Article

Strategic Competition to Security Dilemma – The Language and Narrative of Space and Why it Matters

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Abstract: It was nearly 80 years ago that the first human made object, a V2 rocket, was launched into space. In the decades since, what started as a space race between two nation states has become an environment that is described as both a global commons and a war-fighting domain. Two space faring nations have become many, while an individual entrepreneur now owns more of the satellites that orbit the earth than any of the multiple nation states. The language and narrative of space has evolved in that time too. This essay considers how that language has evolved over the decades; how various actors promote their space narratives; the conflict not only in the use of space but also in the language of space, and what that might mean for the space domain and whether levels of strategic competition and misunderstood narratives could lead to security dilemmas between space actors in the future.

Introduction

> *'We think and behave not only because of who we are and what we believe we are, but also because of where we find ourselves, not necessarily by our own volition politically, morally and strategically.'*[1]
>
> Colin S. Gray

Outer space, the night sky and the planets have fascinated the human race for millennia. For centuries, although out of reach physically, it was utilised by mankind to understand anything from timings for harvests, celestial navigation, and the stories of Gods long gone.[2] It represented an aspirational domain for humanity; a place of infinite possibility. Yet when the novel *From Earth to the Moon* was published in 1889, it spoke of the fictional American conquest of the moon and adding it to the 'thirty-six States that compose this great Union,'[3] suggesting a desire for ownership of something outside of Earth's bounds even before much was known of the practicalities of getting there. Eighty years before humanity actually landed on the moon, science fiction of the time wrote of the wonder, excitement and opportunity of all that space could offer, yet it also focused on the proposed ownership of something outside this world. There was, it seemed, an inherent belief that space and the universe provided another area for mankind to explore, stake ownership of and mine for resources: and where there are resources, there is competition.

The space era of the 1950s and 1960s was a two horse race between the United States of America and the Soviet Union.[4] Competition and national pride drove development and achievement for both spacefaring nations, but it also saw the creation of some of the first space related treaties: the sentiment at that time (aided by the desire to maintain the status quo between two nations with nuclear capability) saw space as a global commons; somewhere that could be of benefit to all humanity. While there was little space discourse openly available at the time as so much of it was shrouded in secrecy and military classifications, the key events of the 'first time' achievements were front page news and on televisions around the world. The lack of transparency contributed towards the divide between the primary communist and democratic nation states, creating a level of political competition, rhetoric and a 'win at all costs' approach to space that created much of the mistrust and strategic behaviours between the US and Russia that remains today.[5] In the early decades of the 21st century, the number of players with an interest in operating in and maximising the benefits of accessing space has increased considerably. When considering the various narratives that each of those parties has brought to the space discussions, it is clear that many aspects of the '… political power of ideology and nationalism'[6] has translated from Earth to space. Given the additional parties with the desire to access or maintain access to space, and the currently limited impact of internationally accepted treaties regards behaviours in space, it is of little surprise that there are increased levels of strategic competition within the domain as each player works to understand or create their role within. Those increased tensions between spacefaring nations 'such as the US, Russia, China, Iran and North Korea pose security threats,' according to Dawson.[7] In addition, Lonsdale and Kane note that there are critical regions within space that are already

overcrowded with satellites and space debris, suggesting there is potential for 'conflict over the right to launch new satellites into them.'[8] As yet, however, 'battles beyond the atmosphere remain science fiction,'[9] and the space domain has remained relatively free from any potential security dilemmas spilling over into conflict. In respect of this paper, a security dilemma is defined as being when 'two or more states are drawn into conflict even though none of the states actually desires conflict.'[10] The challenge for the space domain in particular is that any conflict[11] could result 'not from the actual intentions and capabilities of a particular actor,[12] but rather from the uncertainty …'[13] That uncertainty could come from the language and narrative that a particular actor uses regards the space domain and any assets it may have.

As a result of the significant growth and reliance on space enabled technology, there has been an increase in the number of potential space powers and influencers within the last thirty years. This paper will therefore use the International Relations (IR) approach of constructivism, 'an approach to interpretive understanding,'[14] to ascertain whether space remains a global common for all or if it has become an area that is increasingly susceptible to becoming a security dilemma, via increased strategic competition, for all concerned. While IR theory will be a light touch throughout the essay, it will be highlighted as required, though as Kubalkova notes, 'different styles of constructivism fasten on different social phenomena, for example, language, rules, norms and structures.'[15] It is the varying examples of this, via the consideration of actors' language, culture and narrative, that will show how personal or national perspectives on space, can be constructed.

The key question behind this paper is concerned with how space actors; nations, leaders, industry, military forces or individuals, communicate about space and what messages, intended or otherwise, that might send to an audience regards an actor's intent towards space. In considering the language and narrative in popular use, the paper will consider the potential intent behind any message and whether the use of space by that entity is from the perspective of benefitting humanity (a global commons), for commercial competition, or security driven factors (strategic competition). The research will consider whether those narratives have changed since the beginning of the space race; who the key actors are within space today and how that differs from the early 1950s; whether those actors are working together as alliances and how that contributes towards international relations. Finally, it will consider whether space is still thought of as a global commons, or an area of strategic competition that is at risk of causing a security dilemma between some or all space actors. The paper will also discuss where the UK could position itself for a role within space, primarily from the perspective of defence.

This paper is broken down to five parts and will use discourse and content analysis from space and international relations academia; from national space strategies and the ensuing defence space strategies (where they exist); from space and security industry reports; and, from news stories and social media to consider the narrative of space. Part One will consider the space paradox and whether it is a global commons as originally intended, or if it has become an area

of strategic competition such that it could cause security dilemmas between actors. Part Two will discuss the actors involved in space, both nation state and non-state, and how that has evolved over the last six decades, including if there has been any impact to the narrative of space. Part Three will explore the language[16] and narratives surrounding space and how actors communicate their messages to their intended, and unintended, audiences. In addition, it will look at what those messages contribute towards the discourse in Part One. Part Four will consider both historical and current alliances and partnerships that the actors identified in Part Two are creating or disestablishing. Finally, Part Five will consider what might come next and suggest where UK Defence could have a function in contributing towards the UK space narrative, and the UK's role within the space faring nations.

Limitations within the paper are based around access to quality, unbiased information, the fast moving pace of developments within the space domain, and gaining a broad[17] perspective of the discourse that is available. The author, as a Western defence student from a space operations background, who is studying in a military training academy is susceptible to bringing an unintended bias towards interpreting the narrative via discourse analysis. The discourse itself is written by authors with a vested interest in the domain, and are therefore also not entirely neutral in approach. In addition, access to detail from nations such as Russia and China is limited: translated works are susceptible to misinterpretation and may have changed the original communication intent. Availability of written works are primarily limited to modern day and the early period of the Space Race while the pace of change in the space environment regards technology, actors and doctrine in the last few years alone means that even articles and books published within the last couple of years are already out of date in some aspects.

Overall, the paper concludes that words do, in fact, matter if the human race is to avoid falling into a downward spiral of rhetoric and poor behaviour that will drive space further towards becoming a domain of strategic competition, at risk of causing security dilemmas, rather than being a global commons with assured access for all. International collaboration and partnerships between spacefaring nations will only continue to grow in importance, therefore, understanding how best to communicate across language and culture will be vital to prevent escalation or misunderstandings. Key, trusted, interlocutors will be required if international agreements and norms of behaviours are to make any impact on future space endeavours; this could present an opportunity for UK Space and Defence to have a real position of relevance within the space domain in a role of space diplomacy.

Part One: The Space Paradox – A Global Common or 'Star Wars' Part II?

'*Since space is virtually unexplored, it becomes of great significance to man's future.*'

Lt Gen James Gavin[18]

Gray suggests that there are four great commons on Earth: 'the sea, the air, Earth orbital space and cyberspace,'[19] while Sadeh expands those to describe the domains of '… space, the high

seas, the atmosphere and Antarctica … as global commons [that] lie beyond the jurisdiction of any state … and are available for all to use for the common good.'[20] A common, in this respect, is deemed to be an area 'beyond state dominion that hosts finite resources available to all or that provide non-excludable global benefits.'[21] This paper considers space, and whether it can be considered a global common, or if it has become an area of strategic competition, fraught with potential security dilemmas, despite the best intentions set out in treaties at the beginning of the Space Race.

Space and humanity have been interlinked for millennia and for the majority of that time, it was considered by many as something magical, mysterious and far out of reach. There was, prior to the beginning of the space age, a genuine desire to maintain space as a 'war free sanctuary.'[22] That is, until the United States and the Soviet Union commenced their competition with each other to gain the 'firsts' of human kind's explorations beyond earth's atmosphere. Thus, 'space and politics … [became] inseparably interlinked,'[23] with Sheehan noting that space has typically been considered from one of three perspectives: 'as a sanctuary; as an environment and; as a theatre of war.'[24] Though on 14 November 1957, the United Nations (UN) '… passed resolution 1,148 demanding to allow space flight for peaceful and scientific purposes only,'[25] the language used within documents such as this, or the Outer Space Treaty (OST) of 1967, are generally considered to be somewhat general in their vernacular and loose enough to allow for some interpretation.[26] Of interest, there is a 'strong linguistic dissonance, both in terms of translation and different interpretation of terminology,'[27] between the Western world and Russia. When words such as *peace*, *deterrence* and *détente* have quite different interpretations between two of the major space powers (US and Russia), there is certainly room for misunderstanding.[28]

Within the UK Ministry of Defence (MOD) publication on *Global Strategic Trends*, space is referred to as a 'global commons,'[29] alongside the earth's oceans. Mahan, a naval strategist, considered a global commons to be 'a great highway … or a wide common, over which men may pass in all directions.'[30] While Mahan was referring to the strategic use of terrestrial oceans, it has also been used to describe the Antarctic and space, both of which could provide unknown levels of mineral resources and are not claimed by any single nation. MOD doctrine for *UK Air and Space Power* states that space 'represents a source of power and influence in its own right … a critical weakness if not given appropriate protection.'[31] Silverstein and Panda, however, suggest that 'not all leading space powers have endorsed the concept of outer space as a great commons,'[32] with the US among those that have been inconsistent in their approach.[33] Where there are inconsistencies in narratives, that is likely down to the realisation that reliance on the space domain has created a vulnerability that needs protecting: but inconsistent language can lead to an inconsistent and, therefore, confusing approach to the use of space, and a misunderstanding of intent. As expansive as space is, there are elements that are a finite resource, such as orbital slots and the radio frequency spectrum, and it is these limitations that can create competition and make space the contested and congested domain that it is today. Sadeh notes that:

> 'As [a] commons becomes overcrowded and degraded, users must consume more just to get the same level of benefit, so a downward spiral begins that individual users are powerless to stop.'[34]

The modern day reliance, by many, on space enabled technology has created an environment where guaranteed access to those resources has become fundamental to day-to-day living, and nowhere is this more applicable than for a modern military. Outside of Defence circles, there has always been some concern regards what is seen as the militarisation and weaponisation of space, hence part of the original treaties were to ensure no placement of weapons in space. Dolman argues that space was both militarised and weaponised from the very beginning, at the moment that it became politicised.[35] Olsen suggests that it was later, at the beginning of the Global Positioning System (GPS) network upon which humanity has become so dependent, or the use of Joint Direct Attack Munitions (JDAMS) within terrestrial based military operations, saying: 'it is past time to drop the fiction that space, somehow, is a pristine environment untrammelled by the military art.'[36] Sheehan argues that outer space has always been perceived in a certain manner, a special realm whereby 'certain types of activity are possible … while others are frowned upon or specifically forbidden,'[37] while Gray proposes that space is simply the latest domain to be exploited by the military, like maritime, land and air before it.[38] Sadeh suggests that if space is seen purely in the context of military competition, 'the starting assumption is that players want to maximise their relative power.'[39] With the relatively recent growth of non-state actors creating substantial satellite constellations on orbit, that competition for access is no longer the preserve of nation state militaries. A commercial entrepreneur, Elon Musk, now controls more than 25% of all active satellites after launching more than a dozen Starlink missions since 2018.[40] China has already announced plans to launch an internet satellite constellation of its own, in competition. These substantial additions to the number of spacecraft on orbit, from both a nation state and commercial market perspective, provides further potential for strategic competition, miscalculation of intent and a change to any traditional space narrative.

Opinion on space as a global commons or an area of strategic competition is often polarised. Ziarnick suggests that this is simply down to human nature; that it is common to 'view a new environment in terms of the environment you are most familiar with.'[41] This could explain the propensity to link space strategies with naval and air power strategies from earlier centuries, as well as the divide between commercial industry, scientists, military leadership and public perceptions. Prior to humanity's successes in getting to space and reaching the moon, it was not difficult to consider something as vast as the expanse of space as being open and available to all. Sixty years later, with the significant reliance on space enabled technology, it is also easy to understand a desire for all nations to have assured space access, to want to protect any sovereign space based assets, and the nervousness over other actors' behaviours and intent regards space. Indeed, with all industrially advanced nations recognising that access to space, or delivery of space power, is critical to continued national security from a terrestrial

perspective, any concerns over military space programmes appear to have been cast aside.[42] As Gray notes, 'strategic history records many states misunderstanding their adversaries' concepts and plans, but often there has been time to learn and adjust to unanticipated revelations.'[43] Understanding others' approach and intent towards a valued domain is therefore of vital importance, for, as noted in the *NATO 2030* report, 'outer space is a new theatre for geopolitical competition.'[44]

In order to fully consider whether space can still be thought of as a global commons, or whether guaranteed access to space and its resources has become so fundamental to space faring nations that it has developed into a domain of strategic competition, it is important to understand who has a vested interest in space. It also requires an understanding of the cultures and approaches to communication by those actors, as that contributes towards how actions and intent are understood by others and supports the proposal that it is constructivism that determines how space activity is perceived. Meyer's body of work on culture is discussed more in Part Three, but highlights the importance of understanding how communication is done differently between nations, noting that 'Americans often tend to be more explicit and direct,'[45] which Monaghan suggests means 'the resulting commentary is often dramatised and hyperbolic – and misleading …'[46]

Part Two: Who's Who In The Space Zoo?

> *'But today, many Americans look to the stars unsettled, fearing that they may soon be eclipsed in space by a foreign competitor.'*
>
> Brent Ziarnick[47]

The space age, Sheehan suggests, 'is the age of global politics,'[48] and the first real players in the space game were the US and the Soviet Union, as was. Their competitiveness as nations to achieve successful rocket launches, orbit the earth and get humanity to the moon was such that it earned it's own name: the 'Space Race'. While the launch of Sputnik in 1957 was celebrated by many, even outside the Soviet Union, for the Americans the message the launch sent drove fear into the national psyche, with it described as '… perhaps the most serious setback, both psychologically and technically, that [the US has] suffered since World War II.'[49] The publication in question was printed only two years after Sputnik launched and the tone of the entire book reads of national survival, and disbelief that the American way of life had not been able to beat the Soviets. That power balance for control of space between two significant nation states set the scene for the decades that followed, and the power struggle of the Cold War years,[50] though it also enabled four decades of 'consistent norms of conduct in space and strategic stability.'[51] The balance of space power may not be as equal as it once was between the US and Russia, but under Vladimir Putin 'the Russian leadership … continues to see space as a strategic asset that needs to be exploited for its potential.'[52] The issue of power, however, is not necessarily a characteristic in itself but rather a relationship[53] between two or more entities, where an active decision is made regards where the power balance lies; this will be covered in more detail in Part Four.

The US and Russia have been the known space actors over the last 65 years, with each nation competing with the other to gain those 'firsts' in space: for a time, Russia was very much the lead nation with the launch of Sputnik; Gagarin completing the first manned flight to space; Tereshkova as the first woman in space; and the Soviet space programme also saw them achieve the first space walk and send the first probes to the Moon, Venus and Mars.[54] Just days after Gagarin's successful orbit of the earth[55], President Kennedy held a cabinet meeting to discuss any options that the US might have in overcoming the Soviet lead in space.[56] This highlighted the level of competition in space at that time: Kennedy allegedly did not care what the specific programme might be, but he wanted something dramatic the US could succeed at, and send a message to the Soviets (and the world) while doing so. Thus started the planning for the moon landings, and when Armstrong stepped out onto the moon, 'the bi-polar space game was over.'[57] Ziarnick suggests that the competition between the US and Russia, or the Space Race as it was known, was a competition between the communist and free democratic systems, to 'win the popularity of the third world countries in a play for favouritism.'[58] What is less clear, is whether this was also the Soviet thinking of the time; that their space messaging from their accomplishments was merely designed to win favour with other nations and therefore expand Soviet influence. Over sixty years later, and the '… persistent friction between the West … and Russia'[59] continues, both on Earth and in space. Some of that friction could be attributed to the varying narratives and perceived intent behind actions within the domain.

Fast forward to the early 21st century, and there are now 'more than 50 countries [with] space agencies or other government bodies carrying out space activities.'[60] Space power: the ability to exert 'influence in, from, or through, space' [61] has traditionally focused on 'the activities of a nation's military and civil space programs,'[62] with Ziarnick suggesting there is an 'unhealthy preoccupation'[63] with the military form. However, even with the significant increase of other nations entering into space endeavours, the US still invests substantially more to their public space budgets: in 2017, at US$43.34 billion it represented more than twice that of the next 11 countries combined.[64] This level of investment shows no sign of abating as the recently formed United States Space Force (USSF) has announced a budget of $17.4bn for 2022, an increase of 13.1% over the previous year,[65] which highlights the US consistently messaging the importance that space has for them as a nation, both economically and as an investment in power status. Sheehan suggests that those nations with space capabilities can be divided into three tiers:[66]

1. Dedicated military and civilian space capabilities on the cutting edge of technology;
2. Develop and use dual use space systems for both military and civilian purposes;
3. Nations that lease or purchase space capability.[67]

While not necessarily an internationally accepted tier grading level, the parameters seem feasible when considered against the current global space actors. However, gradings or tiers can also suggest a level of competition or encourage a desire to reach a certain level. There can be little argument that nations such as the US, Russia and China are in Tier 1. The UK, for now,

is at Tier 2,[68] though that could change when UK sovereign space launch becomes a viable option, and if the planned ambition 'to develop a Sovereign low-earth constellation of responsive small satellites'[69] comes to fruition. The UK's narrative, however, would need to match its ambition and be accepted by the international space community. As Lonsdale and Kane posit, it is 'whether certain countries with certain cultures and certain political institutions are natural space powers …,'[70] and the UK's inability to match level of investment with nations such as the US, China and Russia will likely prevent it ever being perceived as a space power of equivalent value.

Confirming it's intent to become a space power of significance,[71] in October 2003 China became only the third country in the world to successfully launch and recover a human, its first *taikonaut*[72], from Earth's orbit.[73] China's growth within the space domain, over a relatively short period of time, has been impressive, 'exhibiting developments that eclipse many nations' entire accomplishments in space.'[74] Elsewhere, the United Arab Emirates (UAE), in less than a decade, has created a sovereign space agency, sent an astronaut to the International Space Station (ISS), launched a probe to Mars, founded a regional space alliance, and recently announced the first Arab female astronaut had been selected to train with NASA for future space flights.[75] While the UAE's focus is very much on the scientific and space industry side, rather than defence requirements, their messaging has been clear: they are a regional lead for space and will participate alongside the larger space powers, albeit through cooperative endeavour for the most part. This regional alliance, and its subsequent acceptance by the international space community, effectively adds strength to the UAE's geopolitical power position in the Middle East region and sends a message that they want to become part of the international space faring community. In addition, in the last three years, France, the UK, Germany and Australia have all announced and formally stood up, national Space Commands for their military services. All of these new commands are working closely with industry and across Government departments to ensure a cohesive national approach to space. This is a different approach to the early days of the space age when it was primarily seen as a military only endeavour: these efforts should go some way to securing consistent and transparent communications on a nation's space activity.

There is, however, no single nation state that is attempting to operate in space as a single entity. Partnerships and alliances have been steadily increasing over the years, though it has been a constant after the initial competition between the US and Russia. Kauppi and Viotti suggest that it is within these relationships and interactions that the approach of constructivism as part of IR, really comes to the fore, as the 'interests of actors are constructed and subject to change.'[76] The choice of partner(s) within space alliances and cooperative endeavours can also be used as a form of messaging. In recent years Russia, for example has created a regional space cooperative with several Asian neighbours: Japan, China, India, Korea, Indonesia, Malaysia and Thailand.[77] While some of those nations might not be considered significant space powers in their own right, it speaks to regional engagement and building alliances (non-Western) across multiple space activities. International cooperation in space

has long been the focus for Russia,[78] even from its days as the Soviet Union, primarily in getting astronauts and cosmonauts to space. The US were hugely reliant on this agreement in the years after the Space Shuttle Program finished, until Elon Musk and SpaceX provided an alternative with the Dragon capsule in April 2020. France, China, India and the UK have also benefitted from 'a demonstration of Soviet inclusiveness regarding its space programme.'[79] These relationships will be covered in greater detail in Part Four.

While nation states 'remain the principal actors in world affairs,'[80] there are an increasing number of non-state actors with a significant or growing presence within the space domain, all of whom are contributing towards the growth of the space industry and humanity's achievements outside of the Earth's atmosphere. Most notable among them is Elon Musk and SpaceX, whose advancements in reusable rocket boosters within the last couple of years has seen a substantial reduction in the cost of space launch, and a total of 65 rockets being reflown:[81] a concept that was unfathomable only a couple of years ago. In addition, SpaceX's Dragon capsule saw the US able to provide their own sovereign crewed space launch in 2020, sending astronauts to the ISS for the first time since 2011, and being the first private spacecraft to do so.[82] Jeff Bezos is another of the so-called 'Space Barons,'[83] who with his company Blue Origin is working to add to the commercial competition for astronaut shuttles, with the first launch of the New Shepard capsule expected in July 2021.[84] Musk and Bezos have traded competitive rhetoric over social media for some years as they compete to land substantial US government space contracts, which suggests the two horse Space Race of over six decades ago has shifted focus from nations to entrepreneurial individuals with commercial and government contracts in their sights.

Part Three: How's Your Klingon?

> *'Our words matter to us. Simply by being spoken, our stated intentions and plans have some degree of normative force in their own right.'*
>
> Nicholas Onuf [85]

Space: often referred to as the high frontier, the final frontier or the next frontier; the ultimate high ground; a global common; as being both an enabler and a vulnerability; and then there are space races and space ages. The nomenclature surrounding space is certainly varied, and occasionally confusing, which potentially creates a situation where intent can be questioned, or certainly misunderstood. To consider how the narrative of space may have changed over the decades since even before Sputnik, Gagarin and Armstong were the headlines of the day, it is important to understand how the means of messaging have also evolved. In the 1950s, much of the general population's information was delivered to them via official news channels through authorised spokespeople and journalists. Today, news and information are provided 24/7; the majority via space enabled technology to a hand held device, and almost anyone with an opinion is able to create their own narrative with the global population as the audience. It is the narrative, according to Miskimmon et al, that is 'central to the identity and behaviour of actors in the international system, the structure of the system itself, and how

ideas, issues and policies are contested.'[86] Part Three of this paper will consider the language of space through rhetoric, doctrine, treaties, fiction and social media; it will also discuss how culture and trust can affect how communications are understood or interpreted, occasionally leading to friction.

The number of actors; that is nation states and, as seen in Part Two, entrepreneurial individuals that actively participate within the space environment has risen significantly since the early days of the Space Race. Scholarly articles, news headlines, company mission statements and military strategies with a reference to space are more commonplace now than they have ever been, even when considering the narrative around the height of the original Space Race during the Cold War. There are many similarities within those documents, regardless of origin: it is not possible, after all, to change the laws of physics regards operating in space. Yet there are also both subtle and significant differences in what is said, and the intent that might be understood. Gray noted that, 'between the scholar and the policy maker and strategist lies the zone of journalistic commentary,'[87] which is increasingly prevalent within space narratives. The option for Hollywood screen writer, enthusiastic entrepreneur, industry specialist and military leadership could also be added to the potential authors when it comes to adding to the language and narrative of space. In this section, language refers not only to the spoken and written word, but the actions taken[88]; all of which send a message to multiple audiences. Communication in this instance, is 'the sharing of meaning through the exchange of information,'[89] which can come in many guises such as the recordings of Sputnik's radio transmission signals, the audio and visual footage of the Apollo moon landings, or the launch of a Tesla Roadster into orbit. It is important to note that audiences are not simply 'a blank slate for narratives to be projected onto … [the] skilful practitioners of strategic narratives must take into account the political and media literacies of their target audiences,'[90] if they are to understand the messaging as intended. This is where conflicting messaging, such as how a nation state perceives the space domain, does not help an audience understand the environment.

Communication, in its simplest terms, is when an actor uses words, imagery and language in combination to form a narrative that describes an intent or action.[91] The language chosen invariably reflects an element of power; dependent upon the messenger and the message, that power may be perceived quite differently, as could be the reactions to what is said, or the message received which may not necessarily be the same thing.[92] An example of this is the relationship between the US and China: Johnson-Freese highlights that for the US, '[the] concern is primarily regards the ultimate intent of Chinese space ambitions, but deciphering such intent can be difficult for outsiders.'[93] Power relationships, such as those related to the space domain and particularly between the US and China, 'are largely constructed in people's minds through communication processes.'[94] When considered against the IR approach of constructivism, Kauppi and Viotti suggest that constructivists are, 'particularly interested in the key concepts of norms, rules and identities and how they affect the conception of ourselves and how we relate to the world.'[95]

A clear example of this for space is the work the UK undertook to get the membership of the United Nations (UN) to sign off the United Nations General Assembly (UNGA) resolution 75/36 which considered the 'reduction of space threats through norms, rules and principles of responsible behaviours.'[96] The additional 164[97] countries that signed up to the agreement show a clear intent to be seen as responsible users of space, but the UK leading that narrative also gives a strong message as to the role it wants to make for itself in space. Of note, China, North Korea, Iran and Russia were among the 12 countries that voted against the resolution, while India and Israel were among the six abstentions.[98] Sheehan notes that when states 'pursue policies designed to increase their prestige, they are seeking to confirm an evaluation of strength, excellence, even superiority,'[99] against others. It is feasible, then, to interpret the intent of those countries that abstained or refused the resolution to be less than responsible in their use of space. The language in the document, however, may also have contributed to the hesitancy of some nations to accept the proposal. Some consideration of cultural communication differences are made later in this section.

Where an actor sits within the arena of strategic space competition requires a narrative of some sort, whether that is softly spoken or shouted loudly. Constructing that narrative is 'shaped by domestic and international political contexts, the communication environment, and the goals of the political leadership.'[100] In the 1950s, space was a two horse race: in 2021, there are multiple nation states, and non-state actors (primarily entrepreneurs such as Elon Musk and Jeff Bezos) working to gain power within the space environment, each with their own narrative, identity and motivations. There are often disagreements between state leadership, military forces, industry professionals, academics and the civilian population on how space is referred to, what it is utilised for, the legitimacy of treaties and what the proposed 'norms of behaviour,'[101] i.e. any new international legal regimes or best practice guidelines for day-to-day operations, should be. Various factors will influence the development and consistency of any narrative: a nation state's leadership, matters of global significance, levels of strategic and commercial competition and technological advances to name a few. Space, however, has moved from something that was purely aspirational, to being of daily relevance to the majority of the developed world in little over 60 years. Expansive as it is, there are some aspects of space that have a finite capacity; the radio frequency spectrum and available orbital slots for satellite use being the best examples. According to Sadeh, this has the potential to cause issues at some point down the line:

> 'Despite the vastness of space, certain kinds of crowding and irresponsible use are already raising the risks that individual space users will inadvertently cause problems for each other.'[102]

Inadvertent problems in space are one thing, but how would one actor know if an action were unintended or otherwise; how does an actor determine whether or how to react; and how much faith does the spacefaring community have that an actor is being truthful in the

first place? Booth and Wheeler suggest this is how security dilemmas are created, with two levels of strategic predicament: 'a dilemma of interpretation (motives, intentions, capabilities), and a dilemma of response …'[103] This does not simply apply to physical actions, it can also come from the words or postures that are taken by individual actors, and highlights again how constructivism plays its role in how an actor perceives their reality. Constructivists, according to Kauppi and Viotti, build any personal understandings and frameworks from a cultural perspective; from social relationships and shared meanings, according to the level of priority or importance the subject may hold within their group.[104]

Given the role that Defence has within national security, regardless of nation state, it could be expected that any language used in messaging could be considered to be more aggressive or confrontational in nature against any communications that might be seen from an industry or scientific perspective. There are, however, differences even within defence organisations as to the choice of language or tone of message. For example, the US Department of Defense (DOD) released a summary of the *Defense Space Strategy* in June 2020; in the first paragraph it states 'space is now a distinct warfighting domain,'[105] and goes on to explicitly state that it is China and Russia that have 'weaponized space and turned it into a warfighting domain.'[106] There can be further differences in tone even within the same nation state; Gallagher notes that while the US DOD describes space as 'congested, competitive and contested,'[107] the US State Department 'uses more diplomatic terms … congested, multifaceted and interdependent.'[108] This, combined with Gray's suggestion that an absence of discipline and consistency over spelling of commonly used words such as space power, space-power or spacepower, is indicative of conceptual uncertainty and creates a 'strategic anxiety [that] has a way of propelling the creative imagination.'[109] Creative imagination could be another means of explaining a constructivist approach to the space domain, and the potential for creating security dilemmas.

While the US has openly stated that they consider space to be a warfighting domain, NATO[110] use the less contentious phrase of *operational domain*, as did the UK though that changed in 2020 when both the head of UK Strategic Command and the Chief of the Royal Air Force made reference to space as a warfighting domain and 'extending warfare into the novel domain of space.'[111] Although the language use is subtly different, Bowen suggests that the UK MOD has 'explicitly and unambiguously brought British space security policy and military doctrine in line with US doctrine,'[112] though this also contradicts the language within the previously mentioned *Global Strategic Trends* document, another MOD publication, which refers to space as a 'global common.'[113] What that potentially says to other space actors is that the UK will respond in the same manner as the US to any poor or aggressive behaviour in space, but it may also signal a confused approach to the domain by the UK, from other actors' perspectives. Silverman suggests that, 'language does not merely describe events or states of affairs. It also creates or performs them …[it] accomplishes the act itself,'[114] therefore what is said, how it is said, and consistency of message are of real importance when it comes to communicating about space.

Any form of communication is susceptible to misunderstanding, for a variety of reasons, and that can be purposeful or inadvertent. Communicating across cultures, in particular, '… can be fraught with invisible difficulties,'[115] and only some of that is attributed to any difference in the spoken or written language of origin. Huntington suggests that this is partially because people, '… interpret communications in terms of their own pre-existing values and perspectives.'[116] The choice of language in any communication is therefore very important, particularly in challenging domains such as space. The US has certainly varied its approach between the original Space Race era and now. Lonsdale and Kane highlight that at a time when Cold War antagonism between the US and the Soviet Union was at its peak, the US DOD specifically prevented the US Air Force (USAF) from publicly mentioning 'the possibility of equipping its proposed interceptor satellite with a "kill capability",'[117] which suggests a desire from the US perspective to prevent any possible escalation to conflict in space, certainly at that time, or to be seen as contravening the peaceful use of space. Contrast that with the approach and language of the recent Trump presidency, where it was stated: 'It is not enough to have American presence in space … we must have American dominance.'[118] This posturing, while understandable for a nation and society that is considered to have the greatest reliance on space enabled technology,[119] particularly for their military,[120] sends a message of intent that other space actors could react to, or might consider inflammatory. It does not send a message that space is for all.

The US has a potted history regards its communications on space, and whether or not it considers it to be a commons for all, but what has remained constant is its obvious desire to remain the number one space power. In August 2004, the USAF quietly issued a doctrine document entitled *Counterspace Operations*, in which it 'declared the strategic ambitions of the USAF in space.'[121] Johnson-Freese suggests that the low key release of such a document was done specifically to see how much attention other actors were paying to communications such as the doctrine release; effectively testing the water for any negative response to their military intent to protect their space assets on orbit. At the time, the document went virtually unnoticed. Move forward to 2020, and the US DOD issued a space strategy summary and fact sheet that called out Russia and China for 'weaponizing space and turning it into a warfighting domain.'[122]

In that same year, China released the latest version of its White Paper on space; Johnson-Freese describes the language within the paper as 'assertive.'[123] Within the document, it had added an additional component that focused on '… the promotion of international cooperation in Chinese space activities,'[124] and from the outset has stated that the 'Chinese government holds that outer space is the common wealth of all mankind.'[125] An independent review of that same paper highlighted that within the 11,000 word document, the word *security* was mentioned only three times, while the words *military* or *dual-use* had not been found at all.[126] This could be further reflection of Meyer's work, which suggests that the Chinese inclination for high context communication[127] leaves a lot left unsaid, with a need to read between the lines. As noted by Johnson-Freese: 'part of China's propensity toward secrecy is cultural. When intent

is ambiguous, failure is easier to avoid,'[128] but it also makes it far easier for other space actors, such as the US, to assume the worst.[129] Miskimmon et al propose that China has 'preferred to present an ambiguous identity and narrative to the West about its rise,'[130] both as a nation and a space power, though when linked to Meyer's[131] work, that could simply be considered as the manner in which China naturally communicates. Which leaves China's intent open to interpretation dependent on how the West and others want to perceive it, though this is equally true from the perspective of China looking at the US and the West.

China's key piece of global messaging regards its plans for the space domain came in 2003, when it became only the third nation to ever successfully launch a crewed space flight from Earth's orbit.[132] This, combined with an ambitious space strategy[133] that looks out to the next thirty years suggests that President Xi Jinping 'has embraced the idea of technology innovation and [is] adopting the idea of a Silk Road here on Earth and a Silk Road information corridor in space …'[134] China, therefore, 'presents itself in an ambiguous way. It is perceived alternately as an aspiring normal great power to balance others, or as a rising hegemon.'[135] This paper has previously covered the challenges of messaging towards different audiences, with Booth and Wheeler highlighting the difficulty that comes when the 'postures that one government claims to be defensive may appear potentially offensive from the perspective of neighbours and rivals.'[136] This would appear particularly true when it comes to the US interpretation of China's intent. The US simply does not trust China to have non-nefarious intent with its space activities; the reality it has constructed for itself regards China will not allow it to, unless something changes. Kissinger suggests that this is partly due to the US not having 'experience interacting on a sustained basis with a country of comparable size, reach, and economic performance [that embraces] a distinctly different model of domestic order.'[137] Both nations are constructing their own version of a World Order, with each seeing themselves at the centre; this could lead to increased competition within the space domain, misunderstanding of intent, and potentially, conflict due to an ensuing security dilemma.

This paper has previously covered how nations have a natural setting towards how communication is done: messaging and language use within a space narrative is no different and can be both obvious and subtle. Meyer highlights that both the US and UK, 'fall toward the low context end of the communicating scale,'[138] that is, communications that are precise and clear. The US much more so, which explains some of the language use in DoD space policy and strategy documents, but this also carries through to media releases on space behaviours. The US, according to Hitchens, 'messages about what it considers irresponsible milspace behaviour ...'[139] allowing for the reading or listening audience to deduce the norms of behaviour the state accepts. In April 2020 the US Space Force chief, General Jay Raymond, directly called out Russian behaviour following their testing of a ground based Nudal anti-satellite (ASAT) missile. Unusually, for the UK, the lead for the MOD Space Directorate, Air Vice Marshal Harvey Smyth, also decried the activity, 'marking the first time that the [MOD] has publicly criticised Russian actions in space.'[140] While effectively taking the same action, the language and tone between the two space leaders was subtly different: Smyth spoke of

concern and *threatening the peaceful use of space*, requesting that Russia 'continue to work constructively … to encourage responsible behaviour.'[141] Raymond 'strongly condemned'[142] the behaviour, speaking of *hypocrisy* and *aggression*, and *threats* to the US and its allies; yet did not, in this instance, suggest any means of working together to create the norms.

Transparency and consistency in communications, therefore, is significant. Without it, an actor is left to interpret the gaps and will invariably fall to what is known of the other actor; that is, they will construct what previous experience suggests is the likely intent. If the starting position is one of mutual distrust, it is unlikely either would consider the other to be a responsible partner within a space alliance.

Part Four: Inter-Galactic Speed Dating

> *'An alliance is a temporary, mutually expedient arrangement within a rivalry … allies expect to eventually revert to a condition in which war between them is an option … Friends may fall out … but their expectation up front is that the relationship will continue.'*
>
> Alexander Wendt[143]

With so much competition between nations since the beginning of humanity's endeavours in space, it could be considered that there would not be much room for cooperation and alliances. However, the '…reality of the space age has been that space activities have been characterised by an enormous amount of international cooperation.'[144] The opening quote to this section perhaps best describes how and why certain alliances and partnerships come about with regard to space cooperation: read any US Space Strategy and it is interlaced with a reminder that Russia and China do not behave well in space, from the US perspective. Yet for many years, the US was dependent upon Russian launch capability to get their astronauts to the International Space Station (ISS); with ISS being an excellent example of international collaboration proving to be successful in space.[145] All partnerships, however, are not created equal. Russia, for example, 'does not have the same definition as Europe of what cooperation is,'[146] as it also tends to include sales of technology and data exchange within their approach to international cooperation in space. Viewed through the lens of constructivism, 'states create each other as enemies, rivals or partners, and proceed to share their interpretations of their respective identities,'[147] they also tend to behave as the other expects. Constructivists, according to Nye, 'emphasise the importance of ideas and culture in shaping both the reality and the discourse of international politics.'[148]

The motivations for nations to engage in partnerships and alliances in space are many and varied, and the 'relationships among different networks have become more important,'[149] particularly as the space domain becomes more competitive. Dependent upon a nation's geographic location, or until technology such as Virgin Orbit[150] provides a fully viable launch alternative, there will always be a need for national agreements with those that are well placed for equatorial or polar orbital launch sites, for example. In addition, the sheer expense of being involved in space launches as well as the often substantial cost of satellites is a prohibitive

factor for some; many nations have already seen the economic and power benefits of entering into alliances or cooperation with others. It was early bilateral space cooperation between several European countries, '…which finally led to the formation of the European Space Agency in 1975.'[151] Dolman argues that cooperation regards exploration of space is a popular vision, that it captures public attention, but there is a requirement for continued competition or 'future growth in outer-space exploration is likely to be stunted.'[152]

The incentives behind space related cooperations are not, however, purely driven by financial or launch related factors; select alliances send messages to other actors in the same way that a press conference from a state leader might. Many of those space alliances might be considered as an extension of normal terrestrial business, though some such as the link-up between France and China to cooperate on 'climate actions and space exploration'[153] may be considered more unusual. Through the French Space Agency, France has also taken on a number of 'diverse cooperative steps with foreign authorities'[154] such as Australia, Ethiopia, Germany, India, Saudi Arabia and the UAE. Gray suggests that for these alliances to work, 'communities require ethical codes, formal or informal, because their survival requires predictability in behaviour.'[155] Those ethical codes would have been messaged in some manner, and would likely have needed to be consistent in content, or evidenced by consistent action, to have encouraged another to enter into an alliance: is that actor, for example, speaking the same language regards use of space: do the narratives match or align? Or are they similar enough to make a necessary partnership or alliance more palatable, such as for those nations that need assistance in gaining access to space in the first place via launch capability, for example.[156] There is a continued dichotomy of 'competition and cooperation'[157] in space alliances that is not always evident in terrestrial activity, and suggests greater political significance 'in relation to … foreign policy interests in space activity.'[158]

The previous section of this paper considered the importance of narrative; Miskimmon et al suggest that when individual narratives appear to be in alignment, it is possible for two or more parties to be in agreement on an issue, because '… they understand [it] in the same terms.'[159] This seems straight forward enough, provided it is considered alongside Meyer's work on cultural communication scales: '… what matters is not the absolute position of either culture on the scale, but rather the relative position of the two cultures.'[160] This might go some way to explaining how the US approach[161] to communicating about space can feel very different to the Russian and Chinese narratives; the Chinese in particular reiterating 'the need for nations to work together, rather than against each other, in space.'[162] Meyer's understanding of the cultural differences on communications proposes that all nationalities can be placed on a scale of low context to high context requirements. A low context nation would consider good communication to be precise, simple and clear where any messaging is clearly expressed and understood at face value, whereas a high context nation is seeking more sophisticated, nuanced and layered communication that comes from reading between the lines.[163] Using Meyer's scale, the US is at the far end of low context while Russia and China are towards the higher context end. If, therefore, national policies and

strategies and international treaties are to avoid causing concern and misunderstandings then it is imperative these differences are taken into account when engaging with different audiences. Without it, there will always be a significant gulf between the three major space faring nations, which means the likelihood of significant partnerships between them, or agreements on international treaties, remains slim. This has been recognised by Johnson-Freese, who notes that while the US has said 'it is interested in working with China as a global partner … actions have not matched words when in functional areas such as space.'[164] It reads as a repetition of the US relationship with the Soviet Union during the Cold War: viewing anything and everything that came from the 'other' side with suspicion and distrust.[165]

Dawson proposes that 'the future will be an interesting mix of government and private enterprise ventures into space,'[166] so careful consideration and selection of alliances and partnerships is considered to be one method of increasing levels of power, be that perceived or real power. Gray argues that power has a value of its own, 'as well as for its instrumental worth in aid of interests that are ever open to subjective evaluation as being defensive or offensive,'[167] such as that of space power. Goswami suggests that the Chinese understand this very well, and that 'with power comes influence,'[168] and given the director general of the European Space Agency (ESA) has noted the strategic importance of future cooperation with China,[169] President Xi Jinping is likely to see China's geopolitical and astropolitical influence grow and enable the nation to 'become more of an equal partner in future space operations.'[170] While the US is currently still considered to be the largest space power at play today, it too has created a network of space alliances and partnerships. This is not purely an economic decision as Ziarnick highlights '… the paradox of space power in the early 21st century: the most dominant space power in the world is in crippling fear of being dethroned by a program far smaller.'[171] These alliances and relationships are the basis of constructivism when it comes to space. Wendt suggests there are two basic tenets to this:

1. The structures of human association are determined by shared ideas;
2. Identities and interests of various actors are constructed by these shared ideas.[172]

There is also strength in numbers, and for those countries that cannot compete on the size and scale of the US space programmes, it makes sense to take a collegiate approach. The founding of the European Space Agency (ESA), for example, can be traced back to the early days of the Space Race when there wasn't a single European country that could match the levels of technical capability that both the Soviet Union and the US had at the time.[173] Russia has used space alliances as a foreign policy tool, 'to strengthen political ties with selected countries or to affirm the country's regained power and influence over those countries,'[174] as has the US with the creation of Operation Olympic Defender (OOD). OOD links the US with several of its key defence alliances, most notably the UK which was the first nation to sign up to the agreement in December 2018. This effectively allows the signed nations to share space capability that might not ordinarily be available: it also sends the message that

certain defence relationships that are strong within the terrestrial environment, are growing outside of Earth's atmosphere. Johnson-Freese suggests that inclusion, such as within the aforementioned alliances and agreements, 'is symbolic of acceptance into the international family of space faring nations.'[175] It is unclear how a similar alliance of other militaries outside of OOD membership would be construed by the US: a proactive defensive stance could easily be interpreted as an offensive stance in this example, potentially leading to a downward spiral into a security dilemma.

All relationships and alliances are generally based on some level of trust, and Meyer suggests that there is a trusting scale, with countries leaning towards either task based or relationship based agreements that help build trust between them.[176] Countries such as the US, Australia and the UK can be found at the task end of the scale; that is, building trust through practical and functional type activities, while Japan, Russia, China and Saudi Arabia are at the relationship end; choosing a slower work up and deeper emotional connections to any alliances.[177] Considered against Meyer's communications scale differences that were mentioned in Part Three, the US and many of the traditional Five Eye communities, are consistently at the opposing end of the scales to Russia and China. Given those disparities in both trust and communication, there is work to be done on all sides regards the language and narrative of space if the domain is to remain conflict free, albeit as an area of strategic competition vice a global common, for 'what we perceive space to be shapes our views on how it should be exploited.'[178]

Part Five: To Infinity and Beyond!

> *'Strategic leadership and dominance in space is not an American birthright, despite the widespread belief that the orderly march into the future is part and parcel of America's destiny.'*[179]
>
> Jim Malachowski

The UK is not the only nation in recent years to have stated an intent to develop its space presence. Hoerber and Sigalas argue that this is because, 'space endeavours are known to generate public appeal and act as a demonstration of societal prowess.'[180] This has all happened within the last century; prior to 1957 and the launch of Sputnik, space was essentially a blank page. It was only after the first satellite was launched that space, 'became an ontological reality directly experienced by mankind.'[181] In that time, the reliance on space enabled technology for both peaceful and military purposes has grown exponentially, as has the level of competition between nation states and private companies in accessing space in the first place.

The UK, despite standing up both a 2* led Space Directorate and Space Command since 2020, does not yet have an approved, updated National Space Strategy.[182] It is therefore also lacking a Defence Space Strategy, and as noted by Lonsdale and Kane, 'military strategy must be integrated within a coherent grand strategy that is itself guided by the common

good.'[183] Sadeh suggests that this is a broader problem, arguing that: 'Spacefaring states do not suffer from a lack of space policy … they do suffer from a lack of explicit space strategies.'[184] Moltz adds that any space strategy needs to consider the reaction of other actors, with communication of the intent behind those strategies aimed to minimise any negative reaction[185], and reduce the possibility of causing future security dilemmas. This is harder to do when considering China, for example, because their 'strategic insights are inferred, rather than extensively laid out,'[186] which highlights again the need to understand how various actors communicate their intent. Strategy, 'links power to purpose, serves and fulfils policy, and provides a means for maintaining advantages for states.'[187] For the UK, while the newly formed Space Command is designed with a military or defence focus in mind, and will have a natural desire to preserve the UK ability to access space, the Space Directorate represents an organisation that looks to link military, cross Government and industry approach to a national space strategy.

Communications and messaging regards space endeavours have ebbed and flowed over the decades. At its peak of human interest, as the race to the Moon came to a conclusion, 'over 528 million people around the world watched a live television broadcast of the mission.'[188] Those communications were facilitated by space enabled technology, which is even more prevalent today than it was in 1969. So, as discussed in Part Three, messaging is about what is said and done, but also what is not said and done, and there is always an audience watching and listening. The tone that national policy documents take will set the scene for how other actors construe the intent, therefore the language chosen should be carefully selected. Johnson-Freese notes that there are many other countries that consider space as a strategic asset, 'though the phrase assumes an entirely different meaning'[189] dependent upon the nation state. From the US perspective, for example, the term *strategic* has become more and more equated with a military approach.[190]

With a growing number of space actors, Klein suggests that those 'with the most active presence and participation in space have a commensurate ability to promote their interests and influence the international legal basis for accessing and utilising space.'[191] The US has not been in the position of having a near peer competitor in space for some time, and China is rapidly proving themselves to be a significant space actor. Fabian suggests that the emergence of China, 'demands actor-specific considerations;'[192] which the current US defence space narrative does not seem to consider. Current levels of mistrust between the two nation states would suggest that it is unlikely anything will change if, as Mahnken states: 'there has been as yet no attempt to understand Chinese strategic culture, decision-making, strategy, operational art, and science and technology,'[193] to the same effort that was made to understand the Soviet Union over six decades ago. Without an amended approach to communications between the two states, particularly around the use of space, it would be easy to see how strategic competition could lead to inadvertent conflict. Zheng suggests that 'in manipulating the language to form and display … distinctive political identities, while portraying the other side as an 'out-group' … [they] are sometimes trapped in the world they construct.'[194] There is,

perhaps, room for the UK and other nation states to act as interlocutors, or space diplomats, between the two nation states given their opposing position on Meyer's communication context scale.[195]

There can be no doubt that there has always been, and will likely continue to be, an element of competition towards achievement within the space domain. Malachowski argues that 'space is a unique domain of all modern human activities, but humanity has a long history of conflict over resources.'[196] With the increasing plans to mine the Moon and passing asteroids, the first nation to be able to do so and return the goods to Earth will reap the benefits. However, effective space mining operations 'could have disruptive effects on the global … precious metal economies, especially if that supply is controlled by a single state.'[197] The US concern is very much that the single state will be China and the US narrative reflects that, portraying China as an irresponsible space user: this is perhaps designed to discourage other nation states from entering into partnerships with them. Huntington refers to this as separate codes that 'govern behaviour towards those who are "like us" and the "barbarians" who are not.'[198] The US has not hesitated to criticise those 'states that have dared even express an interest in engaging with Beijing,'[199] and in doing so they look as if they are constructing the very same bi-polar argument or competition as they had with the Soviet Union in the 1950s and 60s.

Space continues to be filled with opportunity and potential, for both achievement and competition, even when some suggest there has been a 'lack of space development over the last 50 years.'[200] Ziarnick proposes three metrics to measure that development: 'the number of people who have visited space, the distances humans have travelled in space, and the cost of sending a pound of payload into orbit.'[201] Written in 2015, the publication suggests that space has not developed as fast as many believed it would after the rapidly occurring achievements of the early space age: it was written before Elon Musk and SpaceX changed many fundamentals of what was believed possible for rocket launch with reusable boosters, and he has made no secret of his intent to start a human colony on Mars via his Starship launch vehicle.[202] This is another example of commercial enterprise adding to the levels of strategic competition within the domain: there could be potential for the next race to be the one that puts a human on Mars.

Rhetoric, narrative and actions confirm or change a space actor's standing or balance of power: the increasingly open and often antagonistic levels of language used could lead to sufficient friction for a security dilemma to build into conflict. Silverstein and Panda suggest that 'states can pursue mutual benefits in areas considered great commons even under competitive conditions,'[203] but that is very much reliant on gaining a consensus on space being a commons in the first place. Therefore the work that is being undertaken to get nations to sign up to responsible behaviours in space will be vital in creating the norms of behaviour that will encourage actors in treating space as a commons: and this is an area in which the UK could lead.

Conclusion

> *'Space is too important as a strategic asset to leave its fate to inertia, apathy or a few individuals.'*[204]
>
> Joan Johnson-Freese

Space, consciously or not, has become an ingrained part of daily life for a significant portion of the human race. It enables a large part of daily life and maintaining secure access to space enabled capabilities is of vital importance: so much so the UK has listed access to the timing element of GPS as a Tier 1 Risk to its Critical National Infrastructure.[205] It is also only going to get busier, both with the number of active satellites on orbit and with crewed missions to the ISS, the Moon and onwards to Mars, if Elon Musk's dreams become reality.

Given all that has been discussed in this paper, and the geopolitics at the terrestrial level, it would not be wholly unexpected to see the space domain '… replicating the same dynamics that have historically driven security competition on Earth.'[206] Some analysts argue that the current geopolitical frictions between the US, China and Russia have been caused by US policies;[207] by extension those geopolitical issues have extended to the astropolitik arena as described by Dolman.[208] In 1959 Lt Gen James Gavin was convinced that by 1965 the USAF would have men in orbit capable of conducting combat operations in space;[209] in 2005, Gray proposed that 'future warfare will include war in space and cyberspace.'[210] Thankfully neither scenario has come to pass as yet, but it is feasible that increased levels of competition for limited resource such as orbital slots, lack of accepted international commitment to norms of behaviour and responsible space use, little control over commercial satellite constellations and an increase in rhetoric between the bigger space faring nations, could cause enough friction for a security dilemma to arise.

In Part One of this paper, consideration was made to the paradox of space and whether it can truly be considered a global commons, or if the competitive nature of the space actors involved in the environment has always been such that it can only be a domain of strategic competition. Competition does not necessarily have to lead to conflict, but it relies on clear and transparent communications between all entities to ensure there is no misunderstanding regards intent. Fabian has argued that current treaties were 'designed to preserve a status quo favourable to the United States and Soviet Union, and maintain deterrent stability among the great powers during the Cold War.'[211] That status quo is no longer valid, and even the US has shown inconsistencies in referring to space as a global common, with Malachowski suggesting that 'space is no longer a sanctuary for peaceful exploration … [and] is leaning towards a direct clash.'[212]

Part Two discussed the various space actors, and how they have increased from the original two nation states of the US and Soviet Union, to over 80 spacefaring nations and an increasing number of significant commercial players. The language and narrative of space were discussed in Part Three, with comparison made between several states, particularly in relation to national

and defence space strategies. The challenge here is that different audiences require different messaging – there is a need to tell any potential adversary that sovereign space enabled capabilities will be protected; a nation state's politicians need to understand that space is important enough to require consistent and constant investment; the public population need to understand why access to space is a facet of daily life that needs to be protected and if need be, defended. It is simply not possible to get all of that across, to all audiences, with one message, on a single medium. Therefore, how space is spoken about is important, as each nation constructs a reality from what is understood. If it is portrayed as a domain for warfighting and distrust, then it likely becomes it. The relationships between spacefaring nations and those within commercial enterprise were considered in Part Four, along with the role of international treaties in setting the norms of behaviour for responsible space users. There is a potential role in space diplomacy for the UK in this area as many nations 'are beginning to realise how much of their vital national infrastructure depends on space,'[213] and are therefore looking for norms that guide behaviour. Finally, in Part Five the paper considered what might come next in terms of future treaty work and the challenges for maintaining space as a domain without conflict even while recognising its growing importance as an area of strategic competition.

With the UK already assigning itself as a Tier Two, or secondary space power,[214] consideration should be made regards the role it can play to remain of significance to the Tier One space powers of the US, Russia and China and the other space actors. It is highly likely that there will be a requirement for a space interlocutor between the US and China in future, to help alleviate cultural communication misunderstandings and allow for mutually respectful dialogue on future space endeavours to avoid creating further security dilemmas that only add to the level of strategic competition in the domain. Given the work the UK has already done to garner majority consensus on responsible behaviours in space, this is an area that could be further developed for the UK.

In conclusion, nearly sixty-five years ago space was a domain that had not been violated by human presence and was sold as a global commons for all. Prior to that there had not been the levels of competition to drive achievement of the many firsts that followed in the years after, and there was little suggestion that space would become such a significant stage for strategic competition. It was, until the launch of Sputnik, a domain that remained out of reach, available only in the imagination. A lot has changed in those six or seven decades; it has become a domain that is described consistently as contested, congested and competitive, that has more and more actors participating within the environment, and a human population on Earth that grows increasingly dependent on space enabled technology. With growing competition, there are ever increasing levels of friction some of which is driven by escalatory narratives, even while there is more cooperation in place than there has ever been. It would be too easy for that friction to worsen due to a significant change in an actor's space narrative, or for a communication to be misinterpreted.

Notes

[1] Colin S. Gray, *Perspectives on Strategy* (Oxford: Oxford University Press, 2013), 81.
[2] Neil deGrasse Tyson and Avis Lang, *Accessory to War* (New York: W. W. Norton & Company, Inc., 2018), 38.
[3] Jules Verne, *From Earth to the Moon* (New York: A. L. Burt, Publisher, 1889), 19.
[4] Throughout this essay there will be reference to the nation state of the USSR, the Soviet Union and Russia. This will vary according to the time period in question and will reference the state as it was known, and referred to, in that particular period.
[5] Colin S. Gray, *Perspectives on Strategy* (Oxford: Oxford University Press, 2013), 53.
[6] Michael Sheehan, *The International Politics of Space* (Abingdon: Routledge, 2007), 1.
[7] Linda Dawson, *War in Space* (Switzerland: Springer, 2018), 13.
[8] David J. Lonsdale and Thomas M. Kane, *Understanding Contemporary Strategy* (Abingdon: Routledge, 2020), 233.
[9] Ibid., 216.
[10] Joan Johnson-Freese, *Space as a Strategic Asset* (New York: Columbia University Press, 2007), 5.
[11] For the purposes of this paper, conflict could be considered to be either terrestrially based today or orbitally based in the future.
[12] In the context of this paper the word 'actor' is taken to mean those with a vested interested in the space environment, for example, a commercial company, a nation state or a military force.
[13] Ken Booth and Nicholas Wheeler, *The Security Dilemma* (Basingstoke: Palgrave Macmillan, 2008), 5.
[14] Mark V. Kauppi and Paul R. Viotti, *International Relations Theory* (Lanham: Rowman & Littlefield, 2020), 143.
[15] Vendulka Kubalkova, *Foreign Policy in a Constructed World* (Abingdon: Routledge, 2015), 23.
[16] Language use throughout the essay remains true to the original content, i.e. manned and crewed space flight, and variations in spelling dependent on type of English used in the original document.
[17] In this context, not purely Western based discourse.
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