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Geopolitical Imaginaries of the Space Shuttle Mission Patches

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ABSTRACT

This paper engages with the (geo)political imaginaries of the Space Shuttle mission patches, through a consideration of the iconography they contain. Each Space Shuttle mission had a unique patch designed to represent the mission, which were typically worn on the arm of astronauts' space suits. Drawing on visual methodologies and popular geopolitics, this paper critically engages with the patches' iconography, their descriptions in official documentation, and the histories that frame their production. In doing so this paper advances three interrelated arguments. First, that the mission patches of the Space Shuttle programme presented a uniquely American framing of outer space in their iconography and can thus be read as geopolitical texts. Second, that the iconography within the patches reflected the contemporary geopolitics of their time of production, but continued to subtly demonstrate American dominance in outer space. Finally, that the consumption of the patches in museums and through popular culture assist in the construction of American Manifest Destiny in outer space. This paper presents tangible examples of humanity's engagement with outer space through the production of material cultures, whilst also pushing forward the agenda for further critical geographical engagement with outer space.

INTRODUCTION

On the 8th of July 2011, astronauts Sandra Magnus, Rex Walheim, Chris Fergusson and Doug Hurley (left to right in Figure 1) left Earth aboard the *Space Shuttle Atlantis* as part of STS-135[i], the final mission of the Space Shuttle programme. The five orbital vehicles of the Space Shuttle programme, *Columbia, Challenger, Discovery Atlantis,* and *Endeavour*, made 135 flights into outer space between 1981 and 2011, operated by the National Aeronautics and Space Administration (NASA), an independent branch of the United States of America (USA) federal government dedicated to aeronautics and spaceflight. On each of these flights, the astronauts, in their ubiquitous orange spacesuits with American[ii] flag, NASA *meatball*[iii], and Astronaut Corps badge, also carried with them another symbolic piece of both shuttle and human spaceflight history: the mission patch[iv]. This paper explores the material culture and geopolitical resonance of this seemingly banal appendage on an astronaut's uniform.

Figure 1: Pre-boarding photo of the crew of STS-135 (NASA 2011a)

The use of mission patches stems from patches or insignia in the military (Paglen 2007), used to identify units, regiments, ranks and even whole armies. As the first astronauts were drawn from the military, this culture[v] was retained for orbital missions from the early American space programmes, for example Mercury, Gemini and Apollo, through to the Space Shuttle programme (Kaplan and Muniz 1986; NASA 2014a). Each mission had a patch uniquely designed for it, with some patches having a commissioned artist to finalise the design in response to input from the mission's crew. The distinct mission patches were worn on the crew's blue flight suits, orange crew suits and also their space suits for Extra Vehicle Activities (EVA). The patches were also present in mission control at the Kennedy Space Centre and in press briefing packs for each mission. The patches have now become items of popular collection like stamps or currency, as part of an outer space souvenir business, with books dedicated to their existence (See: Kaplan and Muniz 1986; NASA 2014a), replica patches available to purchase in both official and unofficial gift stores, and displayed as exhibit items in science centres (Figure 2).

Figure 2: Mission Patch Montage: Left Patches being sold as souvenirs at Kennedy Space Center Visitor's Complex, Florida, USA; Top right Patches as illustrations attached to mission descriptions with example inset, at California Science Centre, Los Angeles, USA; Bottom right mission patches are present as murals on walls, Kennedy Space Center Visitor's Complex Atlantis Exhibit, Florida, USA (All images author's own)

The iconographic content of mission patches, however, offers more than a mere trinket of personal interest, memory of a holiday or appreciation as art, but as a piece of geopolitical history. The mission patches were part of a nation's scientific and political endeavour and are intrinsically linked and associated with that nation, the United States of America. When interrogating images as visual representations scholars have focused on the "geopolitical resonance of images" (Roberts 2016, 235). What is represented can come to form an important discourse in understanding what it is a nation wants to be perceived as representing and being a part of; as Brunn asserts, when "states emphasise 'the visual'…they inform and educate their own populations and those beyond about where they are, who they are, and what they are about" (2011, 19). My focus here is to continue this interest in seemingly insignificant, or banal, aspects of material culture in order to continue "the obvious centrality of the visual in geopolitics" (Raento 2006, 601), but also to show empirically, following Maclaren (*in* Dunnett et al. 2019), that the presentation of geopolitical scripting of nationalism is bound to the geographies of outer space "through the discourses and representations of the visual cultures of outer space and our interpretations of these" (Dunnett et al. 2019, 333).

This work is contextualised within the field of popular geopolitics, as part of the broader field of critical geopolitics (Ó Tuathail 1996; Dodds 2001; Müller and Reuber 2008; Sharp 2014). Critical geopolitics emerged in response to geopolitical engagements that missed the representational forms and strategies of discourses that were mobilised in representing world politics, summarised by Smith, considering Ó Tuathail's (1996) work, as "a reading of geopolitical texts as scripts of global vision, revealing variously partisan amalgams of power, geography, and knowledge claims" (2000, 365). This documenting and deconstructing of textual discourses of political

elites or institutions expanded to see the importance of popular cultures in constructing geopolitical discourses and imaginaries. This attention has led scholars to engage with popular mediums such as magazines (Sharp 1993; 2000), comic books (Dittmer 2005; Dunnett 2009), art (Sage 2008), stamps (Raento 2006), children's toys (MacDonald 2008) and cinema (Dodds 2005). Popular geopolitics is concerned with what geopolitical discourses are being produced or contested through popular cultures. Whilst original critical geopolitical work focussed on the text and words, the move towards more popular forms of geopolitical analysis led to a focus beyond the text, considering images, landscapes and material objects.

In this article I continue this interest through an examination of the mission patches of the Space Shuttle programme. I consider the mission patches as sites of geopolitical communication to understand how nationalism is reflected and reified in the iconography[vi] included in their designs. Although mission patches have been considered by scholars (Brumfitt, Thompson, and Raitt 2008; Platoff 2013), there has been a lack of criticality around the iconography the patches contain, particularly when considering the geopolitical context of their creation. Outer space has long been considered a site of political contestation and geopolitical posturing, particularly within the wider conflict of the Cold War (Sempa 2002; Chari 2010), and the perceived risk and fear of domination by either the USA or USSR (Launius 2006). MacDonald (2007) and others (Dunnett et al. 2019; Dickens and Ormrod 2016, 2007) have established that outer space should continue to be a site of analysis to consider terrestrial issues.

This paper focusses on the Space Shuttle programme as, first, it presents a unique example, unlike the Mercury, Gemini and Apollo programmes, that spans different geopolitical times, both during and after the Cold War, and, second, there has been less focus on it within academic writing in the social sciences despite its recurrent use

in wider popular cultures of film and television. The Space Shuttle programme was first conceptualised in the 1960s with formal research and development beginning in in 1972 (Hitt and Smith 2014). The programme's operation (1981-2011) straddled the end of the Cold War and the era of new political relations that emerged with Russia as the other major spacefaring nation, following the fall of the Soviet Union, as well as increased international cooperation with the European Space Agency member states. The Space Shuttle programme thus presents an interesting case for analysis of the shifting geopolitical imaginaries in the iconography associated with its missions. More so, this paper builds on recent calls for a further engagement with the political geographies of outer space made originally by MacDonald (2007; see also Glassner and Fahrer 2004) and subsequently expanded on (Dunnett et al. 2019)

Previous studies into material cultures have drawn on Billig's (1995) notion of banal nationalism in order to inform the understanding and conceptualisation of the visual cultures under study and to explain "the capacity of… images to represent nations" (Penrose 2011, 429). The reproduction of the mission patches of the Space Shuttle, I argue, can also be seen to emphasise "a whole complex of beliefs, assumptions, habits, representations and practices" (Billig 1995, 7). These assemble, as Penrose (2011) articulates, to embed the specific ways individuals consider and articulate nations and national identity. Indeed, it is the emphasis on the natural that makes banal nationalism powerful, owing to the way that conceptualising iconographic elements of visual material cultures such as flags, comic books, stamps, seem "to be unassailable [where] the process, practices and languages of banal nationalism work to construct and reproduce specific nations and nation-states as indispensable cornerstones of an international geopolitical order" (Penrose 2011, 429). My argument from this context is that within the iconography of the mission patches of the Space

Shuttle programme there were repetitive iconographic themes throughout the 135 patches that reflected, but also reified, the construction of the United States of America as not only influential but 'indispensable', to use Penrose's words, as 'cornerstones' of a 'geopolitical order' in the use of outer space.

To develop this argument, the paper is divided into three sections. The first section considers the iconographic themes within the patches produced within the Cold War that show a uniquely American framing of outer space. The second section considers the development of nationalistic iconographic themes within the patches against the changing geopolitical environment over the Space Shuttle's history, and considers how American dominance is represented throughout these changing eras. The final section analyses the reproduction and consumption of the mission patches within museums, exhibits and other popular culture, to demonstrate how their reproduction assists in the construction of American Manifest Destiny in outer space.

Before leading in to this analysis, I turn now to briefly outline the methodology employed. The mission patches of the Space Shuttle programme have been catalogued and are available in digitised form online (NASA 2011b). Digitisation has been important for this research owing to the logistical challenge of visiting and accessing NASA archives. Archival research was conducted via the variously available NASA online archives (NASA 2011b, NASA 2013) and other literary sources related to the patches' production (Kaplan 1978; Kaplan and Muniz 1986; NASA 2014a). Archival analysis revealed further digitisation of mission press kits (NASA 2010, 2017a) which contained detailed descriptions of the patches, some of the only records of such description, which were subsequently used in other publications (NASA 2014a).

With 135 patches to consider, quantitative analysis would not offer any meaningful insights into the patches. In analysing the mission patches, I deploy a critical visual methodology (Rose 2016), through a “careful reading and interpretation” of the iconography (Gill 1996, 14), considering the site of production, the content of the image and the site of its reception (Roberts 2016). Focused, methodological and contextualised examination of the iconography of the mission patches and associated descriptions allowed for the identification of “recurring themes and visual patterns” (Rose 2016, 204). Analysis of the surrounding discourses and the relationship between the images in the patches and their presentation elsewhere brings into consideration discourse analysis, “used to explore how images construct specific views of the social world” (Rose 2016, 192), and intertextuality, “the way that the meanings of any one discursive image or text depend not only on that one text or image, but also on the meanings carried by other images and texts” (Rose 2016, 188). With this in mind I supplemented my analysis by reviewing articles from the New York Times, variously described as a ‘newspaper of record’ of the United States of America (Encyclopaedia Britannica 2017), and presidential speeches, documented through *The American Presidency Project*, in order to capture the geopolitical environment at the time of the patches’ production. Laterally, I also draw on pilot empirical work from the Kennedy Space Center Visitor's Complex in Florida, the California Science Center in Los Angeles and the National Air and Space Museum’s Udvar-Hazy Center in Chantilly, Virginia outside Washington D.C. (NASA 2011c) to aid considerations on the consumption of the patches. This research encompassed a day in each facility and these were used initially as ‘go-see’ visits to understand how the space shuttles are being memorialised, but also involved ethnographic work documenting, via a research

diary and photographs, how the mission patches are represented and consumed within the museum spaces.

AMERICAN ICONOGRAPHY

NASA is an independent agency of the USA's federal government. Although independent, NASA considers itself "responsible for unique scientific and technological achievements in human space flight, aeronautics, space science, and space applications that have had widespread impacts on our nation and the world" (NASA 2017b, 1). 'Our nation' is a key theme to identify within the mission patches of the Space Shuttle programme where the allegorical personification of 'American' and the United States of America can be found.

Figure 3 presents mission patches that demonstrate this allegorical personification of 'American'. These patches are dominated by both the bald eagle and the American flag as central iconographic elements. The bald eagle was chosen in 1782 to adorn the Great Seal of the United States (Lawrence 1990), whose elements are used in various other federal and state government iconography, for example as part of the Seal of the President of the United States (Stamp, 2013), or as part of the insignia of the Department of Defense used in the mission patch for STS-51C (Figure 3). Indeed, the obvious association for the eagle symbolising the USA is reflected in the descriptions of the patches presented by NASA. For example, for STS-36, NASA notes:

> "The dominant theme of this patch is the essential role that space flight plays in preserving the blessings of freedom and liberty of America. The eagle is a symbol of our country's commitment to strength and vigilance; its domain is

not bound by the limits of Earth but reaches out to the stars" (NASA, 2014b, p. 72).

The idea of 'preserving the blessing and freedom and liberty of America' is symbolised through the eagle and its important representational aspect, owing to its "ability to fly so high as to dominate and destroy baser forces" (Lawrence 1990, 65). The inclusion of the eagle in the patches presented in Figure 3 is particularly important when considering the security of the nation and the role the Space Shuttle played in the early history of the programme in contributing to Department of Defense (DoD) missions.

STS-51C, 28, 36, and 51J were all DoD dedicated missions. These usually involved the deployment of satellites, and press reporting was tightly controlled; as such, the details of the missions were shrouded in secrecy at the time, "based on the national requirement of keeping information from our [sic] adversaries" (Captain Miles Wiley, cited in Broad 1985, 1). The adversary Captain Wiley cites was the Soviet Union (USSR). Media coverage of the return of STS-51J highlights how "secrecy is needed to keep the Soviet military from monitoring shuttle launchings and discovering the nature of missions" (Blakeslee 1985, 1). These discourses presented in the national press are supported by the geopolitical mood of the federal government, and echoed by remarks made by President Ronald Reagan, for example, at his 1982 Address to the United Nations, where he highlights his concerns with Soviet conduct and their "record of tyranny" (Reagan 1982, 1). These discourses, from the government and from the press, correspond with the national symbolism found in the patches and also with the associated NASA description, and "fit into the discursive structuring of the USA and USSR as polar opposites" (Sharp 1993, 501). They support the presentation of the USSR as an opponent and the Space Shuttle missions as a tool in the fight against that opponent. I argue the inclusion of visual representations of the nation in

the patches, such as the bald eagle, are important, as they situate the patches as being innately American, and how the security of the 'nation' would be maintained by the orbital operations of the Space Shuttle and their crews.

STS-2 (Columbia, 1981)

STS-51C (Discovery, 1985)

STS-51I (Discovery, 1985)

STS-28 (Columbia, 1989)

STS-36 (Atlantis, 1990)

STS-54 (Endeavour, 1993)

Figure 3: National imagery- the American eagle (NASA 2011b)

Within the DoD patches, there is the perception of the eagle as a predator, with dangerous talons outstretched, swooping down to catch prey (as in STS-2, 51I, 28 and 54), implicit as allegory for a nation that seeks out threats and is poised to attack. The bird that adorns the Great Seal, the national emblem of the country, created following independence from British colonial control, is generally presented in flight within the patches. For STS-51C where the DoD seal is used, the eagle is stationery, presented with wings outstretched. Of note in the choice of the DoD seal for the mission patch, is the eagle holding arrows in its talons, to symbolise war. This is contrary to the depiction of the eagle in the Great Seal, where it holds an olive branch on one side denoting the power of peace, and the arrows on the other side to denote war (Lawrence 1990). Utilising the DoD seal centralises the idea of combat within the patch. The choice of the bald eagle for these particular missions could be considered as a description of America's role in outer space, as a dominant force against a silent adversary. Within the patches the presence of the USSR is concealed, in line with the Reagan Doctrine of the time, which did not overtly target the USSR as an enemy but sought to overwhelm their terrestrial influence globally through other conflicts (Scott

1996). By extension, America's outer space operations could be considered as a continuation of this doctrine in Low Earth Orbit.

The American flag is equally central within the patches' iconography. Although the use of iconographic content such as the eagle can be contextualised to the period of the Space Shuttle's operation during the Cold War and immediately after its ending (circa 1981 to 1993), the flag as an iconographic element has been far more persistent in its symbolisation of the geopolitical position of the USA as a leader in outer space. The colours used within the patches of Figure 3 are primarily the red, white and blue of the USA flag, with a flag embedded into the designs of both STS-51I and STS-36 patches. The flag of the USA has featured throughout the history of the Space Shuttle's mission patches, both individually and in tandem with other flags. The inclusion of the flag is the most obvious and overt signification of 'the nation' of the USA. Indeed, NASA descriptions of the patches emphasise this point of leadership where STS-51D is described as showing

> "an orbit formed by a colonial American flag and a space shuttle. The flag in orbit signifies the U.S. presence in space and pre-eminence in manned [sic] space flight as exemplified by the space shuttle. The orbiter flies out of the U.S. flag to indicate that it comes from this country and the American people. The original 13-star flag is used to symbolize a continuity of technical achievement and progress since colonial times. The name Discovery preceding the flag represents the spirit of discovery and exploration of new frontiers, which have been a hallmark of American people even before they were formed together as a nation" (NASA 2014a, 54).

The quintessentially 'American' imagery through the use of the flag (Figure 3) of the United States of America, or of national imagery such as the bald eagle, demonstrates what Billig describes as the "flagging, or reminding, of nationhood" (1995, 8), where the USA is framed as leading the world in human spaceflight, through the technological dominance of the Space Shuttle. However, this dominance lacks a criticality where the unapologetic use of the US colonial flag and its history are ignored. From this perspective, the colonisation of the 'frontier' narratives of the American west can be compared to colonising narratives in contemporary spaceflight. This idea of American colonisation is particularly problematic in the outer space sphere. The Outer Space Treaty, signed in 1967 by the United States, the Soviet Union and the United Kingdom (later expanded and signed by a total of 107 countries), states that "the exploration and use of outer space… shall be the province of all mankind [sic]" and "is not subject to national appropriation by claim of sovereignty" (United Nations Office for Outer Space Affairs, 2018,1). A presentation therefore of an 'American outer space' is contrary to the intent agreed between the signatory nations for the peaceful use of outer space.

This brings into contention thoughts around how America innately perceives itself in outer space, regardless of international treaties. This reading of the patches contributes to the portrayal of America as a leader of the world in outer space, reflecting an American Manifest Destiny. Manifest Destiny was first coined in 1845 where John Sullivan, writing for the popular American magazine *Diplomatic Review* "drew on a mythology of exceptionalism to justify American expansionism" across the American west (Sage 2014, 16). In the 18th and 19th century, this mythology was romanticised through art and literature, "showing frontier landscapes, wilderness and 'Virgin' lands as the most important expression of the exceptional destiny and identity

of the American people" (Sage 2014, 17). Sage (2008) contends that the visual motifs that emerged in nineteenth century American romanticism are mobilised in American astronomical art of the twentieth century. I argue that although the mobilisations are different, the symbolism in the mission patches mobilises a sense of an American Manifest Destiny in outer space, through the presentation of American iconography that, through its intertextuality, exhibits American dominance and leadership. The patches therefore help to construct the geopolitical scripting of American Manifest Destiny in outer space, against the backdrop of geopolitical competition, as if outer space becomes marked as a site of American values of exceptionalism and advancement. Dittmer has highlighted how the "American symbolic shape requires a dominant geopolitical script to define the American sense of place and purpose in a complex world" (2005, 630). The backdrop of the Cold War provides such a foil against which American Manifest Destiny in outer space can be positioned, as a contrast to a space of non-American values that would be the alternative if outer space became an area of Soviet success. The terrestrial geopolitical conflict provides replicated imagined territories in outer space for America to conquer. Indeed, NASA's own description of the STS-51D mission patch highlights "the exploration of new frontiers" (NASA 2014a, 54), showing the idea of American expansion was present within the organisation. The iconography frames "geopolitical and geographical imaginations" (Sage 2008, 27) of outer space to this end. The patches presented a specific geopolitical scripting, I argue, that moulds and shapes the perceptions of spaceflight operations as innately American.

This specific geopolitical scripting reflected in the patches discussed in this section is of the Cold War, as an era of competition between the USA and the USSR in outer space. However, the Space Shuttle programme's longevity meant that it spanned

changing geopolitical times, and the end of the Cold War in 1991 led to changing geopolitical and geographical imaginings within the patches, as an era of international cooperation developed in outer space; something that is reflected in the changing iconography of the mission patches and associated discourses.

EXPANDING GEOPOLITICAL HORIZONS

"Having won the Cold War" (Clinton, cited in Chollet and Goldgeier 2008, 38), America assumed the position of the lone superpower in a world under reconstruction since the fall of communism and the Berlin Wall in 1991 (Zimmerman 2003). The end of the Cold War in 1991, a mutual desire for peace and the ensuing budgetary changes meant both NASA and Russia's newly formed space agency had reduced access to funds, which prompted the two agencies to begin to work together (Siddiqi 2009). In 1984 President Reagan directed "NASA to develop a permanently manned [sic] space station and to do it within a decade" (Reagan, 1984,1). However, by the early 1990s, the plans for the Space Station, to be called 'Freedom', were in somewhat of a crisis, with repeated budget cuts and cost reviews. This, combined with the new post-Cold War vision of President Clinton, led to the Gore-Chernomyrdin commission that agreed to a $400 million joint operation that would involve cooperative missions to the Russian Space Station Mir (Zimmerman, 2003; Harland, 2005) and would eventually lead to the building of a joint International Space Station (ISS).

Within the mission patches, this change in the geopolitical relationship is reflected. The American flag remains within the patches, but is seen alongside the flag or national symbols of other nations involved in the missions, such as in STS-46 (Figure 4) with Malerba of Italy onboard where "the U.S. and Italian flags [present in the mission patch], as well as the ESA [European Space Agency] logo, illustrate further

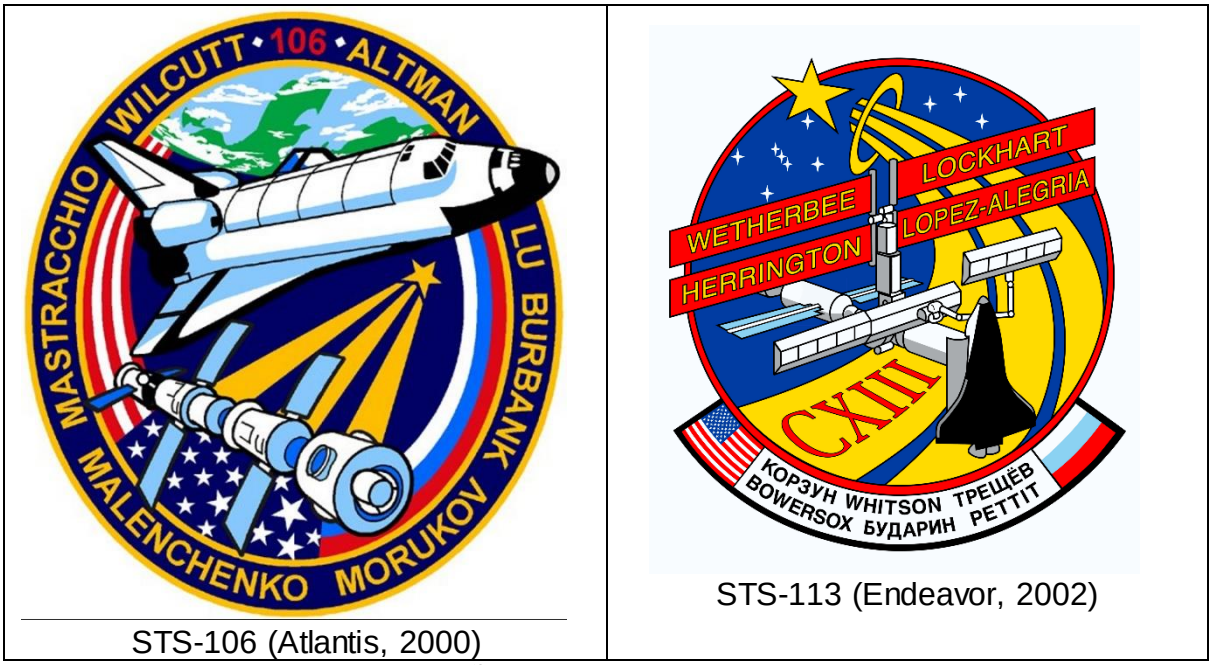
340 the international character of this mission" (NASA 2014a, 87). But it is the iconography
341 of the missions with the former 'adversaries' in the cooperative missions to Mir (Figure
342 4: STS-71, STS-79, STS-81) or to the ISS (Figure 4: STS 113) that I draw particular
343 attention to here.

STS-46 (Atlantis, 1992)

STS-71 (Atlantis, 1995)

STS-79 (Atlantis, 1996)

STS-81 (Atlantis, 1997)



STS-106 (Atlantis, 2000)

STS-113 (Endeavor, 2002)

Figure 4: Joint 'flagging' in mission patches (NASA 2011b)

STS-71 and STS-79 (Figure 4) show how the iconography of the patches evolved and changed in particular to show, from a surface reading, a much more cooperative endeavour, spawned from the missions to Mir, where two space agencies who vied for power and leadership in outer space (Siddiqi 2009) came to work together in orbital operations between Mir and the Space Shuttle, bringing together knowledge and cooperation that would eventually be used to underpin the construction of the ISS (Catchpole 2008; Harland and Catchpole 2002). The mission patch of STS-71 (Figure 4) highlights this cooperation through a number of iconographic elements. The Space Shuttle and Mir approach each other for docking above what appears to be Alaska and far eastern Russia, where the borders of the two countries meet. Indeed, NASA describes the patch thus:

> "the rising sun symbolizes the dawn of a new era of cooperation between the two countries. Atlantis and Mir are shown in separate circles converging at the center, symbolizing the merger of the space programs of the two nations. The

359 flags of the U.S. and Russia emphasize the equal partnership of the mission"
360 (NASA 2014a, 107).

361 This wording of an 'era of cooperation' was repeated by President Clinton in a call to
362 the astronauts aboard STS-71, where he told them "this is truly the beginning of a new
363 era of cooperation in [outer] space between the United States and Russia" (Clinton,
364 1995, 1). Press coverage of the mission highlighted the mission as "symbolizing a new
365 partnership between former adversaries" (Broad, 1995,1).

366 The mission patch of STS-79 (Figure 4) shows further cooperation between the two
367 nations. NASA describes the patch "in the shape of the Space Shuttle's airlock hatch
368 symbolizing the gateway to international cooperation in space… With the flags of
369 Russia and the U.S. as a backdrop, the handshake of the EVA-suited crew members
370 symbolizes mission teamwork of crew members and also between both countries'
371 space personnel" (NASA 2014a, 117). The patch at once shows the developing
372 relationship between the two countries, whilst the flag of the USA is still present.

373 However, it is the continued presence and distinct presentation of the American flag
374 that is of interest here. For STS-71, 79, 81 and 113 (Figure 4), whilst the Russian flag
375 is present, and symbolising in the words of NASA 'an equal partnership', in a standard
376 Western script reading of left-to-right, the American flag appears first. When multiple
377 flags are presented side by side on a patch, the American flag always appears on the
378 left-hand side. This subtler reading of the iconography of the patches shows, that even
379 in the stated 'age of cooperation', there exist particular discourses in the patches that
380 reflect an idea of American dominance and leadership in outer space, which does not
381 directly reflect the official government position of 'equal partnership'. For STS-79,
382 where an American astronaut and a Russian cosmonaut are depicted shaking hands,

the American astronaut is again on the left-hand side, with the image depicting the American hand on top. The darker brown/grey colour of the Russian cosmonaut's suit is reflective of the Sokol space suit, but the fact that this colour difference is portrayed within the patch points to the Russian cosmonaut as inferior to the brilliant white of the American astronaut. This intertextual meaning is further highlighted through the continued safety concerns American astronauts had on missions to Mir (Houston 2013) that speak of the functional yet effective technologies deployed by the Russian space programme compared to the cutting-edge approach of the American space programme. An American astronaut, Scott Parazynski described "the American approach to design is to understand the physics and the engineering limitations and material properties… The Russian approach is to build it like a brick outhouse and then try to blow it up. If it doesn't blow up, it's probably safe enough to fly" (Houston 2013, 163). This could reflect a hangover from the initial pace set by the USSR and thus Russia being the first country to send a satellite and human into space, with the USA playing catch-up for the first few decades of the space race; the contemporary picture presented in the missions to Mir and the ISS see a flipping of this script where it is American leadership in outer space that is breaking new ground. These alternative readings of the patches are supported by discourses within the national press. Press coverage of STS-71 highlights the difference in appearance between the Space Shuttle and the Russian's space station Mir: "the two spacecraft … could hardly have looked more different: the shuttle … is sleek; the station… is gangly" (Broad 1995, 1). This further supports the idea in the national subconscious of the superiority of American endeavours in outer space against Russian ones. Indeed, continued focus on American achievements leads to STS-81 being described as assisting with the planned assembly of "the United States-led international space station" (Leary, 1997,

408 1), conveniently forgetting the multitude of treaties defining it as an *international* space
409 station.

410 Figure 4 shows that the iconography of the mission patches responded to the
411 contemporary geopolitical environment of their production, whilst still retaining distinct
412 American themes. It is the subtle presentation of these themes, that I argue, even in
413 a stated age of cooperation, contributes to the perception of American Manifest
414 Destiny in outer space, through continued centralisation of the American nation in the
415 iconography as a leader even where the official line is one of an 'equal partnership'
416 and international cooperation. These readings and interpretations of the mission
417 patches of the Space Shuttle programme show the value in considering the patches
418 as geopolitical texts that reinforce a geographical imaginary and a representation of
419 geopolitical relations at the time, not just the formal relationship presented by
420 government, but also the undertones of continued leadership and central positioning
421 within the global discourses of spaceflight.

422 ## MISSION PATCH CONSUMPTION AND LEGACY

423 The mere presentation of American iconography within the patches is not sufficient to
424 argue that the patches do anything more than reflect American Manifest Destiny in
425 outer space. However, drawing on work in popular geopolitics, it is the consumption
426 (Dittmer 2005; Dodds 2005) of the mission patches that cements the idea of American
427 dominance in outer space. Dittmer highlights that "symbolic meaning associated with
428 [geopolitical territories] materializes … through the production and consumption of
429 popular culture, which leads to the internalization of the mythic and symbolic aspects
430 of national identities" (2005, 626). The patches, as a material item, are consumed by
431 tourists, space enthusiasts, reproduced and constructed for television and film whilst

reflecting American dominance and leadership in outer space throughout the changing geopolitical eras, thus helping to construct the perception of an American Manifest Destiny in outer space through their reproduction.

The surviving Space Shuttles, *Atlantis*, *Endeavor* and *Discovery*, now respectively serve as exhibits in museums across the USA at the Kennedy Space Center Visitor's Complex in Florida, the California Science Center in Los Angeles and the National Air and Space Museum's Udvar-Hazy Center in Chantilly, Virginia outside Washington D.C. (NASA 2011c). Within these exhibits the mission patches are present as murals on walls, as illustrations attached to mission descriptions and as objects for purchase in the gift shops (Figure 5).

Figure 5: Mission patches reproduced on w all of Kennedy Space Center Visitor's Complex Atlantis Centre, Florida USA (Author's own)

The mission patches are everywhere in the visitor centres. Printed images are displayed above the ticket booths as you enter, large blown up boards of the patches for each shuttle mission line the corridors, and physical patches are presented in display cases of astronauts' personal effects. Their presence on the arm of astronaut's clothing means they are reproduced in almost every representation of the astronauts within the visitor centres, including photo images, video presentations and physical models. Within the centres it is difficult to walk around the exhibitions without some form of a mission patch visible within your eye line. As you leave the exhibition and follow the mandatory route out through the gift shop, you are then greeted by rows of imitation patches for sale and astronaut flight suits in every size available for purchase, adorned with mission patches on the arms. The three visitor centres that formed part of the pilot empirical work for this research are popular tourist attractions, attracting between 1.5 million and 2.1 million visitors each per year (TEA/AECOM 2018). The mission patches are thus a highly visible emblem of spaceflight within these spaces of memorialisation.

I argue that this final use of the patches as exhibits in museums and as souvenirs for purchase ultimately demonstrates how the iconography of the patches is important, as this is where they are observed and experienced by the general public. The patches' use of quintessentially 'American' imagery and of cooperative involvement in outer space, whilst maintaining a focus on the centrality of America's role, all contribute to representing the narrative of American spaceflight seen by both domestic and foreign visitors. They represent the capacity for everyday objects of spaceflight to become symbols of the nation and to reify the story of American spaceflight and leadership in outer space. Through their reproduction they not only reproduce "a whole complex of beliefs, assumptions, habits, representations and practices" (Billig 1995, 7) but present

an example of "a medium for constructing and circulating [a state's] idealized views of who and what constitutes the nation" (Penrose 2011, 432) that reproduce these complex beliefs, assumptions and representations of American leadership in outer space.

Mission patches' position as an item of popular culture is not just as a space souvenir, but through reproduction in popular culture, most notably in film. Through a popular geopolitical framing, Dodds (2005) considers the geopolitical implications of the narratives explored in film. He contends that "using popular films in this way helps us get a sense of the everyday connections between 'the popular' and 'the political'" (Dodds 2005, 267; see also Carter and McCormack, 2006). The Space Shuttle has been featured in various medias, including the James Bond film *Moonraker* (1979), *Space Camp* (1986), *Space Cowboys* (2000) and *Gravity* (2013). The 1998 film *Armageddon*, released during the Space Shuttle programme's operation, is an example of 'the geopolitical' being reproduced in popular culture. The film presents American exceptionalism in outer space via two fictionalised Advanced Space Shuttles. An asteroid is threatening to destroy Earth and an American crew of astronauts and drilling experts aboard the shuttles are the only way to stop annihilation by drilling into the asteroid and blowing it up. It is perhaps a simplistic representation of American leadership in outer space; however, it is an example where mission patches are mobilised within popular culture to assist this representation. Figure 6 shows the patch for the mission to the asteroid. The mission patch is a talking point within the film, representing achievement of the mission.

Figure 6: Mission patch from *Armageddon* (1998)

Whilst it is a fictionalised narrative, it allows for the mission patches to assist in framing the popular representation of America in outer space. America as a symbolic entity uses the geopolitical script of competition in outer space to exemplify American values of expansionism and advancement. These same values are reproduced within popular culture and consumed by audiences. As Dodds (2005) contends, this connects 'the popular' and the 'political'. The mobilisation of the mission patches, as items of popular culture and geopolitical scripting, assembles to support the perception of American Manifest Destiny in outer space, beyond just the museum spaces where they are initially reproduced. Their cultural production reifies the nationalistic imaginaries surrounding the space shuttle and thus reifies outer space as a place of American achievement and expansion.

CONCLUSION

In this article I have contributed to the continued consideration of material cultures by reflecting on the "geopolitical resonance" (Roberts 2016, 235) of the iconography of the mission patches of the Space Shuttle programme. The analysis has demonstrated that images of 'the nation', of America, were central themes within the design of the patches. This nationalistic iconography remained a distinct element in the mission

patches throughout the Space Shuttle programme, through the changing geopolitical eras. Whilst the later patches reflected more examples of cooperation in outer space, echoing the geopolitical change, there remained subtle presentations of America within the patches that contributed to the construction of a dominant American geopolitical narrative in outer space. The banal repetition of these types of visual representations reinforces a geopolitical and geographical imaginary.

With the surviving Space Shuttles now retired to various museums around the USA, the mission patches play a role in the memorialisation of the shuttle programme, with their consumption in exhibits and as souvenirs allowing the iconography to reach wider audiences. The presence of patches and the associated iconography in exhibits across America further reflects American Manifest Destiny in outer space, with outer space seen as a place of American leadership, achievement and thus exceptionalism. The consumption of mission patches as an item of popular culture, for example through film, allows them to contribute to the construction of American Manifest Destiny in outer space, rather than just solely reflecting that vision of America within the confines of NASA.

This article has continued the engagement of popular geopolitics with visual cultures. It also provides a springboard for further engagement with outer space. The lack of criticality around outer space means that some of this work may seem 'late' in terms of wider shifts within critical geopolitics, but this article presents a foray into popular geopolitical representations of outer space through a visual culture, and will be useful in underpinning future work that expands on these reflections through analysis that extends, critiques and compares this emergent work. MacDonald (2007, p. 595) first most notably argued that geography was the obvious discipline "to carry a broad range of cultural, historical, political and economic inquiries into outer space; inquiries that

might freely draw, inter alia, on Marxist, feminist, postcolonial, psychoanalytic and deconstructive readings of geopower", something echoed and built on latterly by Dunnett *et al.* (2019). This paper presents tangible examples of, first, how such research can be done, but also, second, pushes forward the agenda for a critical engagement with outer space. This work I have presented specifically deconstructs how views of geopower are presented, and how outer space has had real and tangible terrestrial effects through the production of material cultures associated with our engagement, exploration and growth into outer space. The significance of this work is that it continues landmark calls for an engagement with outer space, such as those by MacDonald (2007) and Dunnett *et al.*, (2019) within geography but also those from the wider social sciences, arts and humanities (e.g. Dickens and Ormrod, 2016; Messeri 2016), whilst further elaborating on Sage's (2008, 2014) work that explored how nationalism is inherently bound to humanity's engagement with outer space.

Dunnett (2019, p. 16) summarises usefully that "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". There remain substantive areas of potential geographical research into the geopolitics of outer space. Continuing the focus of this paper on how nationalism and outer space are entwined, there are some questions for future research that stem from the findings of this paper. First, if here the focus has been on the geopolitical imaginaries of American missions to outer space and the associated iconography, what questions of nationalistic representation should be asked of the 'new space race' of the 21st century (Grady, 2017; Sammler and Lynch, 2019), that has fostered new forms of private enterprise engagement in spaceflight? Drawing on Penrose's (2011, p. 432) contention on banknote iconography (but equally applicable to other forms of

561 nationalistic iconography), “who actually controls the process of constructing and
562 representing a nation”, particularly when the nation state is not leading many of the
563 contemporary endeavours into outer space brought forward by the new space race?
564 This question is of particular consequence when we think of the types of moral, and
565 ethical questions brought by the discourses of expansionist and colonist language
566 made about humanity’s expansion beyond low earth orbit and is the next logical area
567 of enquiry when considering contemporary geopolitics of outer space. Where does the
568 nation fit in this emerging moment?

569 Finally, with this paper considering the consumption of geopolitical engagements
570 with outer space, it is perhaps worthwhile to consider potential critiques of this paper
571 in the contemporary moment. Building on wider criticism of recent engagements in
572 cultural geographies, and underpinning work, it can be contended that solely
573 deconstructing representations marginalises understanding their actual force in the
574 world, and indeed we need to ask what representations, in this case visual
575 iconography, actually *do* (Anderson, 2018; Maclaren *in* Dunnett *et al.* 2019). Outer
576 space research might usefully consider the question of the nature of discourses and
577 representations in the world and how they act and have a force in the world, whether
578 through their use in popular culture, or reproduction in sites of memory such as
579 museum spaces, or even further afield to domestic spaces, and show how wider
580 engagements of nationalism in relation to outer space are wrapped up and bound to
581 wider terrestrial geographies.

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[i] STS stands for Space Transportation System. STS + an alphanumeric would designate a mission. Although these read as 1, 2, 3 and so on, note the missions were not consecutively launched e.g. STS-28 was launched in 1989 but STS-51J was launched in 1985.

[ii] I use 'American' in this paper to refer to the United States of America, unless otherwise stated.

[iii] The NASA *meatball* is the term used for the circular style NASA logo. Formerly the agency used a design known as the *worm* which was 'NASA' written out in rounded sloping bold letters.

[iv] Sometimes also referred to as 'mission insignia' or 'space patch' I follow NASA's own use of the term 'mission patch' throughout (NASA 2011b).

[v] This material culture has also been explored by Paglen who has investigated the use of patches in the secret, "black" (2007, 1), world of the United States' Pentagon programmes.

[vi] 'Iconography' can refer to a huge area of study with a particular approach/focus to looking at visual images/media, particularly developed in art history (for overview see: Rose, 2016, p. 198 onwards). My work draws on discourse analysis within the broad understanding of 'iconography' and within this paper iconography should be understood to mean the visual images, symbols, or modes of representation collectively associated with a person, cult, or movement. I refer to the iconography of the space shuttle mission patches, i.e. the visual images contained within them.