

## Case for support: Culture-Space – Towards a Better Understanding of Space Exploration

### Rationale

There is a widespread exposition of space exploration technology in museums and science centres around the world (Collins and Millard, 2005). While varying in size and scale, the displays all follow similar narratives that emphasise the technical means developed in the mid twentieth century to enable spaceflight. These exhibits can be powerful, even spectacular and, with original space-flown artefacts included, evoke strong responses and emotions, especially when human spaceflight is foregrounded (DeVorkin, 2005). That said, these representations presuppose the visitors' interest in spaceflight is limited to the science and technology of rockets, their engines, satellites, spacecraft and probes. While that is self-evidently the case for the more technically-minded visitor, it misses the opportunity to address broader questions about the place of space flight in culture, and to engage those with limited taste for plinths parading cold and mysterious concoctions of impassive metal (Durrans, 2005). Indeed, a continued focus on the technological achievement of space exploration in museum displays risks conveying a technologically determinist account of the topic, when both the literature and the Museum's experience point to the significance of cultural, social and economic factors in this branch of scientific endeavour, as in general (Maurer et al, 2011). Science and Technology Studies (STS), social historical, social constructivist and actor-network approaches have convincingly, over a generation, shown alternatives to determinism, and STS scholars – including this project's Co-I – have demonstrated how science and technology work as parts of culture, not in any simple way as its driver (Bijker et al 1987; Golinski 1998; Agar 2012). On the museum side, our recent temporary exhibition, *Cosmonauts: Birth of the Space Age* (2015), exemplified the power of presenting how Russia's unique space culture – embodied in the concept 'Cosmism' – contributed to it leading the world in physical space exploration (Millard, 2014). We are convinced of the importance of an explicit refocusing of space displays to strongly incorporate cultural factors. Without this, they will continue to be bypassed by many for whom the bald scientific and stark technological are barriers to engagement.

This is where the research network approach comes in, as we demonstrated with a previous project, 'Music, Noise and Silence' (AH/M008061/1; Boon et al 2017), which is now informing the development of permanent galleries at the National Science and Media Museum. Convening a research network enables the bringing-together of a wide range of scholars and practitioners from a wide variety of disciplinary backgrounds, to share and discuss their differing insights into, in this case, the culture of space exploration. In the spirit of the AHRC's 'Science in Culture' theme, we will bring together people concerned with space who would never usually meet; space scientists and technologists with science fiction writers, artists, curators, arts and humanities and social science researchers from history of science, STS, art history, geography, philosophy, sociology, anthropology and psychology. The research network approach exemplifies the virtue of taking a research-driven approach to questions of museum display, as it enables a particularly broad and open-ended discussion, assists in the scoping of aspects requiring further intensive HEI-museum research, and entails feedback to the academic community via the meetings themselves and publication.

Our workshops will ask, "how and why do humans explore space?" The groupings will stimulate a robust, but congenial, debate on how multidisciplinary perspectives can complement existing approaches of space displays. These discussions will develop a culture-centred framework for a new generation of public engagement with space exploration. Moreover, the network will go beyond this major restructuring of approaches to public engagement, and connect traditional space science and technology to other relevant scientific disciplines and especially the biological and human sciences, and with emerging perspectives of space culture and art, to stimulate new research avenues to address the more philosophical or anthropological question: "what does space exploration tell us about human cultures?"

### Research Context

Before the technology for physical exploration above and beyond the Earth's atmosphere existed, humanity's interaction with outer space was primarily cultural, with ideas and understanding of space shaped by terrestrial perspectives and widely represented in rich media of art and literature (Geppert, 2012). The rapid technological advancements of the space age (beginning in the 1950s) provided the first opportunity for humankind to engage directly with space via rockets, satellites and probes. Subsequent publicity and museum galleries drew large audiences by displaying the hardware that opened the age of space exploration (Gouyon, 2014a). The broader cultural backdrop to this new age of spaceflight was eclipsed by technological spectacle which, however, has now remained virtually unchallenged for some 60 years, long after its novelty value started to fade. Societal appreciation of space culture prior to, and alongside, the space age is all-but forgotten. But recent scholarship has emphasized culture as a fundamental driver of space exploration and the unique perspectives of humanity the endeavour reveals (McCurdy, 2011; Siddiqi, 2014; Maurer et al, 2011, Geppert, 2012, 2018). We now recognize that space exploration

should be viewed through the lens of societies and cultures, and this necessitates a more coherent synthesis that integrates space science and technology with cultural representations. That much we learned with the *Cosmonauts* exhibition, the success of which provided proof-of-concept for interdisciplinary humanities perspectives on space science and technology (Millard 2016). In so doing, it generated interest in broader questions of how human cultures drive space exploration, and how their diversity among nations and human populations shape the diversity of space cultures. Further, it demonstrated methods for engaging wider and more diverse audiences, in stark contrast to existing, more technical, displays.

### **Timeliness**

The Science Museum's aging *Exploring Space* gallery is typical of the older technology-focused space displays that include sparse acknowledgement of broader cultural factors, and which disproportionately emphasise a western space narrative. The creation of an entirely new space gallery, a major component of the Science Museum's post-2020 masterplan, gives an urgency to undertake the research (including this application) to create the broader account of space exploration we are seeking. The network is designed to launch this research enterprise by building the multidisciplinary context and opening-up the subject to new research questions that view space technologies, still a necessary component of the new displays, from fresh perspectives. By building a research-led approach, we aim to produce a new space gallery that is original, rigorous, and which maximizes engagement and participation across demographics and cultures to ensure an enduring legacy over its 20-25-year lifespan.

The global context here is important. First, space programmes have long embraced international cooperation, from the world's first International artificial satellite Ariel 1, in 1962, through to the International Space Station of today. Internationalism is fundamentally embedded in a wide range of space endeavours but, less noticed, each national contribution brings with it cultural perspectives and drivers that differ from country to country. Meanwhile, some space powers choose to pursue nationally bound programmes with no or very little international involvement (including new national players investing in space activity for the first time). Now is an opportune time to not only focus on how human culture has shaped space exploration generally, but also how the cultures of individual nations are driving unprecedented national diversity in the field. Second, in our neo-liberal market economy, new space enterprises headed by entrepreneurs such as Elon Musk and Richard Branson with personal passions for space exploration are increasingly significant. Third, much current space exploration is focused on the question of how far humans can travel in space, with Mars cited as an ultimate target for newly designed rockets and spacecraft. This elicits an optimism that encourages belief in a limitless frontier in space, which is at odds with sober questioning of the technological limits we face, given the enormous distances involved for all destinations beyond the Moon, and the vulnerability of the human body and mind to extra-terrestrial environments. Such attitudes are in part prompted by our vicarious exploration of space via science fiction, in novels and short stories, comics, and television, film, web and press headlines, many of which carry implicit or even explicit messages of humanity inevitably moving out ever further into the cosmos. The expectations and aspirations of spaceflight for the armchair traveller are set by these cultural mediators and yet this is largely absent from space galleries.

### **Aims and objectives**

The aim of the project is to bring together a multidisciplinary group to ask "how and why do human cultures explore space?" and "what does it say about humankind that we go into space?" so as to develop a culturally centred conceptual framework for understanding of space exploration. The resulting framework will help develop a new generation of space exhibitions/galleries by integrating cultural and social aspects that heretofore have featured little in space displays, with the ultimate purpose of engaging a wider breadth of the public. We will achieve this broader aim via three workshops and associated activities with the following specific objectives:

- To convene multidisciplinary encounters to address questions of "how and why do humans explore space?" and "what do the answers to these questions tell us about the human condition?";
- To delineate and bring into dialogue the imaginaries and realities of space exploration;
- To foreground the material, visual and aural culture of space exploration in the wider sense and identify artefacts and other assets for a new space gallery;
- To encourage and work towards more targeted and substantial cross-disciplinary academic research projects of the space science-culture dynamic - how culture and space exploration shape each other;
- To explore how a new generation and - more importantly - new demographics and audiences beyond technology enthusiasts, may be engaged in space exploration.

### **Timetable of activities; key speakers**

The workshop programme is designed to address the objectives in a logical progression, building from current museum displays of space technology and its representation in art and media,

through to a diversity of space practice and cultures, and ultimately to build a synthetic view, at the last event, of humanity's collective desire and fascination with space, and how to engage a larger breadth of audiences. The approach is that all attendees are participants, not divided into speakers and audience. We are sensitive to the need to be as inclusive as possible in seeking the best deliverable range of attendance by gender, ethnicity and career stage. We will run the workshops in such a way that emergent themes can be pursued and, especially, incorporated in the final discussions; one approach here will be to use 'open space' technique to promote synthesis; we will also employ student rapporteurs to feed back into the conclusions of each meeting. We will also make an audio recording of all the discussions. In practical terms, the workshops will build on the successful pattern of our earlier 'Music, Noise and Silence' workshop series, each taking place across two days with evening public events designed both to provide additional stimulus to participants, and to engage the public with the network's deliberations. We have found this pattern to be highly effective in building *esprit de corps*. Like those workshops, these will include activities and provocations so as to put the accent on mutual exploration and discussion, rather than on the knowledge transfer model of many conferences. The series starts at the Science Museum, and continues to two, vastly different space science locations: the European Space Agency (ESA)'s Research and Technology Centre (ESTEC) in Noordwijk, the Netherlands, the incubator of the European space effort - where most ESA projects are born and where they are guided through the various phases of development and, UCL's Mullard Space Science Laboratory, near Dorking.

**Workshop 1: How space exploration has been represented in museums and beyond (Science Museum) Target date: July 31-August 1<sup>st</sup> 2019.**

The purpose of the first workshop is to introduce the participants to the core problem – poor cultural representation and understanding of space exploration in museums and in public culture more generally, and to begin to stoke interest in the overarching question of why humanity explores space and what a cultural perspective adds to current approaches. The workshop starts by building team spirit through an exercise in which each participant proposes an idea for an object that could be included in a future space gallery (a similar technique was highly successful in the Museum's previous network series). Next comes a tour of the Science Museum's *Exploring Space* gallery (an archetypical example), guided by the PI who also curated it. Focal points of the tour will include the striking objects used in space exploration (such as an Apollo J-2 rocket engine and a flight-spare detector from the Hubble Space Telescope). Responses will be captured in an immediate discussion. An international panel will bring the meeting's attention to the style and contents of space galleries worldwide (speakers to include David DeVorkin [National Air & Space Museum, Washington]; curators from other international locations have been approached). Millard will reprise the *Cosmonauts* exhibition as an illustrated talk. Next, Alexander Geppert (New York University, a leading proponent of 'astroculture' as an organising concept for space exploration) gives a plenary lecture before the workshop attends the Apollo 50<sup>th</sup> Anniversary 'Lates' event at the Museum. On the second day, the participants – via mixed panels, group discussions, provocations and viewings – will explore the representation of space exploration in visual and sonic art, TV and film and in science fiction. Participants include Amanda Rees, Richard Tutton, Roger Luckhurst, Melanie King, William Macauley, Mark MacCaughrean, Mike Allen, J-B Gouyon and David Kirby.

**Workshop 2: Multidisciplinary perspectives on space exploration (ESA Technical Centre, The Netherlands) Target date: October 7-8 2019**

Workshop 2 is designed to take account of the breadth of space cultures as a solution to narrowness of museum representations. Here the focus is on space diversity, where diversity is used to encompass many elements. First, geographical, ethnic, gender and national diversity in space perceptions, cultures, and approaches to space programmes and exploration. It will ask: how do different cultures and nations interact with space, and what drives one to pursue space exploration over another? Here we will benefit from a presentation on [ESA's own approach to diversity](#). Second, 'diversity' here also describes the disciplines among the technical, physical, biological, social and economic sciences, and arts and humanities that investigate space: how does each study space, and what does each tell us about space? Third, diversity in the breadth of people and personalities within society that interact with space, such as those fascinated with the mechanics behind a rocket launch vs. those enthralled by the mystique and imagination of what might lie beyond our solar system. Here key participants will include Cathy Lewis (Smithsonian, Washington), Elisa Raffaella Ferré (Royal Holloway, London) and Mark McCaughrean (ESA, Noordwijk). They will lead participants in a series of discussions and activities that explore the dependency of space activity on expert input from a range of disciplines, groups and nationalities, referring directly to space artefacts, their programmes and the work spaces in which they are prepared for spaceflight. This workshop will be held at ESA's Technical Centre in the Netherlands for symbolic and practical reasons, because ESA embodies diversity as a major collaboration of nations in space and science, and practically because of the close proximity of these teams to the space technologies they work with. The Workshop will dovetail with the Centre's annual open day affording public a rare opportunity to tour its facilities and to interact with the participants.

### **Workshop 3: Potential Future Space Exploration displays (UCL Mullard Space Science Laboratory) Target date: 21-22 November 2019**

Workshop 3 brings together the different approaches, perspectives and cultures of space discussed in Workshop 2 with the focus on existing museum display conventions – and those of other media – from Workshop 1 to investigate the culture of space flight holistically and to promote a coherent, state-of-the-art, synthesis that represents the interdependencies of space science and space culture. Here we will pick-up and address emergent themes from the previous workshops. The collective synthesis will then address the ultimate purpose of the network to determine “why do we go into space?” and “what does it say about humanity, as a whole, that we go into space?”. We will use ‘open space’ technique to create a synthesis to inform the redevelopment of the Science Museum’s new space gallery. Key participants including Lisa Messeri (Yale, New York), Klara Anna Capova (Durham, UK) and Alice Gorman (Flinders, Australia), will address social and anthropological perspectives of space exploration. It will be held at the UCL Mullard Space Science Laboratory, whose long history of space science, complemented by the University’s reputation for history of science and technology, make it a natural host. A panel of Laboratory people – past and present – will discuss its institutional history and global reach as a public event.

#### **Management and coordination**

The network will be managed by the PI Doug Millard, who has exceptional experience in the curation of space exhibitions and has managed workshops and discussion groups. Co-Investigator, Professor Jon Agar, will work with Millard on the delivery and coherence of the whole series, taking special responsibility for delivery of the last meeting on UCL territory. Dr William Macaulay (Coordinator) will ensure the detailed delivery of the whole programme as well as contributing from his own expertise. All three will be involved in preparing the outputs. Mark McCaughrean (Senior Advisor for Science & Exploration at the European Space Agency) is local lead for the second meeting, and Lucie Green (Professor of Physics, Mullard Laboratory) at the third. Dr Tim Boon, Science Museum Group Head of Research and Public History, who has experience from the Museum’s previous successful AHRC Research Networks, will oversee the project (time given *gratis*).

#### **Dissemination**

Immediate project outputs will include: public events at each workshop; workshop summaries on the project webpage, a summary article (for submission to a museum studies journal) discussing the substance of the workshops and a report and presentation for the Museum’s masterplanning review group. The major long-term dissemination will be the redeveloped Science Museum space gallery, which will be visited by millions of people. This will be accompanied by a catalogue, containing essays by many of the network participants. This will provide a permanent record of the thinking behind the gallery deriving from these workshops, and enable engagement by people who cannot visit in person.

#### **Works Cited**

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