



## Viewpoint

## Reflections on the authorship of space technology



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## ABSTRACT

The paper offers a proposition in which the notion of the 'ownership' of outer space is substituted for that of 'authorship'. The notion of authorship draws attention to the processes of critical thinking, re-contextualization and resistances to space technology that take place in social domains where no clear role exists either as audience or user of space technology. The proposition responds in part to interventions made by artists in recent years into the workplaces of space technologists and, incrementally, into the imaginaries that inform the kinds of activities that happen in space. Artistic processes expose the reception of space technology at an intimate scale where the agencies of the viewer to observe, absorb and rethink converge with the shaping of space technology via state mediation and space agency imperatives. The constituency of collective authorship to which space technologies are subject is revealed in unexpected ways through artistic intervention that suggests a reappraisal of some of the terms of reference guiding space policy.

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## 1. Introduction

The proposition of this paper emerges from my own interactions with the astronomical community as an artist-in-residence, teacher and researcher in space science labs, conferences and through a series of co-produced public engagements.<sup>1</sup> It relates more specifically to a project called Moon Vehicle which was an artist-led initiative that responded to the mission of India's Chandrayaan-1 spacecraft and the conduit that this spacecraft established between its makers at the Indian Space Research Organisation (ISRO) and the Moon. I took the role of artist-mentor in what was a long-term and highly collaborative project. In this short paper I will outline some points about ownership and authorship that in retrospect were the defining criteria of that engagement. I focus on the concept of authoring by using a drawing made during Moon Vehicle to look at convergences present at an intimate distance from space technology and at what can be drawn, metaphorically, from the artifacts and processes of aesthetic and creative intervention.

I have described some episodes from the Moon Vehicle project in more detail elsewhere [1], but briefly, Moon Vehicle was the initiative of Srishti Institute of Art, Design and Technology in

Bengaluru (Bangalore) and was one of a series of artist-led projects through which the design curriculum merged with external networks to develop new areas of design practice. Just prior to the launch of Chandrayaan in 2008, I was invited to mentor the Moon Vehicle project as artist-in-residence, having previously spent some years developing space-related projects at UC Berkeley Space Sciences Laboratory and at Mullard Space Science Laboratory, University College London. With Srishti design students I developed a series of events and workshops over two and a half years in collaboration with some of the Chandrayaan mission teams and also scientists from the Indian Institute of Astrophysics. In one event we projected the rising full Moon via a telescope attached to a camera and projector onto the rooftop of the Visvesvaraya Industrial and Technological Museum and invited an audience to share cultural and scientific interpretations of the Moon. In another activity, children living in slum areas near to ISRO interviewed mission teams and drew portraits of the ways the technologists were connected with the apparatuses they constructed and operated. There were many episodes to Moon Vehicle and from the research visits, planning meetings and workshops that happened along the way, the conversations and friendships that emerged became an extraordinary 'vehicle' for dialogue across communities. These were excellent examples of public engagement with science and space missions, but perhaps more interestingly, these creative interactions exposed the conveyance and reception of space technology across diverse and elusive social domains. As an artistic and

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<sup>1</sup> See [www.aconnectiontoaremotepiece.net](http://www.aconnectiontoaremotepiece.net).

creative initiative, Moon Vehicle visualized a defining problem in the enterprise of space faring: the disjuncture between the experience of alienation from the mission, felt by many, and the promise of the collective quest of space technology. Although Chandrayaan's launch brought widespread celebration, like most space missions it still offered little tangible means of participation or involvement. This problem became particularly evident as Moon Vehicle began to try to use the mission as material for new work. In this context, imaginative connections made to a technology that cannot be seen or touched become significant indicators of who authors space technology, when and where – and who does not.

## 2. Authorship and ownership

The launch of Chandrayaan-1 on 22 October 2008 from the Satish Dhawan Space Centre on the East coast of India stirred certain anxieties over the nature of the relation of the spacecraft to the population of the Indian nation. Orbiting spacecraft generate partitions between those who own space technology and those who do not. Such partitions are abstractions or imaginaries in that ownership of space technology is difficult to pin down. Do the scientists of the Indian Space Research Organisation who designed the instruments onboard Chandrayaan own it? Or do the funders, the BJP (Bharatiya Janata Party) government that in 2003 allocated funds and gave the mission the go ahead? Can the State claim ownership and if so, then does Chandrayaan belong, by dint, to the citizens of India? Or does a mission to the Moon from the Earth assume the transcendental ownership of all humanity, as often suggested by space advocates? The abstract partitions of exclusions and inclusions that form the imaginaries of space technology generate complex reactions within an affective space that is by definition hard to see and changeable. As a conceptual category, the materialist and arguably Eurocentric concerns of 'ownership' reduce tantalizing affective spaces where the imaginaries that guide space faring enterprises and the imaginaries that are structured by space faring collide. The structural ambiguity of space technology motivates an array of visible responses. Some are from artists, such as myself, whose responses include finding ways to infiltrate the enterprises of space faring, if not to seek ownership, then to lay claim to imaginaries of space technologies through the tactical poetics of authorship.

The notions of 'ownership' and 'property' are contained in the treaties governing the uses of outer space – the 1967 Outer Space Treaty and the 1979 Moon Treaty. In the Moon Treaty a section that has sparked contention is Article 11 Clause 3 that states that a nation, non-government group or "natural person" can own no part of the Moon. The treaty has not been fully ratified but its words still carry an authority that the recent spate of missions to the Moon by China, India, Japan, the United States and by ESA begin to test, as do independent initiatives to sell land on the Moon. Ownership of the Moon was a hotly debated topic at an art exhibition held in London last year called 'Republic of the Moon'. The work of artists, including the Moon Vehicle project, was presented with the wry provocation that the Moon now belongs to artists! But to adopt the existing language of ownership is to miss the more subtle ways that art and artists appropriate. The claim that artists should occupy or own the Moon follows the attention given to ownership in the language of space policy documents and in this, I suggest, there is room for a shift in thinking.

Moon Vehicle was primarily a claim for co-authorship of the Chandrayaan mission. Its significance was as a cultural vehicle for interpretation at the moment of Chandrayaan's launch. In some ways the project was a ruse by which to share in the celebration. At the same time, it responded to anxieties about the exclusivity of the mission and its disavowal of the broadly societal remit of the Indian

space programme. It also responded to a much less defined and insidious consequence of space faring that could be sensed in the way space activities generated ties between techniques used for the control of non-Earth environments and the techniques used by government to control their over-complex populations. The ties between state and space agency, for instance the transfer of ISRO directors between outer space projects and governance of the non-technological, culturally determined everyday world, begged questions, in India at least, about the structural consequences of space programmes.<sup>2</sup> As the historian of technology Rosalind Williams argued in 1993, aesthetic intervention has become the only means of participation, appropriation or resistance towards the impositions of large-scale technological systems: "The central form of protest is no longer political but aesthetic – the capacity to apprehend differently, to create a different cognitive map" [2]. If this is so then an artist-led intervention such as Moon Vehicle visualises and exposes a structure of exclusion of which it is itself symptomatic. The question is how to decipher and learn from such interventions.

## 3. Drawing space technology

The most rewarding and critically testing episode of Moon Vehicle was a two-week workshop held at a school called Drishya Learning Centre situated close to the ISRO Satellite Centre where Chandrayaan was assembled. The learning centre is for children from communities situated in slum districts of Bengaluru. From my perspective, an important aim of Moon Vehicle was to demonstrate that the constituencies affected by space enterprises were not anonymous, complicit publics but highly capable of determining the terms of their participation in space missions, given the opportunity to do so. In this way the interaction between Drishya and ISRO was unusually charged. It was activist in many respects because it demonstrated that the space agency was not sharing the mission adequately. The ISRO scientists who participated in the workshops may have done so because they recognized the lack of effort being made at higher levels of the organisation to share the Moon mission beyond a specific and arguably privileged scientific community. Their participation actively redressed this oversight. One of the ways this happened was by mission scientists becoming part of Moon Vehicle and hosting field visits to their workplaces in ISRO.

During one such visit Shivashakti, then aged 12, made the drawings shown in Fig. 1. The left page relates to the visit made by the children on the second day of their workshop to the ISRO Satellite Centre where Chandrayaan had been assembled. During this visit the children were told about the three stages of a rocket and that at launch the satellite Chandrayaan had been in the 'nose cone' only emerging when the last stage of the rocket was in outer space, orbiting the Earth. From there its solar panels opened and it continued its journey to the Moon where it took photographs. The drawing shows this journey, including the detail that Chandrayaan turned its cameras on the Earth to photograph the eclipse of the Sun.

The huge plant or flower on the right hand page is dramatically different. Written in the petals of what may be a flower is the factual, but nonetheless poetic numerical information about the

<sup>2</sup> Former Chairman of ISRO K. Kasturirangan has since become a member of the government Planning Commission heading a controversial report on the development of the fragile biodiversity of the Western Ghats. Former Chairman U.R. Rao has been significantly involved in education initiatives, see for example, Rao, U. R. Space Technology for Revitalising the Education System. In Subbarayappa BV, editor. Science in India Past and Present, Mumbai: Nehru Centre; 2007, p. 428–57.

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