

Chapter 12

Exploring the Heavens and the Heritage of Mankind

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Selene, divine daughter of Hyperion, lover of Endymion the shepherd, has faded into the realm of poetry. Readers of this book, hoping for scholarly insight into the morals of lunar mining and other uses of advanced technology in space, are perhaps unlikely even by modern standards to worship the gods of ancient Greece. The Moon that can be mined is plainly a rock. Yet while Selene offers nothing to the technology that lets humans explore the Moon, our ethics may have to accommodate her memory.

A powerful moral ideal in the modern world is that of conserving cultural heritage. National and international legal regimes have developed doctrines concerning 'cultural property': 'objects that embody or express or evoke the culture [of some group]; principally archaeological, ethnographic and historical objects, works of art and architecture, but the category can be expanded to include almost anything made or changed by man' (Merryman 1990, p. 513). A United Nations organisation now oversees a World Heritage List intended to name sites of 'outstanding universal value' to the entire human race (UNESCO n.d.).

What counts as whose heritage, and how rival claims should be resolved, is the subject of a burgeoning literature created by legal scholars, anthropologists and archaeologists, and increasingly by moral philosophers. After all, it 'would be naive to suppose that where items of cultural heritage hold different significances for different people, any disagreements should be readily resolvable given a modicum of mutual understanding and goodwill' (Scarre and Coningham 2013, p. 8). Journeys into space will not escape these different significances, for human cultures have been finding meaning in the night sky since before the dawn of recorded history. 'Celestial bodies have been named, used to navigate, track the seasons and tell stories. The Moon features in stories created by cultures from Australia to the Arctic. Every culture from prehistoric times can rightfully claim the Moon as a part of its cultural heritage' (O'Leary 2006).

The practical question, the point of intersection between space ethics and heritage ethics, is this: what moral constraints, if any are placed upon what explorers of space may do by the long involvement with space of terrestrial human cultures? In recent work on the ethics of lunar mining, Tony Milligan has suggested that the cultural significance of the Moon gives us reason not to treat it as a mere resource

(Milligan 2013; see also his contribution to the present volume). This claim draws on prior developments in space law: the Moon and its natural resources are designated by an international treaty (albeit one which no major spacepower has signed or ratified) as ‘the common heritage of mankind’ (United Nations 1979), in language akin to that which underpins the World Heritage List. (Here I am glossing over technicalities concerning what overlap exists between ‘cultural’ and ‘natural’ heritage. The crucial point seems to have been more that the Moon is common heritage than that it is naturally occurring.)

Much of the existing literature on heritage in space is concerned with the physical traces of exploration after it has taken place, and how to secure their preservation as a collection of historic sites or places of archaeological interest. This literature is sufficiently developed for a Master’s thesis in space law to have been written with its focus on protection of the Apollo 11 landing site (DiPaolo 2013). Archaeologists have been notably vigorous in seeking protection for space heritage of this sort: a World Archaeological Congress Space Heritage Task Force was formed to manage sites and objects related to the history of space exploration, including ‘satellites and so-called space junk in orbit round Earth; spacecraft and space debris in orbit around other bodies in the Solar System; [and] landing and crash sites on the Moon, Mars, Venus, a small selection of asteroids and soon some of the moons of the outer planets’ (World Archaeological Congress n.d.; see also Campbell n.d.; eds Darrin and O’Leary 2010; Spennemann 2004).

However, I say little about this kind of cultural heritage in this chapter, since I take it that it is not the *ethical* features of this sort of heritage site which render it so unconventional. Once it is agreed that the Apollo 11 landing site qualifies as an archaeological site, moral arguments for its importance as either American or human cultural heritage can draw on the moral vocabulary already employed with respect to terrestrial archaeology (although there will be certain differences: for example, when it comes to determining who is morally responsible for ensuring the conservation of sites). The idea that the entire Moon, or perhaps even a smaller celestial body such as an asteroid, may qualify as heritage is not so easily brought within the scope of the ethics of cultural heritage as familiarly construed.

In what follows I set out to explore what potential exists to extend our thinking about the ethics of cultural heritage and apply it to the special case of space. Against a backdrop of the various roles which celestial objects have played and continue to play in human cultures, in the next section I move to questions of whose culture is under discussion: are heavenly bodies part of a shared cultural heritage, of ‘the common heritage of mankind’, or should we entertain a more pluralistic view, recalling that different cultures have developed quite different accounts of the heavens and their contents? In the subsequent section I discuss a further dilemma: given that, for most of human history, our encounters with space have been from a wholly terrestrial standpoint, is it truly celestial objects which might count as our cultural heritage, or just the way they look from Earth?

Next I move to another related question: much of what space has contributed to human cultures comes in the forms of long-lived mythology and the ‘softer’ (that is, less scientifically grounded) kind of modern science fiction. Given that it is precisely an adhesion to scientific plausibility that makes space exploration possible, when we consider space as cultural heritage may we, or indeed should we, give priority to those construals of space which accord with what scientific cultures have come to consider realistic? Here I make the conciliatory suggestion that whether we aim at boundless and soaring imagination, at grounded science, or indeed at religious devotion or aesthetic delight or any other response, space has significance for us as an intellectual resource that fosters all these responses. On this basis I conclude by drawing on the idea of stewardship as it has developed within archaeological ethics, and consequently by suggesting that explorers of space should conduct themselves also as stewards of it.

Popular Culture and Pioneering Colonists

Many things in space were unknown to humans in antiquity, but more recent discoveries have been making their way into cultures beyond the world of astronomy. If you have played the Asteroids arcade game, or recall the asteroid belt in *The Empire Strikes Back*, or remember the asteroid Adonis from Hergé’s *Explorers on the Moon*, then you have seen that asteroids have found roles to play in popular culture. Now they are being investigated as candidates for mining (Planetary Resources n.d.; Deep Space Industries n.d.).

Though their status as a source of inspiration to the arts and the entertainment industries is plain enough, it is harder to say whether their contributions to our culture mean that asteroids, or any particular asteroid, should be counted as anyone’s cultural heritage in any significant sense. If everything that contributes to human culture qualifies as part of the cultural heritage of our species, then it becomes difficult to think of things which are not someone’s and perhaps everyone’s cultural heritage. This is not a conclusion that should be rejected out of hand; but if the notion of cultural heritage is going to inform our ethics then we shall need some means of working out just when the contribution which something has made to a culture entails moral constraints on what we may do with it.

Unsurprisingly, this problem is not new to the literature of heritage ethics. Often a related question is formed around conceptions of value or importance: when does the value which an object holds for some culture mean that it ought to be in the possession of representatives of that culture, and nobody else? (See for example Thompson 2003; Young 2007) This leads to further questions about how value is to be measured, and what kinds of value (aesthetic, religious, historic, and so on) are relevant.

I take it that where space is concerned we will typically not be concerned with the value which any of the heavenly bodies may hold just for any one terrestrial

culture in particular. Of course, different cultures feature different interpretations of the sky, originating from different locations on the Earth's surface. Even where there is agreement, for example, that the Moon is a divinity, Selene of the ancient Hellenic traditions is not Tsukuyomi of Japan's Shinto faith. However, since every human culture has developed under Earth's skies, none is in a strong position to make special and overriding claims on space exclusively for itself.

It is true, of course, that some cultures have absorbed more than others from the scientific and technological investigation of space. The examples of asteroid-related popular culture which I gave above represent a manifestly Western background, unevenly reflected in the interests and experiences of people and peoples across the globe. A case might therefore be made that space is disproportionately the heritage of peoples that have sought to venture into it, with the former participants of the 'space race' leading the pack. (The peoples in whose scriptural heritage the Tower of Babel features might have a claim of greater antiquity, but that endeavour, so the story goes, met with less success than more modern space programmes.)

However, whilst richer nations have always had the technological advantage in investigating space (though there are nowadays more countries than before for which space exploration is viable), it would be excessive to infer that space looms consistently larger in the wealthier national cultures of the 'developed world'. Lebanon had an active space programme in the 1960s (Hooper 2013); and individuals who lack engineering resources still have one of the universal features of human culture, the power to invent and tell stories. 'Reading science fiction as a commentary on modernization,' writes M. Elizabeth Ginway, 'one can begin to grasp the adaptation of science fiction, the quintessential First World genre, to Third World cultures.' (2005, p. 467) Jonathan Dotse links science fiction to 'the rise of a completely different mindset from the ones that has dominated the developing world until very recently; a growing recognition among [the] youth of the immense potential for science and technology to induce tangible social change' (2012). If science fiction and the genre's long engagement with space exploration have their natural home in any region, others are catching up fast and making contributions of their own.

In consequence, I think that when we ask whether there is cultural heritage in space, having in mind naturally occurring objects rather than the remnants of past exploration, what we are asking about is going to concern the 'common heritage of mankind', and only that.

What, though, about the cultures which might develop amongst a community living away from Earth? Thus far only small groups of astronauts have ever done so, and only for limited portions of their lives. Much of what we would like to see done in space is better done by robots, controlled remotely from Earth. However, if a permanent colony is ever established elsewhere in the Solar System, given time it will develop a distinctive culture of its own. Quite how distinctive that is will

depend in part upon the strength of the colony's communication links with Earth, and particularly on how long it takes before anyone is able to make a return journey; the Mars One project plans for one-way emigration (Mars One n.d.) (and its feasibility has been called into question nonetheless (Devlin 2015)).

Colonists of Mars would develop a vastly more intimate involvement with their new planet than anyone left on Earth would have with it. It would inform their common identity as Martian colonists, a society of people whose lives centred on the challenges and possibilities of life on Mars. At some point, when colonies had become long established and their members numerous, it would probably seem plausible that Mars was more their cultural heritage than anyone's on Earth, the antiquity of the latter population's claim notwithstanding. (Should intelligent beings turn out to be dwelling in the bowels of the planet, their claim will of course be best of all.)

In our present situation, however, no such colonies exist. Any pioneers landing on Mars will be landing on a planet which, if it is anybody's cultural heritage, is the heritage of our species in general. Can we say much about the cultural 'importance' or 'value' of Mars in comparison with that of, say, asteroid 11384 Sartre? In practice we may not need or wish to; even if we do think that both relevantly qualify as heritage, we may nonetheless think that Martian planetary mining and asteroid mining pose moral questions significantly distinct from one another. Trying to bring everything astronomers have ever glimpsed together under a unified scheme of moral priorities might prove a vexing task for anybody seeking practical guidance. If cultural heritage is to prove a useful idea when considering our moral obligations involving heavenly bodies, its use may have to be of a somewhat different sort.

Seeing Lunar Seas

Is it celestial bodies themselves that enter into our cultural heritage, or their appearances when observed from Earth? When we deal with terrestrial heritage, such a question does not normally arise: if an item of heritage exists physically in the first place (as some do not, such as languages, songs or artistic motifs), then its appearance will be of interest, especially if the item is held to be of aesthetic merit, but the material object which *has* that appearance is what is said to be the item of heritage. Even landscapes, not easily delineated, are not reduced to the vistas they offer us. Terrestrial landscapes, however, tend to be more often and easily walked over than those of other worlds.

Humans have been looking up at the sky for millennia, but we have had a very limited view of what is out there, and our myths (and science-fictional imaginaries) are products of this history of limitation. With the naked eye we see a Moon which waxes and wanes, and in the dark lunar seas we perceive pareidolia which vary

with culture: the Man in the Moon for Westerners, a rabbit in parts of Asia. Everything else is a tiny light if we can make it out at all.

Over the past few centuries, what astronomers can see has been hugely enhanced through technological progress. Much of this development, including human beings' first visit to the Moon, has happened within living memory. Like our distant ancestors, we can look up and see the Man in the Moon; unlike them, we can also examine photographs taken from the lunar surface.

Suppose we think that the Moon is part of our cultural heritage as human beings. We also think that the Moon is a large, rocky spheroid, a place which humans have visited. We seem to be getting no closer to the Man in the Moon who, according to Tolkien, Stayed Up Too Late. If anything we are pushing him into some other corner of our minds. Yet he, as part of popular folklore, is a rather more obvious candidate for consideration as cultural heritage than distant rocks tend to be.

Here is a possible lesson: when it comes to cultural heritage, treating the Moon as an object can be a conceptual error. We are interested in what terrestrial cultures have made of space, and what they have made of it has drawn upon what little has been visibly apparent. This is plain when we consider constellations, which have the forms they do only when viewed from our direction. What celestial bodies truly are is, for cultural heritage, irrelevant.

If correct, this might prove a liberating thought. It would take a tremendous amount of mining to make even the Moon, our nearest neighbour and the largest object in the night sky, look noticeably different when viewed from Earth. In fact, the most obvious moral constraint to result from this account of space as heritage would be on 'light pollution', the way in which all but the brightest stars are obscured by the numerous electric lights of modern settlements, so that in many places we are left with something brighter and yet drabber than our ancestors' skies. Since this volume is concerned with the *exploration* of space, however, I do not develop this theme further.

There are reasons, nonetheless, to take the opposite view that it is not just appearances but objects that feature in our celestial heritage. In the first place there is our construal of perception. We ordinarily feel free to say (and without sophisticated philosophical justification) that we saw a rabbit this morning, or whatever it was we saw, without having to specify that what we saw was the left side of a rabbit, and anyway it might conceivably have been the left side of a hare at that distance. It would be consistent with ordinary practice not to insist that our ancestors, seeing one side of the Moon at a great distance, therefore were talking merely about something else, the *appearance* of the Moon, when they came up with Selene and the lunar rabbit and the rest. Certainly they were calling it the Moon before anyone had much knowledge of lunar geography to attach to the name (or its equivalent in other languages).

There is also the fact that there is no short history of humans' seeing heavenly bodies as places. Lucian of Samosata, writing in the second century AD, has his heroes lifted by a whirlwind onto the surface of the Moon: its inhabitants are warring with those of the Sun over colonisation of the Morning Star. Thinking of the Moon as a place above the Earth, with a surface upon which people might walk, does not appear to have unduly taxed the brains of Lucian's readers. It might therefore seem arbitrary to say that they knew the Moon only from its appearance, when they and we have both been able to look up and see it as a physical place.

An Intellectual Resource

Let us tentatively grant, then, that celestial bodies, and not just their sublunary appearances, can be part of human cultural heritage. The complication persists that human cultural heritage includes an awful lot of notions *about* celestial bodies, some inconsistent with others. Besides the obvious incompatibility of the Moon as a rock and as a charioteering goddess, there are subtler differences. For example: once telescopes were developed which granted a somewhat detailed view of lunar geography (unavailable to Lucian when he wrote his satire), disagreement promptly raged among men of science concerning whether our Moon, or other moons and planets of our solar system, might support alien life (Dick 1982; Crowe 1986). No less a figure than Johannes Kepler seems to have favoured the doctrine of lunar inhabitation; to protect their readers from its seduction, Giovanni Battista Riccioli and Francesco Maria Grimaldi wrote at the top of their lunar map of 1651 that 'neither do men inhabit the Moon, nor do souls migrate there'. History has vindicated Riccioli and Grimaldi, but both pro- and anti-selenite doctrines belong to the tangled history of human thought. In this respect, cultural heritage is insensitive to truth: our culture has transmitted to us both the Moon landing footage of 1969 and the conspiracy theory that it was faked, and both are thereby included in the culture which we have inherited.

Must our ethics take stock of *everything* that has ever been popularly imagined about space, regardless of the plausibility or compatibility of all these notions? We know that explorers of space will be working within the concepts and conventions of modern science roughly as we know it; no-one who attempted anything radically different has yet succeeded in becoming an explorer of space. Is our ethical reasoning supposed to take account, for the purposes of moral judgment, even of ideas which our practical circumstances otherwise compel our reason to reject?

The tension is a little reminiscent of one surrounding some heritage objects of a conventional sort, concerning how the meanings which people have attributed to an object, and the uses to which it has at one time or another been put, should influence the manner in which it is acquired and exhibited by a museum. The manner of display can emphasise scientific concerns, teaching visitors about an object's historical provenance and how it serves as evidence of the past; or it can

favour artistry over artefact, encouraging visitors to appreciate the exhibit as an object of open-ended aesthetic judgment.

Perhaps fortunately, however, there is not much we can do to exhibit space to our liking. It is implacably *there*, looming above us, and tricky to conceal entirely even from the naked human eye. Still, the comparison with museum display offers one advantage: it suggests a path towards reformulating our question about the permissible roles of unscientific ideas in the cultural heritage of a spacefaring species.

My suggestion is that we construe space as an intellectual resource, or the objects within it as intellectual resources which together arouse and sometimes satisfy our curiosity about space. Through this characterisation we can encapsulate the various ways in which space has informed and inspired the human intellect and the ideas which pass among us, from the most systematic of the sciences to the freest of space opera. More useful than that, once we have the category of a *resource* available to us, it becomes easier to see how the various cultural roles which space can play might complement each other in our ethics. For example, instead of seeing the Moon as a site *either* of extraterrestrial inhabitation *or* of lifelessness, and consequently inferring that because the latter view is empirically true, the former must be a defective and discredited and therefore barely relevant aspect of our heritage, we can instead see the Moon as a stimulating part of a vigorous history of scientific debate, and more broadly of human intellectual curiosity.

Space furnishes us with many kinds of intellectual material. The hard scientific measurements of astronomy are one sort; science fiction converts them into another. Religious contemplations are a third, whether the sky seems full of gods and mythic figures or whether it is held to reveal the majesty of one supreme Creator. 'Bright star, would I were steadfast as thou art' is a line in which space offers us both a moral example and at the same time a contribution to a poetic oeuvre. (Keats was but one of innumerable poets and lyricists who have taken inspiration from the heavens; applying a criterion of popular familiarity might make *Twinkle, Twinkle, Little Star* a stronger example still.) People almost invariably know their own star signs regardless of what they believe about the operations of destiny or character. Rising stars hurtle meteorically towards success in their careers, financial black holes appear in companies' accounts, and nothing is ever rocket science. Space is so quintessentially a part of human experience that it gave rise to the very word, which recalls the *quinta essentia*, the fifth element of Aristotelian metaphysics, once thought to be the stuff of which the heavenly bodies were composed. Space is a resource upon which our minds, and hence our cultures, have long been drawing.

This does leave us still some way from arriving at practical advice for those wondering how to mine the surface of an intellectual resource in a morally responsible fashion. For the business (in fact, the industry) of space exploration, it is no doubt interesting or even moving that so much of what we are is inspired by

space; but this observation falls short of moral force. We have the foundations of an understanding of why celestial objects might be worthy of careful treatment, but in just what ways we might be morally obliged to treat them with care remains a further question. The concluding section of this chapter will not go all the way to tracing out a handy list of moral guidelines for explorers of space. It will, however, highlight another potentially illuminating idea which we can draw from the terrestrial literature on heritage and its ethics.

Stewards of the Sky?

‘In recent years the principle of stewardship according to which archaeologists are stewards of the past has become the epicentre of criticisms of archaeological ethics. Stewardship, however, has shaped the ethical concerns of archaeologists by raising awareness of ethical issues related to archaeological practice.’ (Pantazatos 2010, p. 96) Stewardship has not furnished archaeological ethics with an exhaustive conceptual toolkit, any more than it has the environmental ethicists who have sought to make use of ideas about stewardship of the natural world in either religious or secular contexts. It probably will not confer one upon us when we want to know about our moral responsibilities towards heavenly bodies *qua* intellectual resources; but it offers us a starting point.

In archaeological ethics, stewardship evokes the power not of a possessor, but of one holding goods in trust for others. In this model the goods at stake are those of disinterested scientific knowledge about the past; archaeological sites are repositories of such knowledge, and their preservation and proper excavation is vital if it is to be brought to light. Archaeologists, whose expertise enables them to bring this about, therefore find themselves with the responsibilities of custodianship. Archaeological sites are a resource, not merely economically but intellectually: investigated with the proper care and insight, they yield material for human thought from which everyone may benefit.

In the previous section I suggested that we should consider space, too, to be an intellectual resource. Resources, however, are often appropriated and made into sources of private benefit. Resource management is not, in itself, the foundation of a moral calling. It is here that the idea of cultural heritage becomes significant: whilst the mineral resources in space may be open to construal as virgin territory, the cultures of the Earth have ancient involvement with the intellectual resources of space. How then should explorers of space comport themselves? A possibility nicely in keeping with the moral practices of Earthbound work connected to cultural heritage is that they should take cues from the professional ethics of archaeologists, and seek to comport themselves as the careful stewards of an intellectual resource, accountable to those in whose cultures that resource looms large.

Stewardship is not a flawless, unobjectionable and universally acclaimed moral principle or framework, even for archaeologists; in some respects it was the arbitrary choice of a professional committee. (Wylie 2005) I do not intend, in endorsing it in this chapter, to foreclose or discourage further debate. Perhaps my suggestion will be lampooned in centuries to come (if not wholly forgotten) as the small-minded doctrine of a man who wanted to extend to the exploration of the whole majestic cosmos a moral ideal developed by people who keep their eyes downward as they dig for human artefacts: the parochial recommendation of a philosopher who would never have advocated ethics with such limited horizons if he had ever had the chance to see a tiny Earth glinting distantly in the skies of Mars.

Still, every journey must start somewhere, including the forays of a spacefaring species into youthful regions of moral philosophy. Stewardship of intellectual resources is one concept through which explorers of space might be able to reflect upon their moral purposes alongside their technological and economic objectives. Their accomplishments, after all, have great potential to enrich human culture with new knowledge, new stories and new ambitions. Cultural heritage need not be always and only a moral constraint on action: it is also through cultural interchange, and through ideas about 'the common heritage of mankind', that we have been able to affirm our shared humanity, in which explorers of space and even eventual colonists of Mars will also participate.

Stewardship as an ethical concept, even allowing for this archaeological inspiration, does not necessarily limit explorers of space to the role of disinterested scholars, any more than 'stewards of the Earth' are forbidden from cultivating it for their own gain. It implies, not a duty to leave things just as they are, but a duty to preserve information and avoid thoughtless, wasteful destruction. Since space is part of the heritage of every human culture, stewardship also suggests a responsibility to manage this intellectual resource for the cultural benefit of the whole species, regardless of where a spacefaring organisation may be incorporated, under which national laws it may operate, and who benefits economically from its operations.

Conclusion

The further from our native planet we cast our minds and send our probes, the more hubristic it may seem to speak of all this as 'our' cultural heritage: to speak of all these worlds as ours (even Europa) when our exploration of space has so far been so local. If I had chosen to use the language of 'cultural property', that accusation would be hard to rebut. However, 'cultural heritage', like the natural resources which are so indispensable to life, can connote something upon which we depend as well as something to which we may have a claim. Through our cultures we shape what we are, and we and our cultures have been shaped by the conditions of existence here in our place within the Milky Way. If there ever does

turn out to be other intelligent life somewhere out there, space probably offers enough cultural heritage to share.

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