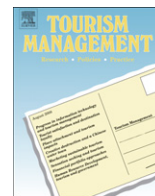




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Steps to Space; opportunities for astrotourism

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ABSTRACT

Recent years have seen the emergence of the *astrotourist* following the \$20 million trip by Dennis Tito to the International Space Station (ISS) in 2001. Although this is the preserve of the hyper-elite, within the next decade it is likely that there will be more affordable opportunities on sub-orbital reusable vehicles pioneered by the Virgin group. This paper offers an overview of recent developments in the space tourism industry as a whole and offers definitions for the new sector of astrotourism. Drawing on motivational theory, the study examines the motivations and experiences that astrotourists have demonstrated through interviews reported through the media. However, parallels are demonstrated with the existing terrestrial space tourism industry, which has been largely ignored to date. Consequently the paper also examines the management of these sites and the challenges this niche presents. There is also evidence of a travel career being marketed by space tourism travel agents, dubbed by one interviewee as '*steps to space*'. This builds on potential tourists' existing aspirations for space experiences allied to these companies' credentials in adventure tourism. Whilst sharing parallels to the work of Pearce (1982), the focus of this career on one particular theme is of interest. This theoretical bridging is useful for observing tourism organisations at work, and furthermore uncovers the massive potential that developments in space tourism present for the tourism industry as a whole.

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'As the world becomes more affluent, as people become more demanding of hard-core adventure, and as crossing even the remotest terrestrial frontiers becomes commonplace, society will continue to push its limits in search of new peripheries looking for new boundaries to cross and places to collect'

(Timothy, 2001:175)

1. Space tourism: getting off the ground

The potential for space tourism has attracted a degree of interest for many years, but has mostly been confined to conjecture. Indeed, much of this discussion has been cyclical, related to significant developments in technology, or high profile events such as the moon landings. For example, in the early 1970s Pan Am had almost 100,000 people sign up on a space flight waiting list (B.B.C, 2006). Academic enquiry has been similarly recurrent, with a number of papers over the years reporting on events and future suggestions (for example Ashford, 1990 in this journal). However, a number of developments in recent years hints more strongly than ever at the potential for a viable tourism industry focused on this sector. As

a result, there has been a more sustained academic interest in space tourism (for example work by Crouch, 2001; Crouch, Devinney, Louviere, & Islam, 2009 and Laing & Crouch, 2004a, 2004b, 2005 Smith, 2000, 2001).

This paper documents some of these developments, whilst avoiding some of the inevitable traps of trying to gaze into the future. Indeed, as Laing and Crouch contend, research on space tourism has been hampered by the 'paucity of potential subjects at this present time and the difficulty of carrying out data collection in situ' (2005:78). However, there is a significant sector of the tourism industry that is already focused on the development of space products, which, when added to significant media coverage on those who have visited the International Space Station, provides a rich arena for enquiry. Thus quotes from space tourists in media interviews and primary research with space tourism operators and a space tourism travel agent are utilised to illustrate the arguments in this paper. The former narratives are dominated by the first two space tourists as their pioneer status attracted the greatest media attention. Their use 'allows the respondents to impart their own reality,... cataloguing the socially constructed knowledge of informants rather than the hypothesising of the investigator' (Riley, 1995:636). It is recognised that there is usually inherent bias in quotes available through the media, but this should not deter their use in academic enquiry, especially as these contribute significantly

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to public understandings. Furthermore, this study takes an approach that attempts to avoid the etic conceptualisations and categorisations of the adventure experience that have dominated to date (Weber, 2001). Rather, an emic approach seeks to uncover experiences from the view of the subject, and since this study examines adventure that is truly 'out of this world', individual interpretations are highly important.

Through these reviews of academic and popular literature this paper offers an insight into current developments in space tourism. However, in order to avoid the temporal trap discussed above, it also attempts to ask why space tourism should be an area of interest to academics, and how different management of this sector really is. It is the author's opinion that contemporary developments in extraterrestrial tourism are actually just an extension of the 'frontier culture' identified in the opening quote. However, in order to have a frontier, there has to have been the development of a foundation, which for the purposes of this discussion exists in terrestrial space tourism. Despite this, this sector has received remarkably little critical examination to date. Nevertheless, as will be demonstrated, the fledgling space tourism industry is quick to recognise that there is a travel career ladder present that can be harnessed for development potential. However, as with all sub-sectors, the definitional debate requires some preliminary attention.

The Space Tourism Society, a US-based non-profit promotion organisation, defines space tourism as consisting of four different areas; 'in earth orbit experiences; beyond earth orbit (such as lunar and Mars) experiences; earth-based simulations, tours and entertainment experiences; and cyber space tourism experiences' (Space Tourism Society, 2007). Somewhat ironically, there seems to have been far more attention directed towards the potential for the former two, rather than the actual state of the latter two. Although the former undeniably attract a great deal of public interest, the latter have been in existence for a number of years as an established tourism product (Crouch, 2001). Indeed, one might venture to suggest that without early space tourism, the British colonisation of Australia might never have occurred (one of Captain Cook's main purposes on his famous voyage was to observe the transit of Venus across the Sun (B.B.C, 2007)). Consequently, this paper seeks to examine the emergence of space tourism through a belated recognition that the industry has been with us for a significant period, and that this foundation is essential for future innovations.

There has been significant debate surrounding the definition of space tourism, although this has not taken place within the tourism literature, with the majority emerging from a number of space advocacy organisations based in the USA such as the *Space Frontier Foundation* and the *Space Tourism Society*, and the private corporations that are now developing this frontier. Although it is important to acknowledge industry debates, academics need to

remain critical about their origins, particularly given the forceful anti-regulation discourse used by some of these organisations, who "believe that free markets and free enterprise will become an unstoppable force in the irreversible settlement of this new frontier" (Space Frontier Foundation, 2009). Therefore in this paper, it is suggested that we adopt the classification of *space tourism* for the broad industry sector, and reserve *astrotourism* for that which truly escapes the confines of this world (Table 1). Such a semantic definition may seem pedantic, but it helps to distinguish between historical and future directions. The author does not claim credit for this distinction, as it is founded within accepted terminology used within aeronautics. In the 1950s the Fédération Aéronautique Internationale designated the so called Karman line as being the edge of space at 100 km altitude (FAI, 2004). This designation has not been without some scientific and legal controversy, but this is well beyond the scope of this paper to discuss this in detail. Nevertheless, since the 1960s those that have travelled beyond this threshold have been deemed astronauts, so it is logical that the current recreational visitors should be dubbed astrotourists.

2. The first astrotourists

In April 2001 American billionaire Dennis Tito paid a reported \$20 million to the Russian space agency for a week-long visit to the International Space Station (ISS). Tito was the first person to part with his own money in order to experience what exists beyond the confines of the earth, and in doing so became the world's first astrotourist. Returning to the previous debate it is interesting to observe that space travel agencies and advocacy organisations are keen to promote terms such as 'private space explorers' and 'personal space flight participants' for these individuals, and yet the academics and the media recognise that these activities are inherently touristic. Although these sums are well beyond the means of the majority of tourists, they are not beyond those of the elite, and to date five others, Mark Shuttleworth, Greg Olsen, Anousheh Ansari, Richard Garriott and Charles Simonyi have followed in Tito's steps, with the latter conducting a repeat trip in 2009 (Space Adventures, 2009). Whilst providing some cashflow to the Russian Space Agency over this time, these trips are most significant in heralding the opening of a new touristic frontier.

It is important in a discussion of the space tourism industry to identify what on earth (or what not on earth!) motivates individuals to engage in such a costly tourism practice. Answering this question requires a consideration of contemporary tourist motivation, and in particular the experiential turn in tourist studies. This shift is identified by Shaw and Williams (1994:5), for example, who define contemporary leisure (and tourism) as 'rooted in enjoyment, well-being and personal satisfaction'. Clearly astrotourism sits

Table 1
A typology of space tourism.

Form	Type	Examples
Astrotourism	Beyond earth orbit	Lunar and Martian voyages
	In earth orbit	Orbital flights (350 km) Sub-orbital flights (100 km)
		Not yet available (but see Google Lunar X-prize) Trips to ISS (Space Adventures) Virgin Galactic
Atmospheric Space Tourism	High Altitude Jet flights (20 km) Weightless Flights	MIG 31 flights (Russia) Zero G corporation (USA/Russia)
Terrestrial Space Tourism	Specific Space Tourism Sites	Space shuttle launch simulator (Kennedy Space Centre) Kennedy Space Centre (Florida USA), Parkes satellite dish (NSW, Australia) Spacewalker (Gold Coast, Australia) National Space Centre (Leeds, UK)
	Non- site specific space tourism	Edu-tainment Space tourism related travel Cyber space tourism experiences Popular culture
		Meteorite collecting, Eclipse tours, Stargazing tours Virtual space travel and gaming environments Space movies related travel

firmly within this experiential definition. As it offers an experience like no other, it is the ultimate tourism for those that can afford it, as Tito suggested before departure;

Every astronaut or cosmonaut that I've talked to has said that this is the most amazing experience a human being could enjoy. And I've seen articles written about going on a joy ride and it is absolutely going to be a joy ride and that's what every astronaut and cosmonaut has told me, it is absolute joy.

Dennis Tito CNN April 27, 2001

3. Astrotourist motivations

The motivational classifications first identified by Beard and Ragheb (1983) are useful in contextualising some of the discourse that these astrotourists use to describe their experiences. These authors identified four core motivations for engaging in leisure experiences; *intellectual*; *social*; *competence-mastery*; and *stimulus-avoidance*, but as Ryan (2002) has shown, these are equally applicable to tourist practice. Indeed, Laing and Crouch identify the existence of aspects of these attributes in the 'frontier' tourist, who 'experiences life on the edge, beyond the everyday experience, the comfort zone and the staged activity or event' (2005:210). They categorise their motivations as *Intellectual curiosity*, *Childhood influences*, *Challenge/goal-setting*, *Self-actualization/Prestige*, *Fun/Novelty*, *Learning*, *Cultural influences*, *Fantasy*, *Educating others*, *Risk/Escape*, and *Spirituality/Environment/Adventure* (Laing & Crouch, 2005:214).

Space has a long-standing association with the field of science, and the intellectual stimulation that results satisfies curiosity that is engaged through mental stimuli such as 'learning, exploring, discovering, creating or imagining' (Beard & Ragheb, 1983:225). This intellectual connection is evidenced in Tito's thoughts:

"It's something I've wanted to do since I was a teenager. And you have a dream that you establish early in your life, it's hard to let go of it. I've been interested in space — interested enough that I went to university and ended up getting both a bachelors and a masters degree in aerospace engineering. I worked at the NASA Jet Propulsion Laboratory for five years".

Dennis Tito: CBS MOSCOW, April 27, 2001

In order to undertake a visit to the ISS, an individual must also undergo significant training, taking up to six months (Space Adventures, 2008). As well as being a major commitment, it is likely that this requirement also fuels the intellectual and physical needs of participants. Indeed Richard Garriott "felt fulfilled even before he rocketed away, thanks to all the training he got with astronauts and other space professionals" (Associated Press, 2008). There is also evidence that these individuals try to make their folly look like 'more than just a holiday' (Moworth & Munt, 1998:146). For example, Shuttleworth undertook basic science projects whilst visiting the International Space Station.

The *social* component identified by Beard and Ragheb (1983) assesses the extent to which individuals engage in leisure activities for social reasons, and in this example, it is undeniable that there is significant status gained by being able to engage in such a high profile adventure. This equates to the prestige factor identified by Laing and Crouch (2005). As Ryan playfully suggests, 'it would appear that in contemporary society we are not only who we are, but also where we have been' (2002:37). There is interplay in the commentary here that echoes well-trodden debates on authenticity (for example MacCannel, 1976, 1992 and May, 1996). Certainly these multi-millionaires want to be seen, but they do not want to be seen as mere tourists, reinforcing the arguments of Moworth and Munt (1998) on tourism status identified above.

Dennis Tito's trip into space was a unique vacation, but in reflecting on it Tuesday he sounded some notes common to mundane voyagers, saying the trip ended all too soon and that he wants to be seen as a traveller and not a mere tourist.

CBS MOSCOW, May 8, 2001

Despite this, it is clear that these trips are firmly rooted within the high-end recreational needs of these elite individuals, so the tourism designation still holds irrespective of their desires.

We can also see evidence of a *Competence-Mastery* component, because of the skills required to undertake this experience, with themes of achievement, mastery, challenge and competition (Beard & Ragheb, 1983), or challenge and goal setting (Laing & Crouch, 2005). These skills have strong links to the intellectual component discussed, and will be enhanced during the training period. Despite this, Tito felt that many individuals would be up to the challenge:

'I'm not faulting the astronauts for creating, having a special feeling about their qualifications because they are highly qualified, and they are highly competent. There are so many more applicants than there are people selected, it makes it a special group but that doesn't mean that there aren't millions and millions of people in this world that are qualified, that have the physical qualifications and could be trained for space.'

Dennis Tito CNN April 27, 2001

The last of the motivators identified by Beard and Ragheb (1983), and also uncovered by Laing and Crouch (2005), is that of *stimulus avoidance*. For some individuals the drive to escape may manifest as 'the need for some individuals to avoid social contacts, to seek solitude and calm conditions; for others it is to seek rest and to unwind themselves' (Beard & Ragheb, 1983:225). It is clear that themes of escape are strong in many holiday motivations and commentators associate this need for escape with stimulus avoidance (e.g. Iso Ahloa, 1982). However, Beard and Ragheb (1983:227) tentatively hint at the possibility that the avoidance may be merely of those stimuli associated with the workplace and that escape takes the form of a need to 'rest and unwind'. More importantly, Ryan (2002:39) highlights, 'to rest and unwind' does not necessarily mean 'to relax physically'. This fact is of clear relevance to astrotourism, given that the tourist is engaging in a significant investment in time and training, culminating in the ultimate adventure, whilst notionally being 'on holiday'. As Ryan quite rightly demonstrates; 'the very action of physical exertion can itself be mentally restful even while, paradoxically, the mind is focused on a specific task' (2002:39). Indeed, as Tito suggests, astrotourism is unlikely to be a vacation in a relaxing sense;

'This is not a vacation. You know, the fulfilment of a life's dream to fly into space.'

Dennis Tito (CNN April 27, 2001)

However, it is an escape, certainly 'getting away from it all' (in the most extreme way) and it is experiential in a very distinct fashion.

Added to these four aspirations identified in the commentaries used by the individuals, it is important to recognise, in line with current academic theory, the embodied nature of experience. As Desmond suggests 'we must have a more fully embodied concept of the tourist, expanding the notion of the 'tourist gaze' to include other embodied aspects of experience (movement, sound, touch and so forth) both in the physical and imaginary realms' (1999:xxi). Indeed, although a significant driving force in the quest to escape the bounds of our planet is one characterized by the search for the ultimate vista, it is not solely driven by this desire. It is likely that a significant part of the experience is embodied like no other; the massive g-forces involved, the peculiar feeling of weightlessness, and the intense physical training required.

'Shuttleworth said that his launch was a "wild, wild ride," with an initial burst of acceleration, a moment of coasting weightlessness, a second kick when the Soyuz booster stage fired, and finally the full experience of zero-gravity'

MSNBC 29th April 2002

Richard Garriott (Daytona Beach News-Journal, November 13, 2008)

4. Science fiction and science fact

Beyond this examination of the individual and self, it is also important to recognise the external influences that shape the desires to connect with extraterrestrial experiences, many of which are identified in the factors suggested by Laing and Crouch (2005). In particular the influence of popular culture and the media on our aspirations must be considered. Science fiction clearly has a part in all of this, whether print or celluloid, as images of life beyond our planet, from movies such as *2001: A Space Odyssey* to *Star Trek* have glamorised the role of space explorers within the public imagination. These images are so ingrained in childhood (and needless to say adult) imaginations that their impact goes beyond their basic form, and the circuit of culture reinforces their place in our desires. What is especially interesting is the way that serious architectural designs for the first space hotels (Newbery, 1997) bear remarkable similarities to those suggested in sci-fi films (for example *2001: A Space Odyssey*), which might be a future case of truth imitating fiction. Nevertheless, as Laing and Crouch (2004a, 2004b) have suggested, there is also potential for conflict here, as the romance of extraterrestrial exploration presented in these films may be at odds with the 'boredom' of reality.

However, one cannot ignore the fact that real exploration of the environment beyond our planet has had an equal if not greater impact on extraterrestrial ambitions, especially for the generation that matters most. It is no coincidence that the youth of 1969 identified by Spennemann (2007) are now the multi-millionaires that can realistically fulfil their dream of seeing the Earth from space, explored in the 2009 documentary *Orphans of Apollo*. As Cosgrove (2001) has shown, NASA's moon programme was enormously important in creating a new awareness of the planet for its sentient inhabitants. Most notable was the impact that images of earth had on the environmental movement, but these images are also ingrained into the consciousness of those that aspire to experience that view:

Ask anyone of the four hundred people that have flown in space, and ah they will tell you being in space and looking back at Earth is you know one of the most rewarding experiences a human being can have.

Dennis Tito (CNN April 27, 2001)

What is striking is the colour of the rainforest, the vibrant green of West Africa and South America, then the textures of the oceans. You can see currents, disturbances, deeper and shallow areas, and you can see it particularly well in the evening or in the morning when the sun is at an angle across the ocean, and that is 32 times a day!

Mark Shuttleworth (Sunday times (SA) 2 Jun 2002)

The view from space is considerably different than I ever imagined. The first view feels like you are very high above the surface of the Earth. There is the curvature of the Earth and the thin atmosphere clinging to the physical side of the Earth and then there is the blackness of space. Stars are not bright but sharp, crisp. When the Soyuz spacecraft rolled over, it was like flying on an airplane above clouds, only 100 times higher. Looking down, I could see the Golden Gate Bridge, ship wakes coming in and out of the bay, major roadways and crop patterns in the fields – just as well from space as an airplane. I felt intimate and close to Earth.

5. Commodification of space

Of course this romantic notion of the earth from space is not one that is employed neutrally, or solely by the environmental movement. Images of the globe are frequently turned into a metaphor for the power, coverage and scope of corporate reach, and it is the migration of private finance into orbit that may prove to have the most significant impact on astrotourism.

It is worth acknowledging that along with commodification of the space experience will come increased commodification of space itself. Although technically nobody can own space, there are many commercial ventures that are tantamount to doing so. This is not limited to the obvious one of technology, as in 1999 Pizza Hut arranged to paint a 30-foot logo on a Russian rocket. Thus the commodification cycle of big business becoming involved with such high profile and iconographic ventures, and the linked consumer aspirations, will be an important factor in the emerging astrotourism industry. Indeed, of allied interest, are plans for space station visits which have been based around commercial sponsorship. Examples, that have yet to get off the ground, include a documentary following a pop star to the ISS, who would have been entirely funded by commercial organisations looking for maximum extraterrestrial exposure, plans by Pepsi to run a global competition for a place or schemes for an ultimate 'pop idol' type show, where individuals compete for places (Space Adventures, 2008).

6. Sub-orbital astrotourism

Looking to the future, one of the most significant hopes for more affordable astrotourism lies in the sub-orbital market. In 1996 a competition was set up called the X-prize, a \$10 million reward to the first private company to build a craft capable of carrying passengers to a height of 100 km (the boundary of 'space' identified above) and being able to repeat the trip within two weeks. The scheme was modelled on the \$25,000 prize awarded to Charles Lindbergh and his aeroplane, the Spirit of St Louis, for the first nonstop crossing of the Atlantic in 1927. In June 2004, a craft designed by Burt Rutan, a California-based aircraft designer, completed the challenge and won the prize. Looking suitably futuristic, the vessel, SpaceShipOne relied on a mothership to carry it to a height of 50,000 feet where it was released and ignited a rubber-nitrous oxide propellant to propel it to the edge of space. At the top of climb, the craft's wing feathered much like a shuttlecock, slowing the descent and glide to earth.

Following the successful launch, Richard Branson has partnered with the company to produce a craft capable of performing the same feat for commercial passengers under his Virgin Galactic brand (Eturbo news, 2004). As shown by Fig. 1 they would take tourists to at least 110 km in altitude, enabling a view of the earth's curvature and several minutes of weightlessness. By comparison, passenger jets cruise at an altitude of about 10 km. Despite an industrial accident at the Rutan fuelling test stand in 2007, which killed three (Reuters, 2007), the company has commenced an extensive program of flight testing. A number of other previous x-prize entrants are developing similar ventures, but are unlikely to have the initial exposure of the Virgin developments. Over the past few years, Virgin has been taking bookings for the first commercial flights, likely to take place in 2012 at a 'fare' of \$200,000. Offering three levels of booking, 300 people have made reservations and the company has taken over \$40 million in deposits, whilst a further 85,000 people have registered their interest (Virgin Galactic, 2009). Virgin has also committed to the plans for a purpose-built \$200 m spaceport on a 27 square mile site in New Mexico to serve as a base for these flights. It is

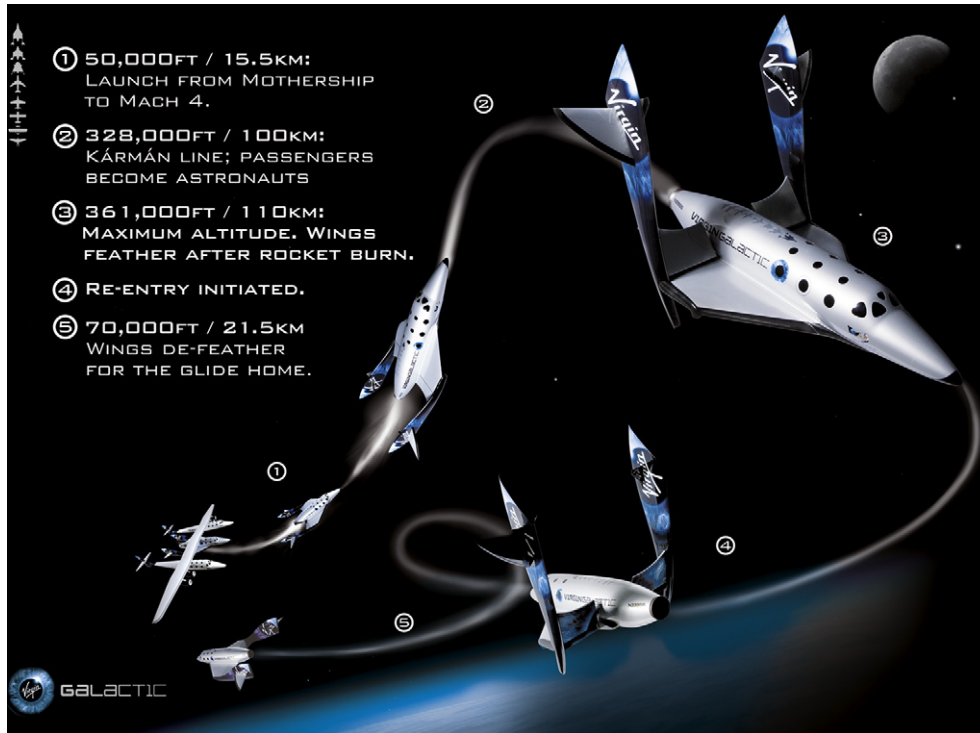


Fig. 1. Flight profile of starship two (courtesy of Virgin Galactic).

not without consideration of the influences discussed above (for example Cosgrove, 2001), that the logo for the company, and indeed grandiose plans for the aerial view of the site, were designed around the human iris (Virgin Galactic, 2009). These developments have captured a similar level of media and promotional interest to orbital experiences. Indeed in March 2007, a new online newspaper was launched in Brisbane, Australia, with the chance of winning a trip on one of these flights (Brisbane Times, 2007).

It may seem premature to start thinking about an astrotourism industry when such experiences are only available at astronomical prices, and developments to bring them more 'down to earth' are still in their infancy. However, a 2004 OECD report suggests that sub-orbital tourism turnover could rapidly grow to between \$700 million and \$4 billion a year (Andrieu, 2004). Furthermore, this paper argues that there is also a flourishing terrestrial space tourism industry that has been largely ignored to date. The existence of this sector is based on many of the desires that have been identified in the discussion so far. Furthermore, operators and travel agents recognise the importance of this as a vital base for the development of sub-orbital and orbital tourism in the future.

7. Terrestrial space tourism

Probably the most popular terrestrial solely space tourism facility presently in existence is that at Kennedy Space Centre (KSC), at Cape Canaveral, Florida. It may be regarded as a relatively mature tourism attraction, having been in existence for over thirty years, and hosting over 2 million visitors a year (KSC, 2007). Clearly the site is a working facility, which poses its own challenges, but the visitor centre is run by Delaware North, a major hospitality and visitor management company. The author conducted a focus group with the management team at KSC, which highlighted some interesting issues in the management of the facility. Furthermore, it became apparent that many of the supposedly extreme motivations of astrotourists are in evidence in everyday space tourists.

One of the major challenges that the centre faces is how to position itself in a region that is a major tourist destination. Being less than an hour from Orlando, which is home to many major theme parks, KSC competes for attention with these other tourist attractions, whilst simultaneously relying on the destination to provide many of its visitors. Whilst not being in the centre of the action was seen as a challenge, the focus group participants also felt that it could be used to the site's advantage, as the drive was seen as a way to further differentiate the product and make it seem 'like an adventure'. The solution was seen to be the use of targeted marketing, that strongly differentiated the product;

"If we position ourselves as a theme park then we are, and then we are fighting all the other theme parks...do we say we are a different kind of attraction or do we say we are something else entirely?...what we are is Kennedy space centre, NASA's launch headquarters. And what we do is we permit access and tours. So you can say it's an attraction, but you're not right, we are in the space business, and therefore as you said we have no competitors, and that's kind of where we seem to be moving".

Managing Director, Kennedy Space Centre Visitor Complex

A related challenge is straddling the line between education and entertainment, which was seen as a potential line of friction between NASA's wish for the centre to have an educational mission, and the operation of the facility as an entertainment attraction. The management team recognised the challenges of trying to cater for everybody, and identifying that most of the visitors were tourists seeking a fun day out as a priority. As a busy spaceport, launches of rockets and the Space Shuttle were definite drawcards, and a variety of extra products and promotions were organised around these events, for example the opportunity to meet an astronaut.

Another area of interest, given our juxtaposition of environmentalism and space exploration discussed above, is the manner in which KSC is also a Wildlife Refuge and home to more than 500 species of animals and birds, including alligators, bobcat, dolphins, otter, sea turtles and pelicans. It shelters no less than twenty

one federal- and state-listed endangered and threatened species, including manatees and bald eagles (US Fish and Wildlife Service, 2007). The opportunity to conduct ecotourism tours on the complex is a recent development from this:

"The island that we are on is six times the size of Manhattan island, and we...The fact that science and the wildlife roles are so, they coexist so well. There are more endangered species in this wildlife reserve than any other reserve in America's National Wildlife System. And it's a juxtaposition that is both bizarre and promising. It's an example, and there aren't many, of where technology and nature can work together. So it's past, future and present in the same place"

Managing Director, Kennedy Space Centre Visitor Complex

KSC is also looking at capitalising on its reputation as the destination for space tourism and developing a range of active products along the lines of zero-gravity and potentially sub-orbital flights. Of course this site is not alone in being a terrestrial space tourism attraction, as there are many other examples worldwide, ranging from observatories and planetariums to more entertainment-oriented facilities. In the UK the National Space Centre (NSC) opened in Leicester in 2001, developed with Millennium commission funding, and had hosted 1 million visitors by 2005 (National Space Centre, 2007). On Australia's Gold Coast, a destination famed for its sun, surf, and sand, tourists can escape to the 'Spacewalker' attraction, just a block back from the beach. Opened in 2004, the edu-tainment based facility soon became a popular tourist site (H. Redhead, Gold Coast, 2006, personal communication).

8. Steps to space

In addition to these space tourism sites there are a host of other terrestrial space-related tourism pursuits ranging from eclipse tours, UFO pilgrimages and even meteorite collecting in Antarctica (Wildwings, 2007). Many of these activities are coordinated by space tourism agents, such as the US-based Space Adventures, which has organised all of the commercial trips to the ISS to date. Although this is undeniably the premium end of their product portfolio, a significant part of their business comes from both terrestrial space tourism, and activities like zero-gravity flights and flights in fighter aircraft. The UK representatives for Space Adventures are the Bristol, UK-based Wildwings, originally established as a specialised travel agent for bird watching tours. Indeed, it is interesting to see that this agent is one involved heavily with various other forms of special interest tourism such as ecotourism and adventure tourism, so theoretically we should seek to position astrotourism as a natural extension of this niche. This repositioning concurs with the suggestion made by Timothy (2001) that opened this paper.

"we booked our first client to fly to the south pole with ANI last week, which is quite significant for us, because we have taken people to the North Pole on an icebreaker, we've flown people to the edge of space in a Foxbat [a Russian fighter Jet], we've taken people to the bottom of the oceans to see the Titanic, so we have literally done every extreme there is in adventure travel"

Travel Representative, Wildwings

Although the business aspects of being involved in astrotourism were not felt to be currently that significant to the company, the public relations value of being involved was felt to be invaluable.

"It's fantastic for PR. When we first announced Titanic back in 1998 the world's media just went berserk. And then we announced sub-orbital space flights, and again the world's media goes nuts...So for a relatively small travel company, which we are, with 9 or 10 staff, in PR terms its gold"

Travel Representative, Wildwings

Indeed, as acknowledged above, enduring interest in the worlds beyond our own is what fuels the space tourism industry:

"Well there is a huge media interest in anything space related. Space is an enduring theme, I mean, what was it, was it Channel 4 that did the top 100 TV moments of all time and the number one was the moon landing. You know people are genuinely excited about the prospect of space travel, and the trick is now to convert that level of interest and excitement about the concept into, you know flying spaceplanes"

Travel Representative, Wildwings

Echoing this sentiment, it is apparent how the industry views their present offerings as part of a 'steps to space', encouraging people to move up the offerings as both their income increases and the cost falls.

"What we are trying to do, at least in the short term is to encourage the whole notion of space tourism, so to explain you probably don't have \$20 million or indeed even \$10,000 for a MiG flight, but you may well have a few hundred pounds to go to the skylaunches in Arizona to go stargazing or money for a space shuttle launch tour. And perhaps when you are a little bit older and you have got some money saved up you might want to experience weightlessness in star city. So trying to build things up..."

Travel Representative, Wildwings

This presents evidence of a travel career ladder being used by space tourism interests to encourage present opportunities for participation that lead to further participation in the future. This may have some parallels to the work of Pearce (1982) who has argued that as tourists gain fulfilment of lower order experiences, they will gradually move to more challenging ones.

9. Historical parallels

This is an important recognition, as it forms the basis of the future astrotourism industry. Furthermore it does not take that much of a paradigmatic leap to see this process at work in previous tourism examples. The comparison with Lindbergh and the X-prize discussed above is an interesting one, as it was this endeavour that formed the basis for the modern air transport industry. Prior to his feat, aviation was largely seen as a risky military endeavour and only occasionally useful for transport of mail and goods, despite having been in existence for over twenty years:

'Lindbergh completely changed the mindset of the world with regard to aviation. Aviation went from something very much like space is today- something that's expensive and difficult- to something that was exciting, with great potential, that a 25-year old from New York could do'.

(Hall, 2001).

Suddenly aircraft emerged as vehicles that could realistically transport people vast distances. Furthermore if we suspend contemporary attitudes that view most air travel as a chore on the way to the real holiday, it is clear that in the early years, flying was as much a part of the travel adventure as the destination:

"In a trip from Amsterdam to Jakarta the aircraft touched down over 24 times in 12 days: Passengers prepared as they would for a cruise: women were advised to pack jumpers and tweeds, a leather coat and a fur, a felt hat, gumboots for wet aerodromes, a black lace evening dress and a Shetland dressing gown. The trip combined adventure and...luxury...although some stops were primitive"

(Feifer, 1985:221)

The highlight of trips to Africa was the bird's-eye view of game wandering the savannah that one could experience on the way

(Feifer, 1985). Certainly in the 1930s, in common with space travel these days, air travel was both highly time consuming and expensive, and confined to the elite. This comparison is not lost on the contemporary pioneers of the astrotourism industry:

'If you look back at the early days of powered flight, the wealthy people were the ones who could afford to go in an airplane 80, 90 years ago. It was that interest that ultimately led to the development of commercial aviation, where everyone could afford it. I don't know exactly what you can afford, but there are a lot of people around the world who could afford this flight at the current price if they were willing to put in the time and the effort. I have a feeling that the amount of training that's required to do this is more of a barrier than the cost. But I think that the cost will come down as the demand increases — that there will be market forces that will develop vehicles that will be able to launch multiple numbers of people. And the cost per person will be a lot less.'

Dennis Tito: CBS MOSCOW, April 27, 2001

Of note here is how Tito suggests that there is a significant pool of rich individuals who may be the catalyst for giving the industry the kick start it needs. This is backed up by recent NASA commissioned surveys (Futron Corporation, 2002) which suggest that of a sample of Americans who earned over 250,000 dollars a year, 7 percent would be willing to stump up the \$20 million for a trip like Tito's, and nearly 20 percent would be willing to pay \$100,000 for a sub-orbital trip.

11. Technology and regulation

As Laing and Crouch (2004a, 2004b) suggest, technological progress is undoubtedly important in the development of astrotourism, but it is important that we do not succumb to 'technological determinism' which would see 'travel as merely derived demand' (Lash & Urry, 1994:253). Of course the developments in sub-orbital tourism are a long way off the thresholds of power required for private orbital tourism, but Lash and Urry (1994) highlight organisational innovations as key to the success of technological advances. As part of this, the 'nature of future legal and regulatory requirements for the industry, which are not inimical to viable businesses and commercial investment, as well as public support and confidence in a fledgling space tourism industry' (Laing & Crouch 2004a:79) will be vitally important. The regulatory context and such bills as the US Commercial Space Act of 2003, which opened up the opportunities for sub-orbital development are thus central to future development (Library of Congress, 2003). Under the Commercial Space launch Amendments Act of 2004, the Federal Aviation Administration (FAA) 'cannot impose safety regulations on the industry until 2012 unless there is a serious accident in flight or if the agency detects a safety threat that companies refuse to fix, (Eturbo news, 2007).

As Ashford (2007) suggests, it is highly likely that astrotourism may have impacts beyond that of simply a new tourism activity. If further development of vehicles takes place, long distance global travel today may seem long winded, and the historical progression of a 'shrinking world' will continue. Thrift (1990:470), for example, discusses how the adoption of railways in Great Britain altered the time-space of the nation. In 1845 barely half of the island could be reached in a full day's travel from London, but by 1910 only the far north of Scotland was beyond this. Furthermore, there are the technological spin offs, and their consequent uptake, that are associated with such endeavour. As Thrift (1990) points out, the railways also facilitated the uptake of the typewriter, the telephone and early cinema. In the same way, cheaper access to space would likely spin off a range of other technologies, as did early NASA missions, such as new metal alloys, and early computers. Of course, just as now, people's experiences of this world are likely to be very

uneven, and as researchers, we will be interested in the potential impacts on place this will have. For example Spennemann (2007) acknowledges the importance of considering heritage preservation on the moon before it is too late to do so. This argument draws on a wider discussion about space heritage preservation and the impacts of space tourism among archaeologists and space professionals over the last decade or so (for example Barclay and Brooks (2002), Rogers (2004) and Spennemann and Kosmer (2005)). It is thus important to acknowledge the contributions made to this subject by the wider archaeological community, and the need for the tourism industry to be aware of these concerns. However, the principal point is that bringing tourism into space will have the effect of creating a dual purpose for development, both tourism and research, which will rely and spin off one another. This fact is not lost on the tourism operators:

The commercial implications are that if it was done on a bigger scale by one of the bigger aerospace companies, could fly you from London to Sydney in an hour and a half! It would revolutionise travel, and that is probably the most exciting thing, I mean within the tourist industry of course, you have got the notion of space hotels and, you know in twenty years time we will all be able to take the family into space for a weekend for \$10,000 or what ever it is going to cost. But there are much wider implications, and you just, you know, I mean initially the benefit of private spaceplanes will be their ability to launch payloads into orbit like satellites for a fraction of the cost that currently the Russians or the Chinese or the Americans can do it for.

Travel Representative, Wildwings

11. Conclusion

This paper's primary purpose has been to demonstrate the extent of contemporary and future developments in the space tourism industry, most notably the development of extraterrestrial astrotourism. It joins a growing body of academic literature that recognises that this phenomenon is no longer 'out of this world', and is worthy of future study. In addition, a useful contribution to defining and delimiting the sub sector is presented. It is undeniable that space tourism is maturing, both physically and in the legislative and organisational realm, evidenced by the growing number of space colloquiums. This paper argues that for space tourism per se we need to now advance beyond the embryonic descriptions to a better conceptualisation of future space tourists as well as the industry itself. The implications for the tourism industry are manifest, not only for the emergence of a truly new destination, but also for the considerable knock-on technologies that may be developed as a result. There are a number of ethical concerns that will also have to be answered in the coming years, particularly the appropriateness of such conspicuous consumption in a world of pressing problems. However, there are also those that argue that only by developing space can we hope to solve global problems such as those related to population pressure (see for example Bernasconi & Bernasconi, 2004).

This paper also addresses a lacuna in terms of tourism research on terrestrial space tourism, which is flourishing as a result of some of the motivations shared by space tourists at all levels. Indeed the space tourism industry, from mass-market terrestrial operations such as Kennedy Space Centre, niche tours such as launch visits or eclipse tours, and specialised high-end operators like Virgin Galactic or Space Adventures, recognise that they all exist because of a human desire to know what it is really like out there. Thus the 'Steps to Space' programme initiated by Space Adventures is emblematic of a realisation that this desire can be fulfilled on a variety of levels. Marketing literature clearly recognises the importance of creating a relationship with the customer, and this stepwise approach is a useful tool. Although sharing similarities with Pearce's Travel Career Ladder, we must

recognise that there may be individual economic and psychological barriers that emerge. In addition, as previously mentioned, we must be aware of the uneven nature of this development, and it is likely that contemporary climate change concerns will force a careful examination of practices in this sector. As usual operators are one step ahead, and the Virgin Galactic initiative promises to use the programme to push forward developments in bio-fuels. Nevertheless, we should not see astrotourism as completely 'out there', and treat it more as the natural progression of a human practice that continually seeks new frontiers.

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