

Chapter 92

Space Tourism: Hurdles and Hopes

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ABSTRACT

According to the Space Policy Institute (2002, Bib. section), “Space tourism is the term broadly applied to the concept of paying customers traveling beyond Earth’s atmosphere.” Operating reusable launch vehicles (RLVs) might be a first step toward achieving mass space tourism. Thus, the aim of this article is to investigate the potential hurdles and other aspects of importance that must be overcome in order to use RLVs for space tourism flights. The primary ones are social issues (e.g., “Is space tourism ethically acceptable?”), institutional issues (e.g., “Is environmental pollution caused by space tourism more harmful than other emission sources?”), and financial issues (e.g., “Are any potential investors interested in space tourism?”).

INTRODUCTION

Interest in the possibility of space tourism has increased among scientists, entrepreneurs, and the general public (Cox, 2002). Today’s space tourism flights are in the early pioneer phase, handling only one or two tourists per year. A trip for a space tourist to the International Space Station (ISS) costs typically \$20-\$40 million and lasts approximately 10 days. In April 2001, Dennis Tito was the first space tourist, and he was followed by Mark Shuttleworth in April 2002, Greg Olsen in October 2005, Anousheh Ansari in September 2006, Charles Simonyi in April 2007 and April 2009, Richard Garriott in October 2008, and Guy Laliberté in September 2009 (Space Adventures, 2013).

Compared to other tourist enterprises, space-related tourism is in its infancy as a commercial activity, but the space tourism industry is already larger than most people realize. The potential of space tourism in the coming decades does not rest on one or two flights per year for \$20-\$40 million per trip; rather a wide range of services and price levels will be provided (Gurtuna & Garneau, 2002). Peak turnover from ticket sales in the range of \$10 billion per year and additional turnover from novel secondary markets, such as space fashions, space food, space entertainment, and space sports, are imaginable within this century.

Currently, there are only two means for humans to access orbital space, i.e., the Russian *Soyuz* and the Chinese *Long March*. Only Soyuz has been

used for space tourism, and there are no indications that Long March will be used for this purpose in the near future. The *Shenzhou* spacecraft that is launched atop the Long March launch vehicle has characteristics similar to those of the Soyuz-TMA that is launched atop the Soyuz launch vehicle, so the Shenzhou-Long March system is a potential candidate for human space flight (Anderson & Piven, 2005). However, the official announcement from the Chinese government looks less positive; Yang Liwei, Deputy Director of China's Manned Space Engineering Office, said in 2012 that "China's manned space engineering is still in a stage of technological breakthrough, and sending civilians into orbit for space tourism is not under consideration right now" (China Daily USA, 2012, para. 4).

Currently, there are no options for space tourists to access suborbital space. A breakthrough might be *SpaceShipTwo*, which is currently in the test and licensing phase and which Virgin Galactic plans to put into operation soon; in fact, "Virgin officials are hopeful that commercial missions could begin in 2014" (Messier, 2013, para. 9).

The following section shows an overview of possible hurdles, challenges, and hopes to space tourism. After a discussion of the social, institutional, and financial issues, my conclusions and recommendations are presented.

SELECTION OF KEY ASPECTS

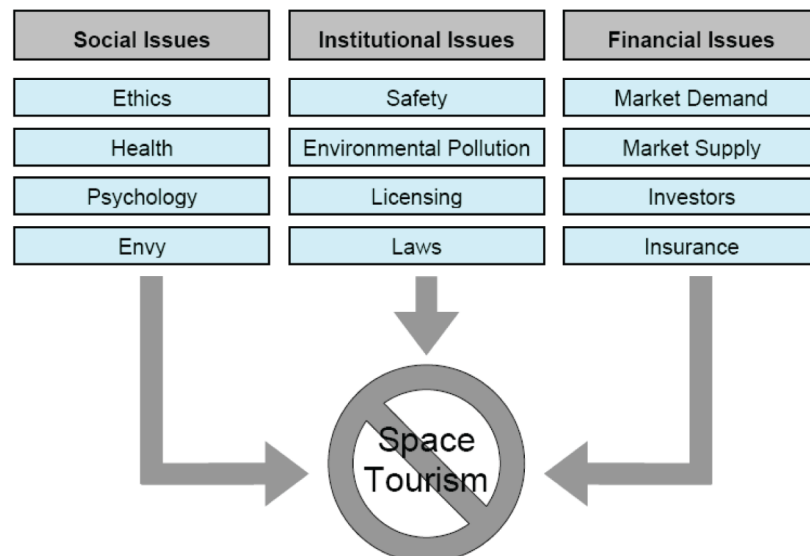
Figure 1 shows a selection of the key aspects of space tourism, including hurdles that could be harmful to the successful establishment and enhancement of space tourism activities (Goehlich, 2003). These potential hurdles to commercial space travel should be considered thoroughly by entrepreneurs and politicians before the actual activation of regular services for space tourists.

Social Issues

Ethics

Apart from concerns regarding the feasibility of mass space tourism, there is also the human ethical issue that rarely has been addressed in

Figure 1. Possible hurdles and opposing forces to space tourism



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