

## HIGH ALTITUDE PLATFORMS AND INTERNATIONAL SPACE LAW

by  
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### Abstract

High Altitude Platforms (HAPS), according to the International Telecommunication Union (ITU), are stations “located on an object at an altitude of 20 to 50 km” and “at a specified, nominal, fixed point relative to the earth”. They can be manned or unmanned; they can be engine powered or lighter than air (*e.g.*, balloons). They are to be distinguished from Unmanned Aeronautical Vehicles (UAVs), usually flying at altitudes of up to 30 km. HAPS operate at an altitude higher than that used by civil aircraft, and at an altitude which is usually also higher than that used by military aircraft. Yet, it is clear that, by any existing physical standard for a lower boundary of outer space, they operate in air space. Functionally, however, HAPS may be in competition with satellites in orbit, or may fulfil functions complementary to those of satellites in orbit: intended uses of HAPS include remote sensing, communications, surveillance and navigation. The purpose of this IISL paper is to examine to what extent HAPS may be functionally governed by outer space rules; and to what extent outer space rules might have to be adjusted to take account of HAP

activities which occur in a physical environment that lies in between normally usable airspace and the lowest altitude at which commercial satellites are usually kept in orbit.

### Introduction

In recent years, lawyers, interested in air and/or space law, have asked themselves the question whether so-called High Altitude Platforms (*hereinafter* HAP in the singular and HAPS in the plural)<sup>2</sup> are governed by international air law, by international space law or by both. In order to answer this question, it is first and foremost necessary to define a HAP. This is not such an easy task since there are various definitions, which is not so surprising because HAPS are still in the planning and design phase, and are not operational yet.

The definitional issue is further compounded by the fact that HAPS, at least according to most authors, must be distinguished from Unmanned Aeronautical Vehicles (*hereinafter* UAV in the singular and UAVs in the plural),<sup>3</sup> of which there are no uniform definitions either. It is therefore necessary first to define HAPS and UAVs and to examine some of their technical parameters.

## Definitions and technical parameters

For the purpose of this paper, HAPS are large structures, manned or unmanned, that are stationary in relation to the earth. They can be heavier than air (aircraft) or lighter than air (*e.g.*, balloons). Most HAPS that are in the planning stage would be stationed at around 20 kilometres above the surface of the earth, although the ITU extends the possible height of HAPS up to 50 kilometres. The uses of HAPS would be predominantly civil, for communications, navigation, remote sensing and surveillance.

What is probably most characteristic of a HAP, when compared with other craft is its *stationary* position.<sup>4</sup> This, it is submitted, is at the same time the most important difference with a UAV: UAVs, like other aircraft, *move*, from movement at very low altitudes to movements up to about 30 kilometres above the earth, although higher altitudes have also been mentioned.<sup>5</sup> UAVs are essentially pilot less aircraft in the sense of the *Chicago Convention on International Civil Aviation* of 1944.<sup>6</sup> Most current and future uses of UAVs are of a non-civil, mostly military nature. To the extent that UAVs are used for civil purposes, they are governed by the safety provisions of Article 8 of the *Chicago Convention*;<sup>7</sup> to the extent that they are used for military purposes, they are governed by the largely non-codified law of air warfare. The important interface between increasing numbers of UAVs and more traditional aircraft, especially from the safety point of view, is entirely an issue of (international) air law and largely in the hands of the

International Civil Aviation Organization (ICAO).<sup>8</sup>

Having distinguished HAPS from UAVs, and having reached the conclusion that UAVs are governed by air law, the question remains to examine if and to what extent (international) space law applies to HAPS. That question will be examined using first a physical approach and then a functional approach.

## The physical approach

In international air law and in international space law, no fixed demarcation line has as yet been adopted between air space and outer space. Yet, most authors and authorities agree that this line lies somewhere around 100 kilometres above the surface of the earth.<sup>9</sup>

It is therefore somewhat surprising to see one of the few authors, who have written on the legal status of HAPS, defend the position that one particular HAP application, a stratospheric platform for telecommunications at approximately 30 kilometres above the surface of the earth, operates in outer space. The author in question, Mr M. Rothblatt,<sup>10</sup> seems to reason as follows: since the international legal community has not fixed a demarcation line yet, one might as well consider the stratosphere –indeed beyond the normal vertical reach of civil and of most military aircraft- as part of outer space. When reading the whole law journal article, to which this text will revert, one cannot avoid the impression that the author wishes to give as much regulatory freedom to “his” platform for telecommunications as possible: after

all, air space is subject to national sovereignty of the underlying State(s), and outer space is not. Yet, this opinion is highly unorthodox and, it is submitted, should be rejected. Therefore, the position that is adopted in this paper is the following: physically speaking, HAPS operate in air space and not in outer space.

### The functional approach

As indicated above, the applications of HAPS are mostly civil and in the areas of communications, navigation, remote sensing and surveillance (observation). These applications have nothing that makes them typically outer space applications. In fact, all of them are applications on earth, in air space or in outer space, separately or in combination. As also already indicated, HAP applications are either complementary to outer space applications or in competition therewith. Generally one can say that outer space applications have a broader geographical coverage (footprint) than HAP applications, but the latter may be more detailed and less expensive (once operational) than the former.

It is again the article of Mr Rothblatt<sup>11</sup> that characterises HAP applications, at least the ones that he discusses with respect to telecommunications, as outer space applications from the functional point of view. Here his reasoning is that the ITU and most national authorities divide radio communication systems into two main categories, outer space services and terrestrial services. HAPS would be governed by the rules applicable to outer space services and would therefore functionally be outer

space activities.<sup>12</sup> This reasoning, with due respect, is erroneous. If HAPS are governed by outer space regulations, this means that they are treated *as if* they were outer space activities, but it does not mean that they *are* outer space activities. After all, and here one combines the physical and functional approaches, HAPS, by any stretch of the imagination, cannot be characterised as space objects: they lack the “launching” elements of Article I of the *Liability Convention* 1972<sup>13</sup> and Article I of the *Registration Treaty* 1975.<sup>14</sup>

### Interrelationships

Thus, HAPS are not governed by space law but by air law. This, however, does not mean that there are no interrelationships between air and space law. More particularly, it means that such interrelationships exist in the area of HAPS.<sup>15</sup> In the first place, HAPS are large or relatively large platforms: they should not impede access for space objects to and from outer space. In this area co-ordination between ICAO and COPUOS may be required.

Next, in principle HAPS are aircraft in the sense of Article II of the *Liability Convention*.<sup>16</sup> Thus, there may be international liability for damage done by a space object to a HAP. However, Article II speaks about an aircraft “in flight”. The question may be asked whether a HAP, being geostationary with respect to the earth, is really “in flight”. The drafters of the *Liability Convention* wished to exclude aircraft on the ground. They did not consider HAPS. Eventually, this issue as to whether a HAP is really “in flight” may have to be resolved by ICAO, in co-

ordination with COPUOS. By analogy, already once before, ICAO decided to remove from the definition of "aircraft" a machine that derives support in the atmosphere from the reactions of the air, namely the hovercraft.<sup>17</sup>

### Conclusion

HAPS are neither physically not functionally an object of (international) space law. They are rather governed by (international) air law. Yet, there are interrelationships between air and space law with respect to HAPS, notably in the area of free access to outer space and of the application of the *Liability Convention* 1972.<sup>18</sup>

### End Notes

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<sup>2</sup> Sometimes also called High Altitude Long Endurance (HALE) stations.

<sup>3</sup> Sometimes also called Remotely Operated Aircraft (ROA).

<sup>4</sup> In this respect, there is a parallel between HAPS and geostationary satellites. This, however, is not enough to equate a HAP with a satellite. See also *infra* the section of this paper on *The functional approach*.

<sup>5</sup> For a survey of definitions of UAVs, see Th. Sulocki, *Unmanned Aerial Vehicles Under the Chicago Convention*, unpublished LL.M. thesis, International Institute of Air and Space Law, Leiden University, September 2004.

<sup>6</sup> ICAO Doc. 2187.

<sup>7</sup> Article 8 reads: "No aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a contracting State without special authorization by that State and in accordance with the terms of such authorization. Each contracting State undertakes to insure that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled as to obviate danger to civil aircraft."

<sup>8</sup> Created by the Chicago Convention, *supra* footnote 6 and text thereto.

<sup>9</sup> See, for instance, I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law*, 2nd revised edition, Kluwer Law International, 1999, at p. 17-21, and P.P.C. Haanappel, *The Law and Policy of Air Space and Outer Space*, Kluwer Law International, 2003, at p. 26-27.

<sup>10</sup> M. Rothblatt, *Are Stratospheric Platforms in Airspace or Outer Space?*, (1996) 24 *Journal of Space Law* 107, at p. 109-113.

<sup>11</sup> *Ibidem*.

<sup>12</sup> *Ibidem*, at p. 113-115.

<sup>13</sup> United Nations Treaties and Principles on Outer Space. Text and status of treaties and principles governing the activities of States in the exploration and use of outer space, adopted by the United Nations General Assembly, UN Doc. A/AC.105/572, Rev. 3 (Sept. 2000).

<sup>14</sup> *Ibidem*.

<sup>15</sup> On interrelationships between air and space law in general, see Haanappel, *op. cit* footnote 9, Introductory Chapter, and Chapters 1 A, 2 C and 3 C.

<sup>16</sup> See reference *supra* footnote 13.

<sup>17</sup> See I.H.Ph. Diederiks-Verschoor, *An Introduction to Air Law*, 7<sup>th</sup> revised edition, Kluwer Law International, 2001, at p. 5.

<sup>18</sup> See reference *supra* footnote 13.