THE LEGAL STATUS OF THE AIRSPACE IN THE LIGHT OF PROGRESS IN AVIATION AND ASTRONAUTICS[1]

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In recent years, aircraft with or without pilot and any craft, whether guided or not, have risen higher and higher above the surface of the earth. Research work and studies now under way indicate that further progress will be made in the very near future. In mid-September 1956, the major world airlines members of the *International Air Transport Association,* (I.A.T.A.), whose headquarters is in Montreal, announced the future golden age of commercial aviation, which would commence with the introduction of jet aircraft flying at an altitude approximately 7½ miles (12 kilometers) and at a speed in the vicinity of 550 miles (900 kilometers) per hour. At the same time, in Barcelona and in Rome, scientists were discussing some immediate and more remote projects; in Barcelona the members of the *Preparatory Committee of the International Geophysical Year* (I.G.Y) heard communications made by the U.S.A. and U.S.S.R. Delegations[2] on the launching, as a contribution to the activities of the I.G.Y., of satellites which will circle the earth in 90 minutes at an altitude of more than 300 miles (500 kilometers); in Rome the *VII International Astronautical Congress* (I.A.F.), dealt also with the problem of satellites, but in addition with projects for and the possibility of interplanetary travel prior to the end of the century.[3] In December 1956, remote-controlled rocket experts will meet in Paris to study the problem of international carriage of mail by rocket.

In view of the progress already achieved and the prospects which lie ahead, experts in the field of air law have felt it necessary to consider whether the present state of air law is adequate to cope with such technical developments. Scientific associations and international organizations have already begun to deal with the problems now being raised. In November 1955, Mr. Andrew G. Haley, Director and General Counsel of the *American Rocket Society,* read to the annual meeting of that body an important paper

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[1]A communication on the subject has been made by the author before the "Académie des Sciences morales et politiques" in Paris on 24th September, 1956.

[2]The U.S.A. communication, prepared by the U.S. National Committee for the I.G.Y., concerns the USNC - IGY Rocketry and Satellite programs.

[3]E.G. Studies of a minimum orbital unmanned satellite of the Earth, by D. T. Goldman and S. F. Singer; Temperature problems of satellites, by S. F. Singer; the Vanguard satellite launching vehicle, by N. E. Felt; Minimum Earth-Moon Vehicle. by N. V. Petersen; One year exploration trip Earth-Mars-Venus-Earth, by G. A. Crocco; etc. All these papers were presented in mimeograph form and will be printed in the volume of the Congress. — See also in *Shell Aviation News,* no. 215. an article on the Project Vanguard, by F R. Furth.

on the "Basic concepts of space law."[4] In May 1956, in Washington, the *American Society of International Law* devoted an entire meeting to the "Legal Problems of Upper Space" on the basis of an excellent report prepared by Professor John C. Cooper.[5] In July 1956, in Caracas, the Assembly of the *International Civil Aviation Organization* (I.C.A.O) took note of the increasing interest that jurists were showing in "upper space" and considered that these problems were within its competence.[6] On the first of September, at Dubrovnik, the *International Law Association* decided, upon a report of Prof. D. Goedhuis[7] and after an important discussion, that its "Air Law Committee should continue the study of the nature and contents of air sovereignty, paying special attention to the problem connected with coming flight in the outer space and the legal nature of interplanetary space." Finally, at the *International Astronautical Congress,* held in Rome in September 1956, American and Italian lawyers exchanged their views on these problems.[8]

I do not intend to describe all the legal problems raised by this new phase of the conquest of space, nor to seek solutions to these problems at this time. I have felt it preferable to limit this paper to a consideration of two concepts of positive air law, interpretation or modification of which I believe to be essential if scientific research and development are not to be hampered. These concepts are:

the legal status of the airspace, as it appears from the text of conventions in force;

the types of devices which may travel in the airspace, according to the same texts.

I

As far as the legal status of the airspace is concerned, the basic text is the Convention on International Civil Aviation, signed at Chicago on 7 December 1944,[9] which created the International Civil Aviation Organization (I.C.A.O.), one of the specialized agencies of the United Nations, with a present membership of seventy States.

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[4]Pamphlet of 72 pages in mimeograph form.

[5]See *Proceedings of the 1956 Annual Meeting* of the Society. — Previously Professor Cooper presented in 1951, in Mexico-City, a paper on "High Altitude Flight and National Sovereignty", published in 4 *International Law Quarterly* (1951), p. 411.

[6]Report of the Legal Commission of the Assembly. I.C.A.O. Doc. A. 10 Le 15, p. 6, par. 12.

[7]Report on "the Limitation of Air Sovereignty", and comments thereon by Dr. E. Pépin and Prof. J. C. Cooper.

[8]The following legal papers have been presented to the Congress: Method for studying legal problems relating to the conquest of the interplanetary space, by Aldo Armando Cocca; Space Law and Metalaw (a synoptic view), by Andrew G. Haley. — Prof. A. Ambrosini took part in the discussion. — Before the Third Astronautical Congress (1952), an address was delivered by Prof. Alex Meyer on "Legal Problems of Flight into the Outer Space", *Zeitschrift fur Luftrecht* 1953 p. 31.

[9]U.N. Treaty Series Vol. 15, no. 102.

Article 1 of this Convention, only the English text of which was signed, provides as follows:

> "The contracting States recognize that every State has complete and exclusive sovereignty over the airspace above its territory".

The term "territory" also embraces territorial waters.[10]

The expression "espace aérien" which is used in the official French translation approved by ICAO,[11] corresponds to the English word "airspace" of the authentic text, and has given rise to differences of interpretation as regards its extension upwards. However, if we go back to the origin of the word "airspace", the meaning of "espace aérien" should not give rise to confusion. In fact, the Chicago Convention simply reproduces — although the Conference did not discuss the matter — a provision[12] of the Paris Convention of 1919 relating to the Regnlation of Air Navigation. This Convention was prepared in three texts, each being equally authentic. The French and Italian texts used the term "espace atmosphérique" and "spazio atmosferico" (atmospheric space), whereas the English text used the term "air space". The "airspace" of the Chicago Convention therefore corresponds to the "espace atmosphérique" of the Paris Convention. Since 1919, most States have incorporated the provisions of the Paris Convention in their national legislation, using sometimes the term "espace atmosphérique"[13] and sometimes the term "espace aérien".[14] Laws of some States refer prudently to the "space" above their territory,[15] and one State, Nicaragua, specified in its 1950 Constitution that its national territory included the "atmospheric space" and the "stratosphere".

Consequently, positive international air law recognizes the sovereignty of a State as extending only to the atmospheric space above its territory, although the thickness of the atmosphere, which varies over different parts of the globe, is not accurately known. States which are parties to the Chicago Convention could not, therefore, prohibit air traffic above their atmospheric space;[16] moreover, there is no convention which gives any international body the power to control such traffic. However, certain technical regulations drawn up by ICAO, by virtue of the powers granted that Organization by the

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[10]Art. 2 of the Convention: "For the purposes of this Convention the territory of a State shall be deemed to be the land areas and territorial waters adjacent thereto . . . "

[11]Pursuant to a Resolution adopted by the ICAO Council on 19 February 1952, the texts in French and Spanish shall be used for the internal purposes of the Organization and for any reference to be made by the Organization in communications to Contracting States; it was also recommended to Contracting States that, for reference purposes in their relations with ICAO and other Contracting States, they use these texts only.

[12]Article 1.

[13]e.g. Bolivia, Colombia, Ecuador, Spain.

[14]e.g. Chile, Dominican Depublic, Egypt, Iran.

[15]Brazil.

[16]See C. Wilfrid Jenks, "International Law and Activities in the Space", International and Comparative Law Quarterly (1956), p. 99 - 119.

Chicago Convention,[17] and certain decisions taken by States in implementation of that Convention might give rise to certain doubts.

In order to ensure the safety of air traffic, ICAO has brought into force rules which establish over a large part of the surface of the globe controlled zones called flight information regions, control areas, control zones and airways.[18] These zones extend, between parallel vertical limits, from the ground or from a certain height upwards to a given altitude, but frequently "without any upper limit". The question therefore arises as to whether control should be exercised, in the latter case, beyond atmospheric space, if the necessary tracking instruments are available.

The States, for their part, by virtue of Article 9 of the Chicago Convention, are entitled to establish prohibited, restricted or danger areas over their territories, the location and extent of these areas being given in Notices to Airmen (NOTAMs). A large number of these areas have no upper limit. Does the prohibition or restriction of flights therefore extend to air traffic even beyond atmospheric space?

Over the high seas, there is freedom of air traffic[19] in the sense that aircrafts may fly without being subject to any authority other than that of their State of Registry. However, since the signing of the Chicago Convention, aircrafts flying over the high seas are required to observe the Rules of the Air established by ICAO,[20] although there is nothing in this document or in the Convention which limits their application to traffic through atmospheric space. Are we therefore to conclude that ICAO might issue air traffic rules applicable over the high seas beyond atmospheric space? Furthermore, within the controlled zones established, in accordance with the decisions of ICAO, over a considerable part of the oceans and, in particular, over the entire North Atlantic, traffic is controlled from 600 metres upwards without any upper limit. Finally, although the Chicago Convention does not provide for prohibited, restricted or danger areas over the high seas, States have established and are establishing such areas, on a permanent or temporary basis, for the purpose of carrying out naval manoeuvres, artillery practice or atomic tests. Thus, in the Pacific, around the atolls of Eniwetok and Bikini

[17]Art. 54 of the Chicago Convention: "The Council shall . . . (1) Adopt . . . international Standards and recommended practices; for convenience, designate them as Annexes to this Convention".

[18]Zones defined in and established in accordance with Annex 11 (Air Traffic Services), under recommendation of Regional Conferences.

[19]Provisional articles concerning the regime of the high seas prepared by the International Law Commission (1955) provide in Art. 2:

> "The high seas being open to all nations, no State may subject them to its jurisdiction. Freedom of the high seas Comprises:
>
> 4. Freedom to fly over the high seas."

[20]Arts. 12 of the Convention:

> " . . . over the high seas, the rules in force shall be those established under this Convention . . . "

there has been declared an enormous danger area covering 14° of longtitude and 8° of latitude.[21] Off the coasts of the United States and of Canada, there have existed for several years new air defence identification zones extending at some points for a distance of 200 miles out to sea.[22]

To summarize, therefore, there are a certain number of points in connection with air traffic over continents and over the high seas, which directly involve the concept of airspace or atmospheric space and which need to be clarified.

II

Similar problems arise with respect to the provisions of the Convention which relate to machines or devices capable of moving above the surface of the earth.

The Chicago Convention and its Annexes apply to one single category only: aircraft. However, the Convention itself contains no definition of the term "aircraft" and ICAO has had to develop such a definition and to include it in various Annexes[23] which, however, do not have the same mandatory force as the Convention. The definition adopted is the same as that used in the 1919 Convention: "Any machine which can derive support in the atmosphere from the reactions of the air". Some jurists claim to have found in this definition a justification for limitation of the airspace to atmospheric space.[24]

According to this definition and to a classification of aircraft contained in one of the Annexes, aircraft are deemed to include balloons, airships, aeroplanes, and helicopters, but not free or remote-controlled rockets, satellites or any other device capable of moving in space without deriving support from the reactions of the air. It should be added that various national legislations contain definitions of aircraft, which could apply to new devices,[25] and that ICAO has the power to amend a definition or classification contained in an Annex.[26]

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[21]Notice to Aviators, 12th March 1956.

[22]These zones, called ADIZ and CADIZ, were established respectively by the U.S. Reg. Sect. 620, 2 b, and by the Canadian Information Circular 0/19/51 of 12th May 1951. A thesis on the subject for an LL.M. degree presented by a Member of the Institute of International Air Law is in the printing stage with the Queen's Printer in Ottawa.

[23]Annexes 6, 7 and 8.

[24]Cooper, *loc. cit.* in note 5 above, p. 413; Oscar Schachter, "Legal Aspects of Space Travel", 11 *Journal of the British Interplanetary Society* (1952), p. 14. — Opposite view: B. Cheng "Recent Developments in Air Law", *Current Legal Problems 1956* p. 212.

[25]e.g. U.S.A. (Civil Aeronautics Act 1938, sect. 1, 1(4): "Aircraft means any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air."

[26]Art. 54 (m) of the Convention: "The Council shall . . . (m) Consider recommendations of the Air Navigation Commission for amendment of the Annexes and take action . . . "

As regards true aircraft, some are the subject of special convention provisions, e.g., pilotless aircraft. Article 8 of the Chicago Convention prohibits the flight of any aircraft without a pilot over the territory of another State without authorization by the latter. Furthermore, the contracting States undertake that such aircraft shall be so controlled as to obviate danger to civil aircraft. Among pilotless aircraft are included sounding balloons, the normal use of which, for meteorological purposes, is provided for in the regulations of the World Meteorological Organization, a body with a near universal membership. Since last January, the United States has launched from various points in Europe and America large-size sounding balloons (1,600 cubic metres) carrying heavy scientific instruments of various types. The flight of some of these balloons over the U.S.S.R. and the fact that some of these instruments fell on the territory of that State after destruction of the balloons in the atmosphere, led to a protest which was addressed to the United States Government on February 4th. The U.S.S.R. stated that such balloons, owing to their size, constituted a hazard to air navigation and that, furthermore, the launching of pilotless aircraft was contrary to the principles of international law relating to the complete and exclusive sovereignty of States over the space above their territories. Several days later, the United States replied that when, in January, the proposed launching of these balloons was announced no protest had been made and that, furthermore, these balloons, which were actually "miniature satellites" intended for study of methods to be used during the Geophysical Year, travelled at heights far above the levels at which commercial aircraft operate.[27] However, the launching of these balloons close to the Eastern European States appears to have been suspended. The question arises as to whether such balloons fall within the categories specified in the international regulations.

As for rockets, satellites or other devices not covered by the definition of aircraft, there is at present no international rule governing their flight. However, in order to ascend into space, these must pass through the atmosphere over the continents or over the high seas, and here again the question arises as to whether some regulations might not be required in order to avoid possible interference with civil aviation. Furthermore, the return to earth of such devices — if they are not disintegrated beforehand — may conceivably cause damage obviously not covered by the conventions on compensation for damage caused by aircraft only or by persons or objects falling therefrom. It would appear that States which are conducting research on rockets and missiles or are planning to launch satellites have felt the need, in the absence

[27]Note of U.S.S.R., 5th February 1956, *New York Times* 6th February; U.S.A. Answer, 8th February 1956, *id.* 9th February; U.S.S.R. reply, 18th February 1956, *id.* 19th February. — A similar complaint was submitted by Czechoslovakia to ICAO; see discussion at the Executive Committee of the 1956 Assembly, ICAO Doc. A 10 — WP/150, p. 138.

of any convention provisions, to obtain the express or tacit authorization of States likely to be overflown.

For example, the tests of guided missiles, which have been conducted for several years in Florida by the United States, gave rise to a series of bilateral agreements with the United Kingdom for the purpose of establishing over the Bahamas and adjacent waters a vast test area for the launching and flight of missiles over distances of more than 1,000 nautical miles. This area was recently extended as far as Santa Lucia in the West Indies, thus permitting firings over more than 1,600 miles, and it is now proposed to extend it over the Atlantic to Ascension Island off Africa, more than 4,000 miles from Florida. This test area, part of which extends over the high seas, is considered to be a danger area without upper limit and is the subject of NOTAMs.[28]

Regarding the satellites, launching of which was announced on 29 July 1955 by the White House, as a contribution to the studies being made in the Geophysical Year, no protest having yet been made against the project, the United States appear to consider that they have received the tacit consent of the other States, particularly of those which are members of the International Committee of the Geophysical year.[29]

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This brief review indicates some of the gaps in the present international regulations governing air traffic. If scientific research now under way and the expansion of air traffic beyond the atmosphere are not to be hampered, these gaps will have to be filled. Various suggestions were put forward at the meetings mentioned at the beginning of this paper.

There appears to be general agreement on the need for a new international convention supplementing the Chicago document. Some would like to see ICAO given the task of drawing up regulations for the movement of all craft and devices, not only in and through atmospheric space, but also beyond. Others, however, are considering the possibility of their sovereignty in regard to travel through space. Consideration was also given to the possibility of dividing space into several zones. For instance, Professor Cooper, in a paper he read to the *American Society of International Law*, suggested, by analogy with maritime practice, three different zones: first of all a "territorial space" which would be restricted to the atmosphere; then a contiguous space zone extending up to a height of 300 miles, over which States would still have sovereignty, but through which any non-military aircraft would enjoy transit rights for ascent and descent; above this zone traffic would be entirely

[28]Agreement of 21st of July 1950, *U.N. Treaty Series*, vol. 97, no. 1351; Agreement of 15th January 1952, *id.*, vol. 127, no. 1697; Agreement of 24th February — 2nd March 1953, *id*, vol. 172, no. 2249; Exchange of Notes of 11th-22nd July 1955 (not yet published).

[29]Haley, *op. cit.* in note (4), and U.S.A. Note of 8th February, *op. cit.* in note (27).

free.[30] It would appear premature, however, to envisage any particular division of space at this stage, since we are only beginning to acquire knowledge of the various zones of space, and the work to be done during the Geophysical Year is certain to provide data which will permit further progress in the legal study of these problems.

It is therefore up to ICAO, which has declared itself competent in this field, to pursue these studies without delay, naturally with the assistance of all interested legal bodies. It is to be hoped that jurists will not let themselves be outdistanced by technicians.

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[30]Cooper, *op. cit.*, in note (5), 1956. Other divisions of space have been suggested, e.g. by Prof. Ambrosini, at the *International Astronautical Congress* of Rome.