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## FROM THE DC-3 TO HYPERSONIC FLIGHT: ICAO IN A CHANGING ENVIRONMENT

EUGENE SOCHOR\*

**A**S CIVIL AVIATION is poised to enter the twenty-first century, it will be choking on its own success unless it can develop innovative approaches to increasingly complex problems that evolve more quickly than the body politic can absorb. These problems concern technological developments, consumer demands, constraints on the infrastructure, and deregulation policies that have buffeted the industry. The challenges are not new and apply to other industries as well in the global market, but they affect airlines on an unprecedented scale. The challenges are forcing both the international airlines and their governments to rethink such fundamental issues as their role in controlling a traditionally well-protected industry. The effects of these developments on the international system are still far from clear, but they are felt by all those who have a part in managing the system: governments; airlines; and their international counterparts, the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA).<sup>1</sup>

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<sup>1</sup> IATA, which currently groups 154 active and 33 associate members, is the airlines' trade organization. INTERNATIONAL AIR TRANSPORT ASSOCIATION, 1989 ANNUAL REPORT 14. Its wide range of activities, including interlining and other cooperative practices, combined with its tariff conferences, have given it a dominant, if not uncontested voice, in all economic matters affecting international avia-

## TECHNOLOGICAL DEVELOPMENTS

The international carriage of passengers and cargo by air is a complicated procedure based on complex technology that requires the cooperation and goodwill of all nations. Since ICAO came into existence in 1944, the number of passengers carried on the world's scheduled airlines has increased more than a hundredfold — from nine million to over one billion in 1988.<sup>2</sup> Looked at in another way, the number of passengers carried on scheduled domestic and international routes in a single year represents more than the combined populations of North and South America. Air freight that did not exist forty-five years ago has become an essential component of world trade.

The basic instrument that governs the way air transport operates is the Convention on International Civil Aviation signed at the Chicago Conference in 1944.<sup>3</sup> It contains

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tion. It has a close relationship with ICAO and participates in all its meetings as an observer.

<sup>2</sup> *Annual Report of the Council — 1988*, ICAO Doc. 9530, at 3 (1988) [hereinafter *Annual Report 1988*]; see generally J.W.D. BRANCKER, *IATA WHAT IT DOES* (1977).

<sup>3</sup> The Convention produced six important documents, five of which still govern the way air transport operates today. On that score alone, the Conference could be called a success. First, the Convention on International Civil Aviation was concluded, to be known as the Chicago Convention, which spells out the rights and obligations of states in international aviation. Convention on International Civil Aviation, *opened for signature* Dec. 7, 1944, 61 Stat. 1180, T.I.A.S. No. 1591, 15 U.N.T.S. 295 [hereinafter *Chicago Convention*]. It came into force on April 14, 1947 after it was ratified by 26 states. See Y. KIHLE, *CONFLICT ISSUES AND INTERNATIONAL CIVIL AVIATION DECISIONS: THREE CASES 2* (1971). As of 1989, 162 states had ratified the Chicago Convention. An Interim Agreement on International Civil Aviation was completed which established the framework of an international agency. Thus, the Provisional International Civil Aviation Organization (PICAO) was born. *Chicago Convention*, *supra*, art. 45, 61 Stat. at 1193, T.I.A.S. No. 1591, 15 U.N.T.S. at 326. It functioned remarkably well and became a permanent agency when the Chicago Convention came into effect. As to the basic issues of air rights, the first two freedoms were adopted as part of a multilateral agreement acceptable to all participants. They remain in force today as the International Air Services Transit Agreement, which has been ratified by 100 countries. *International Air Services Transit Agreement*, *opened for signature* Dec. 7, 1944, 59 Stat. 1693, E.A.S. No. 487, 84 U.N.T.S. 389. The first two freedoms of the air recognized by the Convention participants state: "Each Contracting State grants to the other Contracting States the following freedoms of the air in respect of scheduled international air services: (1) The privilege to fly across its territory without land-

ninety-six articles which cover virtually all aspects of civil aviation.<sup>4</sup> These articles establish both the privileges and the restrictions to be observed by ICAO's contracting states. They also provide for the adoption of international standards and recommended practices, known as SARPS in the ICAO jargon, without which international air transport would be in a state of chaos.<sup>5</sup> In mutually agreeing to these regulatory functions, the delegates at Chicago reaffirmed a basic principle that every state has complete and exclusive jurisdiction over its airspace.<sup>6</sup> They also agreed that no scheduled international air service may operate over or within the territory of another contracting state without that state's consent.<sup>7</sup>

The Chicago Convention was drafted as an instrument of dual purpose. In the first place, it is the basic instru-

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ing; (2) The privilege to land for non-traffic purposes." *Id.* at art. 1, § 1. The so-called "five freedoms" or International Air Transport Agreement was also opened for signature. International Air Transport Agreement, *opened for signature* Dec. 7, 1944, 59 Stat. 1701, E.A.S. No. 488. The additional freedoms recognized in the Air Transport Agreement include:

- (3) The privilege to put down passengers, mail and cargo taken on in the territory of the State whose nationality the aircraft possesses;
- (4) The privilege to take on passengers, mail and cargo destined for the territory of the State whose nationality the aircraft possesses;
- (5) The privilege to take on passengers, mail and cargo destined for the territory of any other contracting State and the privilege to put down passengers, mail and cargo coming from any such territory.

*Id.* at art. 1, § 1. Eventually, 19 states accepted the granting of full reciprocal rights but nine, including the United States, subsequently denounced it so that this agreement never gained acceptance. *See generally* 9 M. WHITEMAN, DIGEST OF INTERNATIONAL LAW 411-14 (1968) (discussing the development of both the Air Services Transit Agreement and the Air Transport Agreement and the political reasoning behind the distinction between the two). Finally a "Standard Form of Bilateral Agreement for the Exchange of Routes and Services" was adopted as part of the Final Act. The text proved to be of great help in drafting future bilateral agreements.

<sup>4</sup> Chicago Convention, *supra* note 3.

<sup>5</sup> *See id.*, at art. 37.

<sup>6</sup> Article 1 of the Chicago Convention stipulates: "The contracting States recognize that every State has complete and exclusive sovereignty over the airspace above its territory." *Id.* at art. 1.

<sup>7</sup> According to article 6 of the Chicago Convention, "[n]o scheduled international air service may be operated over or into the territory of a contracting State, except with the special permission or other authorization of that State, and in accordance with the terms of such permission or authorization." *Id.* at art. 6.

ment in international air law as it relates to international civil aviation. The Convention is also the basic constitutional instrument of ICAO and sets out the basic objectives and structure of the Organization.

From the start, ICAO's major task has been to set the basic international SARPS as now contained in the eighteen annexes to the Chicago Convention.<sup>8</sup> These regulations have been constantly updated to meet successive generations of aircraft and advances in technology as they affect flight operations, airworthiness, rules of the air, the transport of dangerous goods, personnel licensing, airports, aeronautical communications and environmental protection.<sup>9</sup> In their foresight, the drafters of the Convention provided that these rules be separated from the body of the Convention so that they could be adopted by the Council and come into effect without a cumbersome ratification process.<sup>10</sup> By contrast, amendments to the Convention must be adopted by a two-third vote of the Assembly and must be ratified by no less than two-thirds

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<sup>8</sup> See *id.* at arts. 37, 54(L), 54(M), 90 (establishing the ICAO's authority to promulgate SARPS as annexes to the Chicago Convention).

<sup>9</sup> The adopted annexes address the following specific issues: Annex 1: Personnel Licensing Annex 2: Rules of the Air

Annex 3: Meteorology

Annex 4: Aeronautical Charts

Annex 5: Units of Measurement to be used in Air-Ground Communications

Annex 6: Operation of Aircraft, International Commercial Air Transport

Annex 7: Aircraft Nationality and Registration Marks

Annex 8: Airworthiness of Aircraft

Annex 9: Facilitation of International Air Transport

Annex 10: Aeronautical Telecommunications

Annex 11: Air Traffic Services

Annex 12: Search and Rescue

Annex 13: Aircraft Accident Inquiry

Annex 14: Aerodomes

Annex 15: Aeronautical Information Services

Annex 16: Environmental Protection

Annex 17: Security

Annex 18: Safe Transport of Dangerous Goods by Air

<sup>10</sup> See Chicago Convention, *supra* note 3, at art. 90. The Council, which consists of 33 states elected for three year terms, is the continuously operating governing body of the ICAO. See generally PUBLIC INFORMATION OFFICE, INTERNATIONAL CIVIL AVIATION ORGANIZATION, MEMORANDUM ON ICAO 11-12 (1984).

of all contracting states.<sup>11</sup>

Another key to the growth of civil aviation is the vast work undertaken under the regional plans which list the services and facilities in the nine regions of ICAO.<sup>12</sup> To give an idea of this undertaking, more than 60,000 such services have been listed, these being the nuts and bolts of the global infrastructure.

ICAO's heyday of regulatory activity was the first decade of its existence when the organization adopted more annex material than in the following thirty-five years. The first and foremost priority was the assignment of responsibility for the provision of services and facilities for international civil aviation within each portion of the global airspace. Such formal allocations, encompassing all recognized international air routes, were not without problems because of the touchy issues of sovereignty over the airspace. There were also sensitive and complex issues involving portions of the international airspace over the high seas.<sup>13</sup>

One of ICAO's most ambitious accomplishments was the establishment of weather stations and rescue teams in the North Atlantic financed jointly by the airlines that use these facilities.<sup>14</sup> The Organization was thus not only laying the ground rules but was also breaking new ground in international cooperation. The Organization had to also

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<sup>11</sup> See Chicago Convention, *supra* note 3, at art. 94.

<sup>12</sup> See PUBLIC INFORMATION OFFICE, INTERNATIONAL CIVIL AVIATION ORGANIZATION, MEMORANDUM ON ICAO 21-24 (1987) [hereinafter MEMORANDUM ON ICAO 1987]. Because of different requirements in various parts of the world, ICAO convenes meetings periodically in each of its nine regions to plan the facilities and services that are reviewed by the Air Navigation Commission and adopted by the Council to be implemented by the states concerned in each region. The regional plans when taken together constitute an integrated worldwide air navigation system. *Id.*

<sup>13</sup> See T. BUERGENTHAL, LAW-MAKING IN THE INTERNATIONAL CIVIL AVIATION ORGANIZATION 80-82 (1969) (discussion of the sovereignty of airspace provisions in article 12 of the Chicago Convention and Annex 2 adopted by the ICAO Council).

<sup>14</sup> See MEMORANDUM ON ICAO 1987, *supra* note 12, at 40-41. Twenty-two governments are parties to these joint agreements which cover air traffic control, communications, and meteorological services for flights over the North Atlantic. *Id.*

mount a network of radio beacons to guide aircraft. To a large extent this was done by national authorities under the supervision of ICAO.<sup>15</sup> International ventures existed to facilitate radio transmission as well. ICAO helped establish a set of long-range radio aids to navigation (LORAN) together with meteorological stations in Iceland, Greenland and the Faeroe Islands for use along transatlantic routes. These services were again financed jointly by the users. This cooperative scheme has evolved technically over the years and is still the central element of safe and efficient travel over the North Atlantic.

In setting its worldwide standards, ICAO has had to keep pace with the rapidly growing evolution in technology represented by the change from the DC-3 aircraft to supersonic aircraft. It has had to focus not only on the aircraft, but also on the environment in which they fly. Technological innovations in air transport have vastly exceeded developments in other modes of transport, except perhaps for the emergence of supertankers in shipping and the development of high speed trains.<sup>16</sup> Dr. R.R. Shaw, who directed IATA's technical activities for twenty years, recalled the extraordinary willingness of the airlines in the 1960s to pursue "an aggressive programme of far-sighted activities" dealing not only with immediate day-to-day concerns but also with long-term needs.<sup>17</sup>

This emphasis on long term objectives developed out of the challenges of the jet age. The emergence of the turbo-jet engine, for example, had a two-fold impact. In the early 1960s, the turbo-jet led to a dramatic increase in speed while the size of the aircraft remained fairly constant.<sup>18</sup> In the late 1960s and 1970s, the speed remained constant since it was already approaching the sound bar-

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<sup>15</sup> *Id.*

<sup>16</sup> D. REGAS, *FLYING OFF COURSE: THE ECONOMICS OF INTERNATIONAL AIRLINES* 3 (1985).

<sup>17</sup> Shaw, *Are We Investing Our Intellect For the Future?*, *IATA REV.*, July-Sept. 1987, at 3.

<sup>18</sup> D. REGAS, *supra* note 16.

rier, but the aircraft grew in size.<sup>19</sup> The advent of the jet age brought about a change of all ICAO regional plans and practically all the annexes and related documents since these were tailored for a far different flight profile of speed, altitude and passenger seating.

Because adjusting to the technological advancements brought about by new aircraft is an expensive and elaborate process, the Organization steered a cautious line in planning ahead. In 1960, the Organization formed a panel to look into the problems that would likely result from the advent of supersonic aircraft. The panel soon was overtaken by much larger problems incident to jumbo jet service which, as it turned out, arrived on the scene first.<sup>20</sup> At present, in view of the considerable doubts as to the viability of the hypersonic aircraft, and notwithstanding the glowing forecasts of its promoters, the Organization is remaining on the sidelines.

Over the years, ICAO has faced momentous choices in selecting new communications and navigation systems for worldwide use. New equipment inevitably creates new types of problems because it takes years for a new system to be fully implemented. In the meantime, the new must co-exist with the old. For example, in 1949 ICAO established requirements for the Instrument Landing System (ILS), which is still in use today as the standard precision landing aid.<sup>21</sup> Ten years later, after an exhaustive consideration of alternative short-range navigational aids, ICAO settled upon the VOR/DME as the basic international air

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<sup>19</sup> *Id.*

<sup>20</sup> See Freer, *New Problems Arise, Old Ones Return — 1976 to 1986*, ICAO BULL., Jan. 1987, at 32. States and airport operators were fearful that many of their newly laid runways and ramps would become obsolete for jumbo jets. They also remembered that facilities built in the 1950s for prop-driven aircraft became inadequate when the first jets entered service. *Id.* at 34.

<sup>21</sup> *Id.*; see also *Microwave Landing System Advisory Circular Issue No. 1*, ICAO Circular 165-AN/104 (1981) [hereinafter *MLS Advisory Circular*]. "The world-wide implementation of present-day ILS is recognized, within its technical and operational capabilities, as a valuable contribution to the safety and regularity of all weather operations." *Id.* at 1.



navigation system aid.<sup>22</sup> By the early 1970s, the aviation community had concluded that an improved landing aid was needed to meet the growing requirements of a jet era.<sup>23</sup> In order to assure the safety and efficiency of air transport the ILS would have to be replaced on a global basis.<sup>24</sup> Thus, after a long and protracted decision making process in which various states championed their own equipment, the ICAO chose a new system, the Microwave Landing System (MLS).<sup>25</sup>

The Organization has been faulted for being too slow in responding to technical developments and for being overtaken by events. To the extent this criticism true, it is due to the nature of the complex technology and to the fact that the Organization is ill-equipped to make decisions that involve the high stakes of avionics. The Organization does not have a think tank, nor does it have the expertise to deal with every issue. The Air Navigation Commission (ANC), ICAO's technical arm, relies on the advice of specialized panels. These panels, depending on the issue, are themselves heavily dependent on the recommendations of the airlines and the aeronautical industry.

After a specialized panel submits its report, a long development stage begins with an analysis of the proposals by the ICAO Secretariat. The Secretariat then submits its findings, together with its own recommendations, to the

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<sup>22</sup> Freer, *supra* note 20, at 34.

<sup>23</sup> *MLS Advisory Circular*, *supra* note 21, at 2. In 1971 the All Weather Operations Panel (AWOP) concluded that a new approach and landing guidance system was necessary to overcome the limitations of the ILS. AWOP proposed the adoption of the new system by the mid 1970s.

<sup>24</sup> *See id.* at 3.

<sup>25</sup> Freer, *supra* note 20, at 34. The MLS system ultimately chosen was a "time reference scanning beam system" jointly developed by Australia and the United States. *Id.* The main handicap of the Instrument Landing System (ILS) is that its single narrow approach forces aircraft to line up single file and land in turn. The Microwave Landing System (MLS) provides a wider approach and operates on much higher frequencies than the ILS, which allows pilots to come in from several directions and at different speeds. The MLS allows for a more efficient use of runways by different types of aircraft in all kinds of terrain and weather. *See MLS Advisory Circular*, *supra* note 21, at 12-13; *see also* Underwood & Janes, *Progress Continues to Be Made in MLS Technology*, ICAO BULL., Mar. 1989, at 20.

ANC. The ANC decides on the best means of tackling the problem, and on whether there is a need for the Council to adopt new or amended SARPS. A proposed change in the annexes can be a laborious process, involving consultation with member states and possible consideration at either a worldwide conference or one of the divisional meetings that ICAO convenes to discuss specific technical problems. Much to ICAO's credit, there has never been a case where a final action by the Council has been rejected by either a member state or by the aviation community.

One might argue that the role of ICAO is to advance technology, but in practical terms, this cannot be done without the support of the international aviation community, and more particularly, the support of the airlines. Unlike earlier years, the carriers have been remarkably cautious in supporting technical innovations for fear that they would have to bear the brunt of the cost. The promotion of advanced concepts and theories that may have useful applications to civil aviation is now left to the aircraft avionics industry. All segments of the industry, however, including the airlines, are part of a Special Committee on Future Air Navigation Systems (FANS) created by ICAO to implement new concepts, including satellite technology, which would provide benefits for civil aviation.<sup>26</sup>

Considering that we are already in the space age, it seems incongruous that satellite technology is not fully used to relieve airspace congestion. As early as 1968, ICAO realized the potential of satellites for air navigation when it set up an international mechanism (AEROSAT) to plan a satellite for the exclusive use of civil aviation.<sup>27</sup> A

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<sup>26</sup> See MEMORANDUM ON ICAO 1987, *supra* note 12, at 21. The FANS Committee was established by the ICAO Council in 1983 to make recommendations for the development of future air navigation systems over a 25-year period. *Id.*; see also Smit, *Report on the Activities of the ICAO Special Committee on Future Navigation Systems*, THE CONTROLLER, Mar. 1988, at 10, 10-12 (J.S. Smit was chairman of the FANS Committee).

<sup>27</sup> Whenever they are used, satellites have eliminated communication deficiencies caused chiefly by unreliable high frequency radio links. Satellite links are also

consortium of states, which included the United States, Canada, and the nine members of the European Space Research Organization, scheduled the launch of an experimental satellite in 1979-1980. The whole program was shelved, however, largely because of the industry's concern over the long-term financial implications of such a system.<sup>28</sup>

When the aviation industry belatedly woke up to the missed opportunities, the best satellite navigation available was to share services for mobile communications with the maritime users and to make sure that the next generation of satellites launched by the International Maritime Satellite Agency (INMARSAT) included specifications for aviation users provided by ICAO.<sup>29</sup> Beyond the immediate communications needs, the aviation community looks forward to a highly accurate, multipurpose satellite system for its future communication, navigation and surveillance needs.

The creation of an aviation satellite system is undoubtedly on the horizon. The central question is what ICAO's role will be in managing this global enterprise. Fortunately, ICAO was spared a political clash over choosing a system from among those under development when the

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being used successfully in some cases to provide voice communications between area control centers to assist in the normal transfer of responsibility for air traffic. See generally Eydaleine, *Navigation by Satellite — The Next Step for Civil Aviation*, ICAO BULL., Mar. 1988, at 16, 16-18 (discussing other advantages to a satellite navigation system and the current state of satellite navigation equipment).

<sup>28</sup> The international airlines were particularly concerned about costs at the time because they were in the midst of a deep financial crisis brought about by dramatic increases in fuel prices combined with stagnating demand and falling yields. D. REGAS, *supra* note 16, at 18-19. One commentator recently estimated that the capital required for satellite systems would be in the order of \$5 to \$6 billion and that nearly half of this amount would have to be borne by aircraft operators. Shaw, *Satellite Technology and Civil Aviation*, IATA Rev., Apr.-June 1984, at 8.

<sup>29</sup> INMARSAT was created in 1976 as an intergovernmental, commercially oriented organization to provide maritime satellite communications. Convention on the International Maritime Satellite Organization, *opened for signature* Sept. 3, 1976, 31 U.S.T. 1, T.I.A.S. No. 9605, 15 I.L.M. 1051. It amended its charter in 1985 to provide satellite services to aeronautical as well as maritime users. *Amendments to the Convention of the International Maritime Satellite Organization (INMARSAT)*, ICAO Doc. C-WP/8126 (Nov. 8, 1985).

United States and the USSR announced in April 1989 that they would offer their systems for joint use by the aviation community.<sup>30</sup> Significantly, the surprise announcement came at the last meeting of the FANS Committee, thereby ensuring a prime role for ICAO in planning the political, financial and institutional aspects of the new system.<sup>31</sup> The ICAO Council lost no time in deciding to form a new committee to carry on the tasks of the FANS group and develop the technical requirements for the use and management of the global system expected to be in operation by the mid-1990s. The effectiveness of the system will ultimately depend on these detailed specifications.

#### CROWDED AIRSPACE AND REGULATORY CONSTRAINTS

The most pressing challenge facing the air transport industry is the congested airspace and airport gridlock that affects the busiest air routes. The major problem areas are in North America, Europe and the Asia/Pacific region. One FAA study shows that eighteen major airports in the United States each experience more than 20,000 hours of delay annually.<sup>32</sup> Airport construction is nearly at a standstill. The last major airport built in the United States was Dallas/Fort Worth International, which opened in 1974. Moreover, construction on the new airport for Denver was delayed by bitter wrangling over noise and cost.

The picture is just as grim in Europe. What once was known as "summer peak" congestion in Europe is now prevalent from early spring to late autumn, resulting in heavy and costly delays for the airlines and passengers. The only major airport under construction is in Munich,

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<sup>30</sup> See Anodina & Turner, *US/USSR Cooperation in the Areas of GPS-GLONASS to Develop Joint Operational Performance Standards for Compatible Civil Aviation User Equipment*, ICAO Doc. FANS (Paris) WG/Z WP19, at 1, 3-5 (Apr. 7, 1989). This working paper outlines the agreement on performance standards reached by the two nations. *Id.*

<sup>31</sup> *Id.* at 1-3. A working group of the FANS Committee will coordinate the co-operative work of the US/USSR technical specialists on an arranged schedule. *Id.* at 5.

<sup>32</sup> Malcolm, *Aviation Experts Warn of Gridlock at U.S. Airports*, N.Y. Times, June 19, 1988, § 1, at 22, col. 5.

and it is already expected to be operating over capacity when it opens in 1991. The problem is all the more acute in a continent where large areas of the airspace are reserved for military use and where frequent labor problems with air traffic controllers cause havoc with flight operations.<sup>33</sup>

The largest area of growth has been the Asia/Pacific Region with annual increases in passenger traffic averaging about nine percent annually, well above the world's average. ICAO expects this growth to continue to the point that the region will account for thirty-nine percent of the world's airline passenger traffic by the year 2000, compared to twenty percent in 1978.<sup>34</sup> Looking at the region as a whole, the problem is not so much lack of facilities as the need for a more efficient route structure to accommodate the longer range aircraft — mostly the Boeing 747s — which have revolutionized trans-Pacific air travel in recent years.

Worldwide, if one assumes a continuing average annual traffic growth of some five to six percent, the number of scheduled passenger journeys may double to two billion by the year 2000. The number of aircraft is expected to double to more than 11,000 with a resulting increase in the volume of aircraft movements.<sup>35</sup> These dire predictions are a matter of concern to the aviation community, given the fact that the supporting infrastructure cannot keep pace with the demand. The continued development of civil aviation will face its most acute test on the ground, where national interests are tied to a host of difficult policy and environmental issues at the federal, state or provincial, and local level.

With respect to airport and traffic control, decision-making at the national level is often thwarted or slowed by

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<sup>33</sup> See generally Oudin, *Air Traffic Congestion in Europe — ICAO's Initiatives for Remedial Actions*, ICAO BULL., Jan. 1989, at 15, 15-18.

<sup>34</sup> *The Economic Situation of Air Transport-1978 to the Year 2000*, ICAO Circular 200-AT/90, at 42 (1989).

<sup>35</sup> Eser, *The State of the Industry*, IATA REV. Oct.-Dec. 1988, at 3, 5.

local and state officials who must contend with their own constituents. Even the FAA does not have the political clout to get its own way when it comes to deciding on the use of its airport construction grants. Throughout Europe and in Japan, environmental groups have mounted fierce, sometimes fatal, opposition to increasing existing airport facilities. In November 1987, two policemen were shot during a protest outside Frankfurt airport, the first police officers to be gunned down in postwar Germany. Tokyo's international airport at Narita has long been a battleground between police and local residents.

With runways, terminals and air traffic control stretched to capacity on both sides of the Atlantic, hardly a week goes by without a statement by an airline executive, an editorial, or a report warning of an impending crisis if co-ordinated action is not forthcoming. A recent report of the London-based Aviation Industry Strategy group minces no words when it concludes: "Governments must bite the bullet of expansion of runways, air traffic control and infrastructure if their current aviation industries are to survive . . . ." <sup>36</sup>

The solutions to the air traffic gridlock require urgent action, both in the sky and on the ground. One of IATA's priority tasks is to convince states that they must provide additional airspace for civil traffic in order to allow a more direct and efficient route structure. In preparation for the introduction of the new, very long haul Boeing 747-400, certain routes have already been redrawn for the most advantageous use of the aircraft in the Far East and the Pacific. <sup>37</sup> At long last, the Soviet Union may be ready to open to more airlines its trans-Siberian route between Europe and the Far East, which hitherto has been reserved for Eastern bloc countries and a few privileged

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<sup>36</sup> Cotter, *Traffic May Cripple European Decontrol*, J. Com., June 21, 1988 (newspaper citing the Aviation Industry Strategy group).

<sup>37</sup> *Annual Report 1988*, *supra* note 2, at 48. Various meetings to map new routes have been held at the Bangkok regional office of ICAO. The most direct route for the B-747-400 would be across the Soviet Union and Mongolia.

Western carriers.<sup>38</sup>

Technical solutions can provide short term relief by increasing the flow of traffic and the capacity of airports. With regard to congested airways, studies are under way in several countries to develop specifications for improved equipment to reduce the required minimal separation in terms of horizontal and vertical distances. Horizontal separation between adjacent aircraft has been redefined on a number of occasions as a result of improved radar surveillance and foolproof navigation systems.<sup>39</sup> Improving the height-keeping accuracy that is needed to reduce vertical spacing is a more complex matter. It is technically feasible, however, to reduce by half the 2,000 foot vertical separation in the upper airspace and thereby increase capacity without more than a modest investment in air-data systems by few users.<sup>40</sup>

New separation rules will provide a significant improvement in the flow of traffic but will not address the problem of congestion in terminal areas. Possible solutions to terminal congestion include: an increase in the number of runway exits and a reduction in both the three mile separation between landing aircraft and the space between parallel runways. The gradual introduction of the MLS promises further improvements in the use of existing airport facilities. Noise curfews at airports may also be eased as older aircraft are being replaced by new and quieter jets. Finally, the longer term prospect of a global navigation system, which could further reduce the minimum separation distances between aircraft and provide precision approaches to runways, may greatly expand the number and safety of flight operations.

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<sup>38</sup> Airlines would be charged hefty fees for the use of Soviet airspace since the USSR is not a signatory to the International Air Transit Agreement.

<sup>39</sup> *Annual Report 1988*, *supra* note 2, at 46-47. Navigation systems are now so reliable that this may lead to overconfidence on the part of pilots and human error due to incorrect waypoint insertion.

<sup>40</sup> Changes in the separation minima are being considered by a special ICAO panel based on studies and evaluations being carried out in Canada, Western Europe, Japan, the United States, and the USSR. *Id.* at 46.

The safety risks inherent in drafting new specifications need to be assessed constantly to guarantee recognition of all affected areas. The International Federation of Airline Pilots Associations (IFALPA) has steadfastly opposed reducing separation rules before they are demonstrated to be safe.<sup>41</sup> Another regulatory development to enhance safety and reduce the number of near misses that is causing concern in the aviation community stems from the United States decision to require that all aircraft of more than thirty seats flying in United States airspace be equipped with an anticollision device known as Traffic Alert and Collision Avoidance system (TCAS-II).<sup>42</sup> The rule, which mandates TCAS-II installation no later than December 30, 1991, is equally applicable to foreign carriers.<sup>43</sup> This rule has resulted in protests that the United States is acting unilaterally by imposing its own requirements ahead of ICAO standards which have yet to be decided.<sup>44</sup> There have been negative reactions as to the usefulness and effectiveness of such an airborne collision avoidance system.<sup>45</sup>

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<sup>41</sup> Pilots have been at odds with the airlines over this issue since 1966 when IFALPA successfully delayed the introduction of reduced separation standards over the North Atlantic until proven operationally safe. It has insisted on thorough statistical research every time the question has come up. See IFALPA, *HISTORY OF IFALPA (1948-1980)* 76-77 (1981).

<sup>42</sup> See 49 U.S.C. § 1421(f) (Supp. V 1987).

<sup>43</sup> Traffic Alert and Collision Avoidance System, 14 C.F.R. §§ 121.356, 129.224 (1989). A bill allowing extension of the deadline for TCAS-II installation was passed by the House of Representatives on July 13, 1989. H.R. 2151, 101st Cong., 1st Sess., 135 CONG. REC. H4536-38 (daily ed. July 31, 1989); see also *Deadline for TCAS Installation May be Extended to 1992 or 1993*, AVI. WK. & SPACE TECH., May 22, 1989 at 109 (discussing H.R. 2151 as a response to criticisms of the original statute).

<sup>44</sup> Carey, *Europeans Perturbed by U.S. Pressure to Install Aircraft-Collision Protection*, Wall St. J., June 28, 1989, at A 11, col. 1.

The FAA concedes that the U.S. rule has ruffled some feathers. "Some countries have raised arguments that the U.S. is jumping ahead by unilaterally imposing this regulation on foreign carriers," says Joseph Del Balzo, the FAA's executive director of system development. But he says that argument pales before the system's safety advantages.

*Id.*

<sup>45</sup> *Id.* Carey explains as follows:

Others question if too many TCAS commands to pilots could create



The problems that arise from overburdened airspace are not easily solved, and the existing solutions extend beyond regulatory developments. ICAO can look at global needs, but the detailed requirements are set forth in the regional air navigation plans and implemented by the countries concerned with due regard to their own priorities. An acute need exists for additional resources practically everywhere, in developed as well as developing countries. The United States, for example, is under pressure to improve airport facilities.<sup>46</sup>

ICAO's greatest difficulty over the years has probably been translating its paper norms into practical realities. Setting standards and procedures for air navigation services does not mean they will be applied in practice. The same holds true for the regional air navigation plans. ICAO's regional offices, which are constantly following up on the implementation of regional plans, hear constant laments over lack of money, trained technicians and equipment. Unlike IATA and the airlines, which have been known to put pressure on governments to correct deficiencies, ICAO stays clear of national policies. ICAO, however, may intervene in an extraordinary situation, such as when Nigeria lacked navigational aids. The airlines threatened to suspend operations and the Council President discussed the matter with officials and arranged

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havoc. If one pilot gets a warning and diverts his route, that could cause a chain reaction of other pilots trying to avoid the first plane's maneuver, they say. "This is a very dangerous position for both the pilot and the controller," says Bart Bakker, president of the International Federation of Airline Pilots' [sic] Associations.

*Id.*; see also Witkin, *Airlines Ordered to Install Devices to Avert Collisions*, N.Y. Times, Jan. 6, 1989, at A1, col. 2 (aircraft with TCAS will not be protected from those without transponders); Witkin, *Testing Urged for Airliner Safety Device*, N.Y. Times, Feb. 24, 1989, at A12, col. 1 (report to Congress noted foreign countries' complaints about the rule).

<sup>46</sup> The Government has resisted efforts by the airline industry to use the \$5.6 billion surplus in the Airport and Airways Trust Fund for airport expansion. The fund, which is financed largely by the eight percent tax on tickets, has been allowed to accumulate "because it makes the federal deficit look better." *FAA Seeks More Airports to Lessen Congestion, But its Chances Amount to a Wing and a Prayer*, Wall St. J., Aug. 26, 1987, at 42, col. 1.

for a technical assistance mission.<sup>47</sup>

As planners have been overtaken by their own predictions, governments are coming under increasing pressure to adopt a system approach to resolve congestion problems, especially those involving air traffic control. As one trade publication noted, "the whole subject is a political mine field [since] nobody wants airports next door and spending on ATC [air traffic control] is often a lower priority than housing or health services. It's also a longer term problem than most politicians are interested in."<sup>48</sup>

The first test of the political will of states to provide long-range solutions will come in Europe. The twin pressures of liberalization policies and overcrowded facilities have already led to a public outcry that has compelled governments to begin talking about supra-national solutions to deal with continent-wide problems. The first step was a decision by the twenty-two member European Civil Aviation Conference to work together on a plan to establish two central and interlinked flow control centers in Europe by 1994; one in Brussels to handle all the traffic in Western Europe and the other in Moscow to coordinate flights in Eastern Europe.<sup>49</sup> Flow control, however, is not a means in itself. Although it can help relieve congestion, flow control planning cannot eliminate the shortcomings in the system and increase its capacity to absorb the traffic growth.

The global nature of aviation, which transcends sovereign borders, poses problems in management that go be-

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<sup>47</sup> *Report of the President of the Council*, ICAO Doc.WP/7960 (Feb. 18, 1985); Interavia Airletter No. 11,274 (June 25, 1987) (reports that pilots have had to cope with unchecked beacons and malfunctioning approach radars at Nigerian airports and that this probably accounts for the fact that there are on average two near misses per day).

<sup>48</sup> *The Airport Straitjacket*, AIRLINE BUS., Apr. 1988, at 25.

<sup>49</sup> Sutton, *Eurocontrol Back in Favour*, INTERAVIA, Feb. 1989. The overall coordination will be managed by EUROCONTROL, the agency originally set up in 1963 to oversee air traffic control in Western Europe. The agency will not be able to control European airspace as a single entity, however, since each country retains national sovereignty over its airspace. *Id.*; see also, Mack, *The U.K. Air Traffic System — Planning for Growth*, ICAO BULL., Sept. 1988, at 21.

yond existing mechanisms and requires global solutions. Several articles of the Chicago Convention give states considerable scope for organizing air transport on a regional basis.<sup>50</sup> In a modest way, ICAO is prompting European states to think about such multinational facilities and services. Guidance material developed by ICAO shows that certain services now carried out by individual states can be provided more effectively and at a lower cost by a single entity operated by one or several states. To achieve this result, technical planning groups will need to apply a different approach and focus on broader financial and managerial questions, rather than on the strict implementation in each state of the regional plans.

With respect to the provision of air navigation facilities and services, which is the responsibility of each state, as spelled out in article 28 of the Chicago Convention, there is nothing to prevent states from delegating these functions to a specific public or private entity.<sup>51</sup> This is already the case in Africa and Central America where individual countries are ill-equipped to perform these tasks on their own. Within ICAO's own institutional framework, the joint financing agreements for air navigation services over the North Atlantic have given the Organization considerable experience in managing services on an international scale.<sup>52</sup>

#### THE SHAPE OF FUTURE TECHNOLOGY

The past thirty-five years have brought significant changes in the international airline industry from the introduction of the jet age by the ill-fated de Havilland Comet,<sup>53</sup> to the successive series of turbojets, wide-bodies

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<sup>50</sup> See Chicago Convention, *supra* note 3, at arts. 77, 78, 79.

<sup>51</sup> *Id.* at art. 28.

<sup>52</sup> See C. RHYNE, A MUTUC & R. SANDS, *LAW MAKING ACTIVITIES OF THE INTERNATIONAL CIVIL AVIATION ORGANIZATION* 16-17 (1978); *supra* note 14 and accompanying text (discussing the joint financing of air navigation services in the North Atlantic).

<sup>53</sup> See R. DAVIES, *A HISTORY OF THE WORLD'S AIRLINES* 453 (1967). The commercial jet era started in May 1952 when the British-designed Comet 1 was intro-

and a short-lived promise for greater use of supersonic transport. During this period, technical advances in aircraft and engine designs have revolutionized commercial air transport, made possible lower fares, and generated multimillion dollar expansions of ground facilities. As significant as these developments have been, they will pale in comparison with the change travellers can expect in the future. In an address to the Technical Conference of IATA, Assad Kotaite, the President of the ICAO Council, commented on the rapid changes in air transport:

[A] technical revolution is sweeping through the world air transport industry. It has already been experienced by passengers, to a limited extent, in such new airliners as the Boeing 757 and 767 twin-engine aircraft. The extent of the technological revolution brought about by these larger aircraft encompasses virtually every aspect of the industry and will be accompanied by some equally far-reaching innovations on the ground - the microwave landing system (MLS) that will speed the flow of aircraft in and out of increasingly congested airports and automated air traffic control that will facilitate the controllers' work.<sup>54</sup>

Futuristic aircraft such as hypersonic transports or leviathans carrying a thousand passengers are on the drawing board or in the early stages of feasibility study. By the early twenty-first century, some of these aircraft will be operational, while others may not see service before the year 2025, if at all.<sup>55</sup>

For the foreseeable future, however, aircraft builders are concentrating on extracting the maximum benefits from existing technology and the wide-body fuselage pioneered by the Boeing 747. The reasons for this are largely economic. The cost of new aircraft continues to escalate. Aircraft manufacturers anticipate that commer-

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duced on the London-Johannesburg route. *Id.* at 453. In 1954, disaster struck when two Comets went down. The aircraft was withdrawn from service. Subsequent investigation revealed the accidents had been caused by metal fatigue. *Id.* at 453-54.

<sup>54</sup> Address to the 21st Technical Conference of IATA, in Montreal (Sept. 1987).

<sup>55</sup> LaFond, *The Shape of Things to Come*, ICAO Public Information Office.

cial airlines will need to spend \$500,000 million (in 1988 dollars) for new aircraft until the year 2005.<sup>56</sup> This cost is comparable to expenditures on equipment for the thirty-five year period between 1950 and 1985.

The days are gone when technological advances were engineered by ambitious airline executives like Juan Trippe, who encouraged Boeing to produce the 707, a plane that inaugurated transatlantic jet travel in 1958.<sup>57</sup> Gone also are the days when a strong aeronautical industry, subsidized by governments, could spur technological progress and force new designs on the airlines even when this was not always in their best interest. A striking example, of course, was the development of the Anglo-French Concorde, a technological triumph for the governments, but a commercial fiasco for British Airways and Air France.<sup>58</sup> The aircraft of the future will be decided not by national prestige but by economic realities. Nothing illustrates better the new environment in the aeronautical industry than the decision by Air France in 1987 to "buy American" and order sixteen Boeing 747-400s in a \$3.5 billion package that was until then the second largest ever for the American firm.

In this context, the announcement by President Reagan in his State of the Union address in 1986 that the United States would develop a hypersonic aircraft caused few rip-

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<sup>56</sup> *Fleet Renewal and Investment in Airport Infrastructure*, ICAO Doc. A27-WP/48, at 2 (July 7, 1989).

<sup>57</sup> See R. DALEY, *AN AMERICAN SAGA: JUAN TRIPPE AND HIS PAN AM EMPIRE* 413 (1980). Trippe's biggest contribution to commercial aviation was the support he gave to the development of the 747 jumbo jet in the mid 1960s when Pan American was still the most influential airline in the world. Flushed with the success of his 707, Bill Allen, then president of Boeing, was thinking of a larger version. Trippe persuaded Allen to build the 747 by agreeing that Pan American would buy and operate twenty-five of the aircraft. *Id.* at 432.

<sup>58</sup> See S. WHEATCROFT, *AIR TRANSPORT POLICY* 50 (1984). In his pioneering study of the aircraft industry Stephen Wheatcroft has shown the strong linkage between government-subsidized manufacturers and government-owned airlines. He quotes a British Airline executive to the effect that less frequent replacements of transport aircraft by new and more advanced designs is likely to help rather than hinder the healthy economic progress of the airlines. *Id.*

ples in the international aviation community.<sup>59</sup> The airlines had more immediate concerns about making the right choices in renewing their fleet, while the major American manufacturers wanted to make sure the orders went their way in the face of heavy competition from the Airbus consortium. While the Airbus' share of the world market had been about seventeen percent between 1980 and 1985, it jumped to forty-four percent during the first quarter of 1987.<sup>60</sup> More galling was the European penetration of the American market through the sale of twenty-three Airbus A-300s to Eastern Airlines on terms that were without precedent.<sup>61</sup>

Even as Boeing and McDonnell Douglas answered the Airbus challenge, they complained that the fight was unfair because of government subsidies their competitor reaped from the start. Airbus executives pointed out, in response, that the United States aerospace firms had benefited from billions of dollars in government defense contracts that could be considered an indirect form of subsidy since these funds enabled the aircraft companies to cover overhead in their own research and development.<sup>62</sup> The United States eventually took up the matter at government level negotiations under the auspices of the General

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<sup>59</sup> President's State of the Union Address, 22 WEEKLY COMP. PRES. DOC. 138 (Feb. 4, 1986). President Reagan stated:

[T]his nation remains fully committed to America's space program. . . . [W]e are going forward with research on a new Orient Express that could, by the end of the next decade, take off from Dulles Airport, accelerate up to 25 times the speed of sound, attaining low Earth orbit or flying to Tokyo within two hours.

*Id.*

<sup>60</sup> Milner & Yoffie, *Between Free Trade and Protectionism: Strategic Trade Policy and a Theory of Corporate Trade Demands*, 43(2) INT'L ORG. 239, 257 (1989) (citing statistics from the United States Department of Commerce and the Dow Jones News Service).

<sup>61</sup> See *The National Interest*, 122 FLIGHT INT'L 341 (1982). Frank Borman, the chairman of Eastern, was quoted as telling his employees: "If you do not kiss the French flag every time you see it, at least salute it. The export financing on our Airbus deal subsidized this airline by more than \$100 million." *Id.*

<sup>62</sup> Greenhouse, *Airbus's Threat to U.S. Rivals*, N.Y. Times, May 28, 1987, at D1, col. 3; see generally *Europe Forging New Alliances for Civil Transport Production*, AVI. WK. & SPACE TECH., July 27, 1987, at 26; Fink, *Airbus Industrie's Competitive Gambit*, AVI. WK. & SPACE TECH., Aug. 3, 1987, at 15.

Agreement on Tariffs and Trade (GATT), but apparently without much success.<sup>63</sup> The issue simmered down when Boeing and McDonnell Douglas faced such a backlog of orders for new aircraft that they could safely relax their pressure on the United States government for trade action against Airbus.

Beyond this trade war stands the need to finance the skyrocketing cost of aeronautical technology. Airbus is a prime example of how a multinational cooperative approach can create the resource pool necessary to finance the research, development and production of new aircraft. The governments of the Airbus consortium (British Aerospace, France's Aerospatiale, Germany's Messerschmitt and Spain's CASA) have underwritten the effort with large infusions of cash, but the A330/340 model is probably the last such project to receive this level of support. The consortium must now seek new cooperative arrangements and risk sharing partnerships in its aggressive strategy to cope with free market forces throughout the global air transport business.<sup>64</sup>

Looming on the horizon are competitive challenges for the financing of the hypersonic aircraft, as studies by its American sponsors (NASA, Boeing and McDonnell Douglas) show that demand for high speed civil transport exists. One study found that the success of such a project will require an international consortium to deal with complex issues of costs, airports and the environment.<sup>65</sup> The report concluded that it is "economically and technologically impossible for any single country or company to develop [a hypersonic aircraft]. It is mandatory that an international consortium be organized as early as possi-

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<sup>63</sup> See Greenhouse, *supra* note 62. The newspaper reports: "A high level trade delegation from Washington requested that Airbus open its books in order for the delegation to determine whether the government funding Airbus received was a loan to be repaid or a grant. A grant is not permitted under the General Agreement on Tariffs and Trade (GATT)." *Id.*

<sup>64</sup> See Fink, *supra* note 62.

<sup>65</sup> *Market Studies Indicate Demand for High-Speed Civil Transport*, AVI. WK. & SPACE TECH., Nov. 21, 1988, at 54.

ble, backed by appropriate financial and philosophical commitments from governments in the U.S., Japan and Europe."<sup>66</sup>

With the Americans in the lead, the Europeans do not want to be left behind. The Euromart consortium, led by Aerospatiale and supported by the European Economic Community, initiated a two-year project to study the possibility of a Concorde 2 and a hypersonic Concorde 3.<sup>67</sup> Aerospatiale hopes to be able to put the Concorde 2 in service by 2005, when the life expectancy of the current Concorde expires. The hypersonic model may not be ready before 2015.<sup>68</sup> Yet, many in the airline industry are not quite ready to bet on such prospects.

For its part, ICAO's assessment is one of cautious expectation. ICAO notes: "Any new SST aircraft will need to have economically acceptable operating costs . . . [and] meet exacting environmental requirements in the noise, sonic boom and emission areas."<sup>69</sup> In addition, while ICAO recognizes the significant advantages of cruise speeds between Mach 2 and Mach 3, "without the need for new construction materials, new fuels or variable cycle engines . . . [such aircraft] would involve expensive and risky advances in technology."<sup>70</sup>

### THE ECONOMIC ENVIRONMENT

Airlines have been caught up in the process of change from the beginning, but the change was easily identifiable

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<sup>66</sup> *Id.* "A highly run consortium [is] favored for multiple reasons: high costs, the involvement of many countries and airports, huge Pacific traffic growth, technology and research needs and the need for international agreement on environmental issues." *Id.*

<sup>67</sup> Wise, *Europe Looks Beyond the Concorde*, N.Y. Times, Sept. 12, 1988, at D8, col. 4.

<sup>68</sup> *Id.* The supersonic version, the Concorde 2, will fly faster than the speed of sound and will be able to fly from New York to Tokyo in five and a half hours. Comparatively, the hypersonic version under development will fly five times the speed of sound and will be able to fly from New York to Tokyo in about three hours. *Id.*

<sup>69</sup> *Annual Report 1988*, *supra* note 2, at 38.

<sup>70</sup> *Id.*



as being driven by rapidly emerging technology. The changes brought about by radical developments in the economic environment were an entirely different matter. These economic developments challenged the basic framework of the regulatory system that emerged from the Chicago Convention. These developments are a matter of concern to ICAO to the extent that they impinge on the principle of "equal opportunity" written into the preamble of the Convention.<sup>71</sup> Basically, the system has survived for as long as it has without open frictions because governments were not inclined to rock the boat. The bilateral agreements provided sufficient flexibility, and cartel rates set at the IATA tariff conferences were hardly ever challenged by the governments.<sup>72</sup> This cozy situation came to an abrupt halt during the fuel crisis of the 1970s when costs began to escalate rapidly as the result of world inflation.<sup>73</sup> The airlines will not soon forget the economic difficulties of the mid-seventies. Knut Hammarskjold, former IATA Director General, recalled it as a time "of brutal financial realism when the airlines of the world were being squeezed dry by soaring costs, sky-high interest rates, diminishing yields and nose diving profits."<sup>74</sup>

The changes in the economic environment are demonstrated by a review of worldwide traffic patterns. The proportion of the total scheduled traffic carried by the United Kingdom and the United States declined over a thirty-year period (1946-1976) from about two-thirds to a little more than a quarter. Over the same period, the number

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<sup>71</sup> Chicago Convention, *supra* note 3, at preamble.

<sup>72</sup> IATA's tariff conferences have long been a source of controversy, particularly in the United States. As the result of deregulation policies, IATA made participation in tariff conferences optional. IATA has also dropped its controversial tariff enforcement program. See Feldman, *IATA Moves from Controversy Toward Trade Association Model*, AIR TRANSPORT WORLD, Dec. 1987; *Plotting IATA's Future Course*, IATA REV. Oct.-Dec. 1987, at 9, 9-10; *Report by the Council on Tariff Enforcement*, ICAO Doc. A27-WP/4 EC/1 (Feb. 15, 1989).

<sup>73</sup> Between 1979 and 1983 the financial losses of IATA members amounted to over \$6 billion. ICAO Doc. A-26 WP/73.

<sup>74</sup> Address by Knut Hammarskjold (former IATA Director General), Lloyds of London Press International Civil Aviation Conference, in New York (Apr. 1980).

of international scheduled carriers increased from 40 to 180, and the average payload multiplied sevenfold.<sup>75</sup>

The ensuing competitive battle exacted an even greater toll due to the rapid growth of the low cost charter flights, which eventually threw the IATA price-fixing machinery out of gear. Until then, the charter (nonscheduled) airlines and tour operators had remained largely outside the regulatory framework. They simply did not exist at the time of the Chicago Conference. Some twenty years later, the first Atlantic "Skytrain" services of Sir Freddie Laker brought hordes of bag-packing travellers into the market and helped transform air transport from a luxury to a mass-market product.<sup>76</sup> Inevitably, this phenomenon resulted in unprecedented overcapacity on key routes, especially over the North Atlantic. This situation was aggravated when the major airlines tried to counter their higher operations costs by speeding the introduction of larger jets. In 1975 alone, the unused capacity on the North Atlantic was equivalent to 15,000 empty Boeing 747 round trips.<sup>77</sup>

In the face of trends that were evident as far back as 1970, one would have expected that major airlines operating flights with so many empty seats would have curtailed their services. No major airline, however, was prepared to abandon its share of the market to the competition. Thus, as Andreas Lowenfeld has remarked, "even before [the fuel crisis of] 1973, the basic Bermuda structure<sup>78</sup> was under severe stress, and international aviation was a sick

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<sup>75</sup> Special Air Transport Conference, Information Paper No.3, (1977).

<sup>76</sup> See H. BANKS, *THE RISE AND FALL OF FREDDIE LAKER* 73-79 (1982).

<sup>77</sup> K. Hammar skjold, Address to Freight Seminar, in Gothenburg (Mar. 1977).

<sup>78</sup> The "Bermuda structure" so laid out in the Bermuda Agreement of 1946, refers to the balance of economic benefits. This balancing has meant that competition is limited with respect to market entry (traffic rights and designation), supply (provisional of capacity), and pricing (tariffs). See generally A. LOWENFELD, *AVIATION LAW*, ch. 2, §§ 1.13-1.43 (1981) (thorough analysis of the background of the Bermuda Agreement and its significance to international airline access, capacity, and fares); D. REGAS, *supra* note 16, at 28-29 (discussing how the Bermuda type bilateral agreement differed from the more protectionist approaches of earlier bilateral agreements).

industry.”<sup>79</sup> It was, however, the first fuel crisis which brought about an abrupt change of course for everybody and triggered what was to become an American drive for far-reaching changes in the regulatory system. By 1975, as the grumbling of the American carriers became louder, the administration of President Carter began a comprehensive overhaul of its aviation policies. What looked straightforward on the domestic front was viewed with apprehension in other countries where the airlines were owned by their respective governments and were interlocked with national policy. As Christen Jonsson put it, “the new policy amounted to a fervent call for international deregulation, emphasizing competition, liberalization of charter operations, no capacity restraints and ‘marketplace’ pricing with minimal government involvement.”<sup>80</sup>

At first, American deregulators had planned to revamp the international system within the existing framework and in fact took pains to reaffirm their belief in multilateralism and the IATA machinery for setting fares and rates.<sup>81</sup> The change in policy was triggered by the British decision to terminate the 1946 Bermuda Agreement and the year-long negotiations in 1977 leading to a new agreement, known as “Bermuda 2”.<sup>82</sup>

As the cleavage deepened between the United States and most other countries that resisted free-trade policies in aviation, ICAO summoned a Special Air Transport Conference in April 1977 - the most important such gathering since the Chicago Conference.<sup>83</sup> Given the fact that

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<sup>79</sup> Lowenfeld, *A New Take-Off for International Air Transport*, FOREIGN AFF., OCT. 1975, at 44.

<sup>80</sup> C. JONSSON, *INTERNATIONAL AVIATION AND THE POLITICS OF REGIME CHANGE* 36 (1987).

<sup>81</sup> Brindley, *U.S. Air Transport Policy: International Reactions to Deregulation*, INTERAVIA, May 1979, at 427, 427-28.

<sup>82</sup> *Id.* at 428; see also D. REGAS, *supra* note 16, at 56-57.

<sup>83</sup> See *Special Air Transport Conference, Montreal, April 13-26, 1977*, ICAO Doc. 9199 SATC (1977). The last time ICAO dealt with regulatory issues in air transport pursuant to a resolution of the first ICAO Interim Assembly was in Geneva in 1947.

ICAO previously had abandoned attempts to seek a multi-lateral regime covering economic regulatory matters, and had received no new mandate on that score since the first Interim Assembly of 1946, many were skeptical that the first Transport Conference would do no more than bring the issues into the open. The agenda was divided into four headings: (1) analysis of the open rate situation and the widespread violations of IATA-approved fares; (2) establishment of policies regarding charter airlines; (3) regulation of capacity in international air transport; and (4) the creation of an international mechanism for setting rates and fares.

The debate at this first Conference showed that the ninety-seven governments represented had different perceptions of both the problems and potential solutions. On the question of charter services, which were occurring on a regular basis in many instances, some delegates favored an integrated international regime that would cover the control and surveillance of certain categories of non-scheduled services. Others felt that these operations should be regulated separately. With respect to excess capacity, some delegates suggested that the situation over North Atlantic routes was a short-term phenomenon due to the introduction of jumbo jets combined with worldwide recession. The majority, however, felt that excess capacity was a long term problem due to deficiencies in the regulatory system.<sup>84</sup>

The far-ranging debate showed a wide disparity of views, which precluded any kind of consensus. As the major player advocating free market policies amidst the disparate views, the United States became very isolated. If there was any kind of agreement reached, it was that no matter how serious the shortcomings in the system, solutions must be found in bilateral agreements and should not be left to the vagaries of the market.

By the time the Second Air Transport Conference was

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<sup>84</sup> See *First International Air Transport Meeting in Three Decades Sought Multilateral Solutions for Critical Areas*, ICAO BULL., July 1977.

held in 1980,<sup>85</sup> the solid opposition to deregulation policies was crumbling as the United States had already signed bilateral agreements with some fifteen countries. All these bilateral treaties were negotiated on a one-by-one basis preventing airlines in a particular region, for example Europe, from grouping together and putting up a common front.<sup>86</sup> The United States negotiating strategy, which Jonsson described as "a carrot-and stick approach" satisfied American demands for competitive pricing, liberalized capacity and charter provisions and offered new route access to valuable United States markets sought by foreign carriers. The stick was represented by threats of traffic diversion since American carriers could easily substitute one European gateway for another to force recalcitrant adversaries to come to terms.<sup>87</sup> In these circumstances, the opposition voiced at ICAO Assembly sessions and air transport conferences to the American position had little practical effect.<sup>88</sup>

By the time the Third Air Transport Conference was convened in 1985, regulatory reform as such was no

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<sup>85</sup> See *Second Air Transport Conference, Montreal, Feb. 12-28, 1980*, ICAO Doc. 9297 AT Conf/Z (1980).

<sup>86</sup> See Brindley, *supra* note 81, at 428.

<sup>87</sup> See C. JONSSON, *supra* note 80, at 124.

<sup>88</sup> A. LOWENFELD, *AVIATION LAW* § 5-1, at 5-111 (2d ed. 1981). Lowenfeld has observed:

[These conferences] had begun to resemble the United Nations General Assembly: the rule of one country, one vote meant that the developing countries, when united, controlled the conference. Individually, countries such as Mexico, Brazil, Morocco, Venezuela, etc. might make their arrangements in bilateral accords with the United States and other developed countries; as a group in a large conference, however, the developing countries tended to join in the position that free competition meant ganging up of the strong against the weak, and threatened the opportunity of each country (or group of small countries) to field an international airline.

*Id.*

Thus, at the first two air transport conferences, as Lowenfeld further observed, the majority favored capacity controls, restrictions on charters, and strict control of fares by IATA. The fact that all of these positions put the majority at odds with the United States, was not a discouragement to bloc voting, nor, in the context of the ICAO conferences, an invitation to negotiate.

*Id.*

longer an issue as more and more states had joined the deregulatory bandwagon, albeit more out of necessity than conviction.<sup>89</sup> The Conference considered a host of unilateral measures perceived as detrimental to the international system. The most urgent items considered were measures dealing with competition laws, airline marketing and selling, airline currency transfers and the application of noise constraints on older jet aircraft. As the result of a Show Cause Order, which would have lifted antitrust immunity for all IATA-approved tariffs, several airlines were concerned about the effect United States antitrust laws might have on the way they could conduct business.<sup>90</sup>

The Third Air Transport Conference adopted several sweeping recommendations that urged states to avoid unilateral application of their domestic competition legislation by engaging in bilateral negotiations with other affected states.<sup>91</sup> The Conference asked the ICAO Council to develop guidelines and recommendations to assist states to avoid conflicts over application of domestic legislation.<sup>92</sup> Even though the major culprit was never named as such, the United States delegate took strong exception to suggestions that ICAO could have a say in the way states apply their basic economic policies. In his view, ICAO's recommendations to states would take the Organization beyond its appropriate role by questioning na-

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<sup>89</sup> See *Third Air Transport Conference, Montreal, Oct. 22-Nov. 7, 1985*, ICAO Doc. 9470 AT Conf/3 (1985) [hereinafter *ICAO Third Air Transport Conference*].

<sup>90</sup> See *Unilateral Measures Which Affect Air Transport*, ICAO Doc. AT-Conf/3 WP/3 (1985) (paper presented by the Secretary General); see also C. JONSSON, *supra* note 80, at ch. 7. Due to the airlines concern over the application of antitrust laws, IATA tariff conferences were paralyzed and some of them had to be cancelled at the last minute. After a lengthy review, the Department of Transportation (DOT) issued an order saying it would accept procedural changes made by IATA as satisfactory to maintain antitrust immunity and clarifying under what conditions the DOT would retroactively rescind such immunity in cases of specific violations of an IATA agreement. DOT Order 88-6-9.

<sup>91</sup> See ICAO Doc. AT-Conf/3-WP/71, at 3, 3-11 (1985); see also Dempsey, *The Role of the International Civil Aviation Organization on Deregulation, Discrimination and Dispute Resolution*, 52 J. AIR LAW & COM. 529, 540 (1987).

<sup>92</sup> See Dempsey, *supra* note 91.

tional policies with respect to competition laws.<sup>93</sup>

A matter of grave concern raised at this 1985 Conference was the abusive use by the major airlines of computerized reservation systems (CRS) as a way to control the market at the international level.<sup>94</sup> As a result, the ICAO Council was given a mandate to study the problem and to develop recommendations aimed at preventing display bias, which can influence a travel agent to choose one airline over another.<sup>95</sup> The ICAO study contained few surprises. For Chris Lyle there looms the important question of determining "the type of vehicle which might be used to package and implement the emerging conclusions . . . ." <sup>96</sup> Lyle recognized that ICAO in itself does not have authority to regulate air transport: "The Organization's conclusions in the field of air transport policy have generally been issued as recommendations to its Member States, carrying no binding force but functioning as a more or less effective medium for moral persuasion."<sup>97</sup>

This anomalous situation does not prevent other international bodies from dealing with the issue. It was at this Third Air Transport Conference that a potential conflict was raised between ICAO and negotiators in GATT who were in the midst of assessing whether GATT's liberal principles and rules should extend to air transport and related trade in services such as computerized reservation systems. The 26th session of the ICAO Assembly in 1986 reacted with dismay at such prospects and urgently ad-

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<sup>93</sup> See *id.* at 540-41 (discussing in detail the position of the United States and the United Kingdom's response); see also *ICAO Third Air Transport Conference*, *supra* note 89.

<sup>94</sup> See *Developments on Trade in Services*, ICAO Doc. AT-WP/1543 (June 1988); see also P. EHLERS, *COMPUTERIZED RESERVATIONS SYSTEMS IN THE AIR TRANSPORT INDUSTRY* (1988) (in depth analysis of the differing worldwide CRS systems, how they function and international policy options regarding their use).

<sup>95</sup> *ICAO Third Air Transport Conference*, *supra* note 89, at 37-38.

<sup>96</sup> Lyle, *Computer-Age Vulnerability in the International Airline Industry*, 54 J. AIR LAW & COM. 161, 177 (1988) (Lyle is the Chief of Air Carrier Tariffs for ICAO); see also ICAO Doc. A27-WP/50 EC/11; *Guidance Material on the Regulation of Computer Reservation Systems*, ICAO CIRCULAR 214-AT/84; Zubkov, *The Development of Computer Reservation Systems: The ICAO Viewpoint*, ITA MAG., Mar.-Apr. 1987, at 3.

<sup>97</sup> Lyle, *supra* note 96, at 177-78.

vised its Member States to make sure that their negotiators in GATT were fully aware of potential conflicts with the existing legal system for the regulation of international air transport.<sup>98</sup>

By the time the ICAO Assembly met again in 1989, a Group of Negotiations on Services (GNS) had held several meetings under the auspices of GATT. The feeling at the Assembly's Economic Commission in the face of the uncertain outcome in GATT was reflected by the Tunisian delegate in three words, "incomprehension and powerlessness." The delegates realized that the problem was not one of jurisdiction between GATT and ICAO, but rather, stemmed from the differing approaches to the nature of air transport on the part of trade and aviation policy makers. The ICAO delegates were also pointedly reminded by the GATT observer that any remonstrations by ICAO should not be addressed to GATT but to their own sovereign governments participating in the trade in services talks.<sup>99</sup> Although the ICAO delegates pressed for pertinent studies and an eventual fourth Air Transport Conference to clarify ICAO's role in dealing with the issues raised in GATT, they realized that given the GATT calendar, any input by ICAO would come too late to influence the outcome since full negotiations on trade in services were scheduled to get under way in 1990.

The upshot of the issues left unresolved at the Chicago Conference is that ICAO cannot deal with economic regulatory matters without an unambiguous mandate to do so. As a high ICAO official put it: "[ICAO's role in air transport] is more nearly that of an international forum for the periodic, refined and gentlemanly consideration of civil aviation's economic problems, the outcome of which, it is assumed, will be a more orderly and globally consistent means of coping with these problems."<sup>100</sup> Lowenfeld's as-

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<sup>98</sup> See ICAO Doc. AT-WP/1543.

<sup>99</sup> See ICAO Doc. A27-Min./EC/3 (Sept. 28, 1989) (summary of the debate).

<sup>100</sup> Freer, *supra* note 20, at 35. Duane Freer was the Director of the ICAO Air Navigation Bureau at the time of the article. *Id.*



assessment of ICAO's role is more blunt. In his words, "ICAO [is] ill-adapted to the task of economic regulation, and unlikely to play a major part in developing new rules of the game . . . ." <sup>101</sup>

### CONCLUSION

Looking to the immediate future, air transport will require new forms of international cooperation in technical and economic areas. Whether ICAO's contracting states will respond to the challenge depends on their willingness to sacrifice some of their sacred sovereign rights. The expansion of air transport on a global scale with ever increasing traffic densities has brought about problems that must be solved through new multilateral mechanisms. As a first step, states must decide on the management of a global navigation system that meets the needs of the whole aviation community without restrictions. In the longer term, states will be facing responsibilities of much greater political significance involving the allocation of sovereign rights in the control and management of the airspace.

This will be a daunting challenge since international agencies are not geared to assume activities that impinge on national sovereignty. Air transport by its very nature should have been a counterforce to nationalism. Yet, the regulatory system in civil aviation is still as firmly rooted in the principle of national sovereignty as when it was first proclaimed at the Paris Convention of 1919 and reaffirmed in the Chicago Convention.<sup>102</sup> Sovereignty over

<sup>101</sup> A. LOWENFELD, *supra* note 88, at 5-112.

<sup>102</sup> See *supra* note 6 and accompanying text for a discussion of the recognition of state sovereignty in the Chicago Convention. The Convention Relating to the Regulation of Aerial Navigation, as the Paris Convention was formally labeled, was the first attempt to regulate public international law. Paris Convention, Oct. 13, 1919, 11 L.N.T.S. 173. Article 1 of the Paris Convention states: "The High Contracting Parties recognize that every Power has complete and exclusive sovereignty over the air space above its territory." *Id.* at art. 1. The Paris Convention remained in force until it was replaced by the Chicago Convention. Although the United States was a party to the Paris Convention, the Senate never formally rati-

the airspace has remained the cornerstone of relations between states in all respects of air transport.

The importance of sovereignty over airspace embodied in article 1 of the Chicago Convention also is responsible for restricting the authority of ICAO as an intergovernmental regulatory agency. The Organization, for all its extensive efforts, has only limited authority. ICAO sets standards but cannot enforce them; it devises solutions but cannot impose them. To implement its rules ICAO must rely not so much on legal requirements as on the goodwill of states. Because states treat the field of economics as their sole prerogative, ICAO has never been allowed to exercise any kind of authority over economic matters.

While ICAO does not have a specific mandate to regulate the economic aspects of air transport, nothing in the Chicago Convention prevents it from assuming such a responsibility. ICAO's mandate, according to article 44, is to "[i]nsure the safe and orderly growth of international civil aviation throughout the world . . . meet the needs of the peoples of the world for safe, regular, efficient and economical air transport . . . [and to] prevent economic waste caused by unreasonable competition."<sup>103</sup> Based on a broad interpretation of these objectives, ICAO cannot fulfill its mission without addressing the economic and regulatory issues that stand in the way of the efficient and economic use of air transport.

It has been forty-five years since the international community set the foundations of the international system in civil aviation action. Profound political, economic and technological changes have taken place in air transport. Throughout that time, the development of international aviation has been sustained by the strong commitment of states to building a global network of routes and facilities. The Chicago Convention is living proof that states can

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fied it. See Cooper, *United States Participation in Drafting Paris Convention 1919*, 18 J. AIR L. & COM. 226 (1951). See generally M. WHITEMAN, *supra* note 3, at 346.

<sup>103</sup> Chicago Convention, *supra* note 3, at art. 44.

work together to make air transport a safe mode of travel. States must now show the same determination in solving the more contentious issues so that an airline, which long served the exclusive interests of a state, can become "the chosen instrument" of their common international interests.

## **Comments**

