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LIABILITY FOR AIRCRAFT NOISE—THE AFTERMATH OF CAUSBY AND GRIGGS

JAMES D. HILL

The advent of manned aircraft has been charged with responsibility for causing radical revision of many aspects of our society—from concepts of time and distance to modes of warfare. Of interest to lawyers is its impact upon the venerable Roman law maxim, *cujus est solum ejus est usque ad coelum.*

The coming of the air age necessarily doomed, for all time, the ancient concept of property law that ownership of real property included the airspace above it to the ultimate reaches of the sky. The intellectual problems which have been posed to legal scholars and jurists, their struggles to find an accommodation, the new concepts which ultimately emerged, and their definition and refinement in recent litigation all present an interesting study of the vitality of our legal system, and of its ability to adjust rights and obligations to meet the needs of a changing society.

**THE DEVELOPMENT OF THE "RIGHT OF FLIGHT"**

Its origins lost in the mists of antiquity, the maxim has been imbedded in the common law since Lord Coke, who wrote:

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2. "Whose is the soil, his it is up to the sky."

3. Although the maxim is generally referred to as one of "Roman Law," legal historians state that it cannot be found in Roman law and that, to the contrary, the Institutes of Justinian provide that that air is common to all mankind. The maxim cannot be traced beyond Accursius, who lived in Bologna, 1182-1260, and who published a Roman Law commentary at about 1250. Bouvé states that Accursius' son, Franciscus, also a Roman-law scholar, was brought to England by Edward I, as an aide, and that he also lectured at Oxford. He remained in England from 1273 to 1281, and then returned to his post at the University of Bologna. Bouvé, *Private Ownership of Airspace,* 1 Air L. Rev. 232, 243-248 (1930). See also, Fitzgerald, *Real Property-Horizontal Land Concepts,* 24 U. Kan. City L.
And lastly, the earth hath in law a great extent upwards, not only of water, as hath been said, but of ayre, and all other things even up to heaven; for cujus est solum ejus est usque ad coelum, as is holden. . . .

The property-owner’s dominion of the column of airspace above his property was thereafter, for centuries, affirmed in a variety of land-based situations, affording him a remedy against overhanging eaves and cornices, projecting buildings, walls, overhanging branches, telephone crossarms and wires, the shooting of guns, and even from thrusting arms or being kicked by a horse.

Clearly, this concept of property rights is incompatible with air transportation. As early as 1815, Lord Ellenborough observed:

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**Coke, Littleton** § 1, at 4 (Day ed. 1812), citing from the Year Books 14 Henry VIII 12; 22 Henry VI 59; 10 Edward IV 14. See also 2 BLACKSTONE, COMMENTARIES 118; 3 BLACKSTONE, COMMENTARIES 1217.

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**Cumberland Tel. & Tel. Co. v. Barnes, 30 Ky. L. Rep. 1290, 101 S.W. 301 (1907); Butler v. Frontier Tel. Co., 186 N.Y. 486, 79 N.E. 716 (1906).**
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But I am by no means prepared to say that firing across a field in vacuo, no part of the contents touching it, amounts to a clausum fregit, Nay, if this board overhanging the plaintiff's garden be a trespass, it would follow that an aeronaut is liable to an action of trespass quare clausum fregit at the suit of the occupier of every field over which his balloon passes in the course of his voyage.

Thereafter, as long range artillery and flight in free balloons brought an awakening to the realization that a new dimension had been added to the earth, namely, airspace beyond the immediate reaches of the land, other voices were raised to question the literal wording of the Roman maxim. In 1865 Lord Blackburn said, "I understand the good sense of [Lord Ellenborough's] doubt, though not the legal reason of it," and in 1884 Sir William Brett, M.R., said that usque ad coelum "to my mind is another fanciful phrase." Sir Frederick Pollock thought that an entry above the land, though touching no part of it, was a trespass, "unless indeed it can be said that the scope of possible trespass is limited by that of possible effective possession, which might be the most reasonable rule." Sir John Salmond thought such a passage was not a trespass, since such an extension of the rights of a landowner would be an unreasonable restriction of the right of the public to the use of the atmospheric space above the earth's surface. It would make it an actionable wrong to fly a kite, or send a message by a carrier pigeon, or ascend in an aeroplane, or fire artillery, even in cases where no actual or probable damage, danger, or inconvenience could be proved by the subjacent landowners.

Before 1900, expressions of doubt and suggestions of limitation of the maxim were both rare and academic. But with the turn of the century, the Wright brothers made the aircraft a reality; within a short time the First World War had converted it from a curiosity of a pre-war age to a necessity in a modern world. As the infant air transportation industry struggled for survival and acceptance in the three decades after the war, courts and lawyers wrestled with the collision between traditional concepts of property rights and the emerging necessity for freedom of the air. What had previously been an academic legal question became an urgent problem of great practical importance, as legal writers asked, "Who owns the airspace?" To those who accepted the Roman maxim literally, a right

15. POLLOCK, TORTS 362 (13th ed. 1929).
of flight could be created only by federal condemnation, or by constitutional amendment. Federal condemnation of airspace was proposed by Judge Lamb, Solicitor of the Department of Commerce, and in 1921, constitutional amendment was urged by Major Elza C. Johnson, Legal Advisor to the Air Service, who said:

The navigation of the air must depend entirely upon the question of who owns the space above the earth. If the common law rule is recognized, that the space above the earth belongs to the owner of the earth, then no power exists in the Constitution of either state or nation to deprive the individual owner of any rights to the free use and occupancy of that space as long as he does not molest the private ownership of his neighbor. No one has any right to cross his property with an airplane and trespass upon his right to enjoy without danger or fear of danger. . . .

It would appear, and is my opinion, that steps should be taken at once to obtain federal control of the air by direct grant of the people. I am of the opinion that this must be done before any rights to use the air exist, notwithstanding the claims to the contrary.

At the 1921 meeting of the American Bar Association, its Special Committee on the Law of Aviation supported the suggestion of a constitutional amendment, saying “we believe that recourse to a constitutional amendment is desirable . . . ,” but at the same time expressing great reservation as to the soundness of Major Johnson’s underlying reason for it. The Committee said:

There is no more serious embarrassment to the development of air navigation than the acceptance of the doctrine as thus stated. We are not satisfied that it correctly states the actual condition of the law. . . . We submit that it should be the law that it is not an invasion of private right to utilize the air over land for passage by flight, if such flight is accomplished without jeopardizing any right heretofore usually beneficially enjoyed in the ownership of the land; and that the rights of ownership are those benefits which have hitherto been commonly recognized as incident to such ownership. We feel that this committee can do no more beneficial service to the public and the common inter-

20. 46 A.B.A. REP. 498, 515 (1921).
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ests of all of our people than to challenge the proposition that it is an invasion of the rights of private ownership of property to utilize air for purposes of flight.

The following year, at its 1922 meeting, the Committee withdrew its recommendation for a constitutional amendment.21

While some writers joined Major Johnson in believing that the ancient maxim was applicable to flight,22 this was the minority view. Legal writers mounted an assault on the absolutism, pedigree and intent of the maxim. Some analyzed the more than one hundred cases to point out that in only a few had the maxim actually been accepted without reservation.23 Others engaged in historical research designed to prove that the maxim was never in fact a Roman law concept.24 It was also argued that the maxim had never been applied to trespasses above the immediate reaches of the land, and that it “should not be extended to conditions which did not exist and were not conceived of at the time of its origin.”25 The maxim was termed “absurd.”26 Others discoursed on the fallibility of maxims generally, describing them as a “substitute for thought . . . a dangerous short cut . . . a slogan . . . .”27 Professor Bogert said:

But notwithstanding the persistence of [the] rule, its application to the space not immediately adjacent to the soil and the structures on the soil is wanting. All the decisions are regarding intrusions into the space very near the surface, where the actual use of the soil by the surface occupant was disturbed. It is

22. Carthew, Aviation, Its Future and Legal Problems, 63 Sol. J. 418 (1919); Couture, The Michigan Statute Regulating Aerial Navigation is Void Insofar as it is in Derogation of Vested Rights, 11 Br-Mo. L. Rev. 159 (1928); Hine, Home versus Aeroplane, 16 A.B.A.J. 217 (1930); Hise, Ownership and Sovereignty of the Air or Air Space Above Landowner's Premises with Special Reference to Aviation, 16 Iowa L. Rev. 169 (1931); Meyer, Trespass by Aeroplane, 36 L. Mag. & Rev. 20 (1911); Platt, The Airship as a Trespasser, 7 Ohio L. Rev. 402 (1909); Williams, Law of the Air, 131 L. T. 403 (1911).
25. Bouvé, Private Ownership of Airspace, 1 Air L. Rev. 376 (1930); Clifford, The Beginnings of a Law for the Air, 7 Wash. L. Rev. 216 (1931); Jome, Property in the Air, 62 Am. L. Rev. 887 (1928); Kuhn, The Beginnings of an Aerial Law, 4 Am. J. Int'l L. 109, 126 (1910); Logan, Aviation and the Maxim Cujus Est Solum, 16 St. Louis L. Rev. 303 (1931); Logan, The Nature of the Right of Flight, 1 Air L. Rev. 94 (1930); Zollman, Airspace Rights, 53 Am. L. Rev. 711 (1919); Note, 1 Air L. Rev. 272 (1930); Note, 16 Cornell L.Q. 119 (1930); Note, 32 Harv. L. Rev. 569 (1919); Annot., 42 A.L.R. 945 (1926).
27. McNair, The Beginnings and the Growth of Aeronautical Law, 1 J. Air L. 383, 387 (1930); Note, 3 Brooklyn L. Rev. 350 (1933); Note, 9 Texas L. Rev. 240 (1931).
believed that an examination of the cases will show that *cujus est solum* is not law, but is merely a nice theory, easily passed down from medieval days because there has not been until recently any occasion to apply it to its full extent.

Both the Congress and state legislatures acted promptly in an attempt to solve the problem. In 1922 the National Conference of Commissioners on Uniform State Laws adopted a "Uniform State Law for Aeronautics," which provided:\(^{29}\)

Sec. 3. **Ownership of Space.** The ownership of the space above the lands and waters of this state is declared to be vested in the several owners of the surface beneath, subject to the right of flight described in Section 4.

Sec. 4. **Lawfulness of flight.** Flight in aircraft over the lands and waters of this state is lawful unless at such a low altitude as to interfere with the then existing use to which the land or water or space over the land or water is put by the owner, or unless so conducted as to be eminently dangerous to persons or property lawfully on the land or water beneath.

The Uniform Act ultimately was adopted by 22 states.\(^{30}\) But its apparent adherence to the *ad coelum* maxim, subject only to a right of flight, produced controversy.\(^{31}\) In 1932, at a joint meeting of representatives of the American Bar Association and of the Commissioners on Uniform State Laws, "the conferees reached the conclusion that the statement of ownership of airspace, heretofore contained in the Uniform State Law of Aeronautics, was no longer justified. . . ."\(^{32}\) After enactment of the Air Commerce Act of 1926, and the Civil Aeronautics Act of 1938, the matter became academic, and in 1943 the Commissioners formally withdrew the act.\(^{33}\)

In 1926, the Congress enacted the Air Commerce Act, which provided:\(^{34}\)

**Sec. 10. NAVIGABLE AIRSPACE.** As used in this Act, the term "navigable airspace" means airspace above the minimum safe

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29. *Handbook of the National Conference of the Commissioners on Uniform State Laws* 166 (1928).
34. Ch. 344, § 10, 44 Stat. 574, as amended, ch. 601, § 1107(h), 52 Stat. 1028 (1938).
altitudes of flight prescribed by the Secretary of Commerce under section 3, and such navigable airspace shall be subject to a public right of freedom of interstate and foreign air navigation, in conformity with the requirements of this Act.

Pursuant to this authority, the Secretary of Commerce set the floor of navigable airspace at 1000 feet over the congested parts of cities, towns and settlements, and 500 feet elsewhere.\(^{35}\)

Thus, since 1926, the United States has limited for domestic purposes a property owner's interest in the column of airspace above his property. Although the 1926 act has since been succeeded by the Civil Aeronautics Act of 1938, and it in turn by the Federal Aviation Act of 1958, the 1926 provision remains, and has been broadened.\(^{36}\) The original section, which created a public right of "interstate and foreign" air navigation\(^{37}\) was amended by the 1938 act to embrace all flights in "air commerce," which was defined as\(^{38}\)

interstate, overseas, or foreign air commerce or the transportation of mail by aircraft or any operation or navigation of aircraft within the limits of any civil airway or any operation or

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35. Now § 91.79, Federal Air Regulations, 28 F.R. 6702, which reads:
Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) **Anywhere.** An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.
(b) **Over congested areas.** Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1000 feet above the highest obstacle within a horizontal radius of 2000 feet of the aircraft.
(c) **Over other than congested areas.** An altitude of 500 feet above the surface except over open water or sparsely populated areas. In that case, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure.
(d) **Helicopters.** Helicopters may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section if the operation is conducted without hazard to persons or property on the surface. In addition, each person operating a helicopter shall comply with routes or altitudes specifically prescribed for helicopters by the Administrator.


37. It is doubtful whether the public right of flight was in fact limited to interstate flights by the 1926 act. The "navigable airspace," in which such right existed, was to be established by the Secretary of Commerce under his authority to establish air traffic rules, and the Congress expressly intended these to embrace intrastate flights as well. The original Senate bill would have limited federal regulation to interstate flights, and "intrastate flying is left to the control of the states." S. Rep. No. 2, 69th Cong., 1st Sess. 8 (1925). However, in conference the Senate receded from this and agreed to regulation of both intrastate and interstate flight. The conference report stated that:

In order to protect and prevent undue burdens upon interstate and foreign air commerce the air traffic rules are to apply whether the aircraft is engaged in commercial or noncommercial, or in foreign, interstate, or intrastate navigation..." (67 Cong. Rec. 9390 (1926).)

The act was so construed in Neiswonger v. Goodyear Tire & Rubber Co., 35 F.2d 761 (N.D. Ohio 1929). And any remaining doubt as to a grant of right of flight for intrastate flights was resolved by the broadening amendment of the 1938 act, discussed above.

navigation of aircraft which directly affects, or which may endan-
ger safety in, interstate, overseas, or foreign air commerce.

The courts have construed air commerce as including purely local
intrastate flights within the scope of the act as they may penetrate a
federal airway, or endanger the safety of interstate flights. Today, the
congressional grant of a right of flight, within the navigable airspace as
established by regulations issued under the act, exists in favor of all
flights, including those which, under older concepts, would be regarded
as purely intrastate and hence beyond the scope of federal regulation.
As a result, the similar provisions of the Uniform State Law for Aeron-
autics, applicable to intrastate flight, are no longer necessary as a sup-
plement to federal legislation.

Moreover, the original grant of the right of flight, limited to enroute
flight above the floor of navigable airspace, was broadened by the 1958
act to include “airspace needed to insure safety in takeoff and landing of
aircraft.” Before the 1958 amendment, which extended the right of
freedom of transit to the airspace necessary for take-off and landing, a
number of courts enjoined such flight at altitudes of less than 500 feet on
complaint of the subjacent landowner. While the 1958 amendment
granting a right of flight through lower airspace does not affect the sub-
jectant owner’s rights to compensation, as will be discussed later, it did
create a “privilege” for such flight, immunizing it from injunction.
Further, since the 1926 act as broadened by the 1938 and 1958 acts pre-
empted the field of air traffic control, it also immunized flight in the
navigable airspace from restrictive “anti-noise” state laws and municipal
regulations.

39. Rosenhan v. United States, 131 F.2d 932 (10th Cir.), cert. denied, 318 U.S. 790
(1943).
40. Green, The War Against the States in Aviation, 31 VA. L. REV. 835 (1945);
McDonald & Kuhn, The Ocean Air-State or Federal Regulation, 31 VA. L. REV. 363 (1945);
Morris, State Control of Aeronautics, 11 J. AIR & COM. 320 (1940); Rhyne, Federal, State
and Local Jurisdiction Over Civil Aviation, 11 LAW & CONTEMP. PROB. 459 (1946); Ryan,
Federal and State Jurisdiction Over Civil Aviation, 12 J. AIR L. & COM. 25 (1941); Wille-
brandt, Federal Control of Air Commerce, 11 J. AIR L. & COM. 205 (1940); Editorial, 12
J. AIR L. & COM. 68 (1941).
42. Swetland v. Curtiss Airports Corp., 55 F.2d 201 (6th Cir. 1932); Vanderveer v.
Shawn, 26 Del. Ch. 239, 7 A.2d 87 (1942); Delta Air Corp. v. Kersey, 193 Ga. 862, 20
S.E.2d 245 (1942); Burnham v. Beverly Airways, Inc., 311 Mass. 628, 42 N.E.2d 575
(1942); Maitland v. Twin City Aviation Corp., 254 Wisc. 541, 37 N.W.2d 74 (1949). See
generally Johnson v. Curtis Northwest Airplane Co., 1 U.S. Av. 42 (D.C. Minn., 1928);
Thrasher v. City of Atlanta, 178 Ga. 514, 173 S.E. 817 (1934); Smith v. New England
City of Detroit, 308 Mich. 460, 14 N.W.2d 134 (1944); Dlugas v. United Air Lines Transp.
Corp., 53 Pa. D. & C. 402 (1944); Sweeney, The Airport as a Nuisance, 4 J. AIR L. & COM.
330 (1933); 20 NOTRE DAME LAW. 441 (1945); 33 NOTRE DAME LAW. 273 (1958).
1955), aff’d, 238 F.2d 812 (2d Cir. 1956); Calkins, The Landowner and the Aircraft-1938,
25 J. AIR L. & COM. 373 (1958); Seago & Armour, Federal Licensing of Airports, 22
J. AIR L. & COM. 51 (1955); Weibel, Problems of Federalism in the Air Age, 24 J. AIR L. &
The question of domestic limitation on property concepts, as it relates to citizens or the citizen and the state, is separable from the question of limitations of territorial sovereignty as between nations. Domestic limitations are not necessarily the same as international limitations; a nation may fix territorial boundaries for domestic purposes which are different from those to which it is bound in its relationships with other nations. In maritime law, for example, the “three-mile limit” of territorial waters over which a nation may claim sovereignty into the high seas has been recognized between nations for centuries. However, our Supreme Court has recently held\(^\text{44}\) that for domestic purposes the federal government can recognize state sovereignty in excess of three miles. There the Court rejected the argument that a nation’s recognition of the “three-mile limit” in its dealings with other nations necessarily defines the limits of maritime territory as between states, or between states and the federal government. In answer to the argument of the Department of State that “it had never recognized any boundaries in excess of three miles . . . [and] by virtue of federal supremacy in the field of foreign relations, the territorial claims of the States could not exceed that of the Nation,” the Court answered:

We need not decide whether action by Congress fixing a state’s territorial boundary more than three miles beyond its coast constitutes an overriding determination that the State, and therefore this country, are to claim that much territory against foreign nations. It is sufficient for present purposes to note there is no question of Congress’ power to fix state land and water boundaries as a domestic matter.

Early writers debated not only the question of the appropriate limits of national airspace as between nations, but also whether any limits should exist at all. International dispute over the use of balloons in the Franco-Prussian war focused the attention of legal scholars on the development of international air law. Some, reverting to the rationale underlying the maritime “three-mile limit,” urged that the limit of national airspace be the effective range of anti-aircraft gunfire.\(^\text{45}\) At the 1902 session of the Institut de Droit International at Ghent, the French


\(^{44}\) United States v. Louisiana, 363 U.S. 1, 30-36 (1960), concerning cession of rights to natural resources beneath the sea, by the Submerged Lands Act, 67 Stat. 29 (1953).

jurist, Paul Fauchille, submitted a proposal for international “freedom of the air.” At the 1906 meeting of the Institute, England’s Professor Westlake argued in favor of an opposing resolution which would reject freedom of the air in favor of national sovereignty, but the proposal was defeated in favor of Fauchille’s doctrine. However, in 1908 a number of German military balloons carrying military personnel landed in France, and in 1909 Bleriot flew the English Channel. These events revived an interest in national sovereignty in airspace and in 1910 the French government, alarmed by the German invasions of French airspace, called an international air navigation conference in Paris. Nineteen European governments attended, and a convention was drafted, complete except for articles dealing with national sovereignty in airspace. Cooper writes that all delegations supported the principle of national sovereignty, as opposed to the doctrine of “freedom of the air,” but that the conference broke down over conflicting political considerations concerning the restrictions which a State should be permitted to impose on the aircraft of another. The conference adjourned to permit further examination of the problem by each government; however, efforts to reconcile the differences of opinion were unavailing and it was never called back into session.

The First World War signaled a change, as the belligerent powers became convinced of the paramount need of national security in overlying airspace. The Paris Peace Conference established an Aeronautical Commission, charged with preparation of a Convention on the Regulation of Aerial Navigation. The Convention was opened for signature on October 13, 1919, and was ultimately ratified by 33 nations, though not by the United States. The convention completely rejected the “freedom of the air” concept, providing:

Article 1. The High Contracting Parties recognize that every Power has complete and exclusive sovereignty over the airspace above its territory.

In the United States, some argued that it was contrary to the interests of the United States, as a pioneer in air transportation, to support a national right to inhibit freedom of innocent passage at any height. Others argued that

it is essential to the safety of sovereign States that they possess jurisdiction to control the airspace above their territories. It seems to us to rest on the obvious practical necessity of self-protection. Every government completely sovereign in character must possess power to prevent from entering its confines those whom it determines to be undesirable.  

In 1926 the Congress enacted the Air Commerce Act which, unilaterally, adhered to the position of the Paris Convention and rejected the doctrine of international "freedom of the air," with the declaration:

The Congress hereby declares that the Government of the United States has, to the exclusion of all foreign nations, complete sovereignty of the airspace over the lands and waters of the United States. . . .

The same view was again adopted in the International Convention on Civil Aviation—the so-called "Chicago Convention" of 1944 in which the signatory nations agreed that "every State has complete and exclusive sovereignty over the airspace above its territory."

However, any thought that this agreement finally terminated the controversy over international "freedom of the air" died with the advent of space travel. Today diplomats and legal scholars are again concerned with the problem of limitations of sovereignty in airspace. On December 20, 1961, the United Nations General Assembly unanimously adopted Resolution 1721, which

1. Commends to States for their guidance in the exploration and use of outer space the following principles:

(a) International law, including United Nations Charter, applies to outer space and celestial bodies:

(b) Outer space and celestial bodies are free for exploration and use by all States in conformity with international law, and are not subject to national appropriation. . . .

Although this resolution recognizes the principle of freedom of outer space, it does not define the altitude at which national airspace ends, and free outer space begins. The solution of this question remains for future decision. It is a question peculiarly for diplomatic, rather than legal, decision. "It is clear that this point or line in space cannot be determined by legal opinion of the bench or bar—but can only be arrived at by international acquiescence—either by word or deed."

52. 61 Stat. 1180 (1944).
54. Address by Major General Albert M. Kuhfeld, Judge Advocate General, USAF, before the Association of General Counsel, in Phoenix, Arizona, Nov. 18, 1960.
Various suggestions as to the appropriate limit of national sovereignty in airspace have been advanced. They include:\(^{55}\)

1. Height to which aircraft can attain by aerodynamic lift (25 miles)
2. Height at which centrifugal force takes over (52 miles)
3. Altitude of orbiting satellites (100-600 miles)
4. Height at which the earth’s gravitational effect is lost (60 miles)
5. Height at which no molecules of gaseous air are found (between 1000 and 10,000 miles)
6. Height at which the subjacent state cannot effectively exercise sovereignty
7. Height without limit
8. Finally, Major General Albert M. Kuhfeld, Judge Advocate General, USAF, has recently suggested that “the particular activity in space rather than distance from the earth, is what primarily concerns a subjacent state.”\(^{56}\)

The attitude of the nations at the present is one of maintaining the status-quo—or, stated in another way, that the question is not ripe for decision. The world is now only at the threshold of space exploration. At this point in the development of space law the nations cannot clearly perceive where their various national interests, or world interests, will ultimately lie. The need for self-protection against satellite-spying or attack is at odds with the obvious advantages of “freedom of the skies.”\(^{57}\) And it should not be assumed that it is only the major powers, with international air-transport interests or space exploration capabilities, who see advantage to maximum freedom of the airspace; the small land-locked states have a similar interest.\(^{58}\) Finally, the present state of scientific knowledge of the subject does not permit rational decision at this time:

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\(^{56}\) Kuhfeld, Across the Space Threshold, 4 JAG BULL. 3, 9 (1962).


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What is the make-up of space? What types of vehicles will ultimately use it? To what purposes will it be devoted? Are the uses of space going to be primarily of military value—or will they be primarily of commercial benefit? These are but a few of the questions which must be answered before lawmakers can legislate wisely in the field of space law. We must all fully realize, therefore, that we are being distinctly premature if we attempt to set up or to propose specific rules of space law at this early stage. . . .

The lawmakers wait only for the physical facts of space to be supplied by the explorers, the scientists, the mathematicians, and the physicist. With the physical facts in hand, we can attempt to set the upper limits of national sovereignty.60

This situation has led legislators, diplomats and legal scholars to believe that "the absence of any law of Outer Space is, for the time being, a healthy condition—one which will change, bit by bit, as conflicting interests arise and are properly weighed in the balance."60 A recent article summed up the present situation, and possibilities for the near future, by saying:61

 responsible sources have emphasized the prematurity of any present attempt to codify rules of law for space, and negotiations in the United Nations have led only to the appointment of a study group. . . . In the light of such reluctance to formulate prescriptive rules, proposals for an immediate international convention on the law of space seem unrealistic. . . . The factors which have heretofore precluded an order for space may be expected to postpone its emergence for an indefinite future period. So long as the values and uses of space remain uncertain and the difficulties of implementing basic ordering rules are unresolved, it will continue to be premature to affirm, deny, or otherwise define sovereign rights.

THE CAUSBY DECISION

To return to the development of United States domestic law, the declaration contained in the Air Commerce Act of 1926 was a legal step forward of great significance, modifying an ancient concept of property law. It cut through a legal knot which threatened to impede the development of air commerce. It created new rights and liabilities which the courts are still assessing and refining.

The courts were quick to seize upon the Congressional declaration by denying injunctions against flight at altitudes in excess of 500 feet. Some declared a limitation on ownership of airspace without reference to the congressional declaration; one court was more specific, saying that "the question is unaffected by the regulation promulgated by the Department of Commerce under the Air Commerce Act of 1926 . . . for in our view that regulation does determine the rights of the surface owner . . . .

But whether in reliance on the Air Commerce Act, or as a matter of independent judicial decision, the state courts and lower federal courts were unanimous in concluding that the ancient maxim, *cujus est solum ejus est usque ad coelum*, had yielded to some extent to the air age. Their unanimity, however, was not the end of the matter; indeed, it raised even more questions than it solved.

Writers exhaustively debated the exact nature of the change worked by the Air Commerce Act, compared the Uniform State Law and the Restatement of Torts, and weighed the relative merits of the differing theories utilized by the courts in *Smith v. New England Aircraft Co.*, *Swetland v. Curtiss Airports Corp.*, and *Hinman v. Pacific Air Transport*. To what extent must the ancient maxim give way? What were now the relative rights of the aviator and the property-owner? What remedies existed to vindicate these rights? These questions ultimately came before the Supreme Court in *United States v. Causby*. Two years previously, in *Northwest Airlines v. Minnesota*, Justice Jackson had said:

63. Hinman v. Pacific Air Transp., 84 F.2d 755 (9th Cir. 1936); Thrasher v. City of Atlanta, 178 Ga. 514, 173 S.E. 817 (1934).
68. 55 F.2d 201 (6th Cir. 1932).
69. 84 F.2d 755 (9th Cir. 1936).
70. 328 U.S. 256 (1946).
71. 322 U.S. 292 (1944).
Aviation has added a new dimension to travel and to our ideas. The ancient idea that landlordism and sovereignty extend from the center of the world to the periphery of the universe has been modified. Today the landowners no more possess a vertical control of all the air above him than a shore owner possesses a horizontal control of all the sea before him. The air is too precious as an open highway to permit it to be "owned" to the exclusion or embarrassment of air navigation by surface landlords who could put it to little real use.

However, this statement was but dictum in a concurring opinion, and was limited to a recognition that the ancient maxim had been modified. It did not attempt to meet any of the questions posed by this modification. Such a role was left to the Court in Causby.

_Causby_ was an action commenced in the court of claims, alleging a "taking" of property under the fifth amendment. Plaintiff alleged that army and navy aircraft, operating from an adjacent military base, flew over his chicken farm at heights as low as eighty-three feet, causing chickens to fly into the walls in fright, and destroying the use of the property as a chicken farm. The Court approached the questions presented by holding first that the ancient Roman maxim must be modified to meet the necessities of the air age, and that such a modification had been worked by the language of the Air Commerce Act:

It is ancient doctrine that at common law ownership of the land extended to the periphery of the universe—_Cujus est solum ejus est usque ad coelum_. But that doctrine has no place in the modern world. The air is a public highway, as Congress has declared. Were that not true, every trans-continental flight would subject the operator to countless trespass suits. Common sense revolts at the idea. To recognize such private claims to the airspace would clog these highways, seriously interfere with their control and development in the public interest, and transfer into private ownership that to which only the public has a just claim.

The navigable airspace which Congress has placed in the public domain is "airspace above the minimum safe altitudes of flight prescribed by the Civil Aeronautics Authority."

The airplane is part of the modern environment of life, and the inconveniences which it causes are normally not compensable under the Fifth Amendment. The airspace, apart from the immediate reaches above the land, is part of the public domain.

Next, the Court considered the extent of the modification, and defined the new rights and liabilities of the aviator and the property-

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owner. It could have solved the problem with apparent simplicity and logic by holding that the subjacent owner's property rights continued to exist up to, but were completely and arbitrarily terminated at, the floor of the navigable airspace. As the overflights involved in Causby occurred in the course of take-offs and landings below the then-defined floor of navigable airspace, the Court could have upheld the property-owner's claim on this theory. But the Court avoided this superficial approach. Instead, it adopted the more elastic standard, suitable to the varying facts of individual cases and the changes of a developing science, that "the land-owner, as an incident to his ownership, has a claim to . . . [airspace] so close to the land that continuous invasion of it affects the use of the surface of the land itself." On this subject the Court concluded:

The airspace, apart from the immediate reaches above the land, is part of the public domain. We need not determine at this time what those precise limits are. Flights over private land are not a taking, unless they are so low and so frequent as to be a direct and immediate interference with the enjoyment and use of the land. We need not speculate on that phase of the present case. For the findings of the Court of Claims plainly establish that there was a diminution in value of the property and that the frequent, low-level flights were the direct and immediate cause. We agree with the Court of Claims that a servitude has been imposed upon the land.

When considering the upper limits of a property-owner's interests, it is important to remember that the 500-1000 foot floor of navigable airspace was not originally intended by the Secretary of Commerce as a rule of real property law. The regulation was promulgated pursuant to his authority to "establish air traffic rules . . . including rules as to safe altitudes of flight . . .", and was in fact promulgated as a safety rule. In effect, the congressional declaration of a right of flight through the navigable airspace granted the right in all airspace in which flight was legal under the rules of the competent regulatory agency. While the rights of the subjacent property-owner in the column of airspace above his land were modified by the statutory right of flight, this was not, in the view of the Supreme Court, an arbitrary outer limit of his property interests. Indeed, except for the easement for flight, the regulatory floor of naviga-

74. Id. at 265.
75. Id. at 266-67.
76. Air Commerce Act of 1926, ch. 344, § 3(e), 44 Stat. 570.
77. See Civil Aeronautics Board, Civil Air Regulations, Interpretations No. 1, 19 Fed. Reg. 4602 1954, stating:
The duty of the Board, under the Act, is primarily to prescribe safe altitudes of flight, not to proclaim what is navigable airspace. Although navigable airspace has been defined by the Congress in terms of minimum altitudes, these must be fixed by the Board solely on the basis of safety.
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ble airspace is legally irrelevant to the subjacent owner's property rights. As the Supreme Court of Oregon recently observed in *Thornburg v. Port of Portland*: 78

Whether a plaintiff is entitled to recover should depend upon the fact of a taking, and not upon an arbitrary rule. The ultimate question is whether there was a sufficient interference with the landowner's use and enjoyment to be a taking.

Whatever virtue the establishment of a 500-foot floor under the cruising flight of aircraft may have as a matter of public safety, there can be only one sound reason to make it a rule of the law of real property. That reason ought to be the knowledge, derived from factual data, that flights above 500 feet do not disturb the ordinary, reasonable landowner. This may be true. We do not know that it is. It may well be that only the most sensitive are offended by such flights. It may equally be true that some of the aircraft now in use are so disturbing to those on the ground that 500 feet of air will not provide protection to the landowner below. We are not justified in adopting the 500-foot rule as a rule of property law in cases of this character merely because to do so might make our work easier. The trier of fact in each case is best able to work out the solution. The difficulty was foreseen in the Causby case.

The wisdom of the Court's refusal in *Causby* to measure the subjacent property owner's rights by the floor of navigable airspace is evidenced by the 1958 revision of the definition of "navigable airspace" to include "airspace needed to insure safety in take-off and landing of aircraft." 79 Today, not only flight above 500 feet (or 1000 feet over populated areas) but also flight at any lower altitude, if necessary for take-off and landing, is privileged. Had the Court terminated the property-owner's rights at the floor of navigable airspace, the 1958 enlargement of the term would have curtailed drastically those rights. But, as the Court made clear, the landowner's claim does not turn on flight at a non-privileged altitude, but on the fact of damage.

Finally, the Court considered the question of the property owner's

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78. 233 Ore. 178, 376 P.2d 100 (1962). See *Aaron v. United States*, 311 F.2d 798 (Ct. Cl. 1963). But see *Matson v. United States*, 171 F. Supp. 283 (Ct. Cl. 1959), an opinion written by Mr. Justice Reed, who had participated in the *Causby* decision, in which the court of claims said:

"It would appear from the Causby decision that flights above the 500-foot regulated ceiling are beyond the reach of the landowner's objection to interference with his property rights. As to such use, he is in the position of abutting owners along public highways or railroad rights-of-way. The normal immunity to private actions, "based upon those incidental and inconveniences that are unavoidably attendant" upon operations, applies we think to air routes allowable under public authority."

79. *Federal Aviation Act of 1958*, § 101(24), 72 Stat. 739. The section now reads:

"Navigable airspace" means airspace above the minimum altitudes of flight prescribed by regulations issued under this Act, and shall include airspace needed to insure safety in take-off and landing of aircraft.
remedy. Before *Causby*, traditional remedies had proven inadequate. Actions seeking to enjoin flights over private property, as a nuisance, were denied on the ground that the annoyance or damage was nominal, or that the operation of aircraft, or of airports, was not a nuisance per se, or that the statutory right of flight created a "legalized nuisance" under the theory of *Richards v. Washington Terminal Co.* Similarly, an action for damages for trespass met the defenses that no damages were proved, that the aircraft did not invade the subjacent owner's column of airspace, or that the flight was above the minimum altitude of navigable airspace.

*Causby* attempted a new approach, in a new forum, bringing an action in the court of claims alleging a "taking" of his property. As the Court said, it was "a case of first impression." The Court upheld his theory, holding that his rights in the airspace above his land extended to "as much space above the ground as he can occupy or use . . . ." and made clear that this included not only space which he could physically use for erecting a structure or planting trees but also higher altitudes, invasion of which would interfere with his enjoyment of his property. Any invasion of this right which diminished the value of his property was a "taking" compensable under the fifth amendment. The Court said:

> [T]he airspace is a public highway. Yet it is obvious that if the landowner is to have full enjoyment of the land, he must have exclusive control of the immediate reaches of the enveloping atmosphere. Otherwise buildings could not be erected, trees could not be planted, and even fences could not be run. The principle is recognized when the law gives a remedy in case overhanging structures are erected on adjoining land. The land-


84. United States v. Causby, 328 U.S. 256, 256 (1946). See also 46 Colum. L. Rev. 121 (1946); 14 J. Air L. & Com. 112 (1947); 19 So. Cal. L. Rev. 130 (1945); 21 St. John's L. Rev. 92 (1946).

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owner owns at least as much space above the ground as he can occupy or use in connection with the land. See Hinman v. Pacific Air Transport, 84 F.2d 755. The fact that he does not occupy it in a physical sense—by the erection of buildings and the like—is not material. As we have said, the flight of airplanes, which skim the surface but do not touch it, is as much an appropriation of the use of the land as a more conventional entry upon it. We would not doubt that, if the United States erected an elevated railway over respondents' land at the precise altitude where its planes now fly, there would be a partial taking, even though none of the supports of the structure rested on the land. The reason is that there would be an intrusion so immediate and direct as to subtract from the owner's full enjoyment of the property and to limit his exploitation of it. While the owner does not in any physical manner occupy that stratum of airspace or make use of it in the convention sense, he does use it in somewhat the same sense that space left between buildings for the purpose of light and air is used. The superadjacent airspace at this low altitude is so close to the land that continuous invasions of it affect the use of the surface of the land itself. We think that the landowner, as an incident to his ownership, has a claim to it and that invasions of it are in the same category as invasions of the surface.

We need not decide whether repeated trespasses might give rise to an implied contract. Cf. Portsmouth Co. v. United States, supra. If there is a taking, the claim is "founded upon the Constitution" and within the jurisdiction of the Court of Claims to hear and determine. See Hollister v. Benedict Mfg. Co., 113 U.S. 59, 67; Hurley v. Kincaid, 285 U.S. 95, 104; Yearsley v. Ross Construction Co., 309 U.S. 18, 21.

Thus, a new kind of action was created. The remedy of just compensation for a taking, now popularly referred to as an "inverse condemnation," has been frequently utilized since Causby to obtain redress for diminutions of property values caused by aircraft noise. Although

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86. Inverse Condemnation is the popular description of a cause of action against a governmental defendant to recover the value of property which has been taken in fact by the governmental defendant, even though no formal exercise of the power of eminent domain has been attempted by the taking agency. Thornburg v. Port of Portland, 233 Ore. 178, 180 n.1, 376 P.2d 100, 101 (1962).

most of these actions have arisen from flights at low altitudes, usually in the course of take-off or landing, enroute flights at altitudes, in excess of 500 feet have been held to constitute a taking when they in fact diminished the value of the subjacent property. 88

The contribution of Causby in clarifying the rights and liabilities created by aircraft noise cannot be overstated. The Court made final pronouncement on the limitation of a property-owner's rights in the superadjacent airspace, sought to define the relative rights of property owners and operators of aircraft, and sustained a type of action adequate to vindicate the property-owner's rights. 89

THE GRIGGS DECISION

A major question unresolved by Causby was the identity of the party to be held liable for a taking. Brief analysis will unearth three possibilities: the owners of the overflying aircraft, the operator of the airport at which they are landing or taking off, and the United States, which controls the paths and altitude of aircraft. 90 In Causby, this problem did not arise, as the aircraft were government-owned, were landing and departing from a government-operated airport, and were controlled by a government-operated control tower. All three possible defendants were thus combined in one party. The problem is presented only in the case of a taking caused by the noise of privately-owned civil aircraft, operating to or from a privately-owned (or municipally-owned) civil airport, and controlled by a government control tower. This remaining question came to the court in Griggs v. Allegheny County. 91

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90. An oversimplification of the exact role of the federal government. Aircraft flying IFR (under Instrument Flight Rules) fly on airways and at altitudes assigned by the Federal Aviation Agency's Air Traffic Control. But pilots flying VFR (under Visual Flight Rules) may fly on such courses and at such altitudes as they choose, above the floor of navigable airspace. During landing and takeoff the course and altitude of aircraft is also assigned by Air Traffic Control, if an FAA tower is located at the airport, but such control towers exist at only 272 of the nation's 8084 civil airports. The government thus controls only a small portion of all flight. However, it controls most of it in the vicinity of the nation's major metropolitan airports, which are the source of most noise complaints.

91. 369 U.S. 84 (1962).
Griggs was one of a number of property owners residing within several thousand feet of the end of a runway at the Greater Pittsburgh Airport, owned and operated by Allegheny County, at a point where the glide slope was fifteen to thirty feet above their chimneys, and who alleged a "taking" resulting from depreciation in the value of their property.\(^92\) A Board of Viewers found a taking by the county, and awarded Griggs 12,690 dollars. The court of common pleas affirmed. The Supreme Court of Pennsylvania reversed, holding that "there has been no taking of the plaintiff's property by the County of Allegheny. . . ." The court suggested that "he should look for relief to the owners or operators of the aircraft which have made the complained of flights through the airspace above his land."\(^93\) The decision was in square conflict with *Ackerman v. Port of Seattle*,\(^94\) which held that the airport owner was liable for the diminution in property values caused by aircraft noise, saying that "Clearly, an adequate approach way is as necessary a part of an airport as is the ground on which the airstrip, itself, is constructed . . . ."\(^95\)

Before the United States Supreme Court, on Griggs' petition for a writ of certiorari, the county, joined by the Airport Operators Council as amicus curiae, argued that though there was a taking, someone other than respondent was the taker, namely, the airlines or the C.A.A. acting as an authorized representative of the United States.\(^96\) The Court said:

We think, however, that respondent, which was the promoter, owner, and lessor of the airport, was in these circumstances the one who took the air easement in the constitutional sense. Respondent decided, subject to the approval of the C.A.A., where the airport would be built, what runways it would need, their direction and length, and what land and navigation easements would be needed. The Federal Government takes nothing; it is the local authority which decides to build an airport *vel non*, and where it is to be located. We see no difference between its responsibility for the air easements necessary for operation of the airport and its responsibility for the land on which the runways were built. . . .

The glide path for the northeast runway is as necessary for the operation of the airport as is a surface right of way for operation of a bridge, or as is the land necessary for the operation of a dam . . . . Without the "approach areas," an airport is indeed


\(^94\) 55 Wash. 2d 400, 348 P.2d 664 (1960).

\(^95\) See *supra* 348 P.2d at 666. See also 60 Mich. L. Rev. 98 (1961); 22 U. Pitt. L. Rev. 786 (1961).

not operable. . . . Our conclusion is that by constitutional standards it did not acquire enough.97

The Court in effect took a three-dimensional view of an airport; in addition to its latitude and longitude, it consists of airspace above the ground, mushrooming out from the airport property to a distance sufficient to include the glide paths leading to the runways. This airspace overlying the airport's neighbors was, to the Court, a part of the total property which an airport owner must acquire in order to engage in business.

The holding of Griggs seems eminently correct. The considerations against imposing liability on the federal government were well summarized by the Court. Although the federal government may assist the development of an airport by construction grants and may add to the safety of its operation by a control tower, it is the municipality which decides in the first instance whether it will have an airport, determines its location and runway-layout, and which builds, owns and operates it. In the usual case, it does so in a proprietary capacity, on a self-sustaining basis, and sometimes at a profit. It is the operator's obligation to acquire all property interests, whether in fee or easement, necessary to the operation of the business.

As a practical matter, a decision to impose liability on the owners of the overflying aircraft would have presented the subjacent property-owner with a totally ineffective remedy. The complaining owner in the vicinity of any large airport would be required to observe and identify all overflying aircraft for a long period, and to prove their altitude during overflight. They would include the planes of many scheduled carriers, irregular carriers, and commercial operators, military aircraft, and a large number of privately-owned aircraft, many of which might overfly only once. By the time he reached trial, the carriers might have drastically altered their schedules and relative frequency of operations. Some might have eliminated service to that point, or others might have commenced. Any attempt to apportion the liability for a "taking" in these circumstances would be hopeless.98

A Glimpse into the Future

When the commercial jet aircraft commenced operations in October, 1958, the aircraft noise problem changed from an irritation into a serious national problem. The civil jet transport not only generates twice the noise of a piston aircraft, but its high-frequency pitch or "whine" is more objectionable to the ears.99

99. At the onset of the introduction of jet aircraft into commercial operations, it was stated that the sound pressure level, as measured on a standard sound level
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Studies conducted by the Federal Aviation Agency have shown that an aircraft noise level of 50 decibels produces widespread complaints, and at 70 decibels produces "vigorous community action," and that modern four-engine civil jet aircraft produce ground level pressure under the flightpath of 110 decibels for a mile after take-off, 100 decibels for over three miles, and 90 decibels for over 6 miles.\textsuperscript{100}

The violent intensity and penetrating pitch of jet aircraft noise have aroused anger and bitterness in communities adjacent to the nation's large metropolitan airports. Congressional alarm at the mounting complaints led to hearings by various subcommittees of the House Committee on Interstate and Foreign Commerce, and finally to approval, on August 23, 1961, of House Resolution 420,\textsuperscript{101} authorizing the Interstate and Foreign Commerce Committee to conduct "a full and complete investigation and study of the problems involved in, and measures to minimize or eliminate, aircraft noise nuisances and hazards to persons and property

meter, from jet aircraft was no greater than that from propeller-driven aircraft and, hence, by implication, no noisier. However, experiments conducted in this country and abroad definitely prove that with more appropriate measuring procedures than that of the standard sound level meter, such as perceived noise level, the sound from a jet aircraft in communities immediately adjacent to airports (approximately 2-3 miles from runway) would be subjected to about a 100-percent increase in noisiness over that previously experienced from the typical propeller-driven aircraft. This finding has been amply demonstrated in laboratory experiments and field experiments and provides a partial explanation, at least, for the apparent increased complaints and concern about aircraft noise.

One physical characteristic of sound that has primary importance to the human ear, as Dr. Hubbard indicated, is that of spectrum, whether the sound is predominantly of a high frequency or a low frequency, whether it is a high pitch or a low pitch. High-pitched sounds are noisier, in general, than low-pitched sounds.

A second is bandwidth, that is, whether the sound energy is concentrated in a narrow band of frequencies or whether the energy is spread over a wide range of frequencies; within limits the wider the bandwidth of a sound, the noisier it appears to be.

Perhaps an analogy with how we see light will be helpful here. White light, as you know, contains all of the colors. If you filter it, you get red and blue out of white. Similarly, with sound, if you have all frequencies present, it is sometimes called white noise; if you filter it, it takes on different characteristics in pitch.

Our noise environment has become more complicated in recent years with jet aircraft because, in addition to having this general white noise characteristic, perhaps shaped more in one frequency region than in the other, the jets now have strong pure-tone components or "whines" that we hear.

This pure-tone factor, again regardless of what a person knows about the source, or whether he is afraid of it, or whether it has a meaning to him, is found to be more objectionable than the same amount of sound energy without the pure tone.


See also, testimony of Bartholomew Spano, id. at 112. See also FAA, NOISE ABATEMENT PLANNING SERIES, No. 3 (1960):

The more intense the sound, or higher the decibel level, the more likely it is to produce annoyance. Also as a rule, high frequency or high-pitched noise is more annoying than a low-pitched noise of the same decibel level. Because the turbojet noise is in a higher frequency range, it will be more disturbing to a person than noise caused by a piston engine aircraft of the same intensity. For example, a turbojet engine at an 80-decibel level will sound as loud to the average person as a piston engine operating at a 97-decibel level.

100. FAA, NOISE ABATEMENT PLANNING SERIES No. 3 (1960).
on the ground." The subcommittees heard from complaining residents in New York (Kennedy), San Francisco, Los Angeles and Chicago (O'Hare), four centers of jet noise complaint. They received extensive testimony of the effects of jet noise on the human system, including loss of sleep, temporary loss of hearing, earaches, headaches, shock, children screaming in the night, or falling from their beds in fright. Examples of jet noise on community and social activities included interruption of church services, substantial loss of classroom time and efficiency in schools, inability to converse, telephone or entertain guests, and interference with television reception. Property damage included cracks in walls and ceilings, separation of cabinets from walls, movement of stoves and other gas appliances causing gas leaks, cracking and shifting of door and window molding, cracking of exterior stucco, loosening or breaking of fireplace bricks, and finally, a general deterioration of property values and inability to sell.\textsuperscript{102} The Committee's final report\textsuperscript{103} found that:

There is no evidence before the subcommittee of any permanent physical injury to persons or extensive physical damage to property as a direct result of noise created by civil aircraft.

[But] there is ample evidence before the subcommittee that the impact of aircraft-generated noise upon persons beneath or near the flightpaths does interrupt the peace and quiet of home-life, interferes with public assemblies, and seriously disrupts the community life, which the citizens have a right to enjoy.

The Committee also found that although substantial federal and private research was being conducted in a search for a more quiet jet engine, no solution had yet been found. Indeed, the only significant noise abatement advance yet made—the recently-introduced fan-jet engine—had indeed reduced jet exhaust noise but, ironically, had increased the compressor whine which many find more irritating than the exhaust blast.\textsuperscript{104}

And, although noise abatement regulations of the Federal Aviation Agency providing for the use of preferential runways and for noise abatement climb and turn procedures have ameliorated the problem in some localities, the Committee concluded:

It appears to be the consensus that whatever aircraft noise relief is obtainable through air traffic rules changes, that approach has been pretty much exhausted. While further changes here or there might bring some minor relief to a few people, this possibility can no longer be viewed as a major aircraft noise abatement tool.\textsuperscript{105}

\textsuperscript{102} Hearings, supra note 101 at 133, 136, 147, 158, 232, 234, 272, 278.
\textsuperscript{104} Id. at 8, 26.
\textsuperscript{105} Id. at 22.
At the last session of the hearings, Chairman Oren Harris aptly summarized the present status of the problem: 106

While piston-powered airplanes, like the railroads and horseless carriages that preceded them, generated their share of noise complaints from disturbed citizens, it is only with the advent of the jet age that noisy aircraft have become a major problem. It is a complicated and vexing problem that so far has defied solution. . . .

Unhappily, because of the complexities that beset us in our contemplation of this problem, we cannot yet feel that we are close to any final answer. The continuing flood of noise complaints is eloquent testimony to that fact. . . .

I would like to say that when I use the word "solution," I do so recognizing that there is no such thing in the offing, although a lot of study and thought has gone into it. No engine that can propel a heavy aircraft at speeds of many hundreds of miles per hour can be absolutely silent.

We are not going to ground the planes and we are not going to shut down our airports. We are committed to a national, and indeed an international, system of air transportation. This is of paramount importance, from the standpoints of our commercial growth and our national defense.

At the same time, however, the Congress has recognized that our citizens are entitled to the quiet enjoyment of their homes. Church services and school sessions should be carried on with as little interference from outside noise as is possible in our society.

Clearly, then, we are dealing with a situation in which I do not feel that we have any possibility of pleasing everybody. Our problem is to search for a balancing of the interests of those involved. That includes the householders, travellers, carriers, and all the rest.

This viewpoint, though accurate and fair, has not appeased those affected by jet aircraft noise. They have proceeded from local complaint to demands for congressional action and, finally, to litigation. Recently, suit was filed by 809 persons against the operator of Kennedy Airport, 107 by approximately 200 persons at Tampa, 108 and over 300 at Seattle. 109

The National Aircraft Noise Abatement Council has collected information on 161 pending or recent actions, involving 1469 plaintiffs, in addition to 260 pending claims, and 194 additional suits threatened. 110 Nor will this

108. Alfonso v. Hillsborough County Aviation Authority, 308 F.2d 724 (5th Cir. 1962).
110. 1 NANAC, LEGAL NOTES 1 (1963). Since this compilation, approximately 1000 persons have filed action against the City of Los Angeles, alleging property damage of $16 million. Aviation Daily, May 4, 1964.
be all; in addition to present property owners who are affected but have not yet commenced suit, additional groups will be affected in the future. Although jets now serve 62 United States airports, in several years this figure will be doubled. The Federal Aviation Agency has estimated that 100,000 property owners could be affected.111

The potential liability for "takings" caused by jet noise presents a serious problem to municipalities and other public airport owners. Although they have not acquiesced in the philosophy of the Griggs decision, and continue to urge that the federal government assume the burden,112 such a result appears unlikely. The Federal Airport Act authorizes the Federal Aviation Agency to make matching grants to airport operators for "airport development," which is defined to include the cost of acquisition of "any easement through or any interest in airspace, which is necessary to permit any such work or to remove or mitigate or limit the establishment of, airport hazards . . . ."113 But this legislation was enacted in 1946, when the problem of jet noise was unforeseen, and before the decisions in either Causby or Griggs. Thus, considerable doubt exists whether grants for the acquisition of avigation easements would be within the congressional intent. Senator Monroney, chairman of the Senate Aviation Subcommittee, is of the opinion that such grants are not authorized, and has said that

the law specifically provides that no funds will be allocated to projects which are not directly related to safety (such as runways, high intensity runway lighting, and runway distance markers). Consequently, the Agency is precluded by law from allocating Federal funds for the acquisition of land for the purpose of noise abatement.114

In any event, this question of statutory construction has never been reached, for the Congress has heretofore limited the annual appropriation for grants-in-aid to $75,000,000, a level sufficient only to enable matching grants for designated safety items contained in the Agency's five-year national plan for airport improvement. As a result, it has been the Agency's consistent practice to contribute only to the acquisition of clearance easements for the establishment of obstruction-free areas extending not over 2,600 feet from the runway-end, but not to the aquisi-

111. N.Y. Times, March 6, 1962.
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ination of avigation easements, which might extend over six miles from the runway.\textsuperscript{115}

Nor does congressional action to alter this situation appear likely. The final report of the House Interstate and Foreign Commerce Committee, upon its investigation and study of aircraft noise problems, concluded that:

Any enactment by the U.S. Congress to indemnify each and every airport operator throughout the United States of America against judgments which might be obtained or for moneys paid over to claimants in the settlement of claims alleged under the doctrine of the Griggs case would be impractical.\textsuperscript{116}

At present no reliable estimate has been made, either of the total cost of acquisition of avigation easements, or of the total liability for noise "takings," which face the nation's airport operators. A 1956 air force study of the cost of avigation easements to a distance of six miles from all air force bases showed an estimated total cost of seven billion dollars, "and I might say that we have a lot more airfields now than we had in 1956."\textsuperscript{117} As the nation's civil airports are located more closely adjacent to centers of population, where surrounding properties are developed and frequently highly valuable, it would be reasonable to assume that the total civil liability would be greater.

Yet, the future may not be this dark. A number of considerations have been presented which may substantially lessen the liability of airport operators. First, as time passes, claims become barred by the statute of limitations. Not all jurisdictions have limited the period in which an action for a constitutional "taking" may be commenced;\textsuperscript{118} but in those which have done so, it has been held that the statute commences to run on the date the "taking" occurred. This is not necessarily the day the airport opened and aircraft commenced to fly, but the day on which noise became sufficiently intense to impair the value of the subjacent property.\textsuperscript{119} As one court stated:

Unless there has been a significant depreciation in value or

\textsuperscript{115} At the time of the decision in Griggs \textit{v. Allegheny County}, the county was completing a new runway, which would permit jet service at the airport. It advised the FAA that it would not open the runway unless the Agency would agree to contribute to the purchase of noise-abatement avigation easements or in any judgments entered against the county. The Agency refused, and the county thereafter opened the runway without an agreement to contribute. See Hearings, \textit{supra} note 101, at 540.


\textsuperscript{117} Testimony of Major General Albert M. Kuhfeld, Judge Advocate General, USAF, \textit{Hearings Before the House Committee on Interstate and Foreign Commerce}, 87th Cong., 2d Sess. 667-68 (1962).

\textsuperscript{118} See Ackerman \textit{v. Port of Seattle}, 55 Wash. 2d 400, 348 P.2d 664 (1960).

enjoyment of a property, this court has not considered the mere advent of jet aircraft as the signal of a taking. 120

An airport from which piston aircraft have flown for many years without incurring liability, or as to which suit is barred, may incur a new liability on the date jet aircraft commence to operate, 121 or on the date when a different type of aircraft, with lower landing and take-off characteristics, commences to operate. 122

Second, a cause of action for a “taking” accrues in favor of the owner at the time of taking, and does not pass to subsequent purchasers of the property. The claim does not “run with the land.” In actions brought by subsequent purchasers, the courts have held that “if defendant had already taken an easement before plaintiff acquired the property, plaintiff would not be entitled to recover.” 123 While the seller of real property might also assign his claim for the “taking” of an avigation easement to the purchaser, this is probably never in fact done, and by virtue of the Assignment of Claims Act, cannot be done with respect to claims for taking caused by military aircraft. 124

Third, the measure of damages is the diminution in value at the time of taking. Most airports were originally built in agricultural areas, removed from residential developments. But as the community increased in size, or perhaps because attracted by the airport, residential development eventually reached and surrounded the airport. But the Supreme Court has said that the diminution of value must be measured against “the highest and most profitable use for which the property is adaptable and needed or likely to be needed in the reasonably near future. . . .” 125 And, “ordinarily, the highest and best use for property sought to be condemned is the use to which it is subjected at the time of taking.” 126 If an airport takes an avigation easement over agricultural land, this is what it

120. Jensen v. United States, 305 F.2d 444 (Ct. Cl. 1962).
123. Highland Park v. United States, 161 F. Supp. 597 (Ct. Cl. 1958). See also Aaron v. United States, 311 F.2d 798 (Ct. Cl. 1963) where the court stated that parcel 27 was not owned by the plaintiffs Raymond W. and Betty N. Morrett in February 1952 and, therefore, these plaintiffs would have no standing to assert a claim with respect to the taking of an avigation easement over this parcel in February 1952, since such a claim would have vested in the owner of the land at that time and would not have passed to Mr. and Mrs. Morrett by virtue of the subsequent conveyance of parcel 27 to them. In this connection, Griggs had sold his property before final decision in Griggs v. Allegheny County, but there was no substitution of plaintiffs on that event; Griggs continued to maintain the action.
126. United States v. Buhler, 305 F.2d 319 (5th Cir. 1962).
must pay for; not for a diminution in value of later residential property.127 Indeed, the court of claims has held that an avigation easement works no diminution in value to agricultural property.128

Fourth, although overflights may lessen the value of property, an adjacent airport also increases it. Opportunities are created for sale to persons who are employed at the airport, or for the commercial development which is attracted to the airport. In assessing the damage caused to property values by an adjacent airport, the court must also assess the increase in value which this has created. In some instances, there is no net reduction, for

the detriment to the value of the commercial property by the passage of the planes over it is approximately offset by the enhancement of its value by the proximity of the field. It is the proximity of the field that causes the planes to pass over this property and impair its value, and it is the proximity of the field that creates a greater demand for the property and thus tends to enhance its value. One about offsets the other.129

Fifth, the measure of damages for a taking is somewhat limited. Recovery is measured solely by the amount of diminution in value. It does not include elements which might be recoverable in other actions for damages, such as the irritation or physical injury caused by noise, vibration, fear, nervousness, smoke or fumes.130

Sixth, and perhaps most important, is the effect of Batten v. United States,131 which held that a property owner was not entitled to recover for a “taking” if the offending aircraft did not invade the column of airspace above the plaintiff’s property.132 The holding seems unsound. It cannot be dismissed as a case involving only consequential damage, as the trial court found a diminution in value of from $4,700 to $8,800—from 40.8 per cent to 55.3 per cent—in the ten homes involved. As the Supreme Court of Oregon said, in holding to the contrary:

It is a sterile formality to say that the government takes an easement in private property when it repeatedly sends aircraft directly over the land at altitudes so low as to render the land

127. Jensen v. United States, 305 F.2d 444 (Cl. Cl. 1962).
131. 306 F.2d 580 (10th Cir. 1962).
132. See Nunnally v. United States, 239 F.2d 521 (4th Cir. 1956).
unusable by its owner, but does not take an easement when it sends aircraft a few feet to the right or left of the perpendicular boundaries (thereby rendering the same land equally unusable). The line on the ground which marks the landowner's right to deflect surface invaders has no particular relevance when the invasion is a noise nuisance.\footnote{133. Thornburg v. Port of Portland, 233 Ore. 178, 376 P.2d 100 (1962). See also Mock v. United States, 8 Av. Cas. 18,080 (Ct. Cl. 1964); Davis v. United States, 8 Av. Cas. 18,075 (Ct. Cl. 1964); Anderson, Some Aspects of Airspace Trespass, 27 J. Air L. & Com. 341 (1960).}

Recently the \textit{Batten} holding has been adopted by the court of claims,\footnote{134. Avery v. United States, supra note 122.} and has been rejected by the Supreme Court of Washington.\footnote{135. Martin v. Port of Seattle, Wash. (April 23, 1964).} In \textit{Avery}, the court awarded compensation to a group of landowners designated as "Group A . . . located within the approach zone of the runway . . ." but denied compensation to "Group B," located within the traffic pattern, but not in the approach zone. The court said:

Group B, made up of parcels 23, 25 and 32, while located within the confines of the traffic pattern described in finding 9, is not (with the exception of parcel 32) located within the approach zone of the western end of the Runway 9-27. While the other Group B parcels (parcels 23 and 25) suffer from the same general effects of overflights as do the parcels of Group A, they are not subject to takeoff and landing operations occurring directly overhead; both parcels being at least 17,000 feet south of the center line of the runway.

This holding, aside from its paucity of reasoning, seems to lead to capricious results, and to be inconsistent within itself. An "approach zone" is an inexact area, extending from the end of the runway to the point where the angle of glide slope intersects the procedure turn altitude, and where the outer marker is located. It may extend four to seven miles from the end of the runway, and be of such width as local airport officials may determine. The decision in \textit{Avery} makes the right to compensation a variable one, differing at different airports. Further, the zone is wide enough to include property owners who are located sufficiently removed from the center line that they do not experience direct overflights, to a greater extent than property owners not in the approach zone but under the traffic pattern.

In \textit{Martin v. Port of Seattle},\footnote{136. \textit{Ibid}.} the court divided the claimants into three classes, "Group A" subject to direct overflights, "Group B" as to which evidence of overflight was in conflict, and "Group C" which suffered no overflights. In holding all three groups entitled to compensation, the court expressly rejected the \textit{Batten} holding, saying:
This requirement, that a landowner show a direct overflight as a condition precedent to recovery of the damages to his land, is presently stressed by some federal courts in construing the "taking" as contemplated by the Fourteenth Amendment to the Federal Constitution. Batten v. United States (10th Cir. 1962), 306 F.(2d) 580. We are unable to accept the premise that recovery for interference with the use of land should depend upon anything as irrelevant as whether the wing tip of the aircraft passes through some fraction of an inch of the airspace directly above the plaintiff's land. The plaintiffs are not seeking recovery for a technical trespass, but for a combination of circumstances engendered by the nearby flights which interfere with the use and enjoyment of their land.

The Federal Aviation Agency has found that the modern four-engine civil jet transport, after take-off, casts a 100 decibel overpressure on the land beneath to a lateral width of one-half mile on either side of the flight path, to a distance of over three miles from take-off. Thus, lateral noise may diminish the value of subjacent property as much as vertical noise. Although the holding in Batten seems unrealistic in the light of the practicalities of jet noise effects, certiorari was denied by the Supreme Court, and it would appear to be the federal rule, at least for the present.

All of these, added together, arm the airport operator with substantial defenses to his potential liability. As the House Committee summarized its recent hearings:

A wide divergence of opinion exists with respect to the extent of the financial impact which the Griggs decision may have upon the cost of operating a civil air terminal (p. 720). Some of these fears should be partially allayed by the recent refusal by the U.S. Supreme Court to grant a writ of certiorari in the matter of Batten v. United States, 306 F.2d 580 (10th Cir. 1962); cert. den., 371 U.S. 955 (1963). In the Batten case the owner of property adjacent to the flightpath, but not directly under the flightpath as in the Griggs case, attempted to recover compensatory monetary damages for aircraft noise and nuisance. Furthermore, effective defenses have been revised to successfully resist these actions.

Their final validity remains for the future to determine. Indeed, not even the basic question of the property owner's rights above the minimum

altitudes of flight has been settled with finality.\textsuperscript{141} Present aircraft have not required resolution of this problem, but the planned 1970 introduction of the Mach 3 supersonic commercial jet transport, with sonic boom capability, may revive it.\textsuperscript{142} Causby and Griggs added greatly to a definition of the relative legal rights of the airport and its neighbors, but many issues remain for future resolution.

\textsuperscript{141} See Thornburg v. Port of Portland, \textit{supra} note 133, holding that a property owner has a cause of action for a "taking" caused by overflights above 500 feet; Matson v. United States, 171 F. Supp. 283 (Cl. Cl. 1959); Avery v. United States, \textit{supra} note 122, holding that he does not; and Aaron v. United States, 311 F.2d 798 (Cl. Cl. 1963), saying that the question is not resolved.

\textsuperscript{142} Hopkins & McIntosh, \textit{Is Sonic Boom an Explosion?}, 408 INS. L.J. 15 (1957); Roth, \textit{Sonic Boom; A Definition and Some Legal Implications}, 25 J. AIR L. & COM. 68 (1958).