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Chaos in the Air?: Voluntaryism and the Airplane

By Carl Watner

[Author's Note: In late October 2014 I began reading SIC ITUR AD ASTRA by Andrew Galambos. It had been sent to me by Richard Boren, a Galambos student and a subscriber to THE VOLUNTARYIST. One of the historical topics discussed by Galambos was Glenn Curtiss' alleged violation of the Wright brothers' patent for achieving lateral stability, which was critical to the successful flight of the airplane. I began reading about the history of the airplane, and soon discovered that there were two sides to the argument about where this idea originated. More importantly, I came to realize that the history and development of the airplane offered a fruitful field to investigate from a voluntaryist perspective. (References in the text are of the form [item#-page#(s)]. The items can be found in the partial list of texts at the conclusion of this article.)]

Introduction

When Orville and Wilbur Wright took turns flying their first plane on December 17, 1903 over the beach at Kitty Hawk, NC their efforts were the culmination of years of effort on their part as well as the dreaming, experimentation, and even death of others who believed that man could fly. From the ancient Greek myth of Daedalus and Icarus, to the drawings of Leonardo da Vinci (1452-1519), to Sir George Cayley, a British nobleman, "who started his aeronautical investigations in 1796," and in 1853 "launched the world's first full-scale glider capable of successfully carrying a passenger," to Otto Lilienthal, a German engineer who was killed 1896, "when a sudden gust caused his glider to stall and crash to the ground," the quest was a long one. [3-95 and 97]

Governments around the world had little to do with the creation of the first successful airplane. Although the United States Congress had appropriated \$50,000 to fund the unsuccessful experiments of Samuel Langley, the Wright brothers worked without government support. "With no investors, no government backing, and only" the income from their bicycle shop, "they set out to" solve the problem of heavier-than-air flight. [27-23 and 24; 4-156] They were brilliant, scientific, methodical, and full of common sense, yet had no university training. Wilbur had completed four years of high school, but never applied for his diploma. Orville only attended three years of high school and "started a printing business

when he was 15 years old and was running a weekly newspaper by his junior year of high school." [57] In fact, the Wright brothers not only created the world's first airplane, but they had to teach themselves how to fly, which meant how to take off, how to land, how to turn, and how to maintain balance while in the air - all the while without killing themselves. In addition, they started the world's first flight training school, and operated the world's first airport at Huffman Prairie, near Dayton, Ohio.

Airplanes have changed our world in many different ways. Although the Wright brothers imagined that the plane might have some commercial uses, they believed that the United States military would be their first and most important customer. They thought the airplane would be a force for curtailing war among nations, since the airplane would allow each nation to spy on its neighbor's armed forces. Little could they dream that an airplane would drop the first atomic bomb little more than four decades after they took their first flights.

The U.S. government was caught by surprise when its functionaries learned of the Wrights' success. Actually, many in and out of government originally disbelieved the Wright brothers' announcement that they had flown. Other than the fact that the Wrights filed for several patents, the various parts of the federal government, such as the Interstate Commerce Commission and Department of Commerce, had nothing to do with aviation in its earliest years. Although some states passed legislation affecting the airplane, it was not until 1926 that the federal government did so. Until then "an American engaged in flying either for a livelihood or for pleasure could go about his business and scarcely notice the existence of federal, state, or local authority. ... He needed no pilot's license, nor a license to carry passengers or goods in commerce. The school or individual that taught him to fly was also unlicensed. The aircraft he flew possessed no airworthiness certificate. If he chose, he could build his own machine in his own backyard and fly it - if it would fly - without conforming to any mandatory set of engineering standards. ... Once in the air, this birdman was not required to abide by any rules of flight. There were none." [5-7]

Were the first two decades of aviation history a voluntaryist paradise free of government intervention, or an example of "the chaos of laissez faire in the air," as described by a writer in the BUFFALO COURIER in 1924? [5-8] In the beginning, there was no aviation insurance, there were no airports, no flight charts, no

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aerial maps, no customary rules of flying behavior: so how did all these things sort themselves out? Was there true chaos or were there non-governmental forces at work that would provide for orderly department in the aviation world? The purpose of this article is to describe the voluntary societal forces and the coercive political forces at work in the history of the airplane.

The Early Years of Aviation in the United States: The Aero Club of America

Once the Wright brothers went public with their success, others tried to duplicate their efforts. Glenn Curtiss, in conjunction with Alexander Graham Bell and his associates, “was the first American after the Wright brothers to build and fly an airplane.” [29-16] Flying machines cost in excess of \$5000 (the gold equivalent of at least \$250,000 today) and remained the play toy of the rich for a number of years. In fact, the first major interest in the airplane came in 1905, “when members of the Automobile Club of America formed the Aero Club of America.” [6-ix] Both the Automobile Club and the Aero Club were populated by the likes of John Jacob Astor, William K. Vanderbilt, and Philip T. Dodge. Shortly after its own beginning, the Aero Club of America became a founding member of an international organization “of national aeronautic associations, the Federation Aeronautique Internationale (FAI)” which to this day, “remains the international sanctioning body for all aviation records.” [6-10]

The purpose of the Aero Club was educational and its policy was to encourage “a proper interest in the possibilities of aeronautics.” [6-10] The club’s first focus was on ballooning and it took possession of the James Gordon Bennett International Cup, established by the publisher of the NEW YORK HERALD, when two American balloonists became the winners of a long-distance balloon race that took place in Paris on October 1, 1906. [6-27] Soon its efforts turned toward promoting the airplane and it “was charged with officiating the attempts” of those seeking to win the SCIENTIFIC AMERICAN trophy, which had been offered in 1907 to the first American “to cover a

distance of one kilometer or more” in a heavier-than-air flying machine. [6-39] Although it seemed the Wright brothers could have easily won the trophy, they were uninterested in pursuing it. “On July 4, 1908, the ‘June Bug,’ [an airplane] piloted by Glenn Curtiss,” won the trophy, even though the Wright brothers had already flown greater distances. [6-40]

Although 1908 was a year of aviation firsts, it was fraught with entrepreneurial challenges. When a group of St. Louis businessmen proposed to have Henry Farman come to America with his French-built plane, their efforts ended in disaster. Farman had won a \$10,000 prize for the first circular flight in France of more than one kilometer. This occurred before Orville Wright made the first public demonstration of sustained flight in a Wright-built plane in the United States. [6-43] Farman was to receive \$24,000 for flying his airplane in several major American cities over the course of 3 months. Members of the St. Louis syndicate went bankrupt before Farman started his tour, and Farman’s plane had a lien placed against it until the rent was paid on the tent serving as the plane’s hangar. Upon learning that other creditors intended to have the machine confiscated to pay additional debts incurred by the syndicate, Farman and his wife and crew “stole their own airplane and had it loaded aboard a ship bound” for France. [6-42] Fortunately, the Aero Club’s involvement had been limited to sanctioning and certifying Farman’s flights in the United States.

Meanwhile in France, Wilbur Wright, under the auspices of the French government and the Aero Club of France, finally made a public flight in early August 1908. His demonstration was followed by Orville’s first public flight in the United States in a Wright-built plane on September 3, 1908 for the U.S. military at Fort Meyer, Virginia. Within a few days, “Orville made a stunning, record-breaking flight of sixty-two minutes and fifteen seconds.” [6-43] More records were broken in the following days, but tragedy struck on September 17, while Orville was flying with a passenger. The plane crashed after a propeller broke. Orville was seriously injured, and the passenger was killed.

Although the Wrights’ flights were not certified by the Aero Club of America, the Club was involved in other aviation activities. In December 1908, “James Gordon Bennett who had earlier promoted balloon competition” now sponsored a new trophy and cash prize to be awarded at the first International Air Meet to be held in Rheims, France in August 1909. [6-43] The Aero Club of America was to sponsor three entries, and when they asked the Wright brothers to participate, the Wrights refused. Glenn Curtiss, representing the Aero Club, ultimately won the Bennett aviation trophy, and in the process set a world speed record in a flying machine. “The only thing that marred his success was the surprise announcement

that the Wrights' attorneys had named him as a defendant" in a patent infringement suit. The Club's members were filled with joy at having an American win the Bennett trophy, but now they became concerned that the Wrights would block their sponsorship of the 1910 competition for the Bennett trophy which was to take place in the United States. [6-45] The Club agreed to make royalty payments to the Wrights, but the patent litigation that dragged on until World War I, when the government forced a settlement.

After the success of both Curtiss' and the Wrights' flights in 1908, "Americans developed an intense interest in aviation." [6-54] Not only had ballooning grown in popularity, but there was "a surge of airplane construction and flight attempts" based on books and magazines that catered to the middle-class pilots who built their own machines. "[H]undreds of backyard builders were busy during the prewar years." [29-34] The Club had originally encouraged proper training of balloonists by insisting that any balloon participating in an event sanctioned by the Club carry at least one licensed pilot. "An FAI balloonist license issued through the Aero Club merely attested to a degree of competency on the part of the holder." [6-55] Existing member-owners and pilots were issued grandfathered licenses in 1909. Those applying for licenses after that date were required to have made at least ten balloon flights under the instruction of an already-licensed pilot, and then qualify for an endorsement of their ability from two other existing license-holders. Although mandatory licensing of balloonists was discussed among Aero Club members, the federal government never responded to these public proposals because at that time "there existed no government agency that would logically regulate aeronautical activity." [6-55]

In November 1909, the Aero Club extended its licensing program to include airplane pilots and dirigible operators "in order to prevent 'indiscriminate flying'." Candidates for a plane license would have to be at least twenty-one years of age, have made three solo flights (one of which extended more than a kilometer) under the supervision of the Aero Club, and have exhibited flight skills that "were reasonably safe and prudent." [6-56] The Aero Club of America would extend reciprocity to any applicant already certified by a foreign affiliate of the FAI. "In announcing the licensing requirement, the Aero Club stated that Glenn Curtiss and the Wrights were already qualified as 'aviation pilots.'" Although it was once thought that the Aero Club was prejudiced against the Wright brothers since they received Licenses No. 4 and 5, in reality the first five licenses were assigned alphabetically with Curtiss being No. 1. Many of the very "early pilots did not apply for a license until long after they started flying - and some were never licensed at all." [6-57] Nevertheless, by 1919 the

Club's yearbook showed that "3544 persons then possessed Aero Club aviators' certificates." [56-290]

In judging the effects of the licensing program, one historian of the Aero Club wrote:

Although the Aero Club's licensing program no doubt helped to make flying safer, it carried with it no weight of law. Indeed, the only way that the club could enforce any of its safety measures was by excluding the offender from record attempts and sanctioned competitions - events in which only a relatively small number of pilots participated. [6-57]

Certainly, this licensing procedure did not cover all pilots, nor did it include extended proficiency tests or medical examinations. As one critic of this voluntary system put it, the Aero Club license "was little more than a nice card for a gentleman aviator to carry in his pocket." [5-26] Since there were no federal regulations, municipalities and state governments began enacting their own legislation. Connecticut was the first state to impose licensing and registration of aircraft. A proposal in Grand Rapids, Michigan would have levied a \$10 fine on any pilot who fell from his plane. In Tampa, Florida, two early aviators were arrested for flying their planes on Sunday. [6-58] Los Angeles County issued pilot licenses and "New York City prohibited flying at an altitude below 2,000 feet." [5-27]

Other initiatives were begun by the Aero Club of America. Pilots had their licenses suspended if they flew too low in public demonstrations. [6-75] In 1908, the Aero Club started a fund drive to raise money to purchase the U.S. rights to the Wrights' patent and to place the invention in the public domain. Wilbur Wright indicated that the brothers would be willing to relinquish their rights to the patent if they were paid \$100,000. After six months only \$11,000 had been raised and the effort was abandoned. [28-27] As World War I approached, the Aero Club spearheaded public efforts to develop an air defense capability. The National Aeroplane Fund was begun by the Club in 1915 to raise public donations for pilot training and aircraft purchases by state militias and National Guard units. Ultimately, the Fund raised almost \$400,000 in donations before Congress appropriated \$3.5 million for training military pilots in June 1916.

World War I and the Barnstormers

World War I was a pivotal event in the development of the airplane industry both in Europe and the United States. At the beginning of the war, Great Britain had 110 planes; by the end of the war, the British Air Force consisted of 290,000 personnel and 22,000 aircraft. [29-31 and 32] Similar growth was experienced in the United States. There was amazing cooperation between the U.S. Government and industry during the war. In July 1917, under threat

of government condemnation of the major aeronautical patents, Orville Wright, Glenn Curtiss, and other aircraft manufacturers formed a patent pool known as the Manufacturers' Aircraft Association. This effectively ended patent litigation and allowed the government to reduce the royalties on planes purchased by the military. [28-57 and 33-2] As one aviation historian wrote, "The First World War was a watershed in aviation's history. It was then that a substantial aircraft manufacturing industry, force fed by military procurement orders, first sprang up." [5-11] The war provided the airplane with a useful, yet destructive purpose. It also provided an opportunity for thousands to learn to fly and gave many more their first exposure to the airplane.

After the signing of the Armistice in late 1918, the stream of government money dried up. The American government had no further need for most of its plane inventory and it disposed of its surplus. The Army discharged many veteran airmen who had been taught to fly and who wanted to continue to fly in civilian life. The Jenny, a plane that had been used for training purposes, could be had for the price of a Model T (about \$300). Vast numbers of planes came off the production lines, "too late for war service," and "were grabbed up at bargain-basement prices by aviation enthusiasts, and by the U.S. Post Office Department." [5-20]

By the end of the War, the single most interesting non-military use of the plane was for mail delivery. For the year 1918, Congress appropriated \$100,000 for the establishment of an experimental air route for flights between Washington, DC and New York, with a stopover in Philadelphia. Even after the airmail postage rate was reduced from 24 to 16 cents per ounce, there was still insufficient demand. However, the service was extended in July 1919, connecting New York, Chicago, and Cleveland. Finally in 1920, a full transcontinental air route was established connecting Chicago to Omaha, and Omaha to San Francisco (with many intermediate stops). [5-19]

Many of the war surplus planes ended up in the hands of flyers who became known as barnstormers. "Barnstorming was the art of flying old airplanes about the country to every city, town, or village to introduce flying" to a populace that had never seen a plane before, much less flown in one. [55-Preface] In the early 1920s, "an airplane was still a big sensation" in most parts of the country. [41-25] The barnstormers, also known as gypsy flyers, were "a rare breed of men, aptly called daredevils." [41-7] Most had been demobilized by the war and owned their own planes or worked as contractors for others. They offered one or two minute plane rides for 50 cents or a dollar. "Wingwalking, plane-changing, formation-stunting, dead-stick landings, parachute jumping, night fireworks flights, and mass passenger-

carrying were the order of the day." [41-87] There were also those flyers whose cargo was bootleg liquor trying to avoid the revenue agents.

Most of these early stunt flyers could only be described as fatalists. When a flyer set out, he had no idea where he was going to land. There were no aerial survey maps, no radio aids, usually no wheel brakes - "dragging a plane's tailskid over the ground was the sole method of slowing it down." [41-23] The barnstormers firmly believed that when your time to die came, "you would go regardless of the type of work you were doing." Many would not have quit even if they knew they would die flying. [41-42] When Clyde Pangborn, a well-known barnstormer, crashed in the sand at Coronado Beach, California on May 16, 1920, he was laid up for many weeks with both of his shoulders broken, a split breastbone, a broken wrist, dislocated hip and several damaged vertebrae. When the San Diego newspapers screamed for banning aerial artists and stunt flyers, "Pangborn declared from his hospital bed that it was his life and that he reserved the right to risk it for aviation and his bread and butter." [41-27]

Occasionally barnstormers would fly as a group. The most well-known was the Gates Flying Circus, which formed in 1911 and disbanded in 1929. [41-102] Started by Ivan Gates, his Circus flyers "built a national reputation by covering every state of the Union with their air shows, passenger flights, wing-walking, and parachute jumping." [55-5] According to its own records, "the Circus had carried between 750 and 800 thousand passengers without a serious injury to any of them. Nor had any one of its pilots ever been fatally injured while flying under the banner of the Circus." [41-139]

The self-regulating Internet means no one has to ask permission to launch a website, and no government can tell network operators how to do their job. The arrangement has made the Internet a rare place of permissionless innovation.

- L. Gordon Crovitz, "The U.N.s Internet Sneak Attack," THE WALL ST. JOURNAL (November 26, 2012), p. A15.

Airports were few and far between, so Gates devised a way to promote both his Circus and airport construction. He would go into a town and find the local newspaper office and tell them his Circus would arrive in a few days if the town's citizens would prepare a suitable landing place. As related in **BALING WIRE, CHEWING GUM, AND GUTS:**

At Spartanburg, S. Carolina, [in the Spring of 1925] they approached the editor of the local newspaper and decried the lack of a suitable flying field in that city. The editor had a hurried conference with the local Chamber of Commerce, city and county officials and interested citizenry.

They offered the Circus free labor and equipment with the comment: "Show us how to build an airport and we will build it." The very next morning a large site was donated by a public-spirited citizen. Then other local citizens sent graders, drags, harrows, rollers plus many free laborers out to the large tract. In three days the field was made ready. [41-87]

Although the Gates Flying Circus used this landing field, it was not destined to be Spartanburg's permanent airport. In 1927, a city-financed airport was built at taxpayers' expense of \$ 46,000. The local chamber of commerce and city fathers hoped the new airport would be used on a U.S. Postal air route offering service between Greensboro, NC and Atlanta, GA. [44-36 and 37]

By the end of 1929, there were 453 municipal and 495 private and commercial airports in the United States. [8-46] Public discourse included discussions of whether airports should be owned and built by private interests or local, city, or state governments. Arguments were made that "it is the duty of every municipality to own an airport, just as much as it is its duty to own and maintain the streets, parks, and harbor facilities within its limits." [5-174] In their book, AIRPORTS, published in 1931, the authors asked what municipal ownership had accomplished. "[T]he community has been able to enjoy the facilities of an airport sooner than would have been possible" if it waited for private investors to appear. [8-49] The public paid for this through taxation, whether any particular individual wanted an airport or not. Hubbard recognized that "aviation has been indirectly subsidized by the public, and the growth of aviation [has been] artificially stimulated." [8-50]

Where Did the Impetus for Government Intervention Come From?

Although the barnstormers and the Gates Flying Circus may have benefitted from the expansion of airports, what ultimately brought about their demise was the passage of the federal Air Commerce Act, signed into law on May 20, 1926. As one historian in THE AVIATION BUSINESS described the legislation:

[T]he Air Commerce Act gave flying a legal status: it asserted the right of the federal government to regulate interstate flying and provided for the inspection and regulation of commercial aircraft, thus bringing the commercial operations [and barnstormers] within the law. It provided for the development of airways, and of adequate lighting for night flying. It established a new Assistant Secretary of Commerce for Aeronautics, and put flying under the jurisdiction of the Department of Commerce. [36-77]

In addition, the Act provided for the licensing of pilots and mechanics, certification of the air worthiness of planes, and the issuance and enforcement of air traffic rules. Both civil and criminal penalties could be assessed against violators of the Act. [5-84]

The Act, itself, was primarily urged upon Congress by large parts of the aviation community. The commercial interests, manufacturers of planes, and the established air passenger companies, hoped that national regulation "would increase safety and encourage commercial development." [1-85] There was little public support for passage of the Act. The National Aeronautic Association, which had been formed in 1922, by the merger of the Aero Club of America and the National Air Association, argued for government regulation "because of the close relationship they foresaw between a vigorous civil aviation industry and national military preparedness." [6-106]

When the legislation was finally passed, none other than the "the man who had for so long pressed for government legislation on behalf of the National Aeronautic Association" was chosen as assistant secretary of commerce for aeronautics. [6-116] William P. MacCracken became responsible for licensing civilian pilots and aircraft. Numerous industry-wide meetings were held to formulate the Air Commerce Regulations, which were to go into effect on December 31, 1926. [5-96] Inspectors employed by the Department of Commerce were charged with inspecting factories, testing aircraft, and examining pilots and mechanics. "Aircraft designers were [eventually] required to meet minimum engineering standards" As MacCracken told the manufacturers, "We've got certain safety factors, and we'll have our engineers check your plans with respect to them. But mainly we'll rely on you to comply voluntarily." [5-98] The Inspection Service of the Air Regulations Division of the Department of Commerce had to hire skilled technical people (doctors, engineers, pilots, mechanics) from within the existing aviation industry to enforce the new government regulations.

MacCracken's main goal was "to convince people that airplanes were a safe means of transportation." If the public would not fly on passenger planes "aviation would be relegated to moving the mails," and other freight. But before this could be accomplished "the Aeronautic Branch 'would have to ride herd on a lot of this barnstorming going around the country.' Aviation would have to replace its colorful, but reckless image" with a much safer one. [5-104] In fact, this is what brought about the demise of the Gates Flying Circus. Within a few years, inspectors began to condemn the World War I-era planes used by most barnstormers, and began to enforce air traffic

rules which prohibited commercial stunt flying.

One of the main arguments for supporting the Air Commerce Act was that flying was “unnecessarily dangerous because of a lack of Government regulation.” [5-24] While it was true that people died in airplane accidents before the passage of the Act, it is also true that people died in accidents after the Act. The assumption that somehow government could make flying safer was false. Government had no special ability to devise new safety rules or educate safety engineers. All it could do was force people to adopt new safety codes or, if they didn’t, threaten them with jail time or fines. The main question really was: Who would be forced to pay for the new safety requirements? Flying, like all other human activities, could not be made absolutely safe. In the absence of mandatory regulations, those who had a proprietary interest, such as the owners of planes, pilots, passengers, and insurance companies, ultimately had to decide how much they were willing to pay for safety. What the government did under the guise of the Air Commerce Act was to force members of the general public, who (for the most part) had no direct proprietary interest in airplanes, to pay part of the cost of enhanced aviation safety. “As one wit cracked, the hind legs of mules annually claimed a larger number of victims than did air crashes.” Another critic of the legislation observed: “If a man wants to kill himself [flying], let him do it.” [5-23]

Using taxpayer money, the U.S. Air Mail Service “was the one civil aviation enterprise” with the best safety record for its time. Pilot applicants had to have extensive flying experience and received periodic medical examinations. Planes were thoroughly inspected at the end of each trip; engines and airframes were overhauled on a regular basis. Preventative maintenance was emphasized. For every pilot employed by the service, there were 15 ground personnel. In the early 1920s, Paul Henderson, the Second Assistant Postmaster General, pointed out that the whole purpose of the Air Mail Service was to demonstrate “the practicability of aviation and thereby stimulate [...] its commercial development.” [5-21]

Government Law of the Air and the Insurance Industry

Another factor hindering the development of commercial aviation “was the inability to secure insurance at reasonable rates.” [5-29] In the beginning, commercial underwriters had to struggle with the lack of data on which to base their rates. There is no evidence of any underwriting activity within the United States in the aviation field prior to 1918. It was in that year that the Queen Insurance Company of America (New York, New York) began writing the first aviation coverages by using ordinary automobile or fire policies with special endorsements

which extended coverage to aviation risks. [53-21] In March 1920, a group of five insurance companies pooled together and formed the National Aircraft Underwriters Association. One of its first activities “was the compilation of information about pilots.” It began by collecting pilot records, verifying pilot statements on their insurance applications, and by keeping “insured-loss records on pilots.” “All of the known pilots in the country were canvassed” and a complete questionnaire submitted to each registrant. It asked for a detailed history of each pilot’s experience “at commercial and cross-country flying” as well as the history of any accidents he had experienced. Ultimately a “Pilot’s Grading Code” was established by the Underwriters Association. “More than two hundred pilots were graded” and this “seemed like a fair start toward scientific underwriting, especially when the work of examination and registration of pilots and aircraft was taken up by the Underwriters Laboratories.” [53-26 and 28]

In his 1927 thesis on “The Nature and Development of Aviation Insurance,” Stephen Sweeney discussed the pioneering work of Underwriters Laboratories. After the organization of the National Aircraft Underwriters Association “negotiations were started to have the Underwriters Laboratories at Chicago inspect aircraft production methods and to register and classify aircraft. This preliminary work of the Laboratories was begun in the latter part of 1920. A plan of cooperation between the Laboratories and the Association was finally worked out whereby the Laboratories agreed to provide: (1) a register of pilots, (2) a register of aircraft, and (3) certificates of air-worthiness of aircraft.” In addition, Underwriters Laboratories created a board of inquiry to investigate crashes and began formulating rules to govern a pilot’s conduct and responsibilities while in the air. “[R]egistration of aircraft was based on Lloyd’s Aviation Register and the number assigned followed the plan worked out by the International Aircraft Convention of the Peace Conference” of 1919. [5-30 and 53-29]

However, by mid-1923 the Aviation Department of Underwriters Laboratories had only limited success. It had issued 35 aircraft registrations, 10 air-worthiness certificates, and certified and registered 39 pilots. The Association finally disbanded in 1926, after its members experienced high loss ratios on aviation claims and were faced with the new government regulations. As one commentator wrote, “the insurance companies could scarcely be blamed” for leaving the field. “To begin with, liability in air accidents was a legal no-man’s-land.” [5-30] What legal rules would be used to determine liability in the case of an air accident? It was not until several years after the passage of the Air Commerce Act, that a number of insurance companies formed the United

States Aircraft Insurance Group and began anew the work of underwriting aviation risks. [54-12]

Prior to the passage of the Air Commerce Act the federal government's control over the air was actually in question. Aviation law in the early 1920s was in an unsettled state. "One of the more heatedly debated questions at the time was whether flight over private property without permission of the property owner constituted trespass." [5-50] The question of aerial trespass had begun when balloonists were shot at by residents in Vermont, Alabama, and Kentucky. [6-33 and 34] Although some of those firing the shots were prosecuted, the common law apparently supported the belief that one's property extended to the heavens. The maxim *Cujus est solum, ejus est usque ad coelum* ("Whose the soil is, his is all the way to the heavens") "had been adopted by the English courts as a comprehensive statement of landowners' rights at a time when any practical use of the upper air was thought impossible." [5-50] The question of "who owned the sky" was so debatable that the American Bar Association supported passage of "a constitutional amendment [that would confer] control over the airspace to the Federal Government." [5-51]

Others believed that Congressional power over airspace was derived from the commerce clause, but neither the Constitution nor the common law established any direct federal "jurisdiction over the air, or the air space above the lands and waters of the states." [5-51 and 8-108] Whatever authority the federal government exercised was based solely upon its control over interstate commerce, but even this position did not answer the question of who should regulate flights within a single state. Some argued that flights over private land were in the nature of an easement that required no compensation unless such flights interfered with the land owner's use of his airspace. [16-127] Others believed that a land owner's property extended upward, and that air routes over private property should be paid for by the owners or operators of air-borne vehicles. [16-129 and 130] Ultimately, after a great deal of lobbying, legislative jockeying, and a Supreme Court decision which concluded that "effective control over interstate commerce" could not be exercised "without [the] incidental regulation of intrastate commerce," Congress took the bull by its horns and simply assumed federal ownership of the air and airways. [5-52] No one ever challenged its jurisdiction. This massive space-grab was based on the legal theory that the only way each nation could protect itself was to control its respective air space, which implied that it had the right to regulate flights over and within its own territory.

Conclusion: What Is Seen and Not Seen

Although the airplane was created by two hitherto unknown mid-western brothers, its impact on the

world has been enormous. Their invention set the stage for a transportation revolution, but, like every other human tool, the airplane has been used for good and evil. To answer the question posed in the title to this article, "Was there chaos in the air?" - "No," if by chaos we mean utter confusion and disorder. The existence of a new tool and technology required the development of new modes of customary behavior by those who owned and used the tools. Just as the development of the airplane did not take place overnight, so the evolution of customs relating to the airplane would and did take time.

Is it possible to imagine that the aviation industry could have evolved without government intervention? Yes, because the fact of the matter is that governments contributed little to its start. Long before government was involved, the Aero Club began licensing balloonists and airplane pilots. Underwriters Laboratories was engaged by an insurance group to register pilots, investigate crashes, and set air safety standards. Although it has not been mentioned, private interests in the United States promoted both aviation safety and aeronautical education. Between 1926 and 1930, Daniel Guggenheim, a super-wealthy industrialist and mining magnate, contributed over three million dollars toward various aviation projects. Six schools of aeronautical engineering were endowed, a model airline between San Francisco and Los Angeles was started, and the Guggenheim Fund sponsored a concerted effort to promote visible-from-the-air marking of towns across the United States. [10-33, 86 and 158]

As this historical review makes clear, aviation in the United States, as well as in most other countries of the world, has been fostered and subsidized by governments. "This is not because of the airplane's immense potentialities for furthering human progress, but, on the contrary, [was] chiefly due to its power of destruction and terrorization." [36-vi] So, given government's propensity to "get involved," what has government done that private individuals acting peacefully among themselves could not have accomplished? Nothing. By using money taken from the taxpayers, governments may have managed to impose improvements in air safety sooner than they would have come about naturally, but even that conclusion is doubtful, given government's generally poor track record in accomplishing its stated goals. We have no way of knowing what people might have done with their own money had government not taken it from them. As Israel Kirzner once observed, if we rely on freedom to bring about effects which no one can specify in advance, then restrictions on freedom will harm us in ways of which we will never be aware. [58-37] Who knows what kind of aviation industry we might have had if voluntarism had been respected?


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How One Man Learned to Fly in 1923

"In most of the United States a prospective pilot could buy a plane and try to teach him- or herself to fly. One such young man bought a surplus Curtiss Jenny for \$500; then, never having flown himself (and with only a little informal flight instruction), he tried to take off. He rose slightly from the ground, realized that he did not have the plane under control, and chose not to continue the flight. He managed to get the plane back down without destroying it. Fortunately for him, another pilot gave him a half-hour free lesson before he took off again on his first solo flight. Although he did eventually become a skilled pilot, others who tried to learn flying by such haphazard methods were not so lucky as young Charles Lindbergh."

- Bill Robie, *FOR THE GREATEST ACHIEVEMENT* (1993), pp. 108-109.

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