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Abstract
Over the course of nearly a century, Congress and aviation regulators have crafted a body of laws and regulations addressing the operation and safety of manned aircraft in the United States. Until recently, small Unmanned Aircraft Systems, colloquially called “drones,” have been understood and treated by regulators as distinct from aircraft and not subject to aviation laws. However, in 2015, the Federal Aviation Administration contravened an explicit statutory bar to adopting any regulation of recreational drones, justifying its unprecedented action by claiming that drones are now—and always were—aircraft for purposes of all federal aviation laws. The federal criminal code makes clear that certain aviation-related conduct is criminal, but few if any of these statutes make sense when applied to drones. To avoid attaching criminal liability to harmless backyard drone operations, Congress should rein in the FAA’s regulatory flights of fancy and clarify that drones are not aircraft for purposes of federal law.

The scope of the aviation revolution that began in 1903 when the Wright brothers shocked the world with their first flight cannot be overstated: Since then, a host of engineers, entrepreneurs, and innovators have advanced the techniques of manned aviation, allowing pilots, passengers, and freight to move faster and more efficiently than ever before. Today, a century later, we are in the midst of a similar period of innovation in the form of Unmanned Aircraft Systems (UAS), commonly known as “drones.”1 UAS have seemingly limitless potential that includes delivering medical supplies to remote locations, expediting search and rescue operations, and more. However, in 2015, the Federal Aviation Administration asserted for the first time that Small Unmanned Aircraft Systems (drones) fall within the statutory definition of “aircraft” and therefore are within its regulatory purview.
surveying private land and national borders, and delivering the Internet to far-flung locales.

Regrettably, a legislative and regulatory environment that treats two radically different technologies—large, manned aircraft and small, unmanned drones—as if they were the same is needlessly hampering the development of these and possibly countless other beneficial technologies. The Federal Aviation Administration (FAA) has attempted to shoehorn drones into an existing legal and regulatory framework developed for a wholly different industry. The result: a series of costly, burdensome, and irrational regulations premised on the notion that drones are aircraft, no different from a Boeing 747. These regulatory decrees have slowed, outright halted, and in some cases forced overseas the development of commercial drone technologies. Congress should rectify this by specifying that drones are not aircraft as defined in existing federal law (which was FAA policy for decades prior to 2015) and develop a new suite of drone-specific aviation laws.

The Law Defines “Aircraft”

Following the birth of powered flight in 1903, the federal government did not rush to regulate the budding aircraft industry. That began to change, however, when the Post Office, which had begun operating a federal airmail service in 1918, allowed private companies to bid on contracts and turned the service over to the winning bidders pursuant to the Air Mail Act of 1925. Then, in 1926, Congress enacted the Air Commerce Act to promote safety and reliability in the commercial aviation industry. A new aeronautics branch was created within the Commerce Department and was given regulatory authority over commercial aviation. Ultimately, the statute required the establishment of uniform air traffic control rules and, for interstate flights, a registration and certification system for both aircraft and pilots.

The Act also sets forth a single, nearly all-encompassing definition of what constitutes an aircraft: “any contrivance, now known or hereafter invented, used or designed for navigation or flight in the air, except a parachute or other contrivance designed for such navigation but used primarily as safety equipment.” The modern definition of the term has hardly changed in a century, with the most significant modification being the striking of the safety equipment clause.

With such a broad definition, Congress may have been trying to avoid having to write a new statute for every innovation in the field of aviation. At the time, such innovations were frequent; only two decades before, fixed-wing aircraft had yet to be invented, and two decades later, an entirely new breed of flying machine, the helicopter, was just becoming practical. The advantage to Congress’s approach was efficiency, but the dangers of a single, all-encompassing definition are overinclusion, vagueness, and arbitrary enforcement, particularly when laws referencing that term carry criminal penalties that can then be applied to individuals in situations not originally intended or contemplated by lawmakers. That is the problem facing drone operators today.

Drones: A Leap Beyond Aircraft

For decades, remotely operated model aircraft—the predecessor to what we now call drones—were understood to be beyond the scope of federal aviation regulators’ authority. The FAA’s own single-page advisory circular that guided unmanned model aircraft operating standards from 1981 to 2015 left drones out of federal aviation laws. Now regulators at the FAA are attempting to force drones into a legal and regulatory framework crafted over the course of a century for the purpose of regulating manned aviation. Recently, the FAA asserted that drones fall within the statutory definition of aircraft and, therefore, within its regulatory purview. FAA officials have indicated at various times that drones are subject to all federal aircraft-related laws as well as to the aircraft provisions contained within the Federal Aviation Regulations.

This approach makes little sense because drones differ drastically from their larger, manned cousins. For instance, while a jet aircraft may have a wingspan in excess of 200 feet, the most popular models of quadcopters currently on the market are roughly only a foot wide at their widest point. Traditional aircraft are designed to cruise as high as 35,000 feet and in many cases have a range sufficient to cross continents or oceans; drones, limited by the capacity of onboard batteries and the range of their radio control signals, typically can fly no more than a few hundred feet and operate for only a few minutes before their power fails. Finally, drones do not carry human occupants as either passengers or crew. Human involvement in their flight is restricted to remote control of the vehicle.
As a result of these fundamental differences, it should not be assumed that current aviation laws and regulations can or should be applied to drones. The vast majority of federal aviation laws and regulations were written to apply specifically to manned aircraft.\textsuperscript{15}

\textbf{Oddities in Federal Aircraft Law as Applied to Drones}

A number of oddities arise when existing federal law governing aircraft is applied to consumer drones.

\textbf{Registry of Drone Owners.} The first step in the FAA's recent push to regulate the nascent drone industry was to create a recreational drone owners' registry. The FAA claimed it had the authority to do this pursuant to 49 USC § 44101(a), which specifies that "a person may operate an aircraft only when the aircraft is registered, subject to limited exceptions for military aircraft or short periods following transfer of ownership." Careful readers will note that the FAA has statutory authority to require the registration of aircraft, not aircraft owners, yet the FAA's registry requires individuals to register themselves as owners. Failure to register as the owner of a recreational drone may result in up to three years in prison and civil and criminal fines of over $277,000.

The FAA's own drone task force report admits that the registration scheme for aircraft is ill-fitted to small UA\textsubscript{S} (s UA\textsubscript{S}) and that the statute's penalties are disproportionate to the offense of not registering as an s UA\textsubscript{S} operator. Noting that Congress created "registration-related penalties...to address and deter suspected drug traffickers and tax evaders who failed to register aircraft as part of larger nefarious schemes," the report observes that anyone "flying an s UA\textsubscript{S}, including consumers and juveniles, may now find themselves inadvertently in violation of this new system."\textsuperscript{16} The registration scheme was concocted in contravention of the plain meaning of the aircraft registration statute, decades of consistent federal policy explicitly exempting small model aircraft from federal aviation rules, and a federal statute prohibiting the FAA from creating new regulations pertaining to recreational drones.

\textbf{Policing Drone Owners' Backyards.} Under 49 USC § 1132, the National Transportation Safety Board (NTSB) is required to conduct an investigation into "each accident involving civil aircraft." The NTSB is also authorized to "prescribe regulations governing the notification and reporting of accidents involving civil aircraft."

If a drone is crashed, 49 USC § 1155 applies a civil fine of up to $1,000 each day a person is in violation of the regulations governing the notification and reporting of accidents pursuant to § 1132(b) and also makes it a crime, subject to a potential fine and prison sentence of up to 10 years, when anyone "knowingly and without authority removes, conceals, or withholds a part of a civil aircraft involved in an accident, or property on the aircraft at the time of the accident." Therefore, read literally, if an operator crashed a drone in his own backyard simply because he had not yet mastered the controls and then removed it without notifying the authorities, he could be prosecuted and subjected to substantial fines and a lengthy prison sentence.

Consider, for example, 18 USC § 32 on "destruction of aircraft or aircraft facilities," which makes it a crime when someone:

...willfully-

(1) sets fire to, damages, destroys, disables, or wrecks any aircraft in the special aircraft jurisdiction (see 49 USC 46501 below) of the United States or any civil aircraft used, operated, or employed in interstate, overseas, or foreign air commerce;

(2) places or causes to be placed a destructive device or substance in, upon, or in proximity to, or otherwise makes or causes to be made unworkable or unusable or hazardous to work or use, any such aircraft, or any part or other materials used or intended to be used in connection with the operation of such aircraft, if such placing or causing to be placed or such making or causing to be made is likely to endanger the safety of any such aircraft.

An administrative law judge wrote that it is a "risible argument" to suggest that recreational drones "could subject the 'operator' to the criminal penalties of federal statutes that concern aircraft."\textsuperscript{17} No doubt, someone, somewhere will "willfully" hurl a rock at a drone, spray one with a hose, or do something that damages or destroys it, thus violating this federal criminal law. Moreover, the judge noted, if this law applies to half-pound
drones, how can courts logically exempt “paper aircraft, or a toy balsa wood glider” from a formalistic interpretation of the FAA's definition of aircraft? The agency's novel interpretation of the law would put children playing in their own backyard at risk of disproportionate punishment, including prison time, for playing with a drone, a paper airplane, or a balsa wood glider. Laser Pointers. Consider too 18 U.S.C. § 39A, which makes it a federal crime, punishable by a fine or up to five years’ imprisonment, knowingly to aim “the beam of a laser pointer at an aircraft in the special aircraft jurisdiction of the United States, or at the flight path of such an aircraft.” In the context of manned aviation, this is clearly a serious and dangerous act. The federal felony status of laser strikes is justified because they temporarily blind pilots, thereby endangering the lives of all aboard.

Recently, a 21-year-old faced the statutory maximum $250,000 criminal fine and five years’ imprisonment for each of three counts of aiming a laser at an aircraft, but should those penalties apply for aiming a laser pointer at a half-pound drone? What harm occurs? The drone has neither a pilot to blind nor passengers to endanger. If the FAA’s interpretation of the breadth of the term “aircraft” is allowed to stand, federal criminal liability could attach to entirely harmless conduct.

Document Display. If drone operators wish to comply fully with federal law on aircraft, they must adhere to such requirements as displaying a copy of the registration, airworthiness certificate, and other official documents “within” the aircraft “at the cabin or cockpit entrance so that it is legible to passengers or crew.” Of course, those documents cannot fit within a drone, for just as drones have no pilots, passengers, or crew, neither do they have cockpits or cabins.

A Catch-22. Further, there is a conflict between existing regulations that ban drones from flying at altitudes higher than 400 feet and the mandate that aircraft be flown no lower than the minimum safe altitude of flight, which is generally set at 500 feet. The national airspace, which lies above this threshold, was reserved for manned aviation when it was created in 1926. While compliance with both directives is impossible, a good-faith effort to comply with the mandate for aircraft could put drones in the direct path of passenger planes.

What’s in a Name?

These oddities illustrate why it is crucial for drone operators, the drone industry, and the public that the government provide minimal and sensible regulations that respect the fundamental reality that drones and aircraft are not the same thing. As drone hobbyist John Taylor, who has filed a lawsuit in federal court in the District of Columbia challenging the FAA’s drone regulations as arbitrary and capricious, argues:

By statute, an “aircraft” is, “...any contrivance invented, used, or designed to navigate, or fly in, the air.” 49 U.S.C. § 40102(a)(6). The statute provides that an aircraft is something that is ultimately “used...to...fly...” and not simply something that flies. The distinction is significant. An aircraft is a tool of manned flight, used, by a person, to achieve that person's flight.

This definition is not consistent with the reality of small drones, and there is no reason for Congress to allow the FAA to disregard reality. Drones should not be considered aircraft for purposes of all federal law. Thankfully for the public, the Supreme Court of the United States has indicated that the common perception of what a regulated thing actually is can be important. In 1931, for example, the Court held in McBoyle v. United States that an airplane was not a motor vehicle for purposes of the National Motor Vehicle Theft Act, because although “etymologically it is possible” for “motor vehicle” to mean “airplane,” “in everyday speech, ‘vehicle’ calls up the picture of a thing moving on land” and not in the air.

In language as relevant to drones today as it was to airplanes in 1931, the late Justice Oliver Wendell Holmes wrote:

When a rule of conduct is laid down in words that evoke in the common mind only the picture of vehicles moving on land, the statute should not be extended to aircraft simply because it may seem to us that a similar policy applies, or upon the speculation that, if the legislature had thought of it, very likely broader words would have been used.

That line of reasoning speaks to how courts—not necessarily federal agency rulemakers—can and
should approach a statute. The FAA ought to heed that guidance, however, and avoid extending the scope of statutory terms beyond their generally understood meaning.

If McBoyle were only a one-off, administrative rulemakers would not need to bother with “everyday speech” as an indication of their rules’ potential effects in the real world, but the Supreme Court seems to have doubled down on the idea that “everyday speech” matters. In a recent case, the Court concluded that while a fish is certainly a tangible object, it is not the type of tangible object that Congress had in mind when it enacted a statute to prohibit destroying certain delineated types of objects used for information and data storage.\(^\text{29}\) In another case, the Court found that a certain type of boathouse—one with a rectangular bottom, an unraked hull, and no propulsion or steering mechanisms but nevertheless with the ability to float like any other vessel—was not the type of vessel that is subject to admiralty jurisdiction, even though some courts had said that admiralty jurisdiction extends to “anything that floats.”\(^\text{30}\)

Similarly, applying federal aircraft laws to drones simply does not make sense in light of everyday speech or conceptions about drones.\(^\text{31}\) The term “aircraft” does not evoke the image of a quadcopter or other type of small drone any more than the word “quadcopter” evokes the image of a Boeing 747. Both machines fly, but they belong to distinct categories of machines; they are perceived differently precisely because they are physically and operationally different from one another.

There is little reason to suspect that a lay person would know or have any reason to believe that aircraft statutes with criminal penalties would apply to the operation of a drone. The FAA’s current approach to drone regulation therefore puts the public at risk of “arbitrary and discriminatory enforcement” of law and will serve only to confuse and “trap the innocent.”\(^\text{32}\)

What Congress Should Do

The FAA, anxious to expand its regulatory authority into the recreational drone space, has twisted the statutory definition of the term “aircraft” to enable it to circumvent the clear will of Congress as expressed in the 2012 FAA Modernization and Reform Act, which prohibited the promulgation of new regulations in the hobby drone space.\(^\text{33}\) By claiming that it had always considered drones and similar model aircraft to be aircraft for the purposes of federal law but had exempted them from enforcement merely as a matter of agency discretion, the FAA was able to make the dubious claim that its drone registry was not in fact a new regulation. In doing so, the agency is trying to sidestep the prohibitions of Congress’s 2012 act and has expanded the scope of federal civil and criminal liability across an array of drone operations.

The FAA’s creative wordsmithing is possible only because the law has not kept pace with innovations in aviation and an overly broad statutory definition of the term “aircraft,” written in a vastly different era, has been left to linger on the books. By default, that anachronistic definition has allowed the FAA to run amok, writing and in some cases even promulgating inherently irrational rules and applying criminal laws in ways never intended by lawmakers and not supported by the text of the statutes. This is a problem that only Congress can remedy.

In light of this situation, Congress should consider taking the following steps:

- **Redefine the term “aircraft”** in 49 U.S.C. § 40102 and specify that it refers only to manned aircraft in order to ensure that all federal laws applying to aircraft and all regulations promulgated pursuant to them apply only to manned aircraft.

- **Create a new statutory term** for unmanned aircraft that is clearly distinct from the general “aircraft” term. Language defining unmanned aircraft has already been adopted by Congress in the 2012 FAA Modernization and Reform Act; that language could serve as a template for a new statutory term to cover the range of contrivances invented for the purpose of aerial navigation but incapable of carrying human occupants. Such a definition could incorporate various weight and performance characteristics such that small unmanned craft are not treated the same as larger and higher-longer-faster-farther-flying manned aircraft.

- **Examine the code of aviation law** and, on a case-by-case basis, determine which existing laws should be applied to drones and what new drone-specific laws should be crafted and adjust
any existing criminal sanctions to better reflect the status of the crime in an unmanned-aircraft context.

- **Restrict the FAA’s ability** to regulate unmanned aircraft activity that does not take place within the national airspace or within a reasonable radius of an airport or sensitive military or national security–related site. Congress should also consider codifying the exact altitude at which the national airspace begins in order to prevent the FAA from redefining the term and abrogating property rights in, and local and state control of, low-altitude, currently unregulated airspace.

**Conclusion**

In 1926, Congress crafted the core of a federal legal and regulatory scheme that endured for a century. Recent advances in aviation technology, however, have outpaced the law, and regulators have responded by stretching the text of our aircraft statutes beyond their breaking point. Drones promise a revolution in sectors of the economy as disparate as parcel delivery and disaster relief, with untold and as-yet-undeveloped benefits for society. Shoehorning this 21st century revolution into a statutory and regulatory framework developed for a wholly different technology is not a sensible way to foster continued development and innovation.

Congress should rein in the FAA and redefine the term “aircraft” to prevent the recent excesses and overreaches of the FAA from happening in the future. Done correctly, such a move could do for drones what the Air Commerce Act did for manned aviation and could endure as the cornerstone of American drone law.

Endnotes

1. “Drone” is itself a fairly broad term that encompasses several types of flight-capable machines. Currently, quadcopter and related designs are popular with commercial and consumer operators, although fixed-wing drones that more closely resemble traditional remote-controlled airplanes do exist. For the purposes of this Legal Memorandum, the term “drone” refers to a device weighing less than 55 pounds that is incapable of carrying a human occupant and is generally designed for low-altitude, relatively low-speed flight. Larger drones that are capable of high-altitude, high-speed, and long-range flight—military drones, for example—are beyond the scope of this paper, although Congress should not assume that manned aircraft statutes apply to this category of drone either.


4. The history of aviation regulation in the United States is a complicated one, and regulatory authority was transferred several times in the decades after 1926. In 1934, the aeronautics branch became the Bureau of Air Commerce. In 1938, Congress passed the Civil Aeronautics Act and created a new, independent Civil Aeronautics Authority to regulate aviation. In 1940, the agency was divided into the Civil Aeronautics Administration (CAA) and the Civil Aeronautics Board (CAB), each with different functions. The CAA was tasked with air traffic control and the enforcement of aviation safety rules; the CAB was responsible for accident investigation and economic regulation, including setting prices and determining airline routes. In 1958, Congress created an independent Federal Aviation Agency to succeed the Civil Aeronautics Administration. That body was later renamed the Federal Aviation Administration when it was subsumed into the Department of Transportation. As for the CAB, in 1978 Congress passed the Airline Deregulation Act, a milestone that ended federal price controls in the aviation space and opened the industry to competition and expansion. The CAB was dissolved in 1985. For a more complete history of federal aviation regulation, see FAA, A Brief History of the FAA, https://www.faa.gov/about/history/brief_history, (last updated Feb. 19, 2015).

5. Compliance with air traffic rules was mandatory for all aircraft regardless of whether their flights were wholly intrastate. By contrast, lawmakers initially required that only interstate flights comply with registration requirements. See Stuart Banner, Who Owns the Sky? The Struggle to Control Airspace from the Wright Brothers On (2008).


7. 49 U.S.C. § 40102(a)(6), defines the term to mean “any contrivance invented, used, or designed to navigate, or fly in, the air.” The current statutory definition excludes language exempting parachutes and other safety equipment.


9. In October 2015, the FAA published a rule “clarifying” that the agency had always considered drones to be aircraft but, as a matter of agency discretion, had not regulated their activity. The move was necessary to legitimize FAA regulations in the recreational drone space, an area in which Congress had forbidden the promulgation of new regulations. Jason Snead & John-Michael Seiberl, The FAA Drone Registry: A Two-Month Crash Course in How to Overcriminalize Innovation, Heritage Foundation Issue Brief No. 4525 (Mar. 8, 2016), http://www.heritage.org/research/reports/2016/03/the-faa-drone-registry-a-two-month-crash-course-in-how-to-overcriminalize-innovation#_ftnref2.


11. Federal Aviation Regulations are contained in Title 14 of the Code of Federal Regulations.


15. According to the FAA, 18 USC § 32, a statute imposing a 20-year prison sentence for shooting down an aircraft, applies to drones as they are. Yet it is hard to fathom that Congress intended that damaging or destroying a toy should be punished so severely. Rather, the reasonable inference is that Congress drafted the law with manned aviation in mind. See Goglia, supra note 10.


18. Id.

19. See John Calvin Jeffries, Jr., Legality, Vagueness, and the Construction of Penal Statutes, 71 Va. L. Rev. 189, 190 (1985) (explaining that only Congress is “politically competent to define crime” and stressing the importance of the rule of legality, which “stands for the desirability in principle of advance legislative specification of criminal misconduct.”); Paul Larkin & John-Michael Seibler, Time to Prune the Tree: The Need to Repeal Unnecessary Criminal Laws, Heritage Foundation Legal Memorandum No 173, nn.25-29 and accompanying text (Feb. 25, 2016) (describing the constitutional lawmaking process, by which only Congress can create criminal laws).


22. 14 C.F.R. § 91.203(b).


25. Taylor Brief, supra note 23, at 34 n.11.

26. The argument that the law is arbitrary and capricious is detailed in Taylor Brief, supra note 23, and will not be treated further here.

27. McBoyle v. United States, 283 U.S. 25, 26 (1931) (overturning appellant’s conviction for transporting a stolen airplane across state lines under the National Motor Vehicle Theft Act, 18 U.S.C. § 408 (1919), which defined a “motor vehicle” as “an automobile, automobile wagon, motor cycle, or any other self-propelled vehicle not designed for running on rails.”).

28. Id. at 28.

29. Yates v. United States, 135 S. Ct. 1074, 1082 (2015) (plurality opinion) (noting that the dictionary definitions of the words “tangible” and “object” are relevant but are not dispositive to the meaning of “tangible object”).

30. Lozman v. City of Riviera Beach, Fla., 133 S. Ct. 735, 751 (2013) (also noting one lower federal court’s statement, “No doubt the three men in a tub would also fit within our definition [of a vessel], and one probably could make a convincing case for Jonah inside the whale.” Id. at 740). See also FAA v. Cooper, 132 S. Ct. 1441, 1448–49 (2012) (“actual damages” has different meanings in different statutes); Wachovia Bank, N.A. v. Schmidt, 546 U.S. 303, 313–14 (2006) (“located” has different meanings in different provisions of the National Bank Act); T-Mobile S., LLC v. City of Roswell, Ga., 135 S. Ct. 808, 820 (2015) (Alito, J., concurring); Adoptive Couple v. Baby Girl, 133 S. Ct. 2552, 2560 (2013) (relying on dictionary definition of “continued” to conclude that § 1912(f) of the Indian Child Welfare Act, which requires a determination that continued custody of a child by a parent or custodian is likely to result in serious damage to the child before parental rights are terminated, “does not apply in cases where the Indian parent never had custody of the Indian child.”); United States v. Santos, 553 U.S. 507, 514 (2008) (plurality opinion). The Supreme Court’s Void-for-Vagueness jurisprudence, which requires federal criminal law to be written in such a way that the average person is not left guessing what it proscribes, also suggests that “everyday speech” would be a worthwhile consideration for federal regulators. See Connally v. General Const. Co., 269 U.S. 385 (1925) (discussing the Void-for-Vagueness doctrine); Lanzetta v. New Jersey, 302 U.S. 451 (1939) (same).

31. Accordingly, enforcement of federal aviation statutes regarding drone operations would likely be a cumbersome affair. See Paul J. Larkin, Jr., Finding Room in the Criminal Law for the Desuetude Principle, 65 Rutgers L. Rev. Commentaries 1 (2014) (identifying potential problems in “[a]ny case where the government has to stretch the terms of an old statute to reach a new problem.” Id. at 10–11).


33. This is true in more ways than one. See H.R. 658, 112th Cong. (2012). The FAA cannot “promulgate any rule or regulation regarding a model aircraft...if...the aircraft is flown strictly for hobby or recreational use,” does not interfere with other aircraft, weighs less than 55 pounds, and operates “in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization.” Id. See also Jason Snead & John-Michael Seibler, Purposeless Regulation: The FAA Drone Registry, HERITAGE FOUNDATION ISSUE BRIEF No. 4514 (Feb. 2, 2016).