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Arkansas Airspace Ownership and the Challenge of Drones

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ARKANSAS AIRSPACE OWNERSHIP AND THE CHALLENGE OF DRONES

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I. INTRODUCTION

In the bundle of property owners' rights, the right to exclude others (and objects others propel) is paramount, essential, and defining.[1] Traditional common law extended a property owner's right to exclude up to the sky.[2] Strict-liability trespass laws protected property owners against any border crossing, whether that border was a horizontal parcel boundary on the surface of the land or a vertical boundary in the air.[3] This straightforward, predictable exclusion regime promoted low-cost resolutions of conflicts and efficient bargaining for precious land resources.[4]

But as certain altitudes of airspace became navigable and valuable as a public thoroughfare, Congress and the Supreme Court recognized that allowing surface owners to exclude others from a column of airspace to the sky was no longer viable,[5] and the federal government asserted control over

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1. *See* Kaiser Aetna v. United States, 444 U.S. 164, 176 (1979); *see, e.g.*, Dolan v. City of Tigard, 512 U.S. 374, 384 (1994) (quoting *Kaiser Aetna*, 444 U.S. at 176); Lucas v. S.C. Coastal Council, 505 U.S. 1003, 1044 (1992) (Blackmun, J., dissenting) (same); Nollan v. Cal. Coastal Comm'n, 483 U.S. 825, 831 (1987) (same); State v. Hamzy, 288 Ark. 561, 565, 709 S.W.2d 397, 399 (1986) ("One of the main rights attaching to property is the right to exclude others . . . ."); *see also* Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 753 (1998) ("to the extent one has the right to exclude, then one has property; conversely, to the extent one does not have exclusion rights, one does not have property").

2. *See* EDWARD COKE, 1 INSTITUTES OF THE LAWS OF ENGLAND; OR, A COMMENTARY UPON LITTLETON § 4(A) (CHARLES BUTLER ED., 18TH ED., CORRECTED, 1823) (1670); 2 WILLIAM BLACKSTONE, COMMENTARIES 18 (Lewis ed. 1915).

3. *See* Troy A. Rule, *Airspace in an Age of Drones*, 95 B.U. L. REV. 155, 174 (2015). Professor Rule's excellent article applies principles of microeconomics and property theory to the property law issues arising from the use of drones. *Id.* at 155.

4. *Id.* at 178. (noting that "these exclusion-based rules bundle together several of the myriad potential uses of land and protect them in one fell swoop by simply protecting physical 'access' to the land itself") (quoting Henry E. Smith, *Exclusion Versus Governance: Two Strategies for Delineating Property Rights,* 31 J. LEGAL STUD. S453, S455 (2002)).

5. *See* Air Commerce Act of 1926, Pub. L. No. 69-254, 44 Stat. 568 (authorizing flights within navigable airspace and charging federal government with ensuring flight safety); United States v. Causby, 328 U.S. 256, 264 (1946) (holding that, for purposes of a feder-

"aircraft" in the "navigable airspace."[6] Navigable airspace, and thereby federal jurisdiction, was roughly fixed as starting at 500 feet, but because fixed-wing aircraft generally stay above 500 feet, courts were not forced to clearly define what rights—if any—a surface owner retained to exclude aircraft at lower altitudes.[7]

Drones[8] have given new value to low- and mid-level airspace, yet in almost all states, property owners lack a clear right to exclude drones as they would a trespasser on the land—contrary to what many property owners would assume. This confusion over the right to exclude has even made its way to television legal dramas. In an episode of *The Good Wife*, attorney Claire's client sued a security company for trespass after the company's drone repeatedly crossed into the airspace over the client's property.[9] The client was a therapist who saw patients in a home office, and he wished to exclude the drone because he claimed the drone flights were frightening away his patients.[10] The court denied the trespass claim, recognizing that under Illinois law, the client had no right to exclude drones from over his property.[11] The client's frustration lead to a self-help measure: the client shot the drone from the sky, and was prosecuted for it.[12]

This fictional storyline dramatizes real-life conflict. In July 2015, a Kentucky man was arrested for shooting down a drone he claimed was flying and hovering over his sunbathing daughters.[13] The state judge dropped

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al takings claim, the surface owner did not own navigable airspace); Nw. Airlines, Inc. v. Minnesota, 322 U.S. 292, 302–03 (1944) (Jackson, J., concurring) ("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 landowner no more possesses a vertical control of all the air above him than a shore owner possesses 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.").

6. *See* Civil Aeronautics Act of 1938 §§ 1(24), 3; Air Commerce Act of 1926 § 10.

7. *See* Colin Cahoon, *Low Altitude Airspace: A Property Rights No-Man's Land,* 56 J. AIR L. & COM. 157, 161 (1990) (noting that the "battle . . . continues to rage in the low altitude airspace arena").

8. Arkansas's Unlawful Use of Unmanned Aircraft System defines "unmanned aircraft system" as an aircraft that does not carry a human operator, can be autonomous or remotely piloted or operated, and can be expendable or recoverable. ARK. CODE ANN. § 5-60-103(a)(2)(A) (Repl. 2016). Drones are also called unmanned aerial vehicles (UAV), Unmanned Aircraft Systems (UAS), and unmanned aircraft. For ease of reference, this article will refer to all unmanned aircraft as "drones."

9. *The Good Wife: Unmanned* (CBS television broadcast March 27, 2016).

10. *Id.*

11. *Id.*

12. *Id.*

13. Elisha Fieldstadt, *Case Dismissed Against William H. Meredith, Kentucky Man Arrested for Shooting Down Drone*, NBC NEWS (Oct. 27, 2015, 1:28 PM ET), http://www.

all charges, finding that the drone invaded the defendant's privacy and gave him the right to violent self-help.[14] Although shooting down a drone is a state and a federal crime,[15] increasing acts of self-help and judicial sympathy for them indicate how unacceptable it is to many that we may not be able to exclude drones from the airspace above our private property.[16]

All states are struggling with the uncertainties that drone conflicts reveal in airspace law, but no state has acted to clarify its laws by going as far as to grant surface owners clear exclusionary rights over lower altitudes of airspace over their properties. Instead, many states, including Arkansas, have acted to regulate the conduct of drone operations. This article examines Arkansas's current statutory and common law regulating private drone operations and explains why the current law fails to ensure predictable outcomes that will govern behavior and prevent conflict.

As described above, the root problem is that the law governing airspace ownership was shaped by conflicts caused by a significantly different kind of aircraft. Part II of the article describes the likely rise of drone conflicts and Arkansas's current conduct-based laws that target drones. Again, as broad as the new statutory restrictions are, they do not give a property owner a clear right to exclude a drone that is otherwise operating legally. Part III tracks the historical development of Arkansas airspace law, highlighting the uncertainty of the current nuisance-based rule of airspace ownership. The law that was adequate to address fixed-wing overflights does not easily or predictably resolve drone overflights. But Part IV discusses why a return to allowing surface owners a zone of airspace ownership within which they may exclude drones is appealing, but unlikely given aggressive federal regulations. And yet when the law runs counter to surface owners' expectations and fails to recognize and clearly define the airspace rights of surface owners, conflicts are likely to continue.

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nbcnews.com/news/us-news/case-dismissed-against-william-h-merideth-kentucky-man-arrested-shooting-n452281.

14. *Id.*

15. *See* ARK. CODE ANN. § 5-38-203, -204 (Repl. 2013) (prohibiting "purposely and without legal justification or "recklessly" destroying or causing damage to the property of another); 18 U.S.C. § 32 (2012) (prohibiting the willful destruction or damage to "any aircraft in the special aircraft jurisdiction of the United States or any civil aircraft used, operated, or employed in interstate, overseas, or foreign air commerce").

16. *See* Eric Limer, *People Just Keep Shooting Down Their Neighbors' Drones*, POPULAR MECHANICS (May 27, 2016), http://www.popularmechanics.com/flight/drones/a21072/people-just-keep-shooting-down-drones/ (indicating none of those charged with shooting down a neighbor's drone have been convicted).

II. ARKANSAS'S REGULATION OF THE OPERATION OF DRONES

The increase in the use of drones presents a second revolution in airspace rights. Arkansas's law adopted in response to the first revolution, the advent of fixed-wing aircraft, has not been amended and has been rarely interpreted in the years since. It does not provide surface owners the clear right to exclude drones, even drones flying at low altitudes.

Instead of altering its airspace ownership statute to allow a right to exclude, the Arkansas legislature has responded to the potential of drone conflict with criminal codes restricting the conduct of drone operations. This section briefly describes the conflicts drones are likely to present and the statutes Arkansas has adopted, as compared to statutory steps other states have taken.

A. The Increasing Potential for Conflicts Caused by Drone Operations

The characteristics of drones and drone use make it likely that conflicts between drone operators and private property owners will be more frequent than conflicts between fixed aircraft and private property owners have been. First, drones are not restricted to airports because they can take off and land from anywhere, and their range is increasing. For example, a mid-level consumer-grade drone, the DJI Phantom, which costs under $500, can go 1600 feet in the air, travel 44 miles per hour, has a 3.1 mile range, and has a camera that records in 4K resolution.[17] A drone developed in Germany promises more than an hour of flight-time on a single charge, speeds of more than 60 mph, and a range of over thirty miles.[18] This flexibility of flight patterns and the increase in capacity and range threaten to increase conflict between drone operators and those who would like to exclude them from their property.

Second, drones are already more prevalent than fixed-wing aircraft. Drone sales are expected to grow from 2.5 million in 2016 to 7 million in 2020.[19] In the first nine months after the FAA created a drone registration system, more than 550,000 unmanned aircraft were registered, and new reg-

17. Aymann Ismail, *What Can Consumer Drones Actually See?,* SLATE (Mar. 7, 2017, 11:50 AM), http://www.slate.com/articles/technology/future_tense/2016/05/how_much_can_consumer_drones_actually_see.html (noting as well that the drone sounds "like a lawnmower").

18. Nick Heath, *The Long-Range Drone that Can Keep Up with a Car and Fly for an Hour*, TECHREPUBLIC (May 27, 2015, 7:31 AM PST), http://www.techrepublic.com/blog/european-technology/the-long-range-drone-that-can-keep-up-with-a-car-and-fly-for-an-hour/. The FAA recently limited drones to a speed of 100 mph. *See* 14 C.F.R. §107.51 (2016).

19. FEDERAL AVIATION ADMINISTRATION, *FAA AEROSPACE FORECAST: FISCAL YEARS 2016-2036*, at 31 (2016), https://www.faa.gov/data_research/aviation/aerospace_forecasts/media/FY2016-36_FAA_Aerospace_Forecast.pdf.

istrations are coming in at a rate of 2,000 a day.[20] Third, drones are used by private industry and individuals more than they are used by the government. According to the FAA, the top commercial uses in the drone market are industrial inspection (42%), real estate and aerial photography (22%), agriculture (19%), and insurance (15%); governmental use is only 2% of the market.[21] Drones are being used to inspect wind turbines,[22] to monitor wildlife conservation,[23] to deliver first aid,[24] to spot mold on leaves,[25] and even to prevent shark attacks.[26] In addition, the FAA estimates that hobbyist sales will more than double from 1.9 million drones in 2016 to 4.3 million in 2020.[27] (But FAA estimates have been easily exceeded in the past.[28])

The increasing and significant role drones play in commerce justifies Congress's recent charge to the FAA to integrate drone regulation into the regulations governing national airspace and to adopt regulations that would improve the predictability of the law.[29] Integrating drones into the national airspace promises significant economic benefit; the Association for Unmanned Vehicle Systems estimates that the United States loses more than $10 billion for every year that integration of drones is delayed, or a total loss

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20. *See* Joan Lowy, *FAA Contemplating Whether Millions of Drones Will Fill Skies*, AP THE BIG STORY (Sept. 17, 2016, 2:46 PM EDT), http://bigstory.ap.org/article/be086f2e1a7345b697f627adc732dfb1/faa-contemplating-whether-millions-drones-will-fill-skies.

21. FEDERAL AVIATION ADMINISTRATION, *supra* note 19, at 33.

22. *See* Brian Merchant, *Wind Turbine Drone Inspection Could be a $6 Billion Industry in Under a Decade*, VICE: MOTHERBOARD (Sept. 10, 2015, 2:50 PM), http://motherboard.vice.com/read/wind-turbine-drone-inspection-will-be-a-6-billion-industry-in-under-10-years.

23. *See The Mission of conservationdrones.org*, CONSERVATION DRONES, https://conservationdrones.org/mission/ (last visited Mar. 7, 2017).

24. *See* John Biggs, *This Ambulance Drone Can Fly into Trouble with First Aid*, TECHCRUNCH (Oct. 31, 2014), https://techcrunch.com/2014/10/31/this-ambulance-drone-can-fly-into-trouble-with-first-aid/.

25. *See* Rachel Rohr, *Using Drones in the Fight Against Apple Scab*, MODERN FARMER (Oct. 28, 2013), http://modernfarmer.com/2013/10/apple-scab-drone/.

26. *See* Katherine LaGrave, *How Australia is Using Drones to Prevent Shark Attacks*, CONDÉ NAST TRAVELER (Mar. 9, 2016), http://www.cntraveler.com/stories/2016-03-09/how-australia-is-using-drones-to-prevent-shark-attacks.

27. FEDERAL AVIATION ADMINISTRATION, *supra* note 19; *see also* Michal Addady, *The Number of Drones Expected to Sell During the Holidays is Scaring the Government*, FORTUNE (Sept. 29, 2015), http://fortune.com/2015/09/29/drones-holiday-sales/ (noting the FAA's concern that over one million drones would be sold in the 2015 Christmas season).

28. *See* Lowy, *supra* note 20; *see also* Alan Levin, *Thousands Sign Up for FAA's Drone Pilot Test*, BOST. GLOBE (Aug. 30, 2016), https://www.bostonglobe.com/business/2016/08/29/thousands-sign-for-faa-drone-pilot-test/8g9ZETh3DzL8Ajx1lPg1aP/story.html (giving as an example that the agency anticipated 15,000 drone operators would be licensed by the end of 2016; 3,030 registered to take the test on the first day, and the FAA now estimates there will be more than 171,000 pilots within a year).

29. FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, § 332, 126 Stat. 11, 73–75.

of $27.6 million per day.[30] Businesses and legal scholars alike urge state and federal governments to proactively craft a practical legal framework for the integration of commercial drones.[31]

B. Arkansas's Conduct-Based Regulation of Drones

Even after the FAA fully integrates the regulation of commercial drones into the regulation of the national airspace, state legislation will continue to be essential to the legal framework governing drones because the FAA—even under its broadest interpretation of its own authority—was created to ensure the safety of aircraft and flight, not to adjudicate privacy or property.[32] Further, states have experience regulating these issues, and allowing them to do so fosters experimentation that may inform other states and the federal government on further legislation.[33] In 2015, 45 states (including Arkansas) considered 168 bills related to drones.[34] In 2016, 38 states

30. *See* Darryl Jenkins & Bijan Vasigh, ASS'N FOR UNMANNED VEHICLE SYS. INT'L, *The Economic Impact of Unmanned Aircraft Systems Integration in the United States 2* (2013), available at https://higherlogicdownload.s3.amazonaws.com/AUVSI/958c920a-7f9b-4ad2-9807-f9a4e95d1ef1/UploadedImages/New_Economic%20Report%202013%20Full.pdf (concluding that "[t]he main inhibitor of U.S. commercial and civil development of [drones] is the lack of a regulatory structure").

31. *See* Bart Jansen, *Amazon Urges Faster FAA Approval of Drones*, USA TODAY (Mar. 24, 2015, 2:32 p.m. ET), http://www.usatoday.com/story/money/2015/03/24/amazon-drones-faa-senate-hearing/70376382/ (describing Amazon CEO's testimony before Congress that the wait for FAA rulemaking disappointed the industry); Nicholas Ryan Turza, *Dr. Dronelove: How We Should All Learn to Stop Worrying and Love Commercial Drones*, 15 N.C.J.L. & TECH. ON. 319, 320 (2014).

32. *See* 14 C.F.R. §107.1 (2016) (adjudicating private property rights is beyond the scope of this rule; trespass specifically reserved to state); FEDERAL AVIATION ADMINISTRATION, *State and Local Regulation of Unmanned Aircraft Systems (UAS) Fact Sheet*, at 3 (Dec 17, 2015) (privacy and trespass laws not preempted); *see also* Florida v. Riley, 488 U.S. 445, 452, (1989) (O'Conner, J., concurring) (opining that the scope of 4th Amendment protection is "too heavily on compliance with FAA regulations whose purpose is to promote air safety, not to protect '[t]he right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures'" (quoting 4th amendment)); Aviation Cadet Museum, Inc. v. Hammer, 373 Ark. 202, 205, 283 S.W.3d 198, 201 (2008) (specifically noting land use as an area of law still retained by state government).

33. *See* Margot E. Kaminski, *Drone Federalism: Civilian Drones and the Things They Carry*, 4 CAL. L. REV. CIR. 57, 67–68 (2013) (noting the value of state experimentation, and recommending that "[a]t the least, Congress should avoid preempting state regulation in any drone privacy statute it does enact").

34. *Current Unmanned Aircraft State Law Landscape*, NATIONAL CONFERENCE OF STATE LEGISLATURES, http://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx, *archived at* http://perma.cc/L55M-KAPL (last updated Sep. 30, 2016).

(including Arkansas) considered legislation, and 17 states passed 31 pieces of legislation.[35]

These state legislative efforts have been primarily focused on the conduct of drones, and not on property owners' right to exclude drones. This section describes Arkansas's legislative efforts—which broadly prohibit drone operations that may violate privacy, but do not clarify what constitutes airspace trespass—and compares those efforts with similar statutes from other states.

1. Statutory Protections of Privacy Related to Drones

In 2015, the Arkansas Legislature added to the crimes of video voyeurism and voyeurism. Arkansas Code § 5-16-101 now makes it unlawful:

> to knowingly use an unmanned vehicle or aircraft, a camcorder, a motion picture camera, a photographic camera of any type, or other equipment that is concealed, flown in a manner to escape detection, or disguised to secretly or surreptitiously videotape, film, photograph, record, or view by electronic means a person:
>
> > (1) For the purpose of viewing any portion of the person's body that is covered with clothing and for which the person has a reasonable expectation of privacy;
> >
> > (2) Without the knowledge or consent of the person being videotaped, filmed, photographed, recorded, or viewed by electronic means; and
> >
> > (3) Under circumstances in which the person being videotaped, filmed, photographed, recorded, or viewed by electronic means has a reasonable expectation of privacy.[36]

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35. *State Unmanned Aircraft Systems: 2015 Legislation*, NATIONAL CONFERENCE OF STATE LEGISLATURES, http://www.ncsl.org/research/transportation/state-unmanned-aircraft-systems-uas-2015-legislation.aspx (last updated Jan. 5, 2017). Other states have acted to prohibit drone operations that Arkansas still, apparently, allows. In 2016, Arizona, California, Delaware, and Louisiana considered whether to prohibit drone flights from interfering with first responders, and Louisiana gave law enforcement the right to disable drones that endanger the public or an officer's safety. Delaware considered whether to prohibit operation of a drone over any event with more than 1500 attendees. And several states—including Idaho, Indiana, and Wisconsin—considered acts that would prohibit using drones to hunt, molest, or locate game animals. *Current Unmanned Aircraft State Law Landscape*, National Conference of State Legislatures, http://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx, *archived at* http://perma.cc/L55M-KAPL (last updated Dec. 16, 2016).

36. ARK. CODE ANN. § 5-16-101(b) (Supp. 2015)

Arkansas Code § 5-16-102 further prohibits a person entering another person's private property through use of a drone and looking into any person's dwelling unit if (1) the drone operator "looks into the dwelling with the purpose to intrude upon or interfere with a person's privacy"; (2) the drone operator "looks into a part of the dwelling in which an individual is present"; (3) the individual "has a reasonable expectation of privacy in that part of the dwelling"; and (4) the individual does not consent.[37]

Combined, these sections broadly prohibit any kind of surveillance over another on another's property, so long as that person has a reasonable expectation of privacy and has not consented. An Arkansas court would likely find that someone has a reasonable expectation of privacy in his or her home,[38] but not in a driveway or a walkway in front of the house.[39] The breadth of this prohibition has led one commentator to advise that, if you are flying a drone over private property in Arkansas, you should probably just turn your camera off.[40]

Other states have acted similarly to prohibit using drones to intrude upon others' privacy. Kansas included certain uses of drones in its preexisting Protection from Stalking Act.[41] Mississippi has broadened its voyeurism law to prohibit using drones to view "the interior of [an] area in which the occupant has a reasonable expectation of privacy, with the intent to invade the privacy of a person or persons inside and without the consent or knowledge of every person present, for the lewd, licentious and indecent purpose of spying upon the occupant or occupants thereof."[42]

Florida prohibits drone surveillance without tying it to voyeurism, and it thereby also prohibits surveillance of property.[43] Florida's Freedom from Unwarranted Surveillance Act prohibits any drone surveillance that violates a person's reasonable expectation of privacy.[44] "Surveillance" is defined as observing a person with "sufficient visual clarity to be able to obtain information about their identity, habits, conduct, movement, or whereabouts," or as observing property's physical improvements with "sufficient visual clari-

37. ARK. CODE ANN. § 5-16-102(b)(2) (Supp. 2015).

38. Sanders v. State, 264 Ark. 433, 436, 572 S.W.2d 397, 398 (1978) (a person's dwelling and curtilage are areas normally considered free from government intrusion).

39. Walley v. State, 353 Ark. 586, 605, 112 S.W.3d 349, 360 (2003) (citing Katz v. United States, 389 U.S. 347, 351 (1967) and United States v. Magana, 512 F.2d 1169, 1171 (9th Cir. 1975)); McDonald v. State, 354 Ark. 216, 222, 119 S.W.3d 41, 45 (2003).

40. National Business Institute, *Drone Law from A to Z* (comments of Richard Jost).

41. KAN. STAT. ANN. § 60-31a02(d) (2016).

42. MISS. CODE. ANN. § 97-29-61(1)(b) (West 2017).

43. FLA. STAT. ANN. § 934.50(3)(b) (West 2017). Federal legislators have also considered privacy issues raised by drones. *See, e.g.*, Safeguarding Privacy and Fostering Aerospace Innovation Act of 2013, S. 1057, 113th Cong. (2013); Drone Aircraft Privacy and Transparency Act of 2013, H.R. 1262, 113th Cong. (2013).

44. FLA. STAT. ANN. § 934.50(3)(b) (West 2017).

ty to be able to determine unique identifying features or its occupancy."[45] Therefore, unlike Arkansas's statute, the Florida Act specifically presumes people have a "reasonable expectation of privacy" when they are on their own land and are not observable from ground level.[46]

Similarly, in 2016 California amended its already far-reaching law prohibiting "physical invasion of privacy" to specifically prohibit entry into "airspace above the land of another without permission . . . in order to capture any type of visual image, sound recording, or other physical impression of the plaintiff engaging in a private, personal, or familial activity and the invasion occurs in a manner that is offensive to a reasonable person."[47]

2. Statutory Protections of Critical Structures from Drone Surveillance

Arkansas, along with several other states, has created the "unlawful use of unmanned aircraft system" offense, which prohibits the knowing use of a drone to "conduct surveillance of, gather evidence or collect information about, or photographically or electronically record critical infrastructure without the prior written consent of the owner of the critical infrastructure."[48] Section 5-60-103 defines "critical infrastructure" as an electrical power generation or delivery system, a petroleum refinery, a chemical or rubber manufacturing facility, or a petroleum or chemical storage facility.[49] Other states that have adopted similar laws have included schools and correctional facilities within the definition of "critical infrastructure."[50]

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45. *Id.* § 934.50(2)(e).

46. *Id.* § 934.50(3)(b).

47. CAL. CIV. CODE § 1708.8(a) (West 2017); *see* Fletcher v. Price Chopper Foods of Trumann, Inc., 220 F.3d 871, 876 (8th Cir. 2000). The California standard is stricter than the traditional standard in privacy law, which protects individuals from actions that are "*highly* offensive to a reasonable person." *See id.*; RESTATEMENT (SECOND) OF TORTS § 652B (AM. LAW INST. 1977).

48. ARK. CODE ANN. § 5-60-103(b) (Rep. 2016). The statute exempts use of drones to conduct surveillance of specific critical infrastructure when done pursuant to a contract with the state or federal government; or pursuant to a prior written authorization from the FAA, the Arkansas Department of Emergency Management; or in connection with emergency management to aid in "incident command, area reconnaissance, personnel and equipment deployment monitoring, training, or a related purpose." *Id.* § 5-60-103(a)(2)(B)(vi). The statute also allows individuals to conduct surveillance on their own property and to contract with others to provide the surveillance. *Id*. § 5-60-103(c)(1)(A).

49. *Id.* § 5-60-103(a)(1).

50. *See Current Unmanned Aircraft State Law Landscape*, NATIONAL CONFERENCE OF STATE LEGISLATURES, http://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx (last updated Jan. 5, 2017), *archived at* http://perma.cc/L55M-KAPL (noting the application of a similar law to schools and correctional facilities in Arizona, Delaware, and Louisiana; prohibition of drone use within 400 feet of critical infrastructure facility in Oklahoma; prohibition of drone use near critical infrastructure in Oregon; and

3. Potential Common Law Restrictions on Drone Use

Although no Arkansas court has so held, drone operators may also be civilly liable for some conduct under existing Arkansas common law.[51] An injury to person or property by a drone may be compensable under a negligence claim.[52] A property owner who wishes to stop drone overflights may argue that the overflights are an intrusion upon seclusion. In Arkansas, which has adopted the Restatement definition, this claim requires a showing that drone overflights are (1) an intrusion, which means they lacked legal permission; (2) highly offensive, which means the overflights rose to a level a reasonable person would find intolerable; and (3) a breach of a legitimate expectation of privacy.[53] Not only would it be difficult to demonstrate that drone overflights—which are not prohibited under Arkansas law—are "highly offensive," it is uncertain whether an overflight itself would be viewed as a breach of a legitimate expectation of privacy. Again, no court has so held.

Although the common law tort system has the advantage of being fact-sensitive, and thereby being flexible in its application to emerging technologies,[54] the disadvantage of a flexible system of laws is that property owners and drone operators cannot be certain about their rights until a court has decided a case with similar facts. Regulating drone conflicts through the tort system, therefore, requires property owners and drone operators to invest time and resources to build a body of law that provides clear guidance.

III. THE UNCERTAIN FOUNDATION OF ARKANSAS'S AIRSPACE OWNERSHIP LAW

While Arkansas's voyeurism laws and the intrusion upon seclusion tort may be used to protect privacy, neither provides surface owners a clear right to exclude drones from airspace above their property, even if the drones are

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prohibition of drone use within 250 feet of critical infrastructure with the purpose of conducting surveillance or gathering information about the facility in Tennessee).

51. *See* Jordan M. Cash, DRONING ON AND ON: A TORT APPROACH TO REGULATING HOBBYIST DRONES, 46 U. MEM. L. REV. 695 (2016) (analyzing the common law torts of intrusion upon seclusion and trespass to argue that a tort approach to drone intrusions could prove to be a useful tool in the fast changing and complex world of emerging technology).

52. *See* Cent. Flying Serv. v. Crigger, 215 Ark. 400, 402–03, 221 S.W.2d 45, 46 (1949) (recognizing a claim for negligence or for negligent entrustment to another operator for injuries caused by aircraft).

53. Fletcher v. Price Chopper Foods of Trumann, Inc., 220 F.3d 871, 875–76 (8th Cir. 2000).

54. *Id.*

within sight and sound.[55] Arkansas, like many jurisdictions, has not amended the airspace ownership statutes adopted with the dawn of the age of flight—statutes that balance the rights of the surface owner against the right of flight, and statutes that have only rarely been applied and interpreted.[56] Because these statutes are typically applied only in conflicts between airports and neighboring landowners over disruptions caused by take-offs and landings, courts have not resolved ambiguities in the statutes' broader application.[57]

Resolving these ambiguities—like how far up surface owners' airspace rights extend and how disruptive overflights must be to be unlawful—is critical to preventing and deciding drone conflicts. Arkansas's airspace statute's structure and flaws are best understood in historical context, beginning with the original adjustments state and federal governments had to make to traditional property rights to account for airspace that had value as a public thoroughfare.

A. The Traditional, Predictable Rule of Trespass

Before airspace could be occupied by anything other than objects on the surface of the land, American common law, through the maxim *cujus est solum, ejus est usque ad coelom,* gave landowners all the space above and below their properties, and any breach—no matter how minor, no matter what the intent—was a trespass.[58] This principal governed disputes predictably and uniformly.[59] Neighbors who fired a shotgun over another's property were held to have committed a technical trespass because the shotgun pellet crossed the plane of the landowner's airspace.[60] Similarly, when a horse's

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55. *See* Michael A. Thompson, *The Emerging Field of Drone Law*, THE ARKANSAS LAWYER, vol. 51, no. 4 Fall 2016 at 27, 28 ("One issue that seems ripe to lead to new disputes, however, is the law of trespass. . . [D]rones would seem to raise significant questions as to what constitutes unreasonable interference with existing use and enjoyment or 'actual damage' to land, and the courts and/or legislature may be called upon to balance the privacy and security concerns of landowners with the right of drone operators to use the 'public highway' of this state's airspace.").

56. *See infra* Section III.C.

57. *See infra* Section III.C.

58. *See* 2 WILLIAM BLACKSTONE, COMMENTARIES ON THE LAW OF ENGLAND 18, n.19 (Lewis ed. 1915) (interpreting the phrase as granting ownership "upwards as well as downwards, to an indefinite extent"); *see also* Turza, *supra* note 31, at 326.

59. *See* Maxwell Mensinger, Note, *Remodeling "Model Aircraft": Why Restrictive Language that Grounded the Unmanned Industry Should Cease to Govern It*, 100 MINN. L. REV. 409, 410 (2015) (noting that American courts adopted the Lord Coke maxim with "nearly 'unquestioning acceptance'").

60. *See* Herrin v. Sutherland, 241 P. 328, 329 (1925); *see also* Chad J. Pomeroy, *All Your Air Right Are Belong to Us*, 13 NW. J. TECH. & INTELL. PROP. 277, 285 (2015).

head crossed over another's dividing fence, the act constituted trespass.[61] Trespass has been similarly straightforward in Arkansas,[62] and it has been applied to cases where the boundary line crossed is vertical, through the airspace. For example, the Arkansas Supreme Court found in *Gathings v. Johns* that a plaintiff had "no right to maintain a spreading hedge extending over and onto the defendant's adjoining land."[63] This approach to airspace ownership "regards the empty space as if it were a solid, inseparable from the soil, and protects it from hostile occupation accordingly."[64]

The absolute theory of ownership for both surface and airspace worked predictably for decades in both tort and property for claims of nuisance, trespass, and ejectment.[65] This strict private property system, or exclusion regime,[66] benefitted landowners, neighbors, and courts by defining boundaries and promoting efficient bargaining between landowners.[67]

B. First Challenge to Airspace Ownership: Fixed-Wing Aircraft

As flight became a reality, courts recognized that the traditional property theory of absolute ownership to a column of air would create unrealistic roadblocks to cross-country travel.[68] Such flights would constitute "[f]requent and universal trespass on a large scale, theoretically banned by the law."[69] This dilemma is not unlike the one facing courts and lawmakers today: the rise of aircraft "caught the American courts without a coherent legal doctrine with which to address the clashes between landowners and

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61. RESTATEMENT (SECOND) OF TORTS § 504(1) (AM. LAW INST. 1977) ("[A] possessor of livestock intruding upon the land of another is subject to liability for the intrusion although he has exercised the utmost care to prevent them from intruding.").

62. Coleman v. United Fence Co., 282 Ark. 344, 345, 668 S.W.2d 536, 537 (1984) (recognizing that a trespasser is simply one who comes upon land without the consent of the possessor).

63. Gathings v. Johns, 216 Ark. 668, 670, 226 S.W.2d 978, 980 (1950).

64. *See* Butler v. Frontier Telephone Co., 19 N.Y. Ann. Cas. 315 (N.Y. Ct. App. 1906) (prohibiting a company from stringing a telephone poll across a piece of property at a height of 30 feet); Pomeroy, *supra* note 60, at 285 (citing cases limiting building overhang and structural additions that overhung even an inch).

65. Mensinger, *supra* note 59, at 410.

66. Henry E. Smith, *Exclusion and Property Rules in the Law of Nuisance*, 90 VA. L. REV. 966, 978–79 (2004) (defining an exclusion regime as one in which "very rough signals or informational variables—such as presence inside or outside the boundary line around a parcel of land—are employed to protect an indefinite class of uses with minimal precision").

67. *See id.*

68. Pomeroy, *supra* note 60, at 285 ("[H]istorically, people could not move over other people's property without risking real liability. That worked fine for many, many years. Eventually, however, the world changed.").

69. Mensinger, *supra* note 59, at 410.

aviators."[70] Consequently, state courts and legislatures began adopting a variety of property theories that abandoned the traditional *ad coelom* theory of absolute ownership and redefined airspace rights.

Under two of these theories—the public easement theory and the privilege of flight tort theory—surface owners continued to own the airspace, but the former recognized a public easement for aviation traffic,[71] and the latter granted aviation traffic a privilege that was a defense to a trespass claim. [72] Overflights were actionable only when the easement was misused by "unreasonable interference"[73] or the privilege was abused or exceeded.[74] These theories limited surface owners' ability to exclude aircraft from navigable space above their properties, but landowners continued to own all of the airspace.

Under two other theories, landowners' ownership excluded a zone of navigable airspace.[75] The first zone theory—the fixed height theory—marked the end of the surface owner's ownership with a strict horizontal boundary; cases were therefore as easy to analyze as cases on the surface had been.[76] If aircraft flew below the boundary, the landowner had a claim for trespass.[77] The second zone theory gave surface owners ownership of the airspace, but limited it to an area of "effective possession."[78] Under this theory, a court would determine the parcel's area of effective possession, and then the theory would operate just as the fixed height theory: if aircraft flew within the area of effective possession, the landowner had a claim for tres-

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70. Walter S. King, *The Fifth Amendment Takings Implications of Air Force Aircraft Overflights and the Air Installation Compatible Use Zone Program*, 43 A.F. L. REV. 197, 198 (1997); *see also* Cahoon, *supra* note 7, at 163 ("To hold that every overflight was an actionable trespass would hamper the young industry and the military's ability to train; yet to allow every low-flying barnstormer to terrorize rural communities with no consequence seemed an equally bad alternative.").

71. Cahoon, *supra* note 7, at 164. This theory was introduced by the proposed Uniform State Law of Aeronautics in 1922 and eventually adopted in about half of the American states. *Id.* (citing ROBERT R. WRIGHT, THE LAW OF AIRSPACE 11–30 (1968)).

72. Cahoon, *supra* note 7, at 164. This theory was adopted by the Restatement of Torts § 194 (1934). *Id.*; *see infra* text accompanying note 35.

73. Cahoon, *supra* note 7, at 164.

74. *Id.*

75. *Id.*

76. *Id.* (citing Smith v. New England Aircraft Co., 170 N.E. 385 (Mass. 1930); Burnham v. Beverly Airways, 42 N.E.2d 575 (Mass. 1942)).

77. *Id.*

78. Cahoon, *supra* note 7, at 164. (citing Swetland v. Curtiss Airports Corp., 55 F.2d 201 (6th Cir. 1932); Delta Air Corp. v. Kersey, 20 S.E.2d 245 (Ga. 1945); Thrasher v. City of Atlanta, 173 S.E. 817 (Ga. 1934)).

pass.[79] Under both zone theories, airspace beyond the boundary was public property to which the surface owner had no claim.[80]

While states limited surface owners' rights to airspace over their parcels, Congress acted to establish the United States government as the "complete and exclusive" sovereign over navigable airspace and to imply an extension of its authority even into non-navigable airspace.[81] The Air Commerce Act of 1926 (ACA), which was then replaced by the Civil Aeronautics Act (CAA), broadly defined "air commerce" and granted the public a "right of freedom of transit in air commerce through the navigable air space of the United States," which was generally defined as above 500 feet.[82] Congress's broadening language indicated "heavier federal influence in the regulation of airspace" and implied that any air commerce, even within non-navigable airspace, "would remain subject to extensive federal regulation."[83]

C. Arkansas's Airspace Act of 1941

In 1941, Arkansas passed section 27-116-102 of the Arkansas Code Annotated to define ownership of airspace and to allow for overflights. Some have argued that statutes passed to regulate "aircraft" should not apply to drones because drones should be treated as projectiles, like kites or balloons or shotgun pellets.[84] Projectiles are still part of the strict exclusionary regime and create actionable trespass when they are fired or flown over another's property.[85] However, drones of all kinds fall squarely within Arkansas's statutory definition of "aircraft," which includes "any contrivance now known or hereafter invented, used, or designed for navigation of or flight in

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79. *Id.*

80. *Id.* One court adopted a "no ownership theory," under which the landowner owns airspace only to the extent that it is actually occupied. *Hinman v. Pacific Air Transp.*, 84 F.2d 755 (9th Cir. 1936). Under this theory, a landowner suffers a compensable harm only when the overflight damages the underlying property. Cahoon, *supra* note 7, at 166. One commentator calls this "probably the worst opinion ever written on the topic." ROBERT R. WRIGHT, THE LAW OF AIRSPACE 131 (1968).

81. Air Commerce Act of 1926, Pub. L. No. 69-254, 44 Stat. 568 (1926).

82. *Id.*

83. Mensinger, *supra* note 59, at 412.

84. *See* Haughwont, 2016 WL 3919799 (D. Conn. 2016) (holding weaponized drone was "aircraft" and not a projectile under federal definition); Huerta v. Pirker, 2014 WL 8095629, at *2 (National Transportation Safety Board) (holding drone was "aircraft" under broad, but clear, federal definition).

85. Under the Restatement approach, it is actionable trespass to fire or fly a projectile in the air above another's property, even though no harm is done to the land or the surface owner's enjoyment of it. *See* RESTATEMENT (SECOND) OF TORTS § 158 (AM. LAW INST. 1965).

the air."[86] Courts will, therefore, apply section 27-116-102 to airspace conflicts created by drones.

How a court would apply the statute to drones is difficult to predict *for two reasons*. First, the statute is a confusing mix of airspace theories. One remedy for Arkansas lawmakers, therefore, is to clean up the existing statute.

Arkansas's statute limits the surface owner's ownership of airspace under an effective possession theory, but then grants a privilege of flight. Subpart (a) of section 27-116-102 vests ownership of airspace "in the owner of the surface beneath, but this ownership extends only so far as is necessary to the enjoyment of the use of the surface without interference and is subject to the right of passage or flight of aircraft."[87] Subpart (c) declares flight lawful unless it is "low enough to interfere with the then-existing use to which the land or water or space over the land or water is put" or is "conducted so as to be dangerous or damaging to persons or property" beneath.[88] Subpart (b) appears unnecessary, as it limits "actionable" claims for interference with the use and enjoyment of the land to flights that result in "actual damage to the land."[89] No decision has clarified the relationship between the subparts.

Arkansas's statute need not be this complex. As a comparison, both Idaho and Minnesota statutes clearly vest ownership in the space above the land in the owner of the surface beneath, subject to the right of flight.[90] Lawful flight is defined as a flight that does not interfere with the then-existing use to which the land is put by the owner, and flight that is not connected so as to be imminently dangerous or damaging to persons or property lawfully on the land beneath.[91] These statutes still leave unanswered how much interference by a drone a court would allow before finding a trespass or nuisance had occurred, but their language is clearer than Arkansas's.

The second problem with predicting the statute's application is in the nature of the statute itself: section 27-116-102, like all state statutes of its time, abandons the clarity and predictive application of the trespass exclusion regime in favor of a nuisance governance regime.

Although the Arkansas Supreme Court has acknowledged that "overflights can constitute trespass,"[92] when Arkansas courts have had to interpret

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86. ARK. CODE ANN. § 27-114-101 (Repl. 2010) (definition applicable through -117).

87. ARK. CODE ANN. 27-116-102(a) (Repl. 2010).

88. ARK. CODE ANN. 27-116-102(c) (Repl. 2010).

89. ARK. CODE ANN. 27-116-102(b) (Repl. 2010).

90. MINN. STAT. ANN. § 360.012 (West 2017); IDAHO CODE ANN. § 55-101A (West 2017).

91. MINN. STAT. ANN. § 360.012; IDAHO CODE ANN. § 21-204 (West 2017).

92. Aviation Cadet Museum, Inc. v. Hammer, 373 Ark. 202, 212, 283 S.W.3d 198, 206 (2008) (citing with approval Brenteson Wholesale, Inc. v. Ariz. Pub. Serv. Co., 803 P.2d 930, 934 (Ariz. Ct. App. 1990)).

and apply section 27-116-102, they have relied exclusively on common law nuisance. The court has not explained how a trespass claim would require any different proof under the statute.

In Arkansas's primary case interpreting section 27-116-102, the Arkansas Supreme Court mentioned a trespass claim but relied exclusively on the law of nuisance to resolve the dispute.

In *Aviation Cadet Museum, Inc. v. Hammer*, the Hammers claimed that Aviation Cadet Museum, Inc. (ACM)'s use of his neighboring land as an airport was a trespass and a nuisance.[93] The lower court found nuisance because flights over the Hammer's land were at "extremely low altitudes," they were dangerous to people on the Hammer's property, and they created excessive noise. The Arkansas Supreme Court affirmed.

First, drawing on common law surface nuisance cases, the court held that the "actual damage" requirement in section 27-116-102(b) "does not necessarily mean direct physical damage to the premises," and that "nuisances can exist when the property owners' use and enjoyment of their property was made much more difficult, and the offensive activity was abusive to senses of hearing and smell."[94] Ten years later, the court affirmed its reliance on surface-area nuisance law to determine whether acts in airspace created actual damage under section 27-116-102(b): the court held "an activity could constitute a nuisance if it created a substantial likelihood of danger in the future or if it could be shown to a reasonable certainty that danger was actually threatened rather than merely anticipated."[95]

Second, the *Hammer* court broadly interpreted the requirement in section 27-116-102(c) to mean that the flight must not be "dangerous or damaging to the persons or property beneath."[96] The court rejected the defendant's argument that subsection (c) added an additional requirement to a traditional nuisance claim.[97] The court held that the phrase "dangerous or damaging to persons or property beneath" meant that flight was lawful *unless* the "flight amounts to a nuisance, trespass, or otherwise poses a danger to the ground."[98]

Other jurisdictions have similarly used nuisance principles to govern airspace claims raised by airplanes,[99] but this application of nuisance princi-

93. *Id.* at 203, 283 S.W.3d at 200.

94. *Id.* at 208 n.3, 283 S.W.3d 198, 203 n.3 (2008) (citing Se. Arkansas Landfill, Inc. v. State, 313 Ark. 669, 858 S.W.2d 665 (1993) (smells from landfill); Higgs v. Anderson, 14 Ark. App. 113, 685 S.W.2d 521 (1985) (noise from dog kennel); Baker v. Odom, 258 Ark. 826, 529 S.W.2d 138 (1975) (noise from a motorcycle race track)).

95. Emerald Dev. Co. v. McNeill, 82 Ark. App. 193, 199, 120 S.W.3d 605, 610 (2003).

96. *Hammer*, 373 Ark. at 212, 283 S.W.3d at 206.

97. *Id*., 283 S.W.3d at 206.

98. *Id.*

99. *See* RESTATEMENT (SECOND) OF TORTS § 159 (1965) ("Flight by aircraft in the air space above the land of another is a trespass if, but only if, it enters into the immediate reach-

ples appears to have been sufficient to predictably resolve disputes. Airplanes consistently take off and land from a central, predictable point and are large and noisy enough to disrupt use and enjoyment if they are flown at low altitudes.[100] In addition, helicopters can fly legally underneath the navigable airspace threshold, but they "can easily avoid trespass claims by choice because they don't need to rise or descend through a lateral trajectory,"[101] and smaller, model aircraft have not been the focus of reported decisions.[102] Successful nuisance claims for airspace overflights typically "include disturbance as a result of dust production, noise, vibration, and frequency of flights."[103] And significant for the application of this statute to drone conflicts, courts have been reluctant to find that frequency of flights alone, without some accompanying noise or dust production, is enough to prove nuisance.[104]

D. Drone Challenges to Arkansas's Airspace Law

Drone flights challenge the application of Arkansas's nuisance-based airspace statute in new ways. First, surface owners will not know how far their ownership rights extend without first having a court decide how far down, how frequent, and how intrusive drone overflights must be to become actionable. Second, because under the statute the surface owner's airspace extends as far as is necessary to enjoy the use of the surface, surface owners who fly drones over their property may in fact extend their ownership of the adjacent airspace.[105]

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es of the air space next to the land, and it interferes substantially with the other's use and enjoyment of his land.").

100. *See* Robert A. Heverly, *The State of Drones: State Authority to Regulate Drones*, 8 ALB. GOV'T L. REV. 29, 45 (2015) ("The courts have generally been able to address overflight takings issues as they arise without stifling flight technologies and operations.").

101. Turza, *supra* note 31, at 330–31.

102. *See* Michelle Bolos, *A Highway in the Sky: A Look at Land Use Issues that Will Arise with the Integration of Drone Technology*, 2015 U. ILL. J. L. TECH. & POL'Y 411, 421–22 (2015) (opining that the test was not challenged by model aircraft because they were never as pervasive as drones threaten to be).

103. Bolos, *supra* note 102, at 422.

104. *Id.* at 422–23

105. *See* Pierce Giboney, *Don't Ground Me Bro! Private Ownership of Airspace and How It Invalidates the FAA's Blanket Prohibition on Low Altitude Commercial Drone Operations*, 67 FLA. L. REV. 2149, 2174 (2015) (giving as an example a university that hires a commercial drone operator to acquire aerial photographs and footage for advertising its campus).

1. When Would Drone Overflights Rise to an Actionable Level under the Arkansas Airspace Statute?

Because Arkansas's airspace statute adopts an effective possession theory with a privilege of flight theory, property owners in Arkansas own airspace to a point (to be determined by a court) that ensures the enjoyment of the current use of the surface, *and* the ownership of even this airspace is subject to the flight of all sizes of drones. Drones do not need a runway to take off, and so they may be launched from individual properties. Drones can be small enough to fit in your hand, and they may be quiet enough to fly over property without being noticed, especially if they are flown at higher altitudes.[106]

So when would a drone overflight rise to the level of a trespass or a nuisance? Because section 27-116-102 privileges the right of flight, a trespass action would require showing that the privilege had been abused.[107] Typically, this has required more proof than the frequency of the drone flights; the drone flights would have to fly "low enough" to interfere with the then-existing enjoyment and use of the property, and the drone flights may need to be found dangerous or abusive to the senses. In other words, a trespass claim would require a nuisance-based proof.[108] The application would vary widely as the facts varied.

One advantage of a fact-specific rule is that courts are given discretion to craft a result that appears equitable. The plaintiff's claim of nuisance in the *Hammer* case was sympathetic: the defendants knew about the plaintiff's use of their property when they bought theirs, and they knew that their activity would interfere with plaintiff's use, but they claimed a privilege to do so anyway.[109] The court made the fact-sensitive nuisance rules work in the plaintiff's favor.

The disadvantage of a nuisance regime is that property owners and drone operators would have to come to a court to determine where airspace rights extended and what behavior constituted a trespass. What if the drones stayed at 20 feet over the property, but had a camera? What if the drones flew at 5 feet, without a camera, but flew over the property daily?[110] And

106. *See* Heverly, *supra* note 100, at 46; Turza, *supra* note 31, at 321–22 (arguing that because drones are quieter, smaller, and lighter, they pose "little risk of many of the legal concerns associated with private property rights"). *But see* Aymann Ismail, *What Can Consumer Drones Actually See?*, http://www.slate.com/articles/technology/future_tense/2016/05/how_much_can_consumer_drones_actually_see.html (noting that the drone sounds "like a lawnmower").

107. *See* ARK. CODE ANN. § 27-116-102(a) (Repl. 2010).

108. Wilson v. Brown, 320 Ark. 240, 241, 897 S.W.2d 546, 547 (1995).

109. Aviation Cadet Museum, Inc. v. Hammer, 373 Ark. 202, 208, 283 S.W.3d 198, 203 (2008).

110. Rule, *supra* note 3, at 170.

would Arkansas law recognize a nuisance when the harm is only economic, and not physical?[111]

The cost of uncertainty when conflicts are likely to increase between private parties is significant. Beyond the economic costs of stifling technologies and operators, we have already seen social costs: landowners are more likely to engage in self-help (like shooting an overflying drone) when legal remedies are uncertain or expensive.[112]

2. Could the Possibility of Drone Use on the Property Actually Expand the Surface Owner's Airspace Rights?

Section 27-116-102(a) declares a surface owner's airspace ownership "extends only so far as is necessary to the enjoyment of the use of the surface without interference and is subject to the right of passage or flight of aircraft."[113] Section 27-116-102(c) makes flight unlawful that interferes with the then-existing use of the land. Under Arkansas's effective possession theory of ownership, a court should review how the air above the surface may support and extend the use and enjoyment of the land beneath.[114]

In 1941 when section 27-116-102(a) was adopted, a property owner's activities occurred on the surface of the land and extended up to the possible tree- or power-line. But with the proliferation of drone use, a property owner's usable space may extend all the way up to traditional navigable airspace.[115] "[T]he modern capabilities of drone technology allow landowners to use these higher altitudes not merely for recreational use but 'in connection with the land.'"[116] Even setting aside hobbyists who may use their own airspace for recreation, farmers use drones to survey crops, homeowners use drones to market property they wish to sell, and hunters use drones to survey potential hunting sites on their land. Arkansas's statute allows a private

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111. *Compare Hammer*, 373 Ark. at 208 n.3, 283 S.W.3d at 203 n.3 ("Physical harm does not necessarily mean direct physical damages to the premises. In *Osborne,* we noted that nuisances can exist when the property owners' use and enjoyment of their property was made much more difficult, and the offensive activity was abusive to senses of hearing and smell."), *with* Reeves v. Jackson, 207 Ark. 1089, 1093, 184 S.W.2d 256, 258 (1944) ("The right to maintain an action for the value of property, however small, of which the owner is wrongfully deprived, is never denied. A trespass upon lands is actionable, although the damage to the owner is inappreciable.").

112. *See* Elisha Fieldstadt, *Case Dismissed Against William H. Meredith, Kentucky Man Arrested for Shooting Down Drone*, NBC NEWS (Oct. 27, 2015, 1:28 PM ET), http://www.nbcnews.com/news/us-news/case-dismissed-against-william-h-merideth-kentucky-man-arrested-shooting-n452281.

113. ARK. CODE ANN. § 27-116-102(a) (Repl. 2010).

114. ARK. CODE ANN. § 27-116-102(c) (Repl. 2010).

115. Giboney, *supra* note 105, at 2174.

116. *Id*.

owner using drones to convert "previously unclaimed airspace into private ownership."[117]

It is not clear under the language of the statute whether the surface owner would need to actually use drones to claim the airspace, or whether the possibility that a private owner may use drones would be enough to claim airspace for all surface owners. Section 27-116-102(c) does appear to limit airspace only to protect a "then-existing use to which the land or water or space over the land or water is put."[118]

In sum, trespass actions against drone operators are likely, and Arkansas's current airspace ownership statute lacks a predictable application that could prevent conflict.

IV. GRANTING SURFACE OWNERS A FIXED HEIGHT OF AIRSPACE RIGHTS: WHY IT MAKES SENSE AND WHY NO STATE HAS DONE IT

Could and should Arkansas lawmakers go further than any state has yet, and vest in the surface owner ownership of a column of airspace up to a certain height? Doing so would reinstitute the predictable rules of trespass to resolve low-level drone conflict. Such laws would also likely be enforced in a manner that reflects the expectations of property owners.

While the federal government has asserted supremacy over navigable space, Congress has not manifested an intent to take from states the power to define airspace for the purpose of trespass actions.[119] Without a clean and manifest intent to supersede the state's historic police power to define property rights,[120] the state still has a critical role to play in determining the contours of airspace ownership and thereby of trespass law.[121]

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117. *Id.* at 2175.

118. ARK. CODE ANN. § 27-116-102(c) (Repl. 2010).

119. *See* Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42,119 (June 28, 2016) (adjudicating private property rights is beyond the scope of this rule; trespass rules are specifically reserved to the state); Heverly, *supra* note 100, at 60.

120. Nef v. Ag Servs. of Am., Inc., 79 Ark. App. 100, 111, 86 S.W.3d 4, 11 (2002); Arizona v. United States, 132 S. Ct. 2492, 2501 (2012).

121. *See* Heverly, *supra* note 100, at 60; Rule, *supra* note 3, at 197 (noting that state laws clearly defining airspace property rights need not conflict with federal law and would, in fact, "serve as an integral part of a larger, coordinated system of federal, state, and local drone laws that promote more efficient use of the nation's precious airspace resources"); Mensinger, *supra* note 59, at 429–30 ("That variable state standards (with regards to trespass, nuisance, and other doctrines that similarly implicate individuals' substantive rights is airspace) remain virtually untouched by federal airspace regulations suggests . . . that states' prerogatives in the realm of non-navigable airspace remain substantial.").

And yet no state currently grants surface owners the right to exclude drones up to a fixed height, primarily because of uncertainty in the law and in the extent of federal jurisdiction over airspace.[122]

A. The Benefits of a Fixed-Height Airspace Ownership: Predictability, Economic Fairness, and Fourth Amendment Clarity

In his excellent recent article on airspace rights, Professor Troy Rule urges states to adopt new laws giving landowners the right to exclude drones from the airspace above their land, laws that would "give a definite ceiling to the three-dimensional column of space initially allocated to surface owners under the common law's *ad coelom* doctrine."[123] To justify his recommendation, Professor Rule draws on principles of microeconomics and property theory, and names the following three primary benefits of extending the exclusionary regime up to a definite height.[124]

1. Increased Predictability Under a Fixed-Height Regime

First, as noted above, nuisance requires a balancing of facts and is, therefore, an unpredictable remedy, at least until an adequate body of interpretive case law is created in a jurisdiction. As Professor Rule notes, "[t]he case-by-case nature of these rules could place unjustifiable burdens on courts and deter drone operators and landowners from making efficient investment decisions relating to their respective interest in low-altitude space" because of the likely volume of conflicts between low-flying drone operators and property owners.[125] Lower altitudes of airspace, outside the navigable airspace of fixed-wing aircraft and outside any zones the federal government established for more powerful commercial drones, should be governed more like the surface—with predictable exclusionary rules of trespass.

2. Economically and Politically Efficient and Fair Allocation

If property owners have the right to exclude drones from lower altitudes, the drone operators would be forced to avoid private property or seek easements from landowners.[126] In this way, an exclusionary regime shifts the

122. Oregon recently eliminated statutory language that granted a surface owner ownership up to 400 feet, *see* OR. REV. STAT. ANN. § 837.380 (West 2016), and California just considered but did not adopt legislation that would have fixed the height at 350 feet, *see* Rule, *supra* note 3, at 159 (recommending a column of space up to 500 feet).

123. Rule, *supra* note 3, at 159 (recommending a column of space up to 500 feet).

124. *Id.* at 158.

125. *Id.* at 185.

126. *Id.*

expense of drone operations where it should be—on the operators.[127] Under Arkansas's current airspace statute, the landowner bears the expense and the uncertainty of challenging the drone's flight over his property.[128]

In addition, allowing states and even municipalities to regulate low-altitude flight shifts decision making to the narrowest specifically relevant body.[129] While the FAA worries that this will create a "patchwork" of regulations,[130] low-flying drones are not likely to be operated interstate (except for those who live near state lines),[131] and states have regularly delegated to municipalities the authority to regulate activities—like setting off fireworks or raising livestock—that do not affect those living outside the city.[132] "Because of their information advantages, municipal governments are often better equipped than state or federal governments to determine when, where, and under what conditions such intrinsically local activities are allowed."[133] Allowing states this regulatory authority, therefore, encourages an efficient, more locally sensitive system.

3. Fourth Amendment Applications

Finally, increased certainty in property laws will lead to increased predictability as to the extent of Fourth Amendment protections. Although Arkansas has not done so, some states have acted statutorily to clarify the extent to which law enforcement agencies may use drones to investigate, detect, or prosecute crime.[134] States have acted in the absence of clear federal common law on whether this use of drones violates the Fourth Amendment.

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127. *Id.*

128. *See supra* Section III.C.

129. Rule, *supra* note 3, at 203–04.

130. *See* FAA OFFICE OF THE CHIEF COUNSEL, STATE AND LOCAL REGULATION OF UNMANNED AIRCRAFT SYSTEMS (UAS) FACT SHEET (Dec. 17, 2015), https://www.faa.gov/uas/resources/uas_regulations_policy/media/uas_fact_sheet_final.pdf.

131. Heverly, *supra* note 100, at 47 ("As drones are likely to be operated locally, often staying within states and even specific jurisdictions within them, the need for national rules need not be emphasized. Instead, drone operators can adapt to local controls, even if they exist in a patchwork across jurisdictions. Longer flights which do cross jurisdictional boundaries are likely to take place at higher altitudes and to follow more traditional flight patterns including takeoffs and landings from established locations, subjecting them to FAA control. All of these elements together indicate that states may indeed have a significant role to play in regulating drone flights, especially in the short term.").

132. Rule, *supra* note 3, at 201.

133. *Id.*

134. *See, e.g.*, VT. STAT. ANN. tit. 20, § 4622 (West 2017) (prohibiting this use of drones but allowing drone use with a warrant or for "observational, public safety purposes that do not involve gathering or retaining data"); FLA. STAT. ANN. 934.50 (West 2017) (prohibiting a law enforcement agency from using a drone to gather evidence or other information); OR. REV. STAT. ANN. § 837.310 (West 2017) (allows drone use only with a warrant or under exigent circumstances).

But these conduct restrictions would be less necessary if a state were to adopt clearer property laws.

In a recent *Harvard Law Review* article, Professors William Baude and James Y. Stern note that "several recent Supreme Court decisions have suggested something of a property renaissance in Fourth Amendment law."[135] Under this emerging framework, courts are more likely to allocate Fourth Amendment privileges in a manner consistent with a state's definition of property.[136] Consequently, as the state's law on airspace ownership and rights of flights are clarified, the extent of Fourth Amendment protections will be clarified.[137] In the absence of state-law clarity, "[t]ragically, most courts still have little more than the FAA's safety-based regulations to assist them in determining whether officers or the public have a 'right to be' in any particular area of low-altitude airspace."[138]

In *Florida v. Riley*, when the Supreme Court of the United States held that a property owner has no reasonable expectation of privacy if an activity is viewable from navigable airspace, it relied upon the FAA's definition of navigable airspace to set that line.[139] If, under FAA regulations, the overflying aircraft is where it has a right to be, the property owner has no reasonable expectation of privacy in anything observable from (or by) that aircraft.[140] Drones are exactly the technological advance imagined by Justice Brennan in his argument that the Court's reliance on FAA regulations to determine whether a property owner enjoyed a reasonable expectation of privacy was misplaced:

> Imagine a helicopter capable of hovering just above an enclosed courtyard or patio without generating any noise, wind, or dust at all—and, for good measure, without posing any threat of injury. Suppose the police employed this miraculous tool to discover not only what crops people were growing in their greenhouses, but also what books they were reading and who their dinner guests were. Suppose, finally, that the FAA regulations remained unchanged, so that the police were undeniably "where they had a right to be." Would today's plurality continue to assert that "[t]he right of the people to be secure in their persons, houses, pa-

135. William Baude & James Y. Stern, *The Positive Law Model of the Fourth Amendment*, 129 HARV. L. REV. 1821, 1834 (2016).

136. *Id.*

137. *Id.* at 1883–84; *see also* Richard M. Re, *The Positive Law Floor*, 129 HARV. L. REV. F. 313 (2016) ("[W]hen the law has made a deliberate choice to protect against certain intrusions on property and security by private parties, then police should have to adduce some kind of justification for undertaking a similar intrusion.").

138. Rule, *supra* note 3, at 174.

139. Florida v. Riley, 488 U.S. 445, 448 (1989) (helicopter 400 feet up and within navigable airspace); California v. Ciraolo, 476 U.S. 207, 215 (1986) (1000 feet up).

140. *See Riley*, 488 U.S. at 449–50.

> pers, and effects, against unreasonable searches and seizures" was not infringed by such surveillance?[141]

The Supreme Court's 2012 decision in *United States v. Jones*, where the Court grappled with whether the Fourth Amendment is violated by the use of a tracking device attached to the bottom of a car, raises two more ways FAA regulations may be determinative in future drone surveillance challenges.[142]

First, the majority in *Jones* reaffirmed the traditional trespassory, or property-based, test of the Fourth Amendment.[143] The majority held that because the government trespassed on Jones's personal property to attach the tracking devices, the Fourth Amendment was violated.[144] However, if the government uses a drone instead of a GPS tracker, and if property owners have no exclusionary rights to the airspace above their homes, the traditional trespassory, or property-based, test of the Fourth Amendment would not be the test applied to the search. The property owner would instead have to show a "reasonable expectation of privacy" in the airspace above his or her home.[145] Justice Sotomayer observed this gap in her concurrence, noting "[i]n cases of electronic or other novel modes of surveillance that do not depend upon a physical invasion on property, the majority opinion's trespassory test may provide little guidance."[146]

Second, both Justice Sotomayor's and Justice Alito's concurrences note the "degree of circularity" in the "reasonable expectation of privacy" test.[147] As Justice Alito notes, this test

> rests on the assumption that this hypothetical reasonable person has a well-developed and stable set of privacy expectations. But technology can change those expectations. Dramatic technological change may lead to periods in which popular expectations are in flux and may ultimately produce significant changes in popular attitudes.[148]

In other words, as drone overflights become more frequent, courts may determine that the hypothetical reasonable person cannot have a reasonable expectation of privacy anywhere in his or her own backyard. Justice Alito concludes: "In circumstances involving dramatic technological change, the

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141. *Id.* at 462–63 (Brennan, J., dissenting).
142. *See* United States v. Jones, 565 U.S. 400 (2012).
143. *Id.* at 404–07.
144. *Id.* at 404.
145. *See id.* at 405, 406 (reaffirming the "close connection" of the Fourth Amendment to property rights, which were the original protected zones until supplemented by the *Katz* reasonable-expectation-of-privacy test) (citing Katz v. United States, 389 U.S. 347, 360 (1967)).
146. *Id.*at 415 (Sotomayor, J., concurring).
147. *Id.* at 427 (Alito, J., concurring).
148. *Id.*

best solution to privacy concerns may be legislative. A legislative body is well situated to gauge changing public attitudes, to draw detailed lines, and to balance privacy and public safety in a comprehensive way."[149]

These three benefits that an exclusionary regime up to a fixed ceiling offers—that property owners would avoid and resolve disputes under a more predictable system, that the allocation would be economically and politically efficient and fair, and that the Fourth Amendment applications would be more certain—are significant, and yet the perceived challenges discussed below have dissuaded states from adopting such a regime.

B. The Obstacles to a Fixed-Height Airspace Ownership: Uncertainty of Application and Federal Preemption

When a fixed-height bill was proposed in California in 2015, Governor Brown vetoed it and indicated his concern that it would expose "the occasional hobbyist and FAA-approved commercial user alike to burdensome litigation and new causes of action."[150] Governor Brown's concern is understandable given the uncertainty of the coming drone conflicts, but one of the benefits of setting ownership to a fixed height is that property owners and drone operators have more certain rights vis-à-vis each other. Presumably, this would lead to less litigation, rather than more. But there are some who argue that a balancing regime, with a focus on harm incurred by the landowner, is more appropriate in overflight cases.[151]

The larger, more legitimate barrier to granting airspace rights to surface owners is the FAA's position, made clear through recent regulations, filings, and comments, that laws drawing a line under which a surface owner may exclude all-comers are likely preempted by the FAA's charge to set altitude limits and to regulate navigable airspace and aircraft.[152] Arkansas recognizes federal preemption when there is a congressional intent to preempt, given either expressly or through "pervasive regulations that 'occupy the entire field,' or through evidence that state law so conflicts with federal that the purposes of federal law are frustrated."[153]

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149. *Id.* at 427–28, 429–30 (referring to Congress's wiretapping laws as an example).

150. Letter from Edmund G. Brown, Jr., Governor of the State of California, to Members of the California State Senate (Sept. 9, 2015), *available at* https://www.gov.ca.gov/docs/SB_142_Veto_Message.pdf.

151. *See* Cahoon, *supra* note 7, at 196. (calling harm to the landowner the proper focus of these cases).

152. *See* 49 U.S.C. § 40103(b)(1) (2012).

153. Emerald Dev. Co. v. McNeill, 82 Ark. App. 193, 197, 120 S.W.3d 605, 608 (2003). For a detailed discussion of the federal government's history of very heavy involvement in aviation law, see generally Jeffrey A. Berger, Comment, *Phoenix Grounded: The Impact of the Supreme Court's Changing Preemption Doctrine on State and Local Impediments to Airport Expansion*, 97 NW. U. L. REV. 941, 963–68 (2003).

This section outlines the case for federal preemption, from common law federal takings law to recent federal regulations.

1. Causby's Lasting Ambiguities

The 1946 federal takings case, *United States v. Causby*, is the common law foundation for modern airspace law;[154] like the ambiguities in airspace statutory law from the same period, the issues left open by the Supreme Court in *Causby* remain open. In *Causby*, the Court eliminated the *ad coelom* theory of absolute ownership of airspace, it asserted the authority of the federal government under the Commerce Clause to regulate navigable space, and it articulated a nuisance test for takings claims.[155] It did not hold, however, whether the federal government could regulate outside of the navigable airspace and where the private airspace ownership line ended.

During World War II, the federal government obtained the right to use an airfield near Greensboro, North Carolina.[156] The Causbys, chicken farmers who had owned property one-third of a mile from the airport since 1934, saw a dramatic increase in the air traffic over their land with the government's use. Large army bombers frequently flew over their land at a height as low as eighty-three feet, making more noise and causing more disturbance than the private planes. The increased noise and the glare from the lights on planes flying at night disturbed the Causbys' sleep and frightened their chickens so much than many of them flew into walls and were killed.[157]

The Causbys sued the federal government, arguing that the frequent and regular flights of the government's aircraft at low altitudes over their land constituted a taking within the meaning of the Fifth Amendment.[158] Under Supreme Court's takings precedent, if the Court continued to apply the traditional *ad coelom* theory of absolute ownership, this physical invasion of the airspace above Causbys' farm constituted a *per se* taking.[159] This takings case, therefore, required the Court to examine theories of airspace ownership.

The Government argued that Congress had given the federal government "complete and exclusive national sovereignty in the air space" over the

154. *See* United States v. Causby, 328 U.S. 256 (1946); *see also* Mensinger, *supra* note 59, at 414 ("[T]he Takings context (in which issues regarding airspace typically arise) differs in fundamental ways from the Commerce Clause context.").

155. *Causby*, 328 U.S. at 260–61.

156. *Id.* at 258.

157. *Id.* at 259.

158. *Id.* at 258.

159. *See* Heverly, *supra* note 100, at 40.

country,[160] and that all citizens of the United States had a public right of transit through navigable airspace.[161] Because the flights were within the navigable airspace and there wasn't a physical invasion of the property, the Government argued there was no taking.[162] In short, the Government argued landowners did not own any airspace they had not occupied with a structure.[163]

The Court disagreed.[164] The Court recognized that although the airspace is a public highway, surface owners must have "exclusive control of the immediate reaches of the enveloping atmosphere."[165] The Court held that a landowner owns "at least as much of the space above the ground as he can occupy or use in connection with the land."[166] This "superadjacent airspace" need not be occupied in a physical sense; the court recognized that some space was necessary to a landowner's full enjoyment of the land, and "for the purpose of light and air."[167]

Significantly, the Court then relied on North Carolina law to define the landowner's airspace rights, recognizing that, for Fifth Amendment takings issues, the term "will normally obtain its content by reference to local law."[168] For federal takings jurisprudence, this basis of property definitions in state law is well established.[169] Because North Carolina's statute defined airspace property as vested in the surface owners subject to the right of flight, and defined lawful flight as flight that does not interfere with the surface owner's use of the property, the Court held that its definition of airspace property rights was "not inconsistent with" North Carolina's definition.[170] The Court did not hold that the federal government, rather than the state, has the right to define state property.

With this definition of airspace rights, the Court held that "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

160. *Causby*, 328 U.S. at 260 (citing 49 U.S.C. § 176(a); Air Commerce Act of 1926, 44 Stat. 568, as amended by the Civil Aeronautics Act of 1938, 52 Stat. 973) (noting that under the cited statutes, "the United States has 'complete and exclusive national sovereignty in the air space' over this country").

161. *Id.*; *see* 49 U.S.C. § 40103 (2012).

162. *Causby*, 328 U.S. at 260.

163. *Id.*

164. *Id.*

165. *Id.* at 264.

166. *Id.*

167. *Id*. at 265.

168. *Causby*, 328 U.S. at 266.

169. *See* Heverly, *supra* note 100, at 54 ("Whether a change in language would push the Court in another direction is a question that has not yet been raised or decided.").

170. *Causby*, 328 U.S. at 266; *see* Heverly, *supra* note 100, at 54–55.

land."[171] The Court recognized the ambiguities of the test, but refused to articulate the "precise limits" of how low or how frequent flights need be to take private property.[172]

The *Causby* Court recognized that a property owner had ownership in "superadjacent airspace" in connection with the owner's use and enjoyment of the land, but as noted above, the Court did not do more to define this airspace. The Court's language, however, is inconsistent with either an easement or privilege theory where the surface owner continues to own the airspace subject to a public right of use: the Court held navigable airspace does not belong to private owners, and it did not award the Causbys damages for an "abuse" of an easement or a privilege.[173]

The Court did not indicate which of the zone theories—either the fixed-height theory or the effective possession theory—it was applying to define the superadjacent airspace. The Court's language supports both theories. The Court relied on the fact that navigable space is outside private ownership and that these planes were flying below the navigable space over Causby's land.[174] But the Court then held that the "landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land."[175] And, if the Court was implicitly endorsing a fixed-height property theory, it wasn't clear whether superadjacent property extends all the way to navigable airspace, or whether "a zone of unclaimed airspace exists between navigable airspace and superadjacent airspace."[176]

This ambiguity in *Causby* was partially resolved by a 1962 Supreme Court case, *Griggs v. Alleghany County*, where the Court appeared to adopt the second zone theory—that the landowner owns what is within her "effective possession"—rather than a fixed height theory.[177] In *Griggs*, the Court found a taking had occurred, even though the low-flying aircraft causing the disruption over the Griggs's land were in navigable space.[178] The Court focused on interference with reasonable use of private land: "[T]he use of land presupposes the use of some of the airspace above it. Otherwise, no home could be built, no tree planted, no fence constructed, no chimney erected. An invasion of the 'superadjacent airspace' will often 'affect the use of the surface of the land itself.'"[179] It had no effect on the Court's holding that the flights were within navigable space; therefore, the fixed-height theory of

171. *Causby*, 328 U.S. at 266.
172. *Id.*
173. *Id.* at 265, 267–68; Cahoon, *supra* note 7, at 170.
174. *Causby*, 328 U.S. at 264.
175. *Id.*
176. Giboney, *supra* note 105, at 2174.
177. *See* 396 U.S. 84 (1962).
178. *Id.* at 86, 88–90.
179. *Id.* at 89 (citing *Causby*, 328 U.S. at 264, 265).

property as a sole method of determining airspace property rights appeared abandoned.[180]

But does federal takings law preempt state definition of airspace up to navigable airspace? *Causby* may be read to require states to allow overflights unless the surface owner can show a harm.[181] Alternatively, *Causby* may be read "to allow states to step in and set navigable airspace for drones below that limit set by the FAA for other aircraft."[182] Although even with these state limits, if a drone interferes with the use and enjoyment of the land it would be a taking.[183] Regardless, states like North Carolina and Arkansas failed to clarify airspace rights, and eventually enough cases presented enough factual variations that "the law coalesced" and airports acquired rights to neighboring properties and "the aerial trespass debate largely fizzled out."[184] Neither the ambiguities in *Causby*'s limits on state authority to grant airspace rights nor the ambiguities in state statutory definitions have since been resolved.

2. Federal Regulations Increasing in Number and Scope

Congress has vested the FAA with authority to regulate navigable airspace and to ensure the safety of aircraft and efficient use of airspace.[185] The FAA also has the authority to "prescribe air traffic regulations on the flight of aircraft (including regulations on safe altitudes)."[186] The FAA treats all drones, no matter the size or purpose, as aircraft, and courts have affirmed the FAA's interpretation. But courts have had limited opportunities to affirm FAA's further jurisdictional claim: that because "navigable airspace" is the

180. *See id.*; *see generally* Cahoon, *supra* note 7, at 180.

181. *See Causby*, 328 U.S. 256; *see also* Heverly, *supra* note 100, at 43–44.

182. Heverly, *supra* note 100, at 46.

183. Heverly, *supra* note 100, at 47 ("It is possible . . . that the Supreme Court would step back from the injury requirement introduced in *Causby* when confronted with drone flights, returning instead to an intrusion based analysis more in keeping with property based notions of vindicating property owners' rights traditionally implicated in such holdings. This could also open up an even greater role for states as the takings analysis would more closely track the fact of the physical invasion and focus less on policy needs related to establishing navigable airspace.").

184. STUART BANNER, WHO OWNS THE SKY?: THE STRUGGLE TO CONTROL AIRSPACE FROM THE WRIGHT BROTHERS ON 259–60 (2008).

185. *See* 49 U.S.C. §§ 40103, 44502, 44701-44735 (2012); *see also* FAA OFFICE OF THE CHIEF COUNSEL, STATE AND LOCAL REGULATION OF UNMANNED AIRCRAFT SYSTEMS (UAS) FACT SHEET, (Dec. 17, 2015), https://www.faa.gov/uas/resources/uas_regulations_policy/media/uas_fact_sheet_final.pdf.

186. 49 U.S.C. § 40103(b)(2).

"airspace above the minimum altitudes of flight,"[187] the FAA may preempt state efforts to regulate airspace down to the tips of the blades of grass.[188]

In 2013, the FAA charged Raphael Pirker for allegedly operating an unmanned aircraft in a careless or reckless manner and assessed a civil penalty of $10,000.[189] The charges came from a posted video that Pirker had created two years earlier from drone flight over the University of Virginia, who had hired Pirker to create a video of its campus.[190] The FAA alleged that Pirker flew the drone at extremely low altitudes—as low as 10 feet from the ground—and through a tunnel and under a crane.[191]

The Administrative Law Judge vacated the order of assessment, holding that the drone used was more like a model aircraft than an aircraft, and was therefore not subject to the same regulations.[192] The NTSB reversed, and held that 49 U.S.C. § 40102(a)(6), which defines "aircraft" as "any contrivance invented, used, or designed to navigate, or fly in, the air" was "broad" but clearly covered any unmanned aircraft, "large or small."[193] After deciding this threshold issue, the court remanded to the administrative law judge and refused to consider other arguments Pirker raised on appeal, including whether the FAA was able to regulate airspace so close to the ground.[194] Pirker argued that the FAA lacked jurisdiction to regulate drone flight at low altitudes, below the tree-top level, and underneath an overpass because the spaces were not "navigable airspace" subject to FAA jurisdiction.[195] Because the parties settled after the remand, this argument was not subsequently decided by the administrative law judge.[196]

In July 2016, the United States District Court for the District of Connecticut held similarly that the FAA could act to regulate drones because

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187. 49 U.S.C. § 40102(a)(32) (2012); *see* 14 C.F.R. § 91.119(b)–(c) (2010) (1000 feet above the highest obstacle over congested areas and 500 feet above the surface over non-congested areas, except when necessary for taking off and landing).

188. *See* Andrea Peterson & Matt McFarland, *You may be powerless to stop a drone from hovering over your own yard*, WASH. POST (Jan. 13, 2016), https://www.washingtonpost.com/news/the-switch/wp/2016/01/13/you-may-be-powerless-to-stop-a-drone-from-hovering-over-your-own-yard/?utm_term=.81f37d187b00.

189. Huerta v. Pirker, N.T.S.B. Order No. EA-5730, 2014 WL 8095629 (No. CP-217) (Nov. 18, 2014).

190. *Id.* at *1.

191. *Id.*

192. *Id.*

193. *Id.**2–*5.

194. *Id.*; *see also* Reply Brief of Respondent, Huerta v. Pirker N.T.S.B. Order No. EA-5730, 2014 WL 8095629 (No. CP-217) (May 12, 2014).

195. *See* Respondent's Motion to Dismiss at 10, Huerta v. Pirker N.T.S.B. Order No. EA-5730, 2014 WL 8095629 (No. CP-217) (Sept. 27, 2013), available at https://www.wired.com/images_blogs/threatlevel/2014/10/MotionToDismiss.pdf.

196. *See* Settlement Agreement, Huerta v Pirker, No. CP-217 (N.T.S.B. Jan. 16, 2015), available at http://cdn.arstechnica.net/wp-content/uploads/2015/01/pirkerdeal.pdf.

Congress's definition of "aircraft" is "stunningly broad."[197] In *Huerta v. Haughwout*, the FAA sought to enforce subpoenas against the Haughwouts to investigate YouTube videos showing the Houghwouts operating weaponized drones.[198] The district court held the broad definition of aircraft gave the FAA authority to investigate the use of drones, but it acknowledged it may have held differently had it been presented with a penalty enforcement action against the Haughwouts for operating the drone on their own property.[199]

In oral arguments, the FAA had asserted regulatory sovereignty "over every cubic inch of outdoor air in the United States."[200] This position is consistent with other statements from the FAA. In 2014, the FAA asserted it is "responsible for air safety from the ground up" under its broad authority to protect individuals and property on the ground and to prevent collisions.[201] Cease and desist letters routinely contain statements like the following: "Private landowners do not have any jurisdiction over the airspace above their property and cannot prohibit or allow aviation operations over their land."[202] The FAA argues that the extension of its authority into private backyards is just a logical extension of the definitions of "aircraft" and "navigable airspace."[203]

The extent of recent regulations supports the FAA's position that it views all drones of any size as aircraft and navigable airspace as airspace from the ground up, and that it intends to "occupy the entire field."[204] The

197. Huerta v. Haughwout, No. 3:16-CV-358 (JAM), 2016 WL 3919799, at *3 (D. Conn. July 18, 2016) (allowing the FAA to enforce subpoenas served against the Haughwouts to investigate their apparent use of weaponized drones in YouTube videos).

198. *Id.*

199. *Id.* at *4.

200. *Id.*

201. *Busting Myths About the FAA and Unmanned Aircraft*, FED. AVIATION ADMIN. (citing U.S.C. § 40103(b)(2) and 14 C.F.R. § 91.13), http://www.faa.gov/news/updates/?newsId=76240 (last updated Mar. 07, 2014).

202. Letter from Alvin A. Brumner III to Reed Timmer (May 16, 2013), *in* Matthew Schroyer, *FAA Cease and Desist Letters Show Agency's Attempts to Control Drone Use in the U.S.*, PROF. SOC'Y OF DRONE JOURNALISTS (Feb. 4, 2014), http://www.dronejournalism.org/news/2014/2/faa-cease-and-desist-letters-show-agencys-attempts-to-control-drone-use-in-the-us?rq=cease%20and%20desist (compiling copies of the FAA's cease and desist letters and discussing their contents).

203. *See* Gregory S. McNeal, *The Federal Government Thinks Your Backyard Is National Airspace and Toys Are Subject to FAA Regulations*, FORBES (Nov. 18, 2014, 12:47 PM) http://www.forbes.com/sites/gregorymcneal/2014/11/18/the-federal-government-thinks-your-backyard-is-national-airspace-and-toys-are-subject-to-faa-regulations/#6b0aab977ab4 (quoting Jim Williams, Head of UAS Integration Office of the FAA as saying: "The definition of the national airspace system is anywhere aircraft can safely navigate. So by definition, then, these quadcopters are what have extended the national airspace down to the ground").

204. *See* Emerald Dev. Co. v. McNeill, 82 Ark. App. 193, 197, 120 S.W.3d 605, 608 (2003) (recognizing that, in determining whether those powers have been superseded, courts

2016 FAA Extension, Safety, and Security Act of 2016, which reauthorized FAA funding and authority, and recent regulations, including Part 107, increase regulations over drone operations without excluding drone flight in private space.[205] Drones must be operated within unaided sight, cannot be operated in a careless or reckless manner or over a nonparticipant, under a covered structure, or inside a stationary vehicle.[206] The FAA argues that a "navigable airspace free from inconsistent state and local restrictions is essential to the maintenance of a safe and sound air transportation system,"[207] and that because drones are aircraft and may be operated just over the ground, the national airspace by definition goes all the way to the ground.[208] It is the FAA's position that reserving low-level airspace to the state may lead to "fractionalized control" of the airspace or a "'patchwork quilt' of differing restrictions" that would threaten "the maintenance of a safe and sound air transportation system."[209]

The District Court in *Haughwout* indicated that the FAA's broad assertions of regulatory authority may be inconsistent with not only Congress's references to "navigable airspace," but also the Constitution's delegation of traditional police powers to state and local governments because they are typically better positioned to regulate what people do in their own backyards.[210] The court noted "[n]o clause in the Constitution vests the federal government with a general police power over all of the air or all objects that leave the ground." Further, the court was troubled that the authority extends beyond the limits of the Commerce Clause because "it is far from clear that Congress intends—or could constitutionally intend—to regulate all that is

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must find a congressional intent to preempt, either expressly through enactments, through pervasive regulations that "occupy the entire field," or through evidence that state law so conflicts with federal that the purposes of federal law are frustrated).

205. 2016 FAA Extension, Safety, and Security Act of 2016, Pub. L. 114-190, 130 Stat. 615; 14 C.F.R. § 107.51 (2016). Section 107 sets a *maximum* height for drones of 400 feet above the ground; it does not set a *minimum* height. 14 C.F.R. § 107.51.

206. 14 C.F.R. §§ 107.23, .31, .39.

207. FAA OFFICE OF THE CHIEF COUNSEL, STATE AND LOCAL REGULATION OF UNMANNED AIRCRAFT SYSTEMS (UAS) FACT SHEET, (Dec. 17, 2015), https://www.faa.gov/uas/resources/uas_regulations_policy/media/uas_fact_sheet_final.pdf.

208. *See* McNeal, *supra* note 207.

209. FAA OFFICE OF THE CHIEF COUNSEL, STATE AND LOCAL REGULATION OF UNMANNED AIRCRAFT SYSTEMS (UAS) FACT SHEET (Dec. 17, 2015), https://www.faa.gov/uas/resources/uas_regulations_policy/media/uas_fact_sheet_final.pdf; *see also* Stephens v. United States, 11 Cl. Ct. 352 (1986) (line of cases demonstrating there is no fixed height below which the landowner can exert absolute property right; as height increases, government's interest increases and landowner's interest decreases.); People v. Sabo, 185 Cal. App. 3d 845 (1986) (while helicopters may be operated at less than minimal altitudes, that does not extend navigable airspace; defined as operation without hazard rather than function of altitude).

210. Huerta v. Haughwout, No. 3:16-CV-358 (JAM), 2016 WL 3919799, at *4 (D. Conn. July 18, 2016).

airborne on one's own property and that poses no plausible threat to or substantial effect on air transport or interstate commerce in general."[211]

The court ended by quoting *Causby*:

> In a different context, the Supreme Court has "said that the airspace is a public highway," but that "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," or else "buildings could not be erected, trees could not be planted, and even fences could not be run." And so the Supreme Court recognized even 70 years ago that "[t]he landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land." If that much is clear, does it follow that this foundational principle must vanish or yield to FAA dictate the moment that a person sets any object aloft (*i.e.,* an "aircraft") no matter how high in the airspace outside one's home? This case does not yet require an answer to that question. Regardless, as with the advent of airplanes before them, the next generation of drones and similar flying contraptions will continue to challenge and shape the law that governs them.[212]

This once latent question about the extent of federal preemption over airspace is now critically important and still unresolved by a court. That the issue of whether this authority extends the FAA's exclusive jurisdiction beyond navigable airspace "has remained unaddressed is, presumably, a testament to both its difficulty and the fact that courts can easily avoid deciding the issue in a world where commercial air safety generally requires flight at altitudes higher than 500 feet."[213]

V. CONCLUSION

Despite broad statements from the FAA as to its regulatory authority, Congress has not indicated that it intends to remove from the state its broad

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211. *Id.* The federal government has rooted its authority to determine navigable airspace to federal authority over interstate commerce. H.R. Rep. No. 572, 69th Cong., 1st Sess. 9-10 (1926); *see also* Turza, *supra* note 31, at 328–29 ("[F]rom the dawn of aviation U.S. law has handled the regulation of airspace in the same way it views the regulation of navigable waterways: not as real estate where ownership rights would be overriding, but as an important channel of commerce."); Braniff Airways v. Neb. State Bd. of Equal. & Assess., 347 U.S. 590, 596 (1954) (noting that Congress's authority to regulate airspace is "bottomed on the commerce power of Congress" rather than on the sovereign's ownership of navigable airspace).

212. *Huerta*, 2016 WL 3919799, at *5 (quoting United States v. Causby, 328 U.S. 256, 264 (1946)); *see also* Giboney, *supra* note 105, at 2171 (opining that "the obvious absurdities inherent in the FAA's 'ground up' argument cannot be reconciled with the Supreme Court's decisions in Causby and Griggs and the rights of the landowner to superadjacent space").

213. Giboney, *supra* note 105, at 2161.

police powers to regulate lower-altitude airspace. This power extends beyond the commerce clause, and properly remains with the states.

And yet while states grapple with applying airspace law developed for fixed-wing overflights to drone overflights, no state yet has done what some scholars encourage is possible: provide surface owners with a clear column of airspace ownership and restore to them the right to exclude drones from that space. Were Arkansas to do so, such a law would bring the airspace property laws in line with the public's expectations, improve predictability in the application of the law, improve efficiency and fairness, and strengthen Fourth Amendment protections.

At a minimum, Arkansas should not limit its legislation to provisions regulating the conduct of private drone operations. Arkansas should act to strengthen and clarify airspace rights through amending and simplifying section 27-116-102, which was written to define airspace ownership in the age of fixed-wing flights. Drone overflights present a new challenge to old, ill-suited laws, and surface owners and drone operators both should have clear direction as to when a surface owner may exclude a drone from adjacent airspace.