Torts of the Future: Drones

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Contents

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Executive Summary

Chapter

01

Drones are becoming fixtures in America's airspace. Routine commercial drone[1] operations have been authorized in the United States since 2016, albeit with considerable limitations. Since that time, even with those limitations, both commercial and recreational use of drones has grown considerably. As of November 30, 2021, there were 867,590 drones registered with the Federal Aviation Administration (FAA).[2]

The social and economic benefits of drone usage in the United States are plain to see. Drones are already being used to aid emergency workers and first responders, inspect infrastructure, assist with agricultural work, obtain birds-eye views of properties, make movies, conduct academic research, and more. In each of these applications, drones revolutionize what people can do, by either offering entirely new capabilities or permitting existing tasks to be done far more efficiently and safely. In the coming years, each of these uses will continue to grow and, in particular, the nascent drone delivery market in the United States is almost certain to expand as well.

As more and more drones have taken to the sky in recent years, courts across the country have had to contend with new tort challenges. As with all new technologies, the law surrounding drones will need time to evolve, as courts, state and federal governments, and legal experts wrestle with how to fit the new possibilities offered by drones into existing legal doctrines. And while developments in this space will largely be driven by agencies, the courts, and legislatures, it is important to understand the role of other key players in this evolution as well.

The revolutionary capabilities offered by drones have led some to suggest that they require an entirely new legal paradigm. The reality is that, in most cases, existing tort law frameworks can accommodate drones without creating entirely new principles and standards that are unique to these aircraft. Although drones raise interesting questions, applying existing law to the greatest extent possible is the best path forward.

Drones and UAS Technology

Chapter

02

The existing regulatory regime for commercial drones has been in place since 2016, when the FAA adopted its Part 107 regulations. Part 107 allows for limited operation of small unmanned aircraft systems (UAS)—drones under 55 pounds—without prior FAA authorization. A substantial number of regulations govern these flights. For example, under Part 107, drones cannot fly beyond the visual line of sight of their operators, higher than 400 feet above ground level, or over human beings without a waiver.[3] Despite these limitations, Part 107 has allowed for considerable growth of commercial drone use.

The growth of the drone industry has had significant benefits. UPS's drones have helped move lifesaving blood and organ samples in North Carolina hospitals.[4] Drones from companies like Skydio can conduct automated bridge inspections, which reduce inspection costs and collect data more efficiently.[5] Wireless network operators, such as T-Mobile and AT&T, fly drones to inspect cell towers and equipment for damage and can even use drones as "flying cell sites" to provide emergency cell service.[6] Farmers use drones for a variety of agricultural applications, ranging from surveying and mapping to crop dusting.[7] Drones can be equipped with visual and thermal imaging cameras, allowing them to gather information rapidly for disaster relief efforts, such as firefighting.[8] In Hollywood, drones are changing the way movies are made.[9]

In the near future, drones will deliver packages to your front door. Google Wing and UPS both obtained certifications for UAS air carrier operations under Part 135 of the FAA's rules, which clears them for commercial package delivery operations.[10] Amazon followed suit a year later, receiving a Part 135 certificate in August 2020 for Amazon Prime Air.[11] Amazon plans to use Prime Air to deliver packages in 30 minutes or less.[12]

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Needless to say, drones are helping save lives and provide novel ways to overcome traditional roadblocks.

While the benefits of drones are clear, numerous, and expanding, the unique characteristics of the technology raise interesting questions with respect to acceptance by the public, integration into everyday life, and, of course, tort law. For instance, because they can—and generally must, under FAA regulations—operate at far lower altitudes than traditional manned aircraft, questions have emerged about the nature of private property rights and when a drone overflight can constitute a trespass. The capture of imagery and data by UAS in flight adds a new gloss to ongoing debates about privacy in the context of new technology. And the very features that allow drones to be used for new and innovative applications—small size, remote operation, and affordable price points—also allow for nefarious uses such as harassment. While tort law plainly will play a role in drone operations, the key questions are how that role will be defined and who will get to define it.

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The Players That Will Determine the Future of Drone Torts

Chapter

03

As with any new technology, the evolution of drone tort law will happen in a variety of fora across the country. Of course, primary sources such as legislatures, administrative agencies, and courts will play a key role in how the law evolves and applies to drones. But secondary players, such as model code organizations, will also have an enormous influence on the regulation of this new technology, and the part that these sources play can often be overlooked. A brief introduction will help keep these players—and their roles—straight.

Legislators and Regulators

Congress has long recognized the need for federal control over the airspace and has vested that control in the FAA. For decades, the FAA has acted as the nation's singular airspace regulator, developing comprehensive regulatory regimes for all aspects of manned aircraft operations. Congress has specifically directed the FAA to integrate drones into the national airspace system and has taken a series of legislative steps to quicken that integration.[13]

FAA Regulation

Although the FAA has moved the ball forward, the integration process is still ongoing. The FAA's current rules leave many important questions about the operation of drones unanswered, which has led to some legal uncertainty. For example, as discussed in the U.S. Chamber of Commerce Institute for Legal Reform's 2017 and 2018 *Torts of the Future* reports, the precise scope of federal preemption in the drone space remains uncertain. In 2015, the FAA released a Fact Sheet to help demarcate the edges of state and federal authority over UAS use.[14] Efforts to update this Fact Sheet are reportedly ongoing, but there is no clear timeframe for revised guidance on this subject from the FAA.

While the FAA's Fact Sheet is useful, it is not exhaustive, and it leaves a number of questions unanswered. Specifically, the Fact Sheet expresses concern about conflicting municipality-enacted ordinances that could "severely limit the flexibility of FAA in controlling the airspace and flight patterns, and ensuring safety and an efficient air traffic flow."[15] The Fact Sheet provides examples of state and local laws that are within traditional police powers and those that are not. For the latter, the FAA recommends that localities consult with the agency before regulating. The Fact Sheet confirms that the federal government has exclusive control over UAS safety, including flight altitudes, flight paths, and no-fly zones. Equipment and

training mandates related to aviation safety are also likely preempted. Conversely, laws related to state and local police powers—land use, zoning, privacy, trespass, and law enforcement operations—are generally not preempted. While this demarcation is helpful and appears to delineate some clear areas of preemption, the precise contours of what falls within local police power in relation to small drones operating at low altitudes remains murky.

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State Laws

In the absence of clearer direction from the FAA, at least 44 states have enacted drone-related laws since 2013.[16] Some of these laws provide causes of action that serve to supplant or supplement traditional tort causes of action. Some states have additional, non-drone-related laws in place that may alter the way courts apply traditional tort concepts to drones. For example, California's statutes provide for a reckless endangerment tort that may impact California courts' analyses of drone-related torts. Given the current ambiguity of the federal drone regulatory regime, courts may find that such laws are not preempted. For example, in *North Dakota v. Turgeon*, the court found that criminal reckless endangerment charges were not preempted because the state could still prosecute misconduct in the drone context under its traditional police powers.[17] The *Turgeon* ruling is in line with the treatment of other aircraft-specific reckless endangerment statutes, which have generally not been held to be preempted by FAA regulations.[18]

Courts

Plaintiffs around the country have brought an array of tort causes of action stemming from incidents involving drones. In grappling with these cases, state and federal courts are developing a body of case law applying traditional tort concepts to this relatively new technology. The topic of the future of drone torts is discussed more fully below.

While the uncertainty surrounding the FAA's regulatory regime obviously raises issues on the user level, it also ultimately shapes the decisions of courts that must contend with drone-related cases. Often, courts rightly apply existing common law principles in cases involving drones. However, they are required to do so with only minimal guidance from the FAA based on existing regulations or

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the Fact Sheet, or in many cases without any FAA guidance at all.

Secondary Actors

As noted in the 2018 *Torts of the Future* report, several organizations are developing general principles and standards that legislatures and courts could apply to drones. These guidelines could play an outsized role in the development of drone torts, but they may be flying below the radar of many observers in this space.

Uniform Law Commission (ULC)

The ULC is an organization that provides states with model legislation in various areas. The ULC has worked on a "uniform law addressing tort liability and defenses uniquely associated with the use of aerial drones."[19] This exercise resulted in the draft *Tort Law Relating to Drones Act.*[20] The ULC's 2018 draft created a per se trespass rule where any nonconsensual UAS flight below 200 feet was a trespass.[21] The draft whipped up a storm of criticism—from industry stakeholders to the FAA and Department of Transportation (DOT).[22] Some commentators even thought that the per se rule would jeopardize the future of the drone industry.[23] The Commission took these comments to heart and redrafted the law in 2019. The revised draft drew more directly from traditional aerial trespass law and would have recognized a trespass only if one operates UAS over someone's land and "causes substantial

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interference with the use and enjoyment of the property."[24] While the 2019 draft received significantly more support from industry stakeholders,[25] it drew criticism from property law groups, and the ULC ultimately declined to adopt the draft and set the drone tort project aside.

Although there has been no further activity since, the ULC is not necessarily out of the drone game. The group could decide to take another stab at a draft law, and its prior work might still influence legislation and court cases going forward.

American Law Institute (ALI)

The ALI is responsible for publishing various Restatements of the Law. Unlike the ULC, which works to propose new state laws to deal with new technologies or circumstances, the purpose of the Restatements is to capture and explain existing law. Moreover, the influence of Restatements is indirect; they are intended to be used and cited by courts, rather than enacted by legislatures. Despite this difference in focus, new Restatements sometimes either expressly or implicitly include normative principles, and the sheer frequency with which they are consulted and cited by courts gives them an outsized influence in the development of the law. The ALI is currently in the process of developing the Fourth Restatement of Property, which will likely address the topic of aerial property rights, specifically in the context of drones. Since a revision in the understanding of aerial property rights could help determine when drone use constitutes a trespass, the Restatement's position will likely put a thumb on the scale in any future development of drone torts. This is especially true since, as explained below, the number of actual cases in this area is still relatively small, meaning that there is little existing law to "restate" here. The Restatement's impact will almost certainly involve its characterization and extension of legal principles from other areas into the drone context.

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The Government Accountability Office (GAO) and Other Government Agencies

In September 2020, the GAO released a report titled *Unmanned Aircraft Systems: Current Jurisdictional, Property, and Privacy Legal Issues Regarding the Commercial and Recreational Use of Drones*[26] pursuant to a directive in the FAA Reauthorization Act of 2018.[27] The report describes GAO's position on "the current state of the law, including the uncertainties, differing legal positions, and concerns raised about the current state of the law."[28] Of the many secondary sources on drones, the GAO report is perhaps the most comprehensive, although it is not legally binding and

is more descriptive than normative. Still, one element missing from the GAO report is the FAA's "position on the existence or impact of property rights in airspace;" the FAA specifically declined to provide its views on this point, citing the existence of an agency working group that is planning to update the 2015 Fact Sheet.[29]

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On February 15, 2015, President Barack Obama issued a Presidential Memorandum titled "Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems."[30] The memorandum explained that the federal government will take steps to ensure that UAS integration accounts for "not only our economic competitiveness and public safety," but also privacy and civil rights and liberties.[31]

In 2016, the National Telecommunications and Information Administration (NTIA) convened a multi-stakeholder engagement process, which culminated in the release of the *Voluntary Best Practices for UAS Privacy, Transparency, and Accountability.*[32] The voluntary guidelines apply to the use of data collected by commercial and non-commercial drones, with an Appendix that focuses on recreational drone use. Importantly, NTIA notes that its guidelines go beyond existing law.[33] The guidelines recommend (1) obtaining consent when flying on someone's property; (2) showing care when collecting and storing information that identifies a particular person; (3) limiting the use of identifying data; (4) securing identifying data (e.g., by following the NIST Cybersecurity Framework); and (5) monitoring and complying with ever-evolving laws.[34] NTIA's guidelines recognize that, while there is the potential for bad actors to abuse drones, voluntary privacy standards can serve as flexible guardrails that aid innovation.

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Think Tanks, Advocacy, and Academic Organizations

A variety of think tanks, academic institutions, and industry advocacy groups have played, and will continue to play, a role in shaping the development of drone tort law. Examples range from drone-specific organizations like AUVSI[35] and the Small UAV Coalition, to broader technology interest groups like CTA[36] and NetChoice,[37] to the U.S. Chamber of Commerce,[38] and even groups like Heritage,[39] Cato,[40] and Mercatus.[41]

The Elephant in the Room: Preemption

Chapter

04

How tort law will develop in the context of drone operations will depend in large part on complex questions of federal preemption. The preemption question turns on whether and to what extent pervasive federal drone regulation precludes state tort remedies for persons injured by drone operations. Because the federal government has long occupied the fields of air navigation and aviation safety, federal preemption will arise often in the drone context, even where the federal government has no comparable law targeting the same conduct.

For instance, a state privacy law that prohibited drones from operating up to a certain altitude above a person's home likely would be preempted. Such a law would impact air navigation and the routes where drones could fly, which are in the FAA's wheelhouse. That impact on navigation and safety would likely control the result—even though the FAA's 2015 Fact Sheet acknowledged that privacy issues fall within traditional state and local authority and the FAA expressly declined to address privacy in its Part 107 regulations.

Despite the outsized role that federal preemption will likely play in the development of the law, so far only a few courts have had the opportunity to consider preemption questions in the drone law context. Decisions have been mixed on the extent to which federal regulations preempt state and local drone laws and ordinances,[42] and some courts have decided not to rule on the issue when given the opportunity.[43] These varied outcomes could stem from the difficulties courts have had navigating the ambiguity of the federal drone regulatory regime and the lack of detailed guidance from the federal government on the scope of federal preemption.[44]

Conflict Preemption

To date, there are two federal court cases that have directly addressed the issue of conflict preemption in the drone context, and they are somewhat in tension.[45] In *Singer v. Newton*, the city of Newton enacted a drone ordinance that sought to require registration of all drones with the local government.[46] The ordinance also created a number of operating conditions, including a ban on the use of a pilotless aircraft below an altitude of 400 feet over

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private property without the owner's permission.[47] The Massachusetts district court found that this ordinance conflicted with, and was thus preempted by, federal law. In doing so, the court explained that the FAA "has indicated its intent to be the exclusive regulatory authority for registration of pilotless aircraft."[48] Importantly, the court also noted that Newton did not seek prior FAA approval before enacting its ordinance.[49] The court ultimately struck down the ordinance.

Conversely, in *National Press Photographers Association v. McCraw*, a Texas district court upheld a state statute that effectively banned the use of drones at correctional facilities and sports venues.[50] In an amicus brief, industry groups AUVSI and CTA had argued that the no-fly provisions in *McCraw* were both field and conflict preempted.[51] The district court disagreed.

Both cases turned on the issue of conflict preemption. Conflict preemption occurs when "compliance with both state and federal regulations is impossible or if state law obstructs the objectives of the federal regulation."[52] The differing answers to the preemption question relied on how the court characterized the FAA's interest. In *Singer*, the court viewed the FAA's interest as "integrat[ing] drones into the national airspace."[53] This is quite a broad view. In *McCraw*, the court took a far narrower approach and limited the FAA's interest to regulating "issues or conflicts, analogous to avoiding crashes."[54] Unlike in *Singer*, the *McCraw* court wanted a more detailed explanation of how a state statute would interfere with the FAA's interest in drone integration and consistency. Of course, the different outcomes may just be due to the facts. In *Singer*, the ordinance at issue effectively banned drone use within city limits;[55] in *McCraw*, the upheld statute only limited drone flight over a "Correctional Facility, Detention Facility, or Critical Infrastructure Facility" or "Sports Venue" at less than 400 feet.[56] *Singer*'s blanket ban was more intrusive on airspace regulation than *McCraw*'s more limited ordinance.

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Still, the reasoning in *McCraw* strains against the weight of the FAA's 2015 Fact Sheet and the years of precedent on which it is based. The *McCraw* court referenced the 2015 Fact Sheet but seemed to read the FAA's statements narrowly, implying that the harmonization benefits of preemption are limited to something like preventing crashes.[57] This seems too narrow of a reading, especially since the FAA understands that it has authority to regulate both safety and efficient air traffic flow.[58] Moreover, unlike the court in *Singer*, the *McCraw* court never discussed whether or not the state sought approval from the FAA before enacting its drone ordinance. Thus, *Singer*'s broader characterization of the FAA's interest in airspace regulation seems closer to the spirit and text of the Fact Sheet.

Conflict preemption issues are not limited to federal courts. In a recent Michigan state court decision, a judge ruled that a local ordinance was conflict preempted by both a state drone law and FAA regulations.[59] A county park rule barred persons on park property from operating drones without prior written permission. Similarly, a county ordinance barred operation of a drone with video/audio recording capabilities from operating on county property without a permit[60] and barred drone usage within 500 feet of detention facilities and courthouse buildings.[61] Michigan has its own UAS law, the Unmanned Aircraft Systems Act (UASA), which explicitly preempts local regulation of "the ownership or operation" of UAS except "as expressly authorized by statute."[62] The court found that the park rule "directly conflicts with FAA sovereignty that permits drones in the airspace" and with the state UAS law's general prohibition on local regulation of drone operation.[63] Similarly, the ordinance's permit requirement "is the type of patchwork drone use regulation the [state] Legislature intended to prohibit."[64]

While neither the park rule nor the permit requirement were wholesale bans on drone operation, the ordinance's ban on operation near detention facilities and courthouses clearly was such a blanket ban. The court explained that "[t]he FAA has exclusive authority to determine the airspace in which a person may operate a drone, and in enacting the UASA the Legislature recognized that currently neither the state nor its political subdivisions have the authority to regulate airspace or to modify the FAA's Part 107 requirements for drone ownership or operation."[65] Thus, at the state level, courts can find that local drone ordinances are conflict preempted by both federal and state drone laws.

Field Preemption

At bottom, the issue animating the Fact Sheet is a simple one: a patchwork of city ordinances or state laws that narrowly curtail flight corridors can actually increase the risk of crashes. Most obviously, that can occur if state or local governments attempt

to insert themselves into flight clearance or coordination, which can lead to confusion and conflict. But even simple restrictions on where and when drones can fly can have knock-on effects for safety. If state and local jurisdictions attempt to limit the space where drones can operate, that naturally increases the concentration of aircraft in those authorized spaces and leads to a greater chance of collisions with other drones or aircraft. It is this concern that has led both courts in other aviation safety contexts and the FAA in the Fact Sheet to embrace field preemption. Field preemption occurs when a federal regulatory regime is so comprehensive as to occupy the entire field of an issue. Thus, even if there is no direct conflict between a state law and a federal law, the state law is preempted if it involves a field that the federal government has claimed for exclusive regulation.

Nevertheless, both the *Singer* and *McCraw* courts rejected field preemption as a rationale for FAA preemption.[66] This is difficult to square both with courts' embrace of field preemption in other aviation contexts[67] and with the FAA's explicit reference to field preemption in the Fact Sheet.[68] It appears that both courts were reluctant to read this prior case law as controlling in the drone context, and did not find the Fact Sheet sufficiently direct or persuasive enough to reach a finding of field preemption.

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Indeed, even apart from field preemption, some courts have questioned whether the FAA has the authority to regulate all airborne objects under the Commerce Clause, no matter the altitude at which they are operating.[69] And while that question has animated the push for "avigation easements," described below, no court has yet confronted the clear safety implications of trying to divest the FAA of its responsibility for certain UAS operations or certain swaths of airspace, nor how limitations on the FAA's authority might be squared with existing, expansive Commerce Clause jurisprudence.[70]

It is possible that the FAA could address these concerns, either through the long-anticipated update to the Fact Sheet or through participation in future appellate proceedings. However, in the absence of a more forceful assertion of authority by the FAA, it remains to be seen how future decisions will approach these critical questions.

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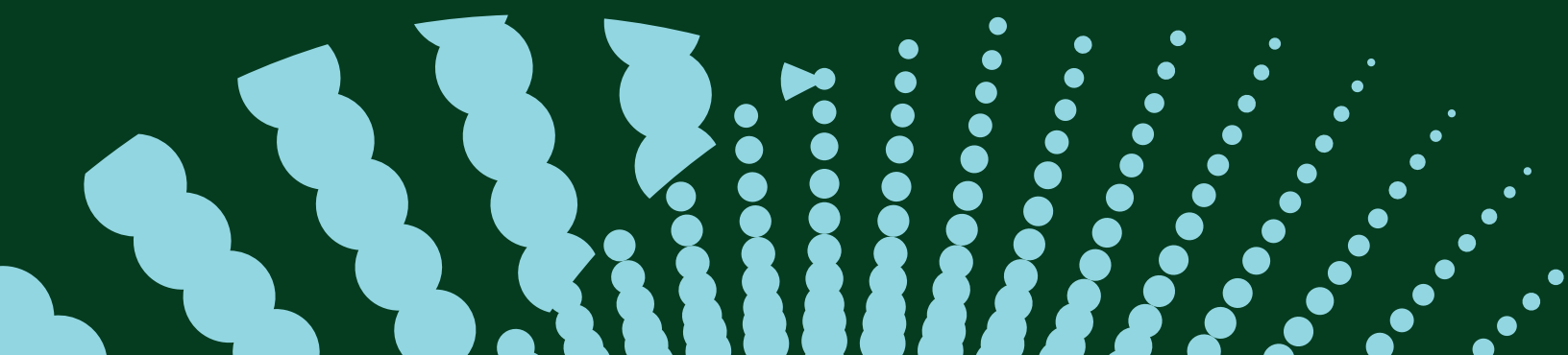

The Future of Drone Torts

Chapter

05

As drone tort law develops, the focus will most likely be in the following three areas: (a) privacy torts, (b) trespass, and (c) negligence. Each of these is discussed in turn, including where the law is, what the key issues are, and where the law is headed.

Privacy Torts

Commercial drones utilize cameras and can collect vast quantities of data, either as part of their mission or simply to enable their operator to navigate the airspace. Recreational drone operators often explore the natural world from an eye in the sky. While most drone use is commercial or harmless fun, it is also clear that bad actors can use drones to violate people's privacy.

Currently, there is no comprehensive federal privacy law, whether applicable to drones or otherwise. At least one Congressional Research Services paper from 2013 argued that the FAA would have the authority to issue drone-related privacy regulations.[71] However, when issuing the Part 107 rules in 2016, the FAA expressly disclaimed this role, characterizing regulation of privacy as an "overreach" of its authority.[72] Still, the agency "recognizes that unique characteristics and capabilities of UAS may pose risks to individual privacy" and noted the public's "concerns regarding the use of small UAS to collect information about individuals."[73] Public concerns about the use of UAS are currently covered by state tort laws.

There are generally four forms of privacy torts: (1) intrusion upon seclusion,[74] (2) appropriation of name or likeness,[75] (3) public disclosure of private facts,[76] and (4) placing a person in a false light.[77] The intrusion upon seclusion and public disclosure of private facts torts require that the intrusion or disclosure be "highly offensive to a reasonable person."[78]

Drone-related privacy cases will most likely arise in the intrusion into seclusion and public disclosure of private facts contexts.[79] Privacy concerns involving drones could extend to both physical and personal data privacy.

The Fourth Amendment Overlay

The Fourth Amendment concept of a reasonable expectation of privacy will likely play a key role in the development of drone-related

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privacy torts.[80] The GAO Report found that it is unclear "[w]hether existing federal and state privacy laws adequately protect against invasions of physical privacy and personal data privacy involving UAS operations and what authority the federal, state, local, and tribal governments have to enact additional measures that may be needed."[81] Still, the Fourth Amendment's reasonable expectation of privacy test—used to determine whether a "search" has occurred—could influence courts' views of future privacy interests when it comes to civil torts. This reasonableness test could be instructive, but probably constitutes a lower bar for liability than the "highly offensive to a reasonable person" test for traditional privacy torts.

Of course, some courts are hesitant to rule on Fourth Amendment drone issues until they are squarely before the court. In *State v. Davis*, for example, the Supreme Court of New Mexico chose not to consider the use of "ultra-quiet drones" until the court was directly addressing such a fact pattern.[82]

"Drones lie at the intersection of two different strands of Fourth Amendment jurisprudence."

Other courts have taken the issue head on. In *Long Lake Township v. Maxon*, defendants argued that aerial surveillance of their property via drone constituted a search under the Fourth Amendment.[83] Under the Fourth Amendment, to decide whether some government action is a search, courts must determine whether the defendant had a reasonable expectation of privacy. In *Long Lake*, the court found that defendants had a reasonable expectation of privacy against drone surveillance of their real property.

Drones lie at the intersection of two different strands of Fourth Amendment jurisprudence. One strand comes from Justice Scalia's majority opinion in *Kyllo v. United States*. In that case, which considered the use of thermal imaging to detect an indoor marijuana growing operation, the Court held that the defendant had a reasonable expectation of privacy inside the curtilage of his home from technological advancements that extended beyond the "naked eye."[84] Another strand of case law deals with aerial surveillance by planes and helicopters and generally has held that there is no reasonable expectation of privacy from naked-eye aerial surveillance.[85] In one such case—*Florida v. Riley*—the plurality found it crucial that the helicopter engaging in aerial surveillance was complying with FAA regulations.[86] However, in concurrence, Justice O'Connor expressed concern that the plurality put too much stock in FAA guidelines. She instead concluded that one has no reasonable expectation of privacy from aerial surveillance if members of

the public use that airspace frequently. She found that the public use of airspace at 400 feet was frequent enough to defeat any expectation of privacy from naked-eye observation from that altitude.[87]

Thus, drones stand athwart two potentially conflicting views of the Fourth Amendment. On the one hand (*Kyllo*), drones could be seen as technological advancements that potentially go beyond naked-eye surveillance and thus violate the right to privacy when used to surveil. On the other hand (*Riley*), drones are aircraft, regulated by the FAA, and their use is becoming significantly more frequent. More common drone use could lead to the possibility that, so long as operators comply with FAA regulations or the airspace is frequently used, there is no issue with aerial surveillance by a drone.

The court in *Long Lake* found that drones fit more neatly into the *Kyllo* technological advances strand of case law.[88] Importantly, the court found that a drone's size, speed, and stealth make it different in kind from and more intrusive than the naked-eye surveillance in the other Fourth Amendment cases that involved FAA regulations.[89] The court also observed that it would be "unworkable and futile" to try and create an altitude-based test for when drone surveillance exceeds Fourth Amendment limits.[90] Rather than deciding to proceed cautiously in the face of this concern, the court moved in the opposite direction, holding that any use of drone surveillance at all is per se an invasion of one's

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reasonable expectation of privacy.[91] In so doing, the Michigan appeals court has created a bizarre technology-based exception to *Riley*. Even if unmanned aircraft are performing exactly the same flights at exactly the same altitude as manned aircraft, or even if they are observing no more than could be observed from a manned aircraft at higher altitude, they are subject to Fourth Amendment constraints in a way that manned aircraft are not. Of course, *Long Lake* is the only current case where a court has tackled Fourth Amendment issues in the drone context, and later courts could rule differently.

For example, petitioners challenging the FAA's Remote ID rule in the D.C. Circuit have argued that the requirement to broadcast operator and location information constitutes an improper Fourth Amendment search, based in part on the rule's application to drones being operated at low levels and from private property.[92] A decision in that case is expected in 2022.

Legislation and Application of Existing Laws

Some state legislatures have enacted drone-specific privacy laws, such as Florida and Texas.[93] California has also amended its anti-paparazzi law to create a private right of action against a person using a drone to record a person engaging in "private, personal, or familial activity."[94] In some states, criminal "Peeping Tom" statutes have been used to address drone-related privacy concerns in lieu of private rights of action.[95]

Individuals also have sought to protect their privacy interests from drones by seeking restraining orders or similar judicial protections.[96] However, not all courts have been willing to find that certain forms of drone usage amount to the necessary level of harassment to grant such orders.[97] In response to concerns surrounding the use of drones to circumvent restraining orders, and to generally add more clarity to the law, some states have considered "extension of self" laws, which clarify that if a person uses a drone to commit certain conduct, that person has committed the conduct for purposes of civil and criminal laws.[98] Michigan, for example, passed an extension-of-self law in 2018.[99] The extension-of-self approach is a helpful tool for regulators, because it allows for a cleaner application of existing laws against drone operators without the need to adopt drone-specific or technology-dependent laws.

The Role of the First Amendment

First Amendment concerns have been raised in several drone-related cases. For example, while the Texas *McCraw* case, discussed above, rejected a preemption challenge to Texas restrictions on where drones can fly, it also found that a suite of state restrictions on the use of drones for photography were unconstitutional under a sweeping view of the scope of the First Amendment.[100] Given that drones can be used in new and innovative ways for newsgathering, and privacy concerns

often butt up against the freedom to gather and report information, it is clear the First Amendment will be a central issue in drone privacy tort cases moving forward.[101]

"Drones' ability to fly at low altitudes has raised new concerns for property owners and property rights advocates and has reinvigorated debates that were settled long ago in the context of manned aircraft."

Secondary Sources

In addition to courts and state legislatures, secondary actors have considered privacy issues in the context of drones. NTIA's *Voluntary Best Practices for UAS Privacy, Transparency, and Accountability*, the culmination of the agency's 2016 multistakeholder process discussed above, addresses the collection of personal data via drone and the protection of that data, and lays out measures to bolster privacy. Although it does not have direct legal effect, it has provided a baseline for the development of policies in this area, and likely will continue to influence the development of tort law in the future.

The ULC has also worked on a draft model drone privacy law as part of its *Tort Law Relating to Drones* endeavor. That proposal would have significantly restricted the ability of drone operators to collect data during flights, which could have imposed meaningful restrictions on the types of operations for which drones could be used. However, during its deliberations, the ULC's drone tort law committee decided that a technology-specific privacy law would be problematic.[102] States have varying approaches to privacy generally and may not be willing to adopt a nationally uniform drone privacy statute that was potentially out-of-step with these approaches. The committee thus ultimately decided to draft a model law affirming that whatever privacy laws a state has in place apply to drones.[103] Nevertheless, the full Commission rejected the proposal along with the rest of the ULC drone law, and the ULC has since suspended the overall effort.[104]

Other Considerations

While drones' collection of flight data may raise personal data privacy concerns in some contexts, it may be a helpful component of drones' functionality in others.[105] In at least one case, a defendant was acquitted of harassment charges because the location data his drone collected showed that he did not in fact fly over the victim's property.[106] In another case, a Dakota Access Pipeline protester was charged with endangering a police plane when he flew his drone to gather video. The video showed that he did not fly his drone in a reckless manner, and he was cleared of charges.[107] The amount of data that drones collect and store can make it easy to determine key facts, and thus aid in the administration of justice. This is something policymakers should keep in mind as they regulate in this area.

Trespass to Land

As drone use has increased and as the sight of drones over a person's property becomes more commonplace, the concept of trespass is front of mind for many stakeholders. Drones' ability to fly at low altitudes has raised new concerns for property owners and property rights advocates and has reinvigorated debates that were settled long ago in the context of manned aircraft.

The Property Rights Debate at the Dawn of Aviation

The issue of whether an aircraft can "trespass" on the land below long predates the development of the modern drone. These questions first arose with the advent of piloted aircraft more than a century ago. As aviation developed, the question of whether landowners could exclude aircraft from flying overhead grew more heated, with some arguing that aviators may need to secure easements before a flight. However, even by 1920 this was a clear minority view, given that it would make flying any distance essentially impossible.[108] The ULC—the same ULC discussed above—pushed for the adoption of uniform state laws that would generally permit aviation. Many of these right-to-fly laws persist today.[109] The federal government also got involved, recognizing the overwhelming national interest in ensuring the availability of navigable airspace.[110]

But it was not until 1946 that the Supreme Court weighed in decisively on this question. In the landmark case *United States v. Causby*, the Supreme Court explained that although ancient common law property rights extended "to the periphery of the universe," this concept had "no place in the modern world."[111] *Causby* established once and for all that the "air is a public highway," and in so doing recognized that the contours of property rights are tied to technological change.[112] Still, the Court did not determine the "precise limits" of airspace within "the immediate reaches above the land."[113] Nevertheless, *Causby* also stands for the proposition that a property owner is not deprived of their rights unless flights are "so low and so frequent as to be a direct and immediate interference with the enjoyment and use of the land."[114] Some industry stakeholders have argued that *Causby*'s holding is limited to property rights in land, and not aerial property rights at all.[115]

Indeed, the Second Restatement of Torts has an aerial trespass exception for traditional trespass rules. Normally, any nonconsensual invasion onto another's land is a trespass per se, without any other harm.[116] Some have argued that drones should be governed by this traditional per se test, meaning that any drone intrusion onto personal property immediately makes the operator civilly liable.[117] However, Restatement Section 159(2) states that trespass

by aircraft is a trespass if and only if the aircraft enters into "the immediate reaches" of the adjacent air space and "interferes substantially" with the use of the land.[118] Some have argued that drones are "aircraft" for purposes of the Restatement, because Congress defined UAS as "aircraft."[119] This would mean that drone operators would have to engage in nuisance-like behavior in order for the operator to be liable for trespass.

Modern Case Law

While the principle of aerial trespass has existed for decades, few—if any—courts have wrestled with how to apply it to drones. The case law that does exist on this point is largely tangential. For example, in *Commonwealth v. Merideth*, a landowner escaped criminal charges for shooting down a drone based partly on the theory that the drone was flying below the tree line of the defendant's property.[120] The drone owner brought a subsequent federal action to try and recover damages based on a theory of a right of navigation, but the suit was dismissed on other grounds at the pleading stage.[121] Similarly, when the FAA issued a subpoena to investigate a flame-throwing drone that had been posted on YouTube, the court issued the subpoena—but in *dicta* expressed doubt that the FAA's enforcement authority was quite as broad as the agency claimed.[122] Moreover, a number of courts examining criminal trespass actions have taken a more expansive view of what local law can prohibit, in terms of operations over specific properties.[123] This is certainly not the same as a civil tort, but these actions could provide groundwork for courts to expand common law trespass in the context of drones.

> "Some have argued that drones are 'aircraft' for purposes of the Restatement, because Congress defined UAS as 'aircraft.' This would mean that drone operators would have to engage in nuisance-like behavior in order for the operator to be liable for trespass."

Secondary Sources

The ULC had previously drafted two different model drone trespass laws. The first law featured a "bright-line" rule that established a per se trespass regime below a certain height. However, this law received serious industry pushback, and many argued that the per se rule failed to note that *Causby* established property rights in land—not airspace.[124] After a redrafting session, the ULC assembled a multi-factor "substantial interference" approach. In so doing, the drafters at the ULC grappled with a question that will ultimately confront courts, as well: How does one evaluate "substantial interference" when it comes to aircraft that are both much smaller and much lower-flying than traditional, crewed airplanes? Ultimately, in large part because of concerns raised by property rights groups,

this revised draft uniform law was withdrawn.[125] It is unclear whether the ULC will revisit this topic, but even if it does not, the foundational work that the group did is publicly available and may resurface when courts or legislatures address these issues.

Meanwhile, the ALI's Restatement of Property could have an outsized influence on what "trespass" means in the drone context, given the impact that Restatements can have in developing state tort law. The Reporter for the Restatement has emphasized that drones should be governed by traditional laws of trespass rather than the *Causby* test.[126] A 2019 draft of the pending Fourth Restatement included a new provision, "trespass by overflight" that discusses the contours of property law and specifically how they could apply to drones.[127] This overflight trespass provision has not yet been adopted.

Avigation Easement Theories

Some advocacy groups and think tanks, such as Mercatus, continue to advocate for strong aerial property rights. Mercatus promotes "avigation easements" for drones.[128] The think tank supports state and local coordination with the FAA to create "drone highways"—or more accurately, drone tollways—which would be narrow aerial corridors over public rights-of-way for drone activities for which state and local jurisdictions could charge fees for access.[129]

A number of states already have generally applicable avigation easement laws that condition property rights to allow for aircraft flights.[130] Generally, such laws are modeled on the 1922 Uniform Aeronautics Act,[131] which is the ULC project mentioned above that dates back to the origin of aviation. These laws allow for overhead flights so long as aircraft operators do not fly at such a low altitude that they would interfere with existing land use, or so long as they do not conduct flights in an "imminently dangerous" manner.[132] Mercatus recommends that states use such avigation laws to lease easements above public roads to drone companies.[133]

In 2021, at least three states introduced drone-specific avigation easement laws.[134] These restrictions could divide airspace, permit the imposition of leasing regimes and, in some cases, collect fees from drone operators. Some industry groups loudly opposed the introduction of these bills. They argued that further avigation easements would stifle drone industry development and growth by creating a web of conflicting and potentially unsafe laws.[135] Moreover, as noted above, there are strong arguments based on case law and the FAA's Fact Sheet that state and local attempts to dictate flight paths or restrict air navigation to specific routes are preempted by federal law. This would mean that an avigation easement regime could not move forward without congressional authorization. Since 2017, Congress has introduced a number of federal drone-related bills that could clear the way for these assertions

of local control over low-flying drones, but none have passed.[136] The federal bills received similarly negative industry responses.[137]

Negligence

Drones can weigh anywhere in the neighborhood from mere ounces to more than 100 pounds. They can be fast—as fast as cars or motorcycles—and can crash due to environmental factors or user error, just like any other vehicles. Drone operators—whether recreational or commercial—are likely to face increased negligence litigation as the drone industry grows and evolves.

The State of the Law

The heart of the negligence tort is reasonableness. When it comes to drones, courts across the country are still determining what constitutes "reasonable care" for drone operators.[138] Several plaintiffs have brought suits against drone operators for injuries sustained after their drones either fell onto, or were flown into, the plaintiff.[139]

Courts may look to other bodies of law to determine the appropriate standard of care. On multiple occasions, state criminal reckless endangerment charges have been brought against drone operators for operating drones in certain ways and at certain times and places. While the standard for criminally reckless conduct of course will not apply in a civil negligence case, courts may use these criminal reckless endangerment cases as a frame of reference for considering what does and does not constitute reasonable care for purposes of drone-related negligence suits.[140] Similarly, at least one defendant has been convicted of disorderly conduct after being found reckless by a jury for failing to comply with the FAA's line of sight requirements.[141]

Some plaintiffs have looked to the federal drone regulatory regime to support their negligence claims.[142] As the FAA adopts regulations creating more concrete standards for drone operations—particularly

"The heart of the negligence tort is reasonableness. When it comes to drones, courts across the country are still determining what constitutes 'reasonable care' for drone operators."

safety standards—plaintiffs may stand a better chance of being able to use these regulations to establish negligence per se. The FAA's recent rulemaking in 2021 created a four-tiered framework for UAS operations over people, with increasingly strict requirements based on the amount of risk posed by the aircraft.[143] These new rules could create possible negligence per se standards in civil suits.

Secondary Sources

The development of secondary sources of law on drone-related negligence has been comparatively limited. For instance, the ULC's draft *Tort Law Relating to Drones Act* did not address negligence issues.

Conclusion

Chapter

06

Drone torts are evolving, influenced by a range of primary and secondary players. In the face of cutting-edge technology, it can be tempting to create new, specific legal doctrines to try and address supposedly novel challenges. That has been particularly true in some contexts, such as privacy and trespass.

Still, the need for wholesale changes in the law can often be an illusion. Although applying existing law to drones may seem daunting, the underlying principles are, in actuality, fairly well-settled. As courts move forward and hear more of these cases, they should be able to adapt settled principles to this new technology with relative ease. Doing so is vastly preferable to trying to create a patchwork of new, drone-specific law that could be inconsistent from jurisdiction to jurisdiction and create conflict with general tort and privacy doctrines—and with the overriding national interest in ensuring safe and efficient use of the airspace.

"As courts move forward and hear more of these cases, they should be able to adapt settled principles to this new technology with relative ease."

Endnotes

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[1] Over the past decade, drones have more formally been referred to as "Unmanned Aircraft Systems." However, the FAA has announced an effort to move away from this terminology and toward more gender-neutral language such as "Uncrewed Aircraft Systems." *See, e.g.*, Lori Aratani, *FAA Committee Recommends Shifting to Gender-Neutral Language*, Wash. Post (June 23, 2021), https://www.washingtonpost.com/transportation/2021/06/23/faa-gender-neutral-language/. Although there are potentially technical differences between a "drone" and all of the components that comprise an "Uncrewed Aircraft System," for the purposes of this paper we will generally refer to "drones" and "UAS" interchangeably.

[2] *See* FAA, *UAS by the Numbers*, https://www.faa.gov/uas/resources/by_the_numbers/ (last visited Nov. 30, 2021).

[3] *See* FAA, *Certificated Remote Pilots including Commercial Operators*, https://www.faa.gov/uas/commercial_operators/ (last visited Dec. 8, 2021). Although regulations have been adopted to allow for routine flights over people, implementation to allow operators to take advantage of these new regulations is still in progress. *See, e.g.*, 14 C.F.R. §§ 107.100–165; Operation of Small Unmanned Aircraft Systems Over People, 86 Fed. Reg. 4314–4387 (Jan. 15, 2021) (revising 14 C.F.R. § 107) (finalizing the FAA's new rules for UAS operation over people); Operation of Small Unmanned Aircraft Systems Over People; Delay; Withdrawal; Correction, 86 Fed. Reg. 13630–13631 (delaying the effective date of the final rule until April 6, 2021).

[4] *See* Rachel Premak, *UPS beat out Amazon and Google to become America's first nationwide drone airline*, Bus. Insider (Oct. 3, 2019), https://www.businessinsider.com/ups-is-now-operating-the-first-national-drone-airline-2019-9.

[5] Guillaume Delepine, *Drone Autonomy for Bridge Inspection. The Newest Tool on the Inspector's Belt.*, Medium (Sept. 21, 2020), https://medium.com/skydio/drone-autonomy-for-bridge-inspection-the-newest-tool-on-the-inspectors-belt-68be85065b13/.

[6] Ryan Lahti, *AT&T, T-Mobile and Verizon Embrace Drones*, OrgLeader (July 14, 2016), https://www.orgleader.com/drones/.

[7] *See* Andrew Meola, *Precision agriculture in 2021: The future of farming is using drones and sensors for efficient mapping and spraying*, Bus. Insider (Feb. 8, 2021), https://www.businessinsider.com/agricultural-drones-precision-mapping-spraying.

[8] *See How Firefighters Can Better Manage Emergency Situations Using Drones*, FlytNow, https://flytnow.com/drone-fire-fighting/ (last visited Dec. 8, 2021).

[9] *See* Stephanie Zacharek, *How Drones Are Revolutionizing the Way Film and Television Is Made*, TIME (May 31, 2018), https://time.com/5295594/drones-hollywood-artists/.

[10] *See* Rachel Premak, *UPS beat out Amazon and Google to become America's first nationwide drone airline*, Bus. Insider (Oct. 3, 2019), https://www.businessinsider.com/ups-is-now-operating-the-first-national-drone-airline-2019-9.

[11] *See Amazon Prime Air*, Amazon, https://www.amazon.com/Amazon-Prime-Air/b?ie=UTF8&node=8037720011 (last visited Oct. 25, 2021).

[12] *See id*.

[13] *See, e.g.*, FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, § 332, 126 Stat. 11 (2012); FAA Extension, Safety, and Security Act of 2016, Pub. L. No. 114-190, §§ 2201-2213, 130 Stat. 615 (2016); FAA Reauthorization Act of 2018, Pub. L. No. 115-254, 132 Stat. 3186 ("2018 FAA Reauthorization Act").

[14] *See State and Local Regulation of Unmanned Aircraft Systems (UAS), Fact Sheet* (Dec. 17, 2015), https://www.faa.gov/uas/resources/policy_library/media/UAS_Fact_Sheet_Final.pdf.

[15] *Id*. at 2.

[16] *See* National Conference of State Legislatures, *Current Unmanned Aircraft State Law Landscape* (Aug. 3, 2021), https://www.ncsl.org/research/transportation/current-unmanned-aircraft-state-law-landscape.aspx.

[17] *See, e.g., North Dakota v. Turgeon*, No. 30-2016-CR-1373 (Morton County, N.D. South Central Jud. Dist. 2017) ("*Turgeon*").

[18] *See, e.g., Ward v. State*, 374 A.2d 1118, 1123-24 (Md. 1977) (upholding state law criminalizing "operat[ion of] an aircraft … in a careless or reckless manner so as to endanger the life or property of another.").

[19] *See* ULC, *Tort Law Relating to Drones Committee* (2017), available at https://www.uniformlaws.org/committees/community-home?communitykey=2cb85e0d-0a32-4182-adee-ee15c7e1eb20&tab=groupdetails.

[20] *See* ULC, *Tort Law Relating to Drones Act*, Draft (2018), available at https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=fd068f11-b1f3-074d-5f4f-7ea3b93c11f3.

[21] *See id*. at 14 ("A person operating an unmanned aircraft is liable to a land owner or lessee for per se aerial trespass, when the person, without consent, intentionally causes the unmanned aircraft to enter into the airspace below [200] feet above the surface of land or below [200] feet above improvements built upon the surface of land." The draft rule was subject to some exceptions.).

[22] *See, e.g.*, Letter from Dep't of Transp. and Fed. Aviation Admin. to Comm'rs, Unif. L. Comm'n (July 11, 2018), https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=21ef3370-77ea-5d39-cdb9-8d7816698cac&forceDialog=0 (stating that neither agency concurred with the substance of the draft rule); Letter from Industry Stakeholders to Anita Ramasastry, Unif. L. Comm'n (July 5, 2018), https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=6ec36eed-5f99-8940-abf1-691f8eddeb03&forceDialog=0.

[23] *See, e.g.*, Brian Wynne and Gary Shapiro, *The biggest threat to drone innovation is a group you've never heard of*, TechCrunch (Oct. 25, 2018), https://techcrunch.com/2018/10/25/the-biggest-threat-to-drone-innovation-is-a-group-youve-never-heard-of/.

[24] ULC, *Uniform Tort Law Relating to Drones Act*, at 6-8 (2019), https://www.uniformlaws.org/viewdocument/2019-annual-meeting-draft-1?CommunityKey=2cb85e0d-0a32-4182-adee-ee15c7e1eb20&tab=librarydocuments.

[25] *See, e.g.*, Letter from Industry Stakeholders to Comm'rs, Unif. L. Comm'n (June 14, 2019), https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=05b054ab-f5de-27e1-a87d-239501372755&forceDialog=0.

[26] *See* GAO, *Unmanned Aircraft Systems: Current Jurisdictional, Property, and Privacy Legal Issues Regarding the Commercial and Recreational Use of Drones* (Sept. 16, 2020), https://www.gao.gov/assets/b-330570.pdf ("GAO Report").

[27] *See* 2018 FAA Reauthorization Act, 132 Stat. 3186.

[28] *See* GAO Report at 2.

[29] *Id.* at 12.

[30] Presidential Memorandum to Heads of Executive Departments and Agencies, *Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems*, 80 Fed. Reg. 9355, 9355 (Feb. 20, 2015) (2015 UAS Privacy Presidential Memorandum) (directing NTIA to convene multi-stakeholder UAS privacy process limited to UAS data privacy), https://www.govinfo.gov/content/pkg/DCPD-201500103/pdf/DCPD-201500103.pdf.

[31] *Id.* at 1.

[32] *See* NTIA, *Voluntary Best Practices for UAS Privacy, Transparency, and Accountability* (May 18, 2016), https://www.ntia.gov/files/ntia/publications/uas_privacy_best_practices_6-21-16.pdf.

[33] *See id.* at 2.

[34] *See id.* at 5-6.

[35] *See, e.g.*, Press Release, AUVSI, AUVSI Submits Comments on FAA Rulemakings for Operations Over People, Safe and Secure Operations (Apr. 16, 2019), https://www.auvsi.org/auvsi-submits-comments-faa-rulemakings-operations-over-people-safe-and-secure-operations.

[36] *See, e.g.*, Brief of Amicus Curiae Association for Unmanned Vehicle Systems International and the Consumer Technology Association, *Nat'l Press Photographers Ass'n v. McCraw*, 504 F.Supp.3d 568 (W.D. Tex. 2020), https://law.yale.edu/sites/default/files/area/center/isp/42._auvsi_and_cta_amicus_brief.pdf ("Amicus Brief").

[37] *See, e.g., Drones*, NetChoice, https://netchoice.org/tag/drones/ (last visited Oct. 25, 2021).

[38] *See, e.g.*, Chamber Technology Engagement Center, American Innovators: America's Next Tech Upgrade, Building the Foundation for the Future of Transportation (2020), https://americaninnovators.com/wp-content/uploads/2020/10/CTEC_TechUpgrade_Transportation.pdf.

[39] *See, e.g.,* Jason Snead and John-Michael Seibler, *The Dangers of Drones Were Regulated Before the FAA Noticed Them*, Heritage Found. (Mar. 31, 2016), https://www.heritage.org/crime-and-justice/report/the-dangers-drones-were-regulated-the-faa-noticed-them.

[40] *See, e.g.*, Matthew Feeney, ed., Eyes to the Sky: Privacy and Commerce in the Age of the Drone (2021); *see also* Cato Inst., *A Buzz in the Air* (2021), https://www.cato.org/policy-report/september/october-2021/buzz-air.

[41] *See, e.g.*, Brent Skorup and Connor Haaland, *Which States Are Prepared for the Drone Industry?*, Mercatus Ctr. (Jan. 14, 2021), https://www.mercatus.org/publications/technology-and-innovation/which-states-are-prepared-drone-industry-0.

[42] *See Singer v. Newton*, 284 F.Supp.3d 125 (D. Mass. 2017) (finding city's "no fly," visual line of sight, and registration ordinances for drones were preempted due to conflict with federal regulations) ("*Singer*"); *but see Nat'l Press Photographers Ass'n v. McCraw*, 504 F.Supp.3d 568 (W.D. Tex. 2020) (finding state's "no fly" drone provisions were neither field nor conflict preempted) ("*McCraw*"); *Turgeon* (finding FAA's drone safety regulations did not preempt state reckless endangerment charges).

[43] *See, e.g.*, *Pan American Properties Corp. v. Municipality of San Juan*, 2018 WL 6503215 (D.P.R. 2018) (electing not to rule on the argument that a local ban on drone flights that were not authorized by the government during a festival was preempted due to the drone's operator being FAA-authorized); *Village of DeForest v. Strelchenko*, Cir. Ct. No. 2015CV2730 (Wis. Ct. App. 2017) (declining to rule on whether local anti-drone ordinances were preempted due to the inadequacy of the record).

[44] *See, e.g., Long Lake Township v. Maxon*, 2021 WL 1047366 (Mich. Ct. App. 2021) (lamenting the lack of clarity in FAA guidance, particularly regarding the preemptive effect of the agency's regulations) ("*Long Lake*").

[45] *Compare Singer* at 130-132 (holding that a state statute was preempted on the basis of conflict preemption but not field preemption); with *McCraw* at 589-91 (holding that an ordinance was neither conflict nor field preempted); *see also Michigan Coalition of Drone Operators, Inc. v. Ottawa County*, File No. 21-6526-cz, at 13 (Cty. of Ottawa Mich. Cir. Ct. 2021) ("*MCDO*") (where a state court held that a local ordinance was conflict preempted by a state drone law and FAA regulations).

[46] *Singer* at 131.

[47] *Id.* at 128.

[48] *Id.* at 131.

[49] *See id.*

[50] *See McCraw* at 575.

[51] *See* Amicus Brief. "In this case, the NoFly Provisions fall well within the preempted field of aviation safety because they purport to directly limit the operations of UAS in the national airspace—a subject that is in the heartland of aviation safety and explicitly governed by pervasive federal regulation." *Id*. at 7.

[52] *Singer* at 129.

[53] *Id*. at 131-32 ("Newton's choice to restrict any drone use below this altitude thus works to eliminate any drone use in the confines of the city, absent prior permission. This thwarts not only the FAA's objectives, but also those of Congress for the FAA to integrate drones into the national airspace.").

[54] *McCraw* at 590.

[55] *See Singer* at 131-32.

[56] *McCraw* at 575.

[57] *See McCraw* at 590.

[58] *See* Fact Sheet at 2 ("In turn, this 'patchwork quilt' of differing restrictions could severely limit the flexibility of FAA in controlling the airspace and flight patterns, and ensuring safety *and an efficient air traffic flow.* A navigable airspace free from inconsistent state and local restrictions is essential to the maintenance of a safe and sound air transportation system.") (emphasis added).

[59] *See MCDO*.

[60] *See id*. at 3.

[61] *See id*.

[62] *Id*. at 1.

[63] *Id*. at 12.

[64] *Id*. at 13.

[65] *Id*.

[66] *See Singer* at 130.

[67] *See, e.g., Tweed-New Haven Airport Auth. v. Tong*, 930 F.3d 65, 74 (2d Cir. 2019), *cert. denied*, 140 S. Ct. 2508 (2020) (holding that the FAA regulatory regime preempts the field of air safety); *Abdullah v. Am. Airlines, Inc.*, 181 F.3d 363, 367 (3d Cir. 1999) ("Our finding of implied field preemption here is based on our conclusion that the FAA and relevant federal regulations establish complete and thorough safety standards for interstate and international air transportation that are not subject to supplementation by, or variation among, jurisdictions."); *but see Sikkelee v. Precision Airmotive Corp.*, 822 F.3d 680, 683 (3d Cir. 2016) (holding that state law products liability claims are not preempted by the FAA regulatory regime, even though *Abdullah* held that the Act preempts the field of air safety).

[68] *See* Fact Sheet at 2 ("Where Congress occupies an entire field … even complimentary state regulation is impermissible. Field preemption reflects a congressional decision to foreclose any state regulation in the area, even if it is parallel to federal standards.") (quoting *Arizona v. U.S.*, 132 S.Ct. 2492, 2502 (2012)).

[69] *Huerta v. Haughwout,* No. 3:16-CV-358 (JAM), 2016 WL 3919799, at *4 (D. Conn. July 18, 2016) ("Although the Commerce Clause allows for broad federal authority over interstate and foreign commerce, it is far from clear that Congress intends—or could constitutionally intend—to regulate all that is airborne on one's own property and that poses no plausible threat to or substantial effect on air transport or interstate commerce in general.").

[70] *See Wickard v. Filburn*, 317 U.S. 111, 128-29 (1942); *NLRB v. Jones & Laughlin Steel Corp.*, 301 U.S. 1, 37 (1937); *United States v. Lopez*, 514 U.S. 549, 558-59 (1995).

[71] Richard M. Thompson II, *Drones in Domestic Surveillance Operations: Fourth Amendment Implications and Legislative Responses*, CRS Report 24701, CRS (Apr. 3, 2013); Alissa Dolan and Richard M. Thompson II, *Integration of Drones into Domestic Airspace: Selected Legal Issues*, CRS Report 42940, CRS at 22-25 (Apr. 4, 2013) (2013 CRS Drones Report).

[72] Operation and Certification of Small Unmanned Aircraft Systems, 81 Fed. Reg. 42064, 42190-92 (June 28, 2016) (Part 107 rules).

[73] *Id.* at 42190; *see also* Operation of Small Unmanned Aircraft Systems Over People, 84 Fed. Reg. 3856, 3893 (Feb. 13, 2019).

[74] Restatement (Second) of Torts § 652B.

[75] *Id.* § 652C.

[76] *Id.* § 652D.

[77] *Id*. § 652E.

[78] *Id*. §§ 652B, 652D.

[79] *See* GAO Report at 18.

[80] *See, e.g., Long Lake* (explaining that FAA regulations are relevant to a person's reasonable expectations of privacy because one may reasonably expect the law to be followed, and concluding that one has a reasonable expectation of privacy in their property against drone surveillance); *State v. Davis*, 321 P.3d 955, 961 (N.M. Ct. App. 2014) (rejecting intrusiveness as a factor in determining whether an aerial surveillance is a search under the state constitution's Fourth Amendment equivalent because "it is likely that ultra-quiet drones will soon be used commercially and, possibly, for domestic surveillance.") *aff'd in part rev'd in part by State v. Davis*, 360 P.3d 1161, 1172 (declining to speculate about the future impact of drone surveillance on the consideration of privacy interests); *see also* GAO Report at 16.

[81] GAO Report at 4.

[82] *See State v. Davis*, 2015-NMSC-034, ¶ 54, 360 P.3d 1161, 1172 ("Because this case only involves surveillance by helicopters, technology that has been with us for nearly 80 years, we find it unnecessary to speculate about problems—and futuristic technology—that may or may not arise in the future. Instead, we reserve judgment and await a proper case with a developed record.").

[83] *Long Lake* at *1.

[84] *See Kyllo v. United States*, 533 U.S. 27, 29-30 (2001).

[85] *See California v. Ciraolo*, 476 U.S. 207, 213-15 (1986); *Florida v. Riley*, 488 U.S. 445, 450-52 (1989) ("*Riley*").

[86] *Riley* at 451.

[87] *See id*. at 455 (O'Connor, J., concurring) ("Because there is reason to believe that there is considerable public use of airspace at altitudes of 400 feet and above, and because Riley introduced no evidence to the contrary before the Florida courts, I conclude that Riley's expectation that his curtilage was protected from naked-eye aerial observation from that altitude was not a reasonable one.").

[88] *Long Lake* at *6.

[89] *Id*.

[90] *Id*. at *7.

[91] *Id*.

[92] *Brennan v. Dickson*, No. 21-1087 (D.C. Cir.) (filed Mar. 12, 2021).

[93] *See* Fla. Stat. §§ 934.50(3)(b), (5)(b); Tex. Gov't Code Chapter 423.

[94] Cal. Civ. Code § 1708.8(a).

[95] *See, e.g., People v. Beesmer*, No. 14070635 (Town of Ulster, N.Y. Crim. Dist. Ct. 2015) (prosecuting, but ultimately acquitting, defendant that flew drone close to a hospital examination room window under state law prohibiting the intentional use of "an imaging device to surreptitiously view, broadcast, or record a person dressing or undressing or the … intimate parts of [a] person at a place and time when such person has a reasonable expectation of privacy, without such person's knowledge or consent."); *Utah v. Foote*, No. 171300054 (Spanish Fork, UT Crim. Dist. Ct. 2017) (charging drone operator with misdemeanor under law prohibiting an individual from "intentionally us[ing] a … photographic camera of any type, or other equipment that is concealed or disguised to secretly or surreptitiously videotape, film, photograph, record, or view by electronic means" a part of a person's body in which the person has "a reasonable expectation of privacy" without their knowledge or consent).

[96] *See, e.g., D.M. v. Bross*, 2017 WL 6616627 (Cal. Ct. App. 2017) (upholding restraining order, finding that flying a drone with onboard video and blinking lights over the plaintiff's home would disturb plaintiff's peace); *Randall v. Koch*, 2020 WL 6708725 (Was. Ct. App. 2020) (explaining that trial court had found that antiharassment order was appropriate due to the defendant flying a drone over the plaintiff's property, but disagreeing with the trial court on other grounds).

[97] *See, e.g., F.W.T. v. F.T*, 101 N.E.3d 336 (App. Ct. of Mass. 2018) (finding the flying of a drone in front of or in the line of sight of a worker operating heavy machinery on plaintiff's property, either viewed separately or in combination with other forms of alleged harassment, was insufficient to support the issuance of a harassment prevention order).

[98] *See* H.B. 5494, 99th Leg., 2018 Reg. Sess. (Mich. 2018), 2018 Mich. Pub. Act 444; *see also* Mich Comp. Laws § 259.320 (2021).

[99] *See id*.

[100] *See McCraw* at 583-88 (allowing First Amendment challenge to anti-drone surveillance and "no fly" provisions to proceed).

[101] *See* GAO Report at 16.

[102] *See id*. at 19.

[103] *See id*.

[104] *See id*.

[105] *See, e.g., Commonwealth v. Layman*, Docket No. CP-43-CR-0000820-2018 (Ct. Common Pleas Mercer Cty. 2019) (defendant acquitted of all but one charge stemming from allegedly harassing neighbor's dogs with a drone because location data from the drone demonstrated defendant did not fly near plaintiff's property).

[106] *Id*.

[107] *See Turgeon*; *see also* AP News, *Judge clears pipeline protester charged in drone incident* (May 26, 2017), https://apnews.com/article/99088bb857db429fb253751db503fae1.

[108] *See* Stuart Banner, Who Owns the Sky? 130 (2008).

[109] *See, e.g.*, Cal. Pub. Util. Code § 21403 (2020) ("Flight in aircraft over the land and waters of this state is lawful, unless at altitudes below those prescribed by federal authority, or unless conducted so as to be imminently dangerous to persons or property lawfully on the land or water beneath."); 2 Del. Code § 304 (2021) ("Flight in aircraft over the lands and waters of this State is lawful, unless at such a low altitude as to interfere with the then existing use to which the land or water, or the space over the land or water, is put by the owner, or unless so conducted as to be imminently dangerous to persons or property lawfully on the land or water beneath."); N.C. Gen. Stat. § 63-13 (2021).

[110] *Id*. at 164-168. The Air Commerce Act of 1926 was a much less muscular assertion of federal authority than would follow with the 1958 Federal Aviation Act, which created the FAA. Still, it recognized the national interest in aerial navigation and the need for federal control over the airspace, and laid the groundwork for what would come later.

[111] *See United States v. Causby*, 328 U.S. 260-61 (1946) ("*Causby*").

[112] *See id*. at 261.

[113] *Id*. at 266.

[114] *Id*.

[115] GAO Appendix I at 12-13; see also Letter from Industry Stakeholders to Anita Ramasastry, Unif. L. Comm'n (July 5, 2018), https://www.uniformlaws.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=6ec36eed-5f99-8940-abf1-691f8eddeb03&forceDialog=0.

[116] Restatement (Second) of Torts §§ 158, 159(1).

[117] GAO Appendix II at 4.

[118] Restatement (Second) of Torts § 159(2).

[119] *See* 49 U.S.C. §§ 44801(11), (12).

[120] *See Commonwealth v. Merideth* (Kentucky); *see also Boggs v. Merideth*, 2017 WL 1088093 (W.D. Ky. 2017). It is not clear that the landowner would always be so quick to escape liability. Federal law provides significant penalties for the destruction of "aircraft," and because the FAA has determined that drones are aircraft, these penalties apply to drones just as they do to 737s—with no exception for trespassing. In fact, as noted elsewhere, the Department of Justice recently indicted a Florida man for shooting down a drone.

[121] *See id.*

[122] *See, e.g., Huerta v. Haughwout*, 2016 WL 3919799 (D. Conn. 2016) (questioning whether the FAA may regulate "all that is airborne on one's own property" and asking "[d]oes it follow that [the] foundational principle" from *Causby* that landowners hold a property right in the "immediate reaches" of the airspace above their land "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[,]" but not ruling on the question).

[123] *See, e.g., State v. Haddox* (Tennessee) (citing defendant that flew drone over large, ticketed event for criminal trespass) ("*Haddox*"); *State v. Dodson* (Tennessee) (charging defendant that flew drone over buildings during a protest with criminal trespass).

[124] *See* GAO Report at 14, n.59.

[125] *See* GAO Report at 14.

[126] Memorandum to Uniform Law Commission from Henry E. Smith, Fessenden Professor of Law, Harvard Law School, and Reporter for the Restatement (Fourth) of Property, June 20, 2019.

[127] *See* Robinson & Cole LLP, *Balancing New Technology and Privacy When Using Drones in Land Use and Construction*, Nat. L. Rev. (May 26, 2020) ("In 2019, the American Law Institute's (ALI) drafters of the Fourth Restatement of Property applied principles of trespass law in proposing § 1.2A – "Trespass by Overflight." ... The draft was on the agenda of the ALI's 2020 Annual Meeting until it was cancelled, and is not subject to approval until the 2021 Annual Meeting."). However, the ALI did not vote on the draft at the 2021 meeting. *See Actions Taken at the 2021 Annual Meeting*, Am. L. Inst., https://www.ali.org/annual-meeting-2021/actions-taken/ (last visited Dec. 7, 2021).

[128] *See generally* Brent Skorup and Connor Haaland, Which States Are Prepared for the Drone Industry? A 50-State Report Card, Release 2.0, Mercatus Ctr. (2021), https://www.mercatus.org/system/files/skorup_which_states_are_prepared_for_the_drone_industry_rp_mercatus_v1_0.pdf. Mercatus explains that "These avigation easement laws mean that drone operators can fly, as long as they are high enough not to bother landowners and passersby. These laws also mean that if the state or municipality does not own the aerial corridors above public roads, drones would still generally be able to access the aerial easements if state officials demarcated drone highways above public roads." *Id*. at 7.

[129] *Id*. at 4.

[130] *See, e.g.*, Ariz. Rev. Stat. Ann. § 28-8277 (2018); Ark. Code Ann. § 27-116-102 (2017); Cal. Pub. Util. Code § 21403 (2020); Colo. Rev. Stat. § 13-21-118 (2016); Del. Code tit. 2 § 304 (Deering 2020); Ga. Code Ann. § 6-2-5 (2010); Hawaii Rev. Stat. § 263-4 (2012); Idaho Code § 21-204 (2019); Ind. Code § 8-21-4-4 (2018); Md. Transp. Code Ann. § 5-1001 (2019); Mass. Gen. Laws Ann. ch. 90, § 46 (2019); Minn. Stat. § 360.012 (2019); Mo. Rev. Stat. § 305.030

(2018); Mont. Code Ann. § 67-1-204 (2019); Nev. Rev. Stat. Ann. § 493.050(1) (2017); N.J. Rev. Stat. § 6:2-6 (2013); N.C. Gen. Stat. § 63-13 (2019); N.D. Cent. Code § 2-03-04 (2019); Tenn. Code Ann. § 42-1-104(a) (2018); Vt. Stat. Ann. tit. 5 § 403 (1985); Wis. Stat. § 114.04 (2019); Wyo. Stat. § 10-4-303 (2018); *see generally* Brent Skorup and Connor Haaland, *supra* note 128.

[131] *See* Uniform Law Commission, Uniform Aeronautics Act § 4 (1922).

[132] *Id*.

[133] *See* Skorup and Haaland, *supra* note 128, at 4; *see also* Brent Skorup, *State Drone Laws Frequently Asked Questions*, Mercatus Ctr. (June 14, 2021), https://www.mercatus.org/publications/transportation-policy/state-drone-laws-frequently-asked-questions.

[134] *See, e.g.*, S.B. 2262, 2021 Reg. Sess. (Miss. 2021); H.B. 2726, 85th Leg., 1st Reg. Sess. (W.Va. 2021); H.B. 3403, 87th Leg. Sess., Reg. Sess. (Tex. 2021); *see also* H.B. 587, 2021 Reg. Sess. (La. 2021) (Louisiana had introduced a drone easement provision in a UAS bill, but the provision ultimately did not pass).

[135] *See* Press Release, AUVSI, Avigation Easement Will Hurt Drone Operations, Say CTA and AUVSI (Apr. 26, 2021), https://www.auvsi.org/avigation-easements-will-hurt-drone-operations-say-cta-and-auvsi.

[136] *See, e.g.*, Drone Integration and Zoning Act of 2019, S. 2607, 116th Cong. (2019); Drone Federalism Act of 2017, S. 1272, 115th Cong. (2017); Drone Innovation Act, H.R. 2930, 115th Cong. (2017).

[137] *See, e.g.*, Letter from Drone Industry Stakeholders to the United States Senate (July 31, 2018), https://smalluavcoalition.org/wp-content/uploads/2018/07/Industry-Sign-On-Letter-to-Senate-re-Lee-FAA-Amendment-7.31.18.pdf (opposing Senator Lee's 2018 amendment to the FAA Authorization Act of 2016 that would allow state and local governments to regulate UAS deliveries).

[138] *See, e.g., Joe v. McBay*, Case No. 2101429 (Cal. Sup. Ct. 2015) (in small claims court, finding that defendant "acted unreasonably in having his son shoot [a] drone down regardless of whether it was over his property or not.").

[139] *See, e.g., Pituch v. The Perfect Event, Inc., et al.*, Case No. BC635301 (Cal. Sup. Ct. 2016) (negligence lawsuit that was ultimately settled against an event planning company for injuries sustained from a drone falling on the plaintiff's head at a fraternity party); *Kamboj v. Hollycal Productions, et al.*, Case No. CIVDS1714762 (San Bernardino Cty. Sup.Ct. 2019) (negligence lawsuit—that was ultimately dismissed with prejudice—alleging defendant photography company owed plaintiff a duty of care, and violated that duty by flying a drone into her eye and causing her to sustain injuries); *Ellis v. Searles Castle* (New Hampshire) (law suit alleging that defendant flew his drone into the plaintiff at the defendant's wedding).

[140] *See Commonwealth v. Roselli*, Docket No. CP-51-CR-0000113-2017 (Ct. Common Pleas Philadelphia Cty. 2017) (defendant charged with, and pled *nolo contendere* to, reckless endangerment (among other charges) for flying his drone near a helicopter); *Haddox* (defendant charged with reckless endangerment for being unable to maintain a line of sight while flying his drone over a large, ticketed event); *City of Seattle v. Skinner* (Washington) (defendant charged with reckless endangerment for flying drone over a parade and into a building, causing drone to fall onto a woman below); *City of Seattle v. Kelley* (Washington) (defendant charged with, and pled guilty to, reckless endangerment for flying drone into Seattle's Space Needle).

[141] *See Commonwealth v. Layman*, Docket No. CP-43-CR-0000820-2018 (Ct. Common Pleas Mercer Cty. 2019).

[142] *See, e.g.*, *Nourmand v. Great Lakes Drone Company LLC,* Case No. A-18-777634-C (Clark Cty. Ct. Nev. 2019) (lawsuit that was ultimately dismissed alleging negligence for being hit by a falling drone during a firework show, arguing that the defendant failed to comply with federal regulations for drone operation after dark and over crowds).

[143] Operation of Small Unmanned Aircraft Systems Over People, 86 Fed. Reg. 4314 (finalized Jan. 15, 2021) (codified at 14 C.F.R. pts. 11, 21, 43, and 107).

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