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MCLE Self Study Article: Property Rights to the Periphery of the Universe or Only to the Rooftop?: The Effects of Drones on Airspace Rights in California and Where to Go From Here

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I. INTRODUCTION

Imagine a peaceful summer afternoon at home with your family. You're inside preparing food for a barbeque while the rest of your family sunbathes and plays by the backyard pool. Suddenly, your teenage daughter runs into the house, hysterical. Something is hovering in the air just above your pool and moving around your backyard. You run outside to investigate, but it has already vanished. What was it? Where did it come from, and where did it go? What photos, recordings, or other data did it take with it? Perhaps more importantly, what is your recourse to prevent this from happening again? After all, you certainly have the right to prevent such trespass into the airspace directly above your property, don't you?

Unfortunately, definitive answers to questions about airspace rights above private property are currently lacking. And this not-so-hypothetical situation is an increasingly common occurrence for property owners across the county—each incident varying in detail, but each equally unnerving—as a result of the rapidly increasing use of small unmanned aircraft systems ("UAS" or "drones"). Once reserved for military use or science fiction novels, drones have in recent years become both highly popular and widely affordable to commercial and hobby purchasers alike. Combined with powerful state-of-the-art cameras and communications technology, drones are capable of efficiently and economically photographing, videotaping, and gathering other information for applications and in manners previously undreamed of. This impressive technological leap forward, however, has been accompanied by numerous documented instances of blatant misuse, which in turn, have prompted calls for state and federal lawmakers—including those in California—to spring into action. The legislative response to drones, however, has struggled to keep up with the technological capabilities and ever-expanding uses of

drones. Additionally, lawmakers have failed to provide necessary clarity regarding the rights and restrictions of drone operation in the context of property rights in airspace above private property.

Instead, the limited legislative solutions enacted in response to drones have thus far focused on protecting privacy rights rather than establishing clear property rights. In October 2015, in response to public outcry over growing incidents of drone invasions of privacy, California enacted a widely-applauded law—AB 856—that directly addressed privacy concerns associated with drone use by prohibiting any knowing entrance into the airspace above the land of another person without permission in order to capture images, sounds, or other physical impressions of private activity. While this so-called "Anti-Paparazzi" law may give celebrities additional legal recourse against snooping paparazzi drones, it does little to protect the privacy of non-celebrities who may not have the financial resources or individualized incentives to pursue legal remedies for potential violations. Moreover, despite being technically couched as expanding the scope of unlawful "trespass," AB 856 focuses on intentional conduct that invades privacy rather than clarifying the parameters of airspace property rights, and, in so doing, fails to provide needed guidance to both property owners and drone operators about what rights each possess when it comes to drone operation above private property.

Indeed, at the same time AB 856 was signed into law, Governor Jerry Brown vetoed other drone legislation that would have created a bright-line rule to protect airspace rights over private property by allowing property owners to prohibit drones from flying below a certain height over their property without their consent. In the wake of these legislative and executive decisions, the continuing lack of clarity regarding the scope of airspace property rights (including where drones may and may not operate) is likely to result in increased confusion about those rights. It may even lead to increased occurrences of property owners taking the law into their own hands. Various incidents around the country involving property owners shooting at drones, or otherwise attempting to prohibit drones from entering airspace above their property, suggest that many believe that the protection of such airspace is as important to the reasonable use and enjoyment of their property as the land itself.[1]

Whether current laws are sufficient to deal with the new and unique issues presented by drones, or whether new drone-specific laws and regulations should be enacted—and what those laws should look like—is currently the subject of heated debate in California and throughout the country. Determining a workable resolution to these issues requires considering both the origins and shortcomings of current laws as applied to drones, as well as the unique capabilities and applications for drones now and in the future. This article briefly reviews the history of airspace property rights and how previously unresolved issues are being raised again in response to expanding drone use. The article then examines whether drone regulation is properly a federal or state issue before discussing recent California drone legislation. The article concludes by proposing that legislation beyond existing law is needed to create bright-line rules for protecting airspace rights up to a specified height above private property. This type of bright-line rule will not only give needed assurances to property owners about their airspace rights, but also facilitate greater support for, rather than opposition to, further development and application of drone technology across a variety of industries.

II. THE ORIGINS OF PROPERTY RIGHTS IN AIRSPACE

It was once generally accepted that ownership of real property meant ownership of the airspace above that property "to the periphery of the universe."[2] The Supreme Court declared that doctrine dead following the Civil Aeronautics Act of 1938, which gave the U.S. government "exclusive sovereignty" over the airspace of the U.S.[3] The advent of air travel and its increasing frequency necessarily required that airplanes be permitted to fly over private property without subjecting pilots or airline operators to countless trespass suits for encroachment into the airspace above every piece of property over which they traveled.[4] Accordingly, the Supreme Court established a clear restriction on airspace property rights in early cases seeking trespass damages against airplane operators for flights over private property, concluding that the old idea of property ownership up to the heavens has "no place in the modern world," and even going so far as to declare that "[t]he air is a public highway."[5]

Despite the Supreme Court's bold declarations and stated limitations on airspace rights in these early cases, the Court nonetheless carved out some protection for private airspace rights, stating 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."[6] In other words, the Court recognized that *some* use of airspace is necessary to allow a landowner reasonable enjoyment of the land, including to erect buildings, trees, and other structures.[7] The new rule

resulting from these cases was that a landowner had a right to use "at least as much of the space above the ground as he can occupy or use in connection with the land."[8] As a result, landowners necessarily possessed certain exclusionary rights in the low altitude airspace above their property because, as the Court noted, invasions into low altitude airspace "affect the use of the surface of the land itself."[9] Thus, the deciding factor as to whether an airplane or other object could be viewed as taking or trespassing on a property owner's airspace rights was whether there is "an intrusion so immediate and direct as to subtract from the owner's full enjoyment of the property and to limit his exploitation of it."[10] However, the precise scope of airspace rights, including at what height a property owners' reasonable use (and exclusionary rights) ended, remained largely unresolved.[11]

III. REVISITING PRIVATE PROPERTY RIGHTS IN AIRSPACE IN RESPONSE TO DRONES

The recent popularization of drones is once again putting the exact parameters of property owners' airspace rights at the forefront of legal discussion, including what rights property owners have to exclude drones from the airspace above their property.[12] Notwithstanding the rationale underlying the original concept of exclusive property rights "to the periphery of the universe,"[13] there is, practically speaking, an upper limit on the reasonable use of airspace above most private property. Putting aside skyscrapers in large cities or other property uses that might require exclusive access to airspace hundreds of feet above the ground (e.g., grain silos, transmission lines), most property owners have no true *use* for airspace much higher than the tallest object or structure situated on the property—or the maximum height for which the property is zoned and up to which structures may eventually be built. But while property owners may not *physically occupy* airspace above a certain height, owners rightfully expect to be able to reasonably *enjoy* their property. That enjoyment, of course, is directly affected by what may or may not be allowed to use or occupy the airspace directly above them.

The problem presented by attempting to deal with drones under existing law is that the current law regarding airspace property rights largely developed in the context of takings cases in connection with the interference or damage caused to property—via noise, vibration, etc.—by airplanes flying overhead.[14] Not surprisingly, the Supreme Court determined that property owners' rights in airspace above 500 feet did not outweigh the general public need for largely uninhibited interstate air travel.[15] Although planes also need to fly lower than 500 feet to take off and land, the disruption and inconvenience associated with such activity was determined to be compensable only to the extent that it posed a direct and immediate intrusion on the use and enjoyment of the property.[16]

By contrast, small drones, whether flown for commercial purposes or for hobby, are likely to be flown well below 500 feet—in some cases perhaps only a few feet off the ground—and for much shorter distances. And while drones are not likely to cause noise, vibration, or other physical interference with property in the same way as airplanes do, they may still cause a similar interference with a property owner's use and enjoyment of property. Specifically, while small drones may not cause a physical or audible disruption to property, they are capable of—and are frequently used for—aerial photography, videotaping, and other capture of information or data of the property over which they fly. The ability of drone operators to *permanently* record detailed images, videos, or other information in connection with private property, not otherwise accessible to the public, constitutes an alarming privacy concern that has never existed to the extent that small drones now make possible. Thus, while one course of action may be to craft drone laws in terms of privacy issues, drones also affect the way property owners use and enjoy their property, and therefore directly affect property rights. This requires that serious consideration be given to whether new legislation is needed to specifically clarify airspace property rights in response to expanded drone use. Of course, the question of who may properly legislate or regulate drone use is also subject to debate.

IV. REGULATION OF DRONES—A FEDERAL OR STATE MATTER?

A. Federal Statutory Framework

Under 49 U.S.C. section 40103, the federal government has exclusive sovereignty over U.S. airspace, and the Federal Aviation Administration ("FAA") has the authority to prescribe air traffic regulations for all "aircraft," which includes drones.[17] In 2007, the FAA issued a policy statement specifically stating that "no person may operate a UAS in the National Airspace System without specific authority."[18] While the FAA has exempted non-commercial, model aircrafts (which, by their nature are "unmanned aircraft systems") from certain federal regulations, the FAA may still take enforcement actions against anyone who operates a drone in a careless or reckless way that endangers the safety of the national airspace system.[19] The FAA's primary enforcement tools against unauthorized drone operation are its cease and desist letters, with potential threats of civil

penalties.[20] Despite the FAA's asserted jurisdiction over all drone operation in the national airspace, the scope of the FAA's jurisdiction over largely local and relatively low-altitude drone flights remains unclear and subject to legal challenge.[21] Moreover, as a practical matter, the FAA is simply unable to actually police every occurrence of small drone operation throughout the country. In sum, while the FAA has asserted broad authority over drone operation, the lack of specific laws and efficient enforcement mechanisms has all but required state and local governments to consider and enact drone-specific laws in the absence of sufficiently clear and enforceable federal laws and regulations.

B. State Laws and Preemption Issues

Many states have already passed extensive legislation on drone operations, which touch on everything from law enforcement use of drones to hunting and fishing laws pertaining to drones to privacy- and property-focused laws.[22] States must be cautious, however, that their legislation is not preempted by federal law. Under its federal statutory authority, for example, the FAA asserts that any purported regulation of the navigable airspace, including flight bans or altitude restrictions on drones, would be preempted by federal law.[23] However, legislation related to state and local police power, including land use, zoning, privacy, and trespass, as well as prohibitions on specific uses of drones, would be proper for local legislation.[24] Of course, how any given law enacted by state or local authorities is ultimately interpreted or applied, and whether it would be deemed preempted by federal law, remains unclear. The potential federal limitations on state authority to regulate drones, however, may help to explain why California's recent legislative decisions focused on privacy rights rather than airspace property rights in dealing with drones.[25]

V. RECENT CALIFORNIA LEGISLATION: AB 856 vs. SB 142

California is already indirectly defining (and limiting) airspace property rights through recently passed law and vetoed legislation. In 2015, the California Legislature passed several drone-related bills—only one of which, AB 856, was signed into law by Governor Brown.[26]

A. AB 856

"Anti-Paparazzi Law" AB 856 was signed into law after being unanimously passed by the Legislature. Although it redefined physical trespass by adding an airspace element, AB 856 largely focused on privacy issues in terms of restricting what images or information drones could capture, as opposed to specifically defining where drones could or could not operate. AB 856 amended Civil Code section 1708.8 to define a "physical invasion of privacy" to include knowingly entering into the airspace above the land of another person without permission in order to capture images, sounds, or other physical impressions of private activity.[27] As amended, section 1708.8 thus makes it a crime to trespass on private property by flying a drone above it (in addition to entering onto it) to capture images, recordings, or impressions of private conduct.

While AB 856 provides a deterrent to celebrity-hunting photographers, the law does little to protect property rights if the owner cannot prove the drone operator's intent to capture images of private activity. In other words, if a drone flies over Taylor Swift's backyard, she is likely to pursue legal remedies under AB 856 against the operator to prevent unlawful distribution or use of any images or information acquired by the drone. But property owners without such fame and financial resources do not necessarily know whether a drone flying over their property was simply a hobbyist off-course, an FAA-approved drone, or a drone operator unlawfully capturing images, video, or other private information. AB 856 is therefore unlikely to provide any real protection to the use and enjoyment of property for the majority of non-celebrity property owners who may not have the financial resources or individual incentives to seek legal recourse for potential violations.

B. SB 142

Shortly before signing AB 856 into law, Governor Brown vetoed other proposed legislation that would have clarified and directly protected airspace property rights by creating bright-line rules regarding drone operation over private property. SB 142, one of several drone bills vetoed by Governor Brown last year, would have prohibited drone operation over private property below 350 feet without the consent of the property owner.[28] SB 142 therefore would have explicitly confirmed property owners' exclusive and exclusionary rights in airspace up to 350 feet. Governor Brown vetoed SB 142 because he felt that, "while well-intentioned, [it] could expose the occasional hobbyist and the FAA-approved commercial user alike to burdensome litigation and new causes of action."[29] While the veto of SB 142 postponed the issue of drones and airspace rights for the time being, even Governor Brown acknowledged that the issue would not simply go away, adding that he knew drone technology raised novel issues, but wanted to look at the issue more carefully before going down the path of legislation.[30]

Drone hobbyists applauded the veto of SB 142 because they felt the proposed law was overbroad in terms of creating potential liability for unintentional incursions into airspace over private property.[31] In reality, however, the veto of SB 142 deprived property owners of an essential property right: the right to determine when, how, and by whom the airspace directly over their property may be used or occupied. So too, drone pilots were denied clarity regarding where they can and cannot fly. It is worth noting that even if SB 142 had passed, it would have effectuated a substantial reduction in then-existing airspace property rights by capping the right to exclude or enforce those rights at 350 feet (150 feet lower than the generally accepted "navigable airspace" height of 500 feet). Governor Brown's veto of this proposed legislation arguably effectuated an even more significant reduction in property owners' airspace rights by refusing to give property owners clear rights to exclude drones that enter the airspace above their property at any height, and that thereby interfere with the reasonable use and enjoyment of that property. SB 142 may not have offered the perfect solution to the issue of drones and property rights, but something more is needed to clarify airspace rights in light of the current and anticipated growth of drone technology. While the veto of SB 142 may have avoided these issues for the moment, they are certain to be revisited, one way or another, in the future.

C. California Property Rights After the Veto of SB 142

In the wake of the veto of SB 142, it remains unclear what rights or recourse property owners in California have to stop unwanted drone incursions into the airspace above their property. After all, it is one thing to say that flying a drone over someone's property above 350 feet is not an unreasonable intrusion or disruption in the use and enjoyment of the property, but where should the line be drawn? Is fifty feet too low? Certainly drone operation within the airspace below the rooftop or height of the tallest structures on the property (or at a minimum, below the fence line) would seem patently objectionable. Neither is explicitly prohibited under current law, though, unless the property owner can prove that the drone operator captured, or attempted to capture, images, recordings, or other physical impressions sufficient to establish a violation of AB 856, or that the drone operation suffices to establish the violation of some other law such as nuisance or constructive invasion of privacy.[32]

However, if a drone flying overhead interrupts conduct on one's own property for which one has a reasonable expectation of privacy, does it matter whether the drone intended to, or actually did, capture images, recordings, or other impressions of the private conduct? Must the drone take some additional harassing or disruptive action in addition to merely flying (or hovering) over the property? Or is it sufficiently disturbing to one's use and enjoyment of their own property that the drone is there at all? As in the not-so-hypothetical incident at the beginning of this article, the mere potential that image-capturing drones may be flying overhead could substantially restrict the way owners use and enjoy their property.

As noted above in Section V.B, regardless of any specific intent by Governor Brown to reduce or define private property airspace rights in rejecting this proposed law, his veto of SB 142 arguably reduced property rights in airspace by refusing to give property owners strict exclusionary rights to the airspace directly above their property. This is in stark contrast to laws pertaining to intrusions onto land boundaries.[33] After all, if a property owner is permitted by law to cut off overhanging branches at the property line, why should a property owner not be permitted to remove, by force, a low-flying drone within reasonable reach?[34] Moreover, the California Penal Code specifically identifies as misdemeanor offenses: (1) entering and occupying real property without the consent of the owner; (2) driving any vehicle upon real property without the consent of the owner; and (3) refusing or failing to leave land or real property not open to the general public upon being requested to leave by the owner.[35] Why do airspace rights, at least up to a certain height, not warrant similar protection? Why should property owners be forced to permit incursions into the airspace over their property when they would never be required to allow such trespass to their land? These questions warrant greater discussion and legislative action, particularly in light of the ability of drones to permanently capture detailed photographs, videos, or other information, and thereby invade property and privacy to a comparable, if not greater, extent than physical invasions to land.

While the advancement of drone technology and the use of drones in many industries presents exciting possibilities, it is important to ensure that drone development does not come at the expense of destroying privacy or property rights. As state lawmakers continue to grapple with the ever-expanding legal issues arising with the use of drones in society, it is important that they realize that any decision made with respect to drone operation over private property affects valuable property rights. The rapid increase of drones in the California skies, along with the corresponding flood of potential invasions of privacy and substantial interference with use and enjoyment of private property, requires a

thoughtful approach to drones and airspace rights that may require new and stricter protection for airspace rights similar to those protecting property rights in land.

VI. THE ARGUMENT FOR A BRIGHT-LINE RULE

A. Consequences of the Current Lack of Clarity Regarding Airspace Rights

Although operating a drone in a particularly harassing or dangerous manner may be found unlawful under certain existing laws, the uncertainty of the application of existing laws to drones, and the lack of sufficient drone-specific laws, leave both drone operators and property owners without needed guidance regarding airspace property rights. Last year, the country was captivated by news reports of misuse of drones invading individuals' privacy. One woman confronted a drone hovering outside of her residence in a Seattle high rise that was piloted from below by two men also carrying a tripod and video camera.[36] Another couple woke up on a Sunday morning to a camera-mounted drone staring in at them through their kitchen window.[37] These incidents of misuse, and the rapid nature with which such stories spread over the internet and social media, have likely caused many individuals to become fearful of drones and/or skeptical that their potential benefits outweigh privacy concerns. More clarity from lawmakers regarding when and how drones may be operated over private property will likely help to alleviate these concerns.

Indeed, low altitude drone operation over private property appears to have touched a particular nerve with many individuals who believe, even absent specific laws, that they have some innate right to exclude (and, if necessary, remove by force) drones operating in the airspace over their property. Perhaps the most infamous incidents arising from increased drone use are those of property owners shooting down drones flying over their property.[38] Strong opinions exist on both sides of this debate, which was played out in court in the case of a Kentucky man who shot down a low-flying drone over his property with a shotgun. The man maintained that the drone was flying very low over his property, on more than one occasion, and that he believed it was spying on his 16-year-old daughter who was sunbathing in the backyard.[39] Although the man was arrested and charged with criminal mischief and endangerment for shooting down the drone, the court ultimately absolved him of any wrongdoing, finding that the drone operator had flown too low over private property in a harassing manner.[40] In an interesting legal twist, the drone operator in that case has now filed suit in federal court against the man who shot the drone down, arguing that because the U.S. Government has exclusive sovereignty over all airspace in the U.S. pursuant to 49 U.S.C. section 40103, the drone was in protected federal airspace when it was unlawfully shot down.[41] Should this case (or another similar one) be resolved by a final court decision that purports to define federal airspace rights, that decision will substantially affect drone operation and private property rights in the absence of any other controlling legislation or applicable law.

Of course, the use of firearms in pursuit of vigilante-style justice is not the ideal method for dealing with drones. However, these incidents highlight the tense conflict between increased drone use and property rights, including the belief held by many property owners that they should be able to protect their property—and airspace—from unwanted intruders, by force if necessary. For the sake of everyone involved (and to promote civility rather than vigilante justice), a bright-line rule regarding drone operation and property rights may be needed to clarify what rights each party possesses so that they can act accordingly, lawfully, and safely.

B. Oregon: An Example of the Bright Line Rule

Imposing a bright-line rule establishing exclusive airspace rights up to a certain altitude (e.g., 350 or 400 feet) would provide protection against drone intrusions and disruptions in the airspace directly above private property, while allowing drones to operate in higher airspace and other designated areas. Indeed, some states have enacted just such a bright-line rule.[42] In contrast to California, Oregon has taken action to protect property owners' airspace rights by prohibiting drone operation over private property without the owner's permission. In 2013, Oregon passed HB 2710, which regulated many aspects of drone use, including restrictions on drone use by law enforcement agencies, creation of crimes and penalties for certain drone use, and creation of civil remedies for property owners to protect against unwelcome drone operation over their property.[43] Specifically, section 15 of HB 2710 allows an owner or occupier of real property to bring an action (and recover injunctive relief, treble damages for injury to person or property, and attorneys' fees if damages are less than $10,000) if a drone operator flies a drone over the property at a height of less than 400 feet where: (1) the operator flew a drone over that property on at least one previous occasion, and (2) the property owner notified the drone operator that the owner did not want the drone flown over the property at a height of less than 400 feet.[44] Thus, HB 2710 protects the

use and enjoyment of property by reserving airspace rights up to 400 feet, while also accounting for the unintentional trespass concerns raised by Governor Brown as a reason for vetoing SB 142.[45]

While certain modifications, adjustments, or exceptions may be necessary or desirable for such a law to work in California, HB 2710 provides a reasonable blueprint for future California legislation on this topic. Such future legislation is unavoidable given the rapid and expected further growth of the drone industry.

VII. WITH EXPANDED DRONE TECHNOLOGY AND APPLICATIONS, THE CALL FOR PROPERTY RIGHTS IN AIRSPACE LIKELY WILL GROW

One thing is certain: the conflict between drone use and property rights isn't going away anytime soon. Drones are here to stay. Indeed, the potential applications for drones are virtually endless. The global market for drones is estimated to be a $4 billion-per-year industry.[46] While much of the anticipated spending on drones is undoubtedly for military applications, the market for consumer and civil drone use is expected to show substantial growth over the next few years.[47] In fact, in 2015, the FAA estimated that 1.6 million small drones would be sold to consumers that year.[48] Drones are already being used in aerial photography and filmmaking, real estate sales, precision agriculture, infrastructure and land monitoring, wildlife tracking and surveillance, and scientific research.[49] In fact, drones are even being used by California wineries to improve vineyard yields.[50] The uses for drones will logically increase as the technology advances and costs of drones decrease. This amazing potential for drone use means that one main obstacle to fully realizing the benefits of drones is the potential inability of laws and regulations to keep up with the technology and/or create a workable framework for drone operation. Failure by lawmakers in California and elsewhere to address drone issues now, including the effects of drones on property rights, will serve only to inhibit innovation and economic opportunity in this exciting and high-growth potential industry. Establishing, and understanding, where drones can and cannot fly is as crucial to operators as to property owners, and is in fact critical to the timely realization of anticipated benefits from the commercial drone market.

California's focus thus far on privacy rights, as opposed to absolute property rights, can be explained, in part, by the present characteristics of drone use. Again, the predominant use of drones—beyond simply piloting them for hobby—has been to gather information. This use does not carry the traditional trappings leading to complaints of loud noise or disruptive vibration typically characteristic of nuisance and trespass suits. However, with changes in the technology and applications, the potential for these types of suits may grow.

For instance, Amazon hopes to use drones for delivery of purchased items.[51] Google has announced a similar consumer goods delivery service, Project Wing, currently in testing with a target rollout in early 2017.[52] BNSF Railway has utilized a FAA-granted exemption as part of a plan to operate drones "beyond visual line of sight" for rail track inspections.[53] San Diego Gas & Electric has received limited permission to test drones in parts of San Diego County to explore uses in emergency response, aerial inspections in remote areas that are otherwise difficult to access, and locating the cause of power outages faster.[54] Others also foresee drones being used to transport people, herd animals, and even provide internet service to remote locations.[55] These uses will likely be noisier, more intrusive, and much different than current drone uses. While significant advances or changes in drone use may require individualized laws, these potential and expanded applications for drones make clear that the scope of airspace rights in general should be addressed sooner rather than later.

VIII. PROPOSALS FOR FUTURE DRONE REGULATION AND LEGISLATION IN CALIFORNIA

So, where do we go from here? And what is the answer to encourage further development of the many applications for drone technology while still protecting private property rights? In furtherance of the desire for more clarity regarding airspace property rights, some scholars have advocated for laws—similar to SB 142 and Oregon law HB 2710—that would give property owners strict rights to exclude all drone operation over their property.[56] Some have even proposed that strict and exclusive property rights in airspace extend all the way up to the 500-foot navigable airspace boundary.[57] While this would be the broadest possible extension of property rights permitted by federal law (which caps any private rights at 500 feet, where the "public highway" begins), it is unclear whether such broad exclusionary rights are possible when considering novel future needs for drone operation.

With the virtually limitless potential applications of drones, some of which may ultimately involve delivery services or transportation of objects or persons, it may be necessary to reserve a certain amount of airspace below

500 feet for drone operation. Similar to when airplanes were first incorporated into the national airspace, the FAA may ultimately determine that a certain band of airspace, even significantly below 500 feet, is required for public use for drone operation.[58] Such requirements would undoubtedly give rise to further legal challenges—in the form of takings and trespass suits—to determine the precise scope of airspace property rights affected by drone operation over private property. However, even if the airspace from 350–500 feet, for example, were to be reserved exclusively for drones, that would still allow for strict protection of private airspace rights up to 350 feet, as proposed by SB 142 and similar laws. Laws giving strict exclusionary rights in at least some airspace above private property will help foster drone development and application by removing fear and skepticism associated with drones, and giving needed comfort and assurance to property owners regarding the investment, use, and enjoyment in their property. While perhaps not perfect in terms of resolving all potential issues, a bright-line rule regarding airspace rights appears to provide a current solution to protecting property rights while encouraging further innovation and increased uses in drone technology.

IX. CONCLUSION

The potential uses for drones in various industries—such as filmmaking, agriculture, scientific research, and many more—is something to be excited about, not something to fear. Further clarification of property rights in airspace is needed, however, before many individuals can be secure in their property and privacy rights as commercial and hobby drone use increases. Advancements in drone use should not, and need not, come at the expense of property rights. Rather, an approach that gives property owners exclusive airspace rights up to a certain height and allows for drone operation at higher altitudes or in other specified airspace strikes a balance that will protect property rights, and foster drone development rather than hinder it. The law is already lagging behind drone technology. It is time for lawmakers in California, and other jurisdictions, to act now to enact drone-specific legislation that clarifies airspace property rights rather than avoiding the issue. Otherwise, the lack of clarity may both erode property rights and hinder the advancement of eagerly anticipated and beneficial drone technology.

Endnotes

1 *See* Joan Lowy, *FAA Warns Public Against Shooting Guns At Drones*, Denver Post, July 19, 2013. http://www.denverpost.com/politics/ci_23693787/faa-warns-public-against-shooting-guns-at-drones; Jeff Stone, *Shooting Down Drone Costs California Man $850 Penalty, One Angry Neighbor,* International Business Times, June 29, 2015, http://www.ibtimes.com/shooting-down-drone-costs-california-man-850-penalty-one-angry-neighbor-1987699; Jeff Stone, *How To Shoot Down A Drone: Ray Guns, Nets And Malware Are Being Used To Knock Drones Out Of The Sky*, International Business Times, December 11, 2015. http://www.ibtimes.com/how-shoot-down-drone-ray-guns-nets-malware-are-being-used-knock-drones-out-sky-2222510.

2 *See U.S. v. Causby*, 328 U.S. 256, 260–61 (1946) (citing the Latin phrase "Cujus est solum, ejus est usque ad coelum," translated as "To whomsoever the soil belongs, he owns also to the sky…") (citing 1 Coke, Institutes, 19th Ed. 1832, ch. 1, s 1(4a); 2 Blackstone, Commentaries, Lewis Ed 1902, p. 18; 3 Kent Commentaries, Gould Ed. 1896, p. 621).

3 *Causby*, 328 U.S. at 260 (citing 49 U.S.C. § 401). This law has been recodified as 49 U.S.C. § 40103.

4 *Causby*, 328 U.S. at 261.

5 *Id.*

6 *Id.* at 264.

7 *Id.*

8 *Id.* (citing *Hinman v. Pacific Air Transport*, 84 F.2d 755 (9th Cir. 1936)).

9 *Causby*, 328 U.S. at 265.

10 *Id.*

11 *Id.* at 266 ("The airspace, apart from the immediate reaches above the land, is part of the public domain. We need not determine at this time what those precise limits are.").

12 The related issue of what property owners are permitted to do within their own airspace, particularly in terms of

drone operation, is not discussed in this article, but presents another important issue for consideration and debate. For academic analysis and discussion of this and many other issues relevant to drone operation and regulation, *see* Troy A. Rule, *Airspace in an Age of Drones*, 95 Boston Univ. L.R. 155 (2015). For example, the FAA has asserted regulatory authority over all drone flights for commercial purposes, even on private property below otherwise navigable airspace. However, it is questionable whether this assertion of authority is valid for drone operation that (1) never crosses state boundaries; (2) never rises to heights close to traditional navigable airspace; or (3) interferes with federal airspace or airport traffic. *See id*. at 197–99.

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

14 *See, e.g.*, *Causby*, 328 U.S. at 258–59.

15 *Id*. at 260–61.

16 *Id*. at 263–65.

17 *See* 49 U.S.C. § 40102(a)(6), defining aircraft as "any contrivance invented, used, or designed to navigate or fly in the air." *See also Michael P. Huerta, Administrator, Federal Aviation Administration v. Raphael Pirker*, NTSB Order No. EA-5730, Docket CP-217 (Nov. 18, 2014) (holding UAS are "aircraft" subject to federal regulations).

18 Unmanned Aircraft Operations in the National Airspace System, 14 C.F.R. pt. 91, at 5.

19 Interpretation of the Special Rule for Model Aircraft, 14 C.F.R. pt. 91, at 6, 16. Strictly speaking, even a "model aircraft" is an "unmanned aircraft system" if it is flown by a remote operator in the national airspace. However, "model aircrafts" are specifically exempted from FAA rules or regulations if (1) the aircraft weighs fifty-five pounds or less; (2) the aircraft is flown strictly for hobby or recreational use; (3) the aircraft is operated in accordance with a community-based set of safety guidelines and within the programming of a nationwide community-based organization; (4) the aircraft is operated in a manner that does not interfere with and gives way to any manned aircraft; and (5) when flown within five miles of an airport, the operator of the aircraft provides the airport operator and the airport air traffic control tower with prior notice of the operation. *Id*. at 6.

20 *See* FAA, UAS Enforcement Q&A (2016) available at http://www.faa.gov/uas/law_enforcement/media/UAS-Enforcement-FAQs.pdf.

21 Rule, *supra* note 12, at 203.

22 *See, e.g.*, Mich. Comp. Laws § 324.40112(2)(c) (prohibiting drone use to hunt or fish, or harass hunters); La. Stat. Ann. § 14:337 (barring drone use for conducting surveillance of high-risk facilities); Fla. Stat. Ann. § 934.50 (authorizing law enforcement's use of drones for surveillance under limited circumstances); Tenn. Code Ann. § 39-13-903 (prohibiting using an unmanned aircraft to capture image of individual or privately owned real property with intent to conduct surveillance).

23 FAA, Office of Chief Counsel, State and Local Regulation of Unmanned Aircraft Systems (UAS) Fact Sheet (2015) at 2–3.

24 *Id.*

25 Currently pending federal legislation proposes to preempt all state laws specifically aimed at drones. The Federal Aviation Administration Reauthorization Act (S. 2658), passed by the Senate on April 19, 2016, prohibits states and local governments from enacting or enforcing any law or regulation "relating to the design, manufacture, testing, licensing, registration, certification, operation, or maintenance of an unmanned aircraft system." Alternate language proposed by Senator Dianne Feinstein proposed to preempt state laws relating to the design, manufacture, testing, certification and maintenance of drones, but would only have preempted state laws regarding the *operation* of drones if a federal regulation governed such operation, and only to the extent that the state law presented an obstacle to that federal regulation. (*See* S. Amdt. 3558 to S. Amdt. 3464, introduced on April 7, 2016.) Feinstein's proposed amendment was ultimately not included in the final bill that passed in the Senate, but the scope of federal preemption of state drone laws may be revisited when the bill is considered in the House of Representatives.

26 *See* AB 856 (signed into law on October 6, 2015); SB 142 (vetoed on September 9, 2015); SB 168 (vetoed on October 3, 2015); SB 170 (vetoed on October 3, 2015); and SB 271 (vetoed on October 3, 2015).

27 *See* AB 856.

28 *See* SB 142.

29 September 9, 2015 Letter to Members of the California State Senate from the Office of the Governor (*available at* https://www.gov.ca.gov/docs/SB_142_Veto_Message.pdf).

30 *Id.* Governor Brown also vetoed SB 168, SB 170 and SB 271. SB 168 would have made it unlawful (punishable by up to a $5,000 fine and/or six months imprisonment) to knowingly, intentionally, or recklessly prevent or interfere with firefighters' efforts to control, contain, or extinguish a fire. SB 170 sought to make it unlawful to knowingly or intentionally operate a drone above the grounds of a state prison or jail. SB 271 would have made it illegal to knowingly or intentionally operate a drone less than 350 feet above a public school (kindergarten through twelfth grade), and/or to capture images of public school grounds

from a drone, while school is in session and without permission of the principal or other higher authority.

31 *AMA Statement on California Governor Veto of SB142*, AMA Government Relations Blog (September 10, 2015), http://amablog.modelaircraft.org/amagov/2015/09/10/california-governor-vetoes-sb-142/.

32 Cal. Civ. Code § 1708.8(b).

33 Rule, *supra* note 12, at 174–79.

34 *Bonde v. Bishop*, 112 Cal. App. 2d. 1, 6 (1952) ("the landowner, merely because he does not desire a neighbor's tree to overhang his premises, can, in a sense, take the law in his own hands and cut off the encroachment"); *see also* 6 Harry D. Miller & Marvin B. Starr, California Real Estate § 17:9 (4th ed. 2015). Admittedly, a property owner's "self-help" rights to shoot, destroy, or disable a drone flying over his or her property may be viewed as somewhat more extreme than merely clipping off the edge of a tree branch dangling over the fence line. However, the unpredictability and urgency of drone trespass—which requires immediate action, if any action is to be taken to prevent the trespass—as well as the potentially serious harm that can be caused by drone trespass (for example, the permanent capture of photographic or other private information) perhaps warrants a more extreme remedy. In any event, as argued in this article, the preferred course of action would be for legislators, regulators, and other public officials to enact laws clearly defining and protecting private airspace property rights so that property owners have legal recourse to bring an action in court rather than having to resort to potentially dangerous or destructive self-help, such as shooting at or otherwise attempting to destroy or disable drones in ways that may prove injurious to themselves, drone operators, and innocent third parties.

35 Cal. Penal Code § 602(m), (n), (o).

36 James Queally, *Seattle Woman Says Drone Seemed To Be Spying On Her*, L.A. Times, June 24, 2014, http://www.latimes.com/nation/nationnow/la-na-nn-seattle-peeping-tom-20140624-story.html.

37 Jonathan Wahl, *Ozark Couple Finds Drone Peeping In Window*, KSPR, Springfield, Mo., Oct. 21, 2015, http://www.kspr.com/news/local/ozark-couple-finds-drone-peeping-in-window/21051620_35971168.

38 Jacob Gershman, *Judge Dismisses Case Against 'Drone Slayer' Who Shot Down Drone From Back Porch*, The Wall Street Journal, Oct. 28, 2015, http://blogs.wsj.com/law/2015/10/28/judge-dismisses-case-against-drone-slayer-who-shot-down-drone-from-back-porch/; Ryan Cummings, *Hillview Man Arrested For Shooting Down Drone; Cites Right To Privacy*, WDRB.com, Jul. 31, 2015, http://www.wdrb.com/story/29650818/hillview-man-arrested-for-shooting-down-drone-cites-right-to-privacy.

39 Cummings, *supra* note 38.

40 Gershamn, *supra* note 38.

41 Complaint for Declaratory Judgment and Damages, *Boggs v. Merideth*, Docket No. 3:16-cv-00006 (W.D. Ky. Jan. 4, 2016).

42 Utah's legislature has introduced Senate Bill 210, which, while not setting a bright-line private property area space restriction for drones as with Oregon's HB 2710, does establish as "criminal trespass" the operation of a drone to "remain unlawfully over" private property after the owner's communications or posted signs giving notice against entering. *See*, Utah S.B. 210, 2016 General Session (amending Utah Code Ann. 76-6-206).

43 Or. Rev. Stat. § 837.380 (2013).

44 *Id.*

45 Governor Brown also referenced FAA-approved aircraft as a reason for vetoing SB 142, but the text of the bill explicitly exempted from coverage, among others, "private entities that may have the right to enter land by operating an unmanned aircraft system within the airspace overlaying the real property of another," which would presumably apply to drone operators with FAA authorization to fly drones lawfully and pursuant to specified conditions and regulations.

46 Press Release, Teal Group Corporation, UAV Production Will Total $93 Billion (Aug. 19, 2015) (*available at* http://www.tealgroup.com/index.php/teal-group-news-media/item/press-release-uav-production-will-total-93-billion).

47 *Id.*

48 FAA Registration and Marking Requirements for Small Unmanned Aircraft, Final Interim Rule, 80 Fed. Reg. 78593 (Dec. 21, 2015).

49 Nick Wingfield & Somini Sengupta, *Drones Set Sights on U.S. Skies*, N.Y. Times, Feb. 17, 2012, http://www.nytimes.com/2012/02/18/technology/drones-with-an-eye-on-the-public-cleared-to-fly.html; Rachel Brown, *Wedding Videos Take A Leap With Drone Technology*, S.F. Chronicle, Jan. 21, 2016, http://www.sfchronicle.com/style/article/Wedding-videos-take-a-leap-with-drone-technology-6770085.php; John R. Platt, *Eye in the Sky: Drones Help Conserve Sumatran Orangutans and Other Wildlife*, Scientific American, Sept. 27, 2012, http://blogs.scientificamerican.com/extinction-countdown/drones-help-conserve-sumatran-orangutans-wildlife/; Jason Koebler, *NASA to Use Second Drone to Monitor Hurricanes*, U.S. News & World Reports, May 30, 2013, http://www.usnews.com/news/articles/2013/05/30/nasa-to-use-second-drone-to-monitor-hurricanes.

50 Brenna Houck, *How Drones Are Helping Wineries Weather California's Drought*, Food Tech, Eater.com (Jan. 25, 2016, 4:00 PM), http://www.eater.com/2016/1/25/10827186/drones-winery-california-drought-verizon-precisionhawk.

51 *Amazon Prime Air*, http://www.amazon.com/b?node=8037720011 (last visited Mar. 29, 2016).

52 Leah Becerra, *Google Says Project Wing Drones Will Be Delivering To Our Doorsteps By 2017*, Gizmodo.com (Nov. 3, 2015), http://gizmodo.com/google-says-project-wing-drones-will-be-delivering-to-o-1740260543.

53 David Z. Morris, *Why BNSF Railway Is Using Drones To Inspect Thousands Of Miles Of Rail Lines*, Fortune.com (May 29, 2015), http://fortune.com/2015/05/29/bnsf-drone-program/; FAA Grant of Exemption, Exemption No. 112-6, Regulatory Docket No. FAA-2014-0704 (Mar. 12, 2015).

54 Gregory S. McNeal, *FAA Approves Limited Use Of Drones For Utility Company*, Forbes (Jul. 12, 2014), http://www.forbes.com/sites/gregorymcneal/2014/07/12/faa-approves-limited-use-of-drones-for-san-diego-utility-company/#d2645aa52e65.

55 Chris Smith, *Forget Driverless Cars, Someone Made An Autonomous Personal Transportation Drone*, BRG.com (Jan. 7, 2016), http://bgr.com/2016/01/07/ehang-184-personal-transportation-drone/; Alan Boyle, *Chinese Company Unveils A Drone So Big It Can Carry A Human – But Is It A Drone?*, Geekwire.com (Jan. 8, 2016), http://www.geekwire.com/2016/china-unveils-a-drone-so-big-it-can-carry-a-human-but-is-it-a-drone/; Christina Goldbaum, *Watch how drones keep elephants away from danger in Tanzania*, QZ.com (July 18, 2015), http://qz.com/456772/watch-how-drones-keep-elephants-away-from-danger-in-tanzania/; Jonathan Vanian, *Behind the scenes with Facebook's new solar-powered Internet drone and laser technology*, Fortune.com (July 30, 2015), http://fortune.com/2015/07/30/facebooks-solar-power-drone-internet-earth.

56 Rule, *supra* note 12, at 186–97.

57 *Id*. at 187.

58 Aaron Smith, *Amazon Wants Air Space Designated For Drones,* CNN Money (July 29, 2015), http://money.cnn.com/2015/07/29/technology/amazon-drones-air-space/.