

2017

Augmenting Property Law: Applying the Right to Exclude in the Augmented Reality Universe

Samuel Mallick

Follow this and additional works at: <https://scholarship.law.vanderbilt.edu/jetlaw>



Part of the [Computer Law Commons](#), and the [Property Law and Real Estate Commons](#)

Recommended Citation

Samuel Mallick, Augmenting Property Law: Applying the Right to Exclude in the Augmented Reality Universe, 19 *Vanderbilt Journal of Entertainment and Technology Law* 1057 (2020)
Available at: <https://scholarship.law.vanderbilt.edu/jetlaw/vol19/iss4/6>

This Note is brought to you for free and open access by Scholarship@Vanderbilt Law. It has been accepted for inclusion in Vanderbilt Journal of Entertainment & Technology Law by an authorized editor of Scholarship@Vanderbilt Law. For more information, please contact mark.j.williams@vanderbilt.edu.

Augmenting Property Law: Applying the Right to Exclude in the Augmented Reality Universe

ABSTRACT

This Note considers whether and to what extent the property right to exclude applies to virtual space in the augmented reality (AR) universe. It provides an overview of AR's development and uses, as well as a review of property law concerning the right to exclude. By considering the consequences of previously proposed regulatory schemes in light of four hypothetical AR applications, this Note demonstrates that these solutions do not adequately balance the societal benefit achievable through free development of AR applications with landowners' absolute rights to exclude others from their property. This Note proposes adoption of an adjusted "open-range" common law solution to the legal challenges AR presents. Under this solution, AR developers would be free to place virtual intrusions anywhere they like, but landowners would be able to give notice to developers demanding virtual intrusions be removed from their property.

TABLE OF CONTENTS

I.	A PRIMER ON AUGMENTED REALITY	1059
	A. <i>The Basics of Augmented Reality</i>	1059
	B. <i>Pokémon GO</i>	1062
	C. <i>The Future of AR</i>	1064
	D. <i>Present Litigation</i>	1065
II.	BACKGROUND ON THE PROPERTY RIGHT TO EXCLUDE	1066
	A. <i>Models for the Right to Exclude Physical Intrusions</i>	1068
	1. <i>Traditional Trespass</i>	1068
	2. <i>Access Land</i>	1070
	3. <i>Open Range</i>	1071
	B. <i>Private Nuisance and the Right to Exclude Nonphysical Invasions</i>	1072
	C. <i>Current Governance of the Electronic and Virtual Worlds</i>	1072

III.	ANALYSIS.....	1073
	A. <i>Four Hypothetical AR Applications</i>	1073
	B. <i>Common Law Property Doctrines Do Not Fit an AR Scheme</i>	1074
	C. <i>Current Proposed Solutions for AR Regulation Are Inadequate</i>	1077
	1. <i>Class Actions</i>	1077
	2. <i>State Statutes</i>	1078
	3. <i>Virtual “No-Fly” Zones</i>	1079
IV.	SOLUTION.....	1080
V.	CONCLUSION	1083

Imagine twenty years from now, you own a plot of land with a nice house, a white picket fence, and a big front yard. To your neighbor walking her dog or to a visitor coming to say hello, your property looks like an ordinary home. But when someone views your home through the camera of a smartphone, a different image appears. The house and picket fence are covered with graffiti, advertisements, lewd pictures, and information about the property and its residents. The lawn is littered with boxes of different sizes and colors. Zombies, fairies, and other fantastical creatures run amok in the yard. None of these intrusions exist in the physical world, but through augmented reality (AR) technology, these virtual images seem to inhabit your property. Their presence has the potential to affect both your property’s value and your enjoyment of it.

AR is continually bringing the virtual and physical worlds closer by tying virtual images to real, physical locations that users can visit.¹ While AR is not yet a recognizable, ubiquitous facet of everyday life, it is already prevalent, and its applications are growing.² As the real and virtual worlds begin to collide, the legal system will have to resolve inevitable disputes resulting from conflicts between

1. See Om Malik, *Pokémon GO Will Make You Crave Augmented Reality*, NEW YORKER (July 12, 2016), <http://www.newyorker.com/tech/elements/pokemon-go-will-make-you-crave-augmented-reality> [https://perma.cc/3PCF-8Z4N].

2. See Paul Blake & Ronnie Polidoro, *Exclusive: Why Apple CEO Tim Cook Prefers Augmented Reality over Virtual Reality*, ABC NEWS (Sept. 14, 2016 7:23 AM), <http://abcnews.go.com/Technology/exclusive-apple-ceo-tim-cook-prefers-augmented-reality/story?id=42064913> [https://perma.cc/UXZ9-KLSK]; Dena Cassella, *What Is Augmented Realty (AR): Augmented Reality Defined, iPhone Augmented Apps and Games and More*, DIGITAL TRENDS (Nov. 3, 2009), <http://www.digitaltrends.com/features/what-is-augmented-reality-iphone-apps-games-flash-yelp-android-ar-software-and-more/> [https://perma.cc/H9JK-GLLM].

landowners and users or developers of AR technologies.³ Landowners have already filed lawsuits in response to the alleged tortious conduct of AR users and developers.⁴ The legal system will have to respond to the question of whether AR application developers can create virtual intrusions in virtual space that are tied to privately owned property.⁵ This Note explores this question and advocates for the application of the fundamental property right to exclude in AR applications, even though they do not look like traditional, physical invasions.

Part I explains AR, discusses current applications of the technology, and considers how it might progress in the future. Part II analyzes the current legal application of the property right to exclude, including trespass, nuisance, and existing attempts to regulate virtual and electronic “spaces.” Part III discusses why property law as it stands is insufficient to cope with AR, presents existing proposed solutions, and explores why those solutions are inadequate. Part IV proposes that courts reject the strictures of current modes of exclusion, look to policy considerations underpinning property law to identify an appropriate solution, and adjust the common law accordingly. This Note argues that courts can best balance encouraging development of potentially useful AR technology with protecting fundamental property rights by adapting the “open range” model of the right to exclude.

I. A PRIMER ON AUGMENTED REALITY

A. *The Basics of Augmented Reality*

Augmented reality is “an enhanced version of reality created by the use of technology to overlay digital information on an image of something being viewed through a device (such as a smartphone camera).”⁶ Put differently, AR uses technology to make virtual presences appear as if they exist in the physical world, superimposing

3. See Alex Hern, *Pokémon Go: Who Owns the Virtual Space Around Your Home?*, GUARDIAN (July 13, 2016, 9:46 AM), <https://www.theguardian.com/technology/2016/jul/13/pokemon-virtual-space-home> [https://perma.cc/5DLT-YFLU].

4. See Complaint 25–28, *Pokémon Go Nuisance Litigation*, Case No. 3:16-cv-04300 (N.D. Cal. 2016) (No. 46).

5. See Yamri Taddese, *Focus: Virtual Trespassing Result of Pokemon Go?*, LAW TIMES, (Aug. 1, 2016, 9:00 AM), <http://www.lawtimesnews.com/201608015557/headline-news/virtual-trespassing-result-of-pokemon-go> [https://perma.cc/MJ25-2LRN]; Hern, *supra* note 3.

6. *Augmented Reality*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/dictionary/augmented%20reality> [https://perma.cc/S86N-VZUN] (last visited Mar. 7, 2017).

virtual graphics onto the real world through use of a device's screen.⁷ This Note refers to such virtual presences as "on" property. This characterization is not technically correct, as these images do not literally inhabit the physical world, but it is a convenient shorthand description of what appears to be happening. AR is distinct from virtual reality (VR), which projects solely digital images, replacing the user's surrounding environment.⁸ AR incorporates digital images into the real world, overlaying them onto a user's physical surroundings.⁹ In an interview with ABC News, Tim Cook, CEO of leading technology company Apple, touted AR as having more commercial potential than VR over time.¹⁰ Cook stated that AR presents "the capability for both of us to sit and be very present, talking to each other, but also have other things—visually—for both of us to see."¹¹ This technology supplements, rather than replaces, the physical world with virtual presences. AR applications depend on the real world for viability.

One of the most common uses of AR is in television broadcasts of football games.¹² Since 1998, broadcasters have used AR to overlay a yellow line, developed by Sportvision and called the 1st and Ten Line, onto video of a football field to allow viewers to easily discern the location of the real-world first down marker, which may not be easily visible to television viewers.¹³ This use may not be immediately recognizable as AR, but it is both prevalent and longstanding.¹⁴

AR was first developed in 1968, when Ivan Sutherland created a head-mounted display system, used for both VR and AR that displayed wireframe drawings.¹⁵ In 1990, Tom Caudell, a researcher

7. See Lily Prasuethsut, *Everything You Need to Know About Augmented Reality, Then, Now & Next*, WAREABLE, (July 30, 2016), <http://www.wearable.com/ar/everything-you-need-to-know-about-augmented-reality> [<https://perma.cc/6J2P-5DFN>].

8. See *id.*

9. See Blake & Polidoro, *supra* note 2.

10. See *id.*

11. *Id.*

12. Dennis Williams, *Did Sports Pave the Way for Augmented Reality?*, AUGMENT (July 7, 2016), <http://www.augment.com/blog/sports-pave-way-augmented-reality/> [<https://perma.cc/P4NF-NQVC>].

13. *Id.*

14. See *id.* ("In today's age, the 1st & Ten Line has become a standard in every football telecast and a worldwide aid to audiences and broadcasters alike.")

15. Kangdon Lee, *Augmented Reality in Education and Training*, 56 *TECHTRENDS* 13, 13 (Mar./Apr. 2012), http://www.academia.edu/1429676/Augmented_Reality_in_Education_and_Training [<https://perma.cc/6P83-8S6S>]; *Infographic: The History of Augmented Reality*, AUGMENT (May 12, 2016), <http://www.augment.com/blog/infographic-lengthy-history-augmented-reality/> [<https://perma.cc/F6SG-ZVSK>].

for Boeing, coined the term “augmented reality.”¹⁶ Caudell, in introducing the term, described the technology:

The general concept is to provide a “see-thru” virtual reality goggle to the factory worker, and to use this device to augment the worker’s visual field with useful and dynamically changing information. . . . This technology is used to “augment” the visual field of the user with information necessary in the performance of the current task, and therefore we refer to the technology as “augmented reality” (AR).¹⁷

Head-mounted displays continue to be at the forefront of AR development, with major tech companies Google and Microsoft both developing such hardware.¹⁸ Google unveiled its head-mounted display, Google Glass, in 2012, attracting national media attention.¹⁹ Google Glass was originally designed to look like a pair of glasses, but instead of prescription lenses, the frames have a built-in camera, a touchpad running along the wearer’s temple, and a display screen allowing users to see a series of virtual cards, which display information like the weather or text messages the wearer has received.²⁰ The hardware, in part, functions like a smartphone, but allows users to access information, read messages, and record videos without taking a device out of their pockets and looking down at a screen.²¹

Google Glass was never widely available on the market—its use was restricted to Google’s Glass Explorers program (a select few users in a controlled pilot program who paid \$1,500 to become early adopters) and publicized use by various celebrities.²² In January 2015, Google closed its Glass Explorers program and announced that new versions of Google Glass were forthcoming, with no information about a timeline for future releases or clues as to what would be

16. Lee, *supra* note 15, at 13; *Infographic: The History of Augmented Reality*, *supra* note 15; see *Augmented Reality*, OXFORD ENG. DICTIONARY (Draft additions Dec. 2005), <http://www.oed.com/view/Entry/13081> [<https://perma.cc/W7EU-KYJH>].

17. T.P. Caudell & D.W. Mizell, *Augmented Reality: An Application of Heads-Up Display Technology to Manual Manufacturing Processes*, Proc. 25th Hawaii Int’l Conf. Sys. Sci. II. 659, 660 (Jan. 1992), <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=183317> [<https://perma.cc/7FD4-XFSK>].

18. Prasuethsut, *supra* note 7.

19. See Nick Bilton, *Why Google Glass Broke*, N.Y. TIMES (Feb. 4, 2015), http://www.nytimes.com/2015/02/05/style/why-google-glass-broke.html?smid=nytcore-iphone-share&smprod=nytcore-iphone&_r=1 [<https://perma.cc/JK9C-6SVW>].

20. Marques Brownlee, *Google Glass How-To: Getting Started*, YOUTUBE (Apr. 30, 2013), <https://www.youtube.com/watch?v=4EvNxWhskf8> [<https://perma.cc/KD55-DX5N>]; Joshua Topolsky, *I Used Google Glass: The Future, but with Monthly Updates*, VERGE (Feb. 22, 2013), <http://www.theverge.com/2013/2/22/4013406/i-used-google-glass-its-the-future-with-monthly-updates> [<https://perma.cc/P8EP-JMEP>].

21. See Topolsky, *supra* note 20.

22. See Bilton, *supra* note 19.

changed in subsequent versions.²³ A 2015 filing with the Federal Communications Commission shows that a new version of Google Glass is in the works and provides photographs of the redesigned model.²⁴

Microsoft's head-mounted display, HoloLens, is currently available for \$3,000 per unit, but is only available to application developers, who Microsoft hopes will create uses for the technology.²⁵ While Google Glass allows wearers to see and interact with a floating display that essentially duplicates a smartphone screen, HoloLens allows wearers to see three-dimensional holograms, and a feature known as "pinning" will allow the hologram to remain in one place while users walk around it.²⁶

Head-mounted displays are expensive and not yet readily accessible—the exclusivity of Google Glass is just one example.²⁷ Microsoft HoloLens, while obtainable, is still only available to developers.²⁸ Although head-mounted displays are not yet mainstream technologies, AR is accessible through a more ubiquitous technological advancement: the smartphone.²⁹

B. *Pokémon GO*

AR technology made headlines again in Summer 2016 with the release of the AR smartphone game *Pokémon GO*, which debuted on July 6, 2016, and within a month, had 21 million users.³⁰ *Pokémon GO* is a mobile application developed by Niantic, Inc. ("Niantic") that

23. Google Glass, *We're Graduating from Google[x] Labs*, GOOGLE+ (Jan. 15, 2015), <https://plus.google.com/+GoogleGlass/posts/9uivXY42tvc> [<https://perma.cc/KQD2-6QUG>].

24. See generally Lisa Eadicicco, *See the New Version of Google's Wildest Product*, TIME (Dec. 29, 2015), <http://time.com/4163067/google-glass-2-photos-2015/> [<https://perma.cc/SAC3-RG4Q>] (referencing Google's application to the Federal Communications Commission with a link to photos of the new Google Glass).

25. *Microsoft HoloLens Development Edition*, MICROSOFT, https://www.microsoftstore.com/store/msusa/en_US/pdp/Microsoft-HoloLens-Development-Edition/productID.5061263800 [<https://perma.cc/E2W5-E9NL>] (last visited Mar. 7, 2017) [hereinafter MICROSOFT].

26. Sophie Charara, *Microsoft HoloLens: Everything You Need to Know About the \$3,000 AR Headset*, WAREABLE (Aug. 2, 2016), <https://www.wearable.com/microsoft/Microsoft-hololens-everything-you-need-to-know-about-the-futuristic-ar-headset-735> [<https://perma.cc/9HT7-YZP6>].

27. See Bilton, *supra* note 19.

28. See MICROSOFT, *supra* note 25.

29. See Nick Wingfield & Mike Isaac, *Pokémon Go Brings Augmented Reality to a Mass Audience*, N.Y. TIMES (July 11, 2016), http://www.nytimes.com/2016/07/12/technology/pokemon-go-brings-augmented-reality-to-a-mass-audience.html?_r=0 [<https://perma.cc/6ZH6-HQWX>].

30. See Georgia Perry, *Imagination in the Augmented-Reality Age*, ATLANTIC (Aug. 4, 2016), <http://www.theatlantic.com/education/archive/2016/08/play-in-the-augmented-reality-age/494597/> [<https://perma.cc/7CBQ-DBE7>].

allows users to take on the role of a “Pokémon Trainer” and attempt to capture virtual “Pokémon” that appear, through use of AR and a smartphone camera, to exist in the physical world.³¹ Pokémon are fictional animal-like creatures that game players attempt to capture and use in battles.³²

Previous Pokémon video games were role-playing games in which a player controlled a character appearing on a screen in a predetermined story in a fictional world, navigating maps created by the games’ developers in a quest to capture Pokémon and battle against other characters.³³ In Pokémon GO, however, the map is the physical world, and instead of guiding a character through a predetermined story, the user walks through the physical world attempting to capture Pokémon.³⁴ These Pokémon can only be found when a user goes to a real location corresponding with the placement of Pokémon on the map by the game’s developers.³⁵ Once at that location, users can engage their smartphones’ cameras and it will appear as if Pokémon exist among their real-world surroundings.³⁶ The game also features gyms, which are “locations” that allow users to compete against each other, and Pokéstops, where users can collect items to help them in their quests.³⁷ These gyms and Pokéstops are often real-world points of interest (for example, the White House is a gym).³⁸ They are geographic coordinates housed on Niantic’s servers and represented to users on the “stylised [sic] Google Map of the area

31. See Matt Peckham, *Review: ‘Pokémon Go’ Is an Ingenious Idea with Too Many Rough Edges*, TIME (July 12, 2016), <http://time.com/4401279/pokemon-go-review/> [<https://perma.cc/BZX8-4A4S>].

32. Dave Thier, *What Is ‘Pokémon GO,’ and Why Is Everybody Talking About It?*, FORBES (July 11, 2016), <http://www.forbes.com/sites/davidthier/2016/07/11/facebook-twitter-social-what-is-pokemon-go-and-why-is-everybody-talking-about-it/#229e2b9c21c7> [<https://perma.cc/9YSH-4UDF>]. The term “Pokémon” comes from the phrase “Pocket Monsters”—users capture the game’s fictional world in balls, which are small enough to be kept in a pocket. *Id.*

33. See, e.g., *Pokémon Red Version and Pokémon Blue Version*, POKÉMON, <http://www.pokemon.com/us/pokemon-video-games/pokemon-red-version-and-pokemon-blue-version/> [<https://perma.cc/36UW-X5QD>] (last visited Feb. 18, 2017).

34. See Yuji Nakamura, *A Beginner’s Guide to Pokemon GO*, BLOOMBERG (July 11, 2016), <https://www.bloomberg.com/news/articles/2016-07-11/what-is-pokemon-go-a-beginner-s-guide-to-the-new-app> [<https://perma.cc/HQW3-JHEC>].

35. See Thier, *supra* note 32.

36. See *id.*

37. See Peckham, *supra* note 31.

38. See Clem Bastow, *From Pokéstops to Pikachu: Everything You Need to Know About Pokémon Go*, GUARDIAN (July 11, 2016), <https://www.theguardian.com/technology/2016/jul/11/from-pokestops-to-pikachu-everything-you-need-to-know-about-pokemon-go> [<https://perma.cc/8266-5ELZ>]; Wingfield & Isaac, *supra* note 29.

surrounding the player,” which is simply a virtual map with Pokémon GO’s information animated onto it.³⁹

Proponents of the game praise the way it encourages users to get outside, exercise, and interact with the world around them.⁴⁰ Critics of the game disfavor the placement of Pokéstops in locations such as the United States Holocaust Memorial Museum, which prompted the museum to complain.⁴¹

At its core, AR is simply the projection of virtual images onto real-world surroundings.⁴² Within this definition, however, there are subcategories of AR, including location-based AR.⁴³ Pokémon GO uses location-based AR by basing its game on a real-world map.⁴⁴ Not all AR technologies tie virtual presences to physical locations in this way, but because of the new and compelling legal questions it raises, this Note focuses only on location-based AR and uses the term “AR” to refer to such applications.⁴⁵

C. *The Future of AR*

Pokémon GO’s digital map could form the basis for multiple future applications.⁴⁶ In fact, Pokémon GO is not Niantic’s first application—the company previously developed a game called Ingress, built around a digital map.⁴⁷ This technology’s successful use in the Pokémon GO application implies that its future use could be widespread. AR technology, however, has never been limited to entertainment, and other uses are already in development.⁴⁸ For example, the Israeli military is beginning to use AR—it has purchased two HoloLens glasses from Microsoft and has created software that

39. Hern, *supra* note 3; see Malik, *supra* note 1.

40. See Malik, *supra* note 1.

41. See Complaint ¶ 7, Pokémon Go Nuisance Litigation, Case No. 3:16-cv-04300 (N.D. Cal. 2016) (No. 46).

42. See *id.*

43. See Prasuethsut, *supra* note 7.

44. See *id.*; Wingfield & Isaac, *supra* note 29.

45. See Prasuethsut, *supra* note 7.

46. See Wingfield & Isaac, *supra* note 29; Devon Lyon, *Augmented Reality Storytelling How It Will Change the Way We Play Forever*, TEDXSALEM (Nov. 17, 2014), <https://www.youtube.com/watch?v=sYl9wI3jnms> [<https://perma.cc/Y9LQ-2J65>] (describing the ways AR could create new media for storytelling and explaining how mapping one location, such as a forest, could provide the setting for multiple stories created by different developers).

47. See Wingfield & Isaac, *supra* note 29.

48. See *Infographic: The History of Augmented Reality*, *supra* note 15; see, e.g., Gwen Ackerman & Dina Bass, *Israeli Army Prepares Augmented Reality for Battlefield Duty*, BLOOMBERG (Aug. 15, 2016, 6:14 AM), <http://www.bloomberg.com/news/articles/2016-08-15/microsoft-s-hololens-technology-adopted-by-israeli-military> [<https://perma.cc/6YGS-R92T>].

overlays battlefield maps onto the real training grounds to aid in battlefield strategy and training.⁴⁹ AR also has potential for valuable educational applications.⁵⁰ For example, a natural history museum could use AR to recreate the external appearance of a dinosaur around the dinosaur skeleton on display in the museum, allowing history to come to life through a visitor's smartphone.⁵¹ AR has also been used to create a role-playing game in which students take on historical roles and explore real-world terrain, "encourag[ing] individuals to more profoundly explore a real site by interacting between the real and augmented world[s]."⁵² The full extent of AR's potential, like that of any technological innovation, is unclear. In addition to military, educational, and entertainment uses, AR could have benefits in healthcare, navigation, retail, and safety.⁵³

D. Present Litigation

Pokémon GO's popularity, and the media coverage surrounding its release, quickly raised a plethora of legal concerns, some of which are already being litigated.⁵⁴ These concerns include: the right to privacy implicated by Niantic's ability to track users' movements, injuries to users who wander into dangerous situations while playing, and nuisance and trespass by game users.⁵⁵

A number of class action lawsuits were filed in the United States District Court for the Northern District of California in Summer 2016 and consolidated in a suit before Judge James Donato on September 23, 2016.⁵⁶ Collectively styled *In re Pokémon Go*

49. See Ackerman & Bass, *supra* note 48.

50. See Lee, *supra* note 15, at 14–16.

51. See *id.* at 18.

52. See *id.*

53. See generally Ackerman & Bass, *supra* note 48 (describing development of AR software to aid in military training); Christina, *4 Benefits for Augmented Reality in Healthcare*, AUGMENT (Feb. 25, 2016), <http://www.augment.com/blog/4-benefits-augmented-reality-healthcare/> [<https://perma.cc/B4GV-XHUC>] (detailing various uses for AR in the healthcare field); Augment, *4 Ways Augmented Reality Will Change Everyday Life*, AUGMENT (Aug. 4, 2016), <http://www.augment.com/blog/4-ways-augmented-reality-will-change-everyday-life/> [<https://perma.cc/4XPD-W49H>] (explaining how AR could be used as a navigation tool, aid first responders, and help shoppers make decisions).

54. See Complaint 25–28, Pokémon Go Nuisance Litigation, Case No. 3:16-cv-04300 (N.D. Cal. 2016) (No. 46).

55. Beatriz Costa-Lima and Mary Hudetz, *The 'Pokemon Go' Files: 10 Tales of Trespass, Robbery, Murder, and More*, INS. J. (July 15, 2016), <http://www.insurancejournal.com/news/national/2016/07/15/420198.htm> [<https://perma.cc/C4XC-HU4E>].

56. See Consolidation and Case Management Order, Pokémon Go Nuisance Litigation, Case No. 3:16-cv-04300-JD (N.D. Cal. 2016) (No. 34); see also Defendant's Unopposed

Nuisance Litigation, Case No. 3:16-cv-04300-JD, Document 34 (N.D. Cal. Sept. 23, 2016), the plaintiffs, individually and on behalf of all others similarly situated, allege “Niantic’s unauthorized placement of Pokéstops and Pokémon Gyms on or near the property of Plaintiffs and other members of the proposed class constitutes an intentional entry of their properties.”⁵⁷ The plaintiffs allege nuisance, trespass, and unjust enrichment, seeking an injunction and other relief against Niantic’s alleged wrongful conduct.⁵⁸ Presumably, such an injunction would involve Niantic removing digital game features from privately owned land.

With AR already prompting questions about the rights of landowners, the legal system needs to respond. The next Part explores existing property rules pertaining to the right to exclude in order to provide a sense of the scheme into which a solution must fit.

II. BACKGROUND ON THE PROPERTY RIGHT TO EXCLUDE

Then-Justice Rehnquist characterized the right to exclude others from one’s property as “one of the most essential sticks in the bundle of rights that are commonly characterized as property.”⁵⁹ Many agree that the right to exclude is one of the most important property rights.⁶⁰ Some have gone so far as to consider the right to exclude constitutional in nature.⁶¹ Both this general conception of property—as a series of rights—and Justice Rehnquist’s characterization of the right to exclude as “one of the most essential” rights provide a framework for conceptualizing property rights in the context of AR.⁶²

Administrative Motion to Consolidate, *Pokémon Go Nuisance Litigation*, Case No. 3:16-cv-04300-JD (N.D. Cal. 2016) (No. 20).

57. See Complaint ¶ 7, *Pokémon Go Nuisance Litigation*, Case No. 3:16-cv-04300-JD.

58. See *id.* at 25–28. On January 27, 2017, the defendants filed motions to dismiss, but as of February 2017, the court has not ruled on them. See *e.g.*, Defendant’s Motion to Dismiss, *Pokémon Go Nuisance Litigation*, Case No. 3:16-cv-04300-JD (N.D. Cal. 2017) (No. 62) (“Plaintiffs would never even see the allegedly intruding Game Items unless they played the game at home. . . . They do not (and cannot) allege any unauthorized entry or tangible invasion of their properties by Game Items, let alone a significant one.”).

59. *Kaiser Aetna v. United States*, 444 U.S. 164, 176 (1979) (Rehnquist, J.). It should be noted that the bundled rights metaphor of property is dominant, but not universally accepted. See, *e.g.*, J.E. Penner, *The “Bundle of Rights” Picture of Property*, 43 UCLA L. REV. 711, 714 (1996).

60. Thomas W. Merrill, *Property and the Right to Exclude*, 77 NEB. L. REV. 730, 730 (1998) (arguing that without the right to exclude, one does not own property).

61. David L. Callies & J. David Breemer, *The Right to Exclude Others from Private Property: A Fundamental Constitutional Right*, 3 WASH. U. J.L. POL’Y 39, 40–41 (2000).

62. See *Kaiser Aetna*, 444 U.S. at 176 (Rehnquist, J.).

These property rights are not fixed; rather, they evolve over time in response to a variety of underlying considerations.⁶³ Those rights are often developed through state common law.⁶⁴ This allows for gradual evolution of doctrine in service of the fundamental issues that animate property law.⁶⁵ This Note examines five of the doctrines as they currently stand in property law, but it contends that this law does not and should not exist for its own sake. Property law must serve the ideals that have shaped it throughout history, and when the essential ideals change, the law must evolve accordingly.⁶⁶

Two key theories underlying the policy aims of property law are the personhood and utilitarian theories of property.⁶⁷ Under a utilitarian view, property should serve society by maximizing welfare.⁶⁸ Under a personhood view, property is viewed as a “part of oneself.”⁶⁹ The home, especially, is connected to notions of personhood: “The home is a moral nexus between liberty, privacy, and freedom of association.”⁷⁰ Virtual invasions of private property through AR put these two notions into tension with each other. The highest and best use of land to maximize welfare requires hundreds of virtual intrusions by various AR developers. Some of those intrusions, however, may offend an owner’s sense of personhood by placing an otherwise harmless virtual object “on” the owner’s land without consent. Thus, there is a question whether the right to exclude should extend to these virtual intrusions.

The right to exclude is paramount to other property rights because it furthers the goals fundamental to property law. Basic goals of property include protecting the rights of the first possessor, encouraging labor, maximizing social welfare, and promoting personhood and personal development.⁷¹ These sticks in the bundle can be broken up and change hands independently of each other.⁷² Therefore, the right to exclude virtual presences can be distinct from

63. See Lynda L. Butler, *The Resilience of Property*, 55 ARIZ. L. REV. 847, 852 (2013) (“[P]roperty is an evolving institution that engages multiple values and norms vetted through a dialectical process involving political, moral, economic, scientific, social, and legal perspectives.”).

64. See *id.* at 875 (“[T]he common law has allowed property to develop through a dialectical process of advocacy, deliberation, and reasoning.”).

65. See *id.*

66. See *id.*

67. See Margaret Jane Radin, *Property and Personhood*, 34 STAN. L. REV. 957, 958 (1982).

68. See *id.* at 984.

69. See *id.* at 992.

70. *Id.* at 991.

71. See John G. Sprankling & Raymond R. Coletta, PROPERTY: A CONTEMPORARY APPROACH 2–7 (Thomson Reuters eds., 3d ed. 2009).

72. See *id.* at 27.

traditional trespass and nuisance doctrines if courts choose to treat it as such. Courts have previously redefined property rights when faced with technological advancements.⁷³ Notably, the development of air travel challenged the traditional notion that ownership rights extended up to the heavens. With the ability and need for air travel, policy considerations prompted a new rule.⁷⁴ In *United States v. Causby*, the Supreme Court stated:

It is ancient doctrine that at common law ownership of the land extended to the periphery of the universe. . . . But that doctrine has no place in the modern world. The air is a public highway, as Congress has declared. . . . Yet 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.⁷⁵

Thus, in *Causby*, the Court cut back a traditional common law doctrine in response to technological developments.⁷⁶ In doing so, however, the Court continued to respect the rights and expectations of landowners.⁷⁷

The following subsections examine different schemes for implementing the right to exclude. Subsection A addresses schemes regulating uninvited physical invasions, which generally fit under the heading of trespass. Subsection B discusses nuisance doctrine, which implements the right to exclude by forbidding any nontrespassory interference with an owner's use and enjoyment of land. Finally, subsection C briefly discusses the still-developing right to exclude in the virtual and electronic worlds.

A. Models for the Right to Exclude Physical Intrusions

1. Traditional Trespass

The Restatement (Second) of Torts provides that a person is liable "for trespass, irrespective of whether he thereby causes harm . . . if he intentionally enters land in the possession of another, or causes a thing or third person to do so . . ."⁷⁸ Under the Restatement, a trespasser is liable for any entry onto the land of another, even if the intrusion does not cause harm.⁷⁹ Consent to

73. See, e.g., *United States v. Causby*, 328 U.S. 256, 260-61, 264 (1946).

74. See *id.*

75. *Id.*

76. See *id.*

77. See *id.*

78. RESTATEMENT (SECOND) OF TORTS § 158 (AM. LAW INST. 1965).

79. *Id.*

trespass provides an affirmative defense.⁸⁰ Under this rule, physical intrusions are not permitted unless they are affirmatively invited.⁸¹ Thus, under traditional trespass to land, non-owners are assumed to be barred from entry to property until the owner consents to their entry.⁸²

This scheme reflects an absoluteness of rights to real property that is embodied in *Jacque v. Steenberg Homes, Inc.* There, Steenberg Homes asked members of the Jacque family for permission to transport a modular home over their land.⁸³ There, Steenberg Homes transported a modular home over the land after the Jacques explicitly denied permission for it to do so.⁸⁴ A jury awarded \$1 in nominal damages and \$100,000 in punitive damages.⁸⁵ The trial court set aside the award for punitive damages, but the Supreme Court of Wisconsin ultimately held that juries, when granting nominal damages for intentional trespass to land, may also grant punitive damages; it also held that the jury's award of \$100,000 was not excessive and ordered the punitive damages to be reinstated.⁸⁶ The court stated, "The law infers some damage from every direct entry upon the land of another [I]n the case of intentional trespass to land, the nominal damage award represents the recognition that, although immeasurable in mere dollars, actual harm has occurred."⁸⁷ The court further reasoned:

Society has an interest in punishing and deterring intentional trespassers beyond that of protecting the interests of the individual landowner. Society has an interest in preserving the integrity of the legal system. Private landowners should feel confident that wrongdoers who trespass upon their land will be appropriately punished. When landowners have confidence in the legal system, they are less likely to resort to "self-help" remedies.⁸⁸

Therefore, in service of both individual and societal interests, the right to exclude others from entering privately owned land is strictly enforced.⁸⁹

80. *Id.* §§ 167, 892A. There are other affirmative defenses available, but as none of them are relevant to AR or this general topic, this Note sets them aside for simplicity's sake. *See, e.g., id.* §§ 196–197.

81. *See id.* §§ 158, 167, 892A.

82. *See id.*

83. *Jacque v. Steenberg Homes, Inc.*, 563 N.W.2d 154 (Wis. 1997).

84. *Id.* at 157.

85. *See id.* at 156.

86. *See id.*

87. *Id.* at 160 (citing W. Page Keeton, *Prosser and Keeton on Torts*, § 13 (5th ed. 1984)).

88. *Id.*

89. *See id.*

While property rights to land itself are fairly straightforward, airspace and subsurface rights are more complicated. As mentioned, at common law, landowners owned the space above and below their property up to the heavens and down to the center of the earth.⁹⁰ Today, the Restatement (Second) of Torts provides that aircraft flight is a trespass if the aircraft both enters into the immediate reaches of the airspace next to the land *and* interferes substantially with the use and enjoyment of that land.⁹¹ Although this is a physical intrusion into space that was historically thought to be privately owned, property law developed a new facet of the doctrine in consideration of a policy that aircraft flight is beneficial to society.⁹² This doctrine, however, looks more like nuisance (discussed below) than physical trespass because it requires proof of injury.⁹³

2. Access Land

The general rule applied to real property is the model set forth in the Restatement and in *Jacque*, in which the entry of a non-owner constitutes trespass absent consent.⁹⁴ Britain adopted an alternative approach in its Countryside and Rights of Way Act (CRoW).⁹⁵ CRoW allows certain land to be designated as “access land,” where members of the public may “enter and remain on any access land for the purposes of open-air recreation” provided they do not cause damage and observe other general restrictions.⁹⁶ Landowners cannot put up signs deterring entrance to access land.⁹⁷ Under this mode of regulation, policy considerations justify the drastic reduction of the right to exclude; with the concept of access land, allowing private owners to exclude all others does not achieve the highest and best use

90. See *United States v. Causby*, 328 U.S. 256, 260–61 (1946).

91. RESTATEMENT (SECOND) OF TORTS § 159(2) (AM. LAW INST. 1965).

92. See *Causby*, 328 U.S. at 261.

93. Compare RESTATEMENT (SECOND) OF TORTS § 159 (AM. LAW INST. 1965), with RESTATEMENT (SECOND) OF TORTS § 821D, 822 (AM. LAW INST. 1965).

94. See *Jacque*, 563 N.W.2d at 160; RESTATEMENT (SECOND) OF TORTS § 158 (AM. LAW INST. 1965).

95. See Countryside and Rights of Way Act 2000, 2000 c. 37 (Eng.), http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf [<https://perma.cc/Q7NB-C68W>]; see also Jerry L. Anderson, *Britain's Right to Roam: Redefining the Landowner's Bundle of Sticks*, 19 GEO. INT'L ENVTL. L. REV. 375, 404–06 (2007).

96. See Countryside and Rights of Way Act 2000, 2000 c. 37.

97. See *id.* at c. 37, § 14.

of the land.⁹⁸ This reflects a value judgment that the benefits of public use of access lands outweigh the interests of private landowners.⁹⁹

3. Open Range

Between these two extremes lies a middle ground approach to the right to exclude that western states and territories applied in the nineteenth century: the open range system.¹⁰⁰ Under such a system, “all have equal run” of the land.¹⁰¹ For example, ranchers may allow livestock to roam and graze on land owned by others at no cost to the rancher.¹⁰² While this system looks like Britain’s CRoW, there is a key difference in Montana’s open range system: property owners may exclude others by building fences.¹⁰³ The practical needs of the nineteenth-century western territories and states, which were sparsely populated and contained an abundance of land, differed from those in Britain and the eastern United States: the abundance of land might have gone unused if ranchers were confined to grazing their herds on fenced-in land.¹⁰⁴

The open range system developed by custom and was later codified in statutes.¹⁰⁵ As technology and the western United States developed, broad open range polices no longer made sense, so property law adapted through case law, construing open range statutes more narrowly.¹⁰⁶

98. See Anderson, *supra* note 95, at 405 (“Parliament was convinced that the public benefit from opening up access to these lands far outweighed the additional burden on the landowners.”).

99. *Id.*

100. See Roy H. Andes, *A Triumph of Myth over Principle: The Saga of the Montana Open-Range*, 56 MONT. L. REV. 485, 486 (1995). See also Robert C. Ellickson, *Of Coase and Cattle: Dispute Resolution Among Neighbors in Shasta County*, 38 STAN. L. REV. 623, 660 (1986).

101. See Andes, *supra* note 100, at 485.

102. See *id.*

103. Compare Countryside and Rights of Way Act 2000, 2000 c. 37, § 14 (Eng.) http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf [<https://perma.cc/HG54-T6S8>] (forbidding landowners from placing information deterring entrance on or near access land), with Andes, *supra* note 100, at 485 (“[D]amages caused by trespassing livestock may not be recovered unless the plaintiff had erected a statutory ‘legal’ fence to fence out animals.”).

104. See Andes, *supra* note 100, at 486.

105. See *id.* at 486–87.

106. See *id.* at 488. Recently, and with little explanation, the Montana Supreme Court readopted a broad application of the open range doctrine. See *id.* at 499–500.

B. Private Nuisance and the Right to Exclude Nonphysical Invasions

The Restatement (Second) of Torts defines private nuisance as “a nontrespassory invasion of another’s interest in the private use and enjoyment of land.”¹⁰⁷ Possessors of land may receive damages for nuisance only when the invasion causes them significant harm and is either intentional and unreasonable, or unintentional but “otherwise actionable” in tort.¹⁰⁸ While the mere fact of intrusion is enough to prove trespass, nuisance requires more.¹⁰⁹ In the case of AR, interference would always be intentional (as the development of an application is an intentional act), but the unreasonable prong of this inquiry presents problems for landowners seeking damages.¹¹⁰ As there is apparently no case law on what constitutes an unreasonable AR interference, courts would be working with a blank slate. Judges would have to draw analogies to real-world interferences and might consequently only regulate the incidental effects of AR. Individual landowners may feel differently about different AR applications, and the facts of the first cases that happen to reach the high court in each jurisdiction could affect application of the doctrine for decades to come.

C. Current Governance of the Electronic and Virtual Worlds

Rules governing unwanted electronic communications like spam e-mails and unsolicited commercial phone calls do not fit neatly into the category of rules animating the right to exclude for two reasons. First, they do not concern real property or, in some cases, even chattels. In *Intel Corp. v. Hamidi*, the California Supreme Court declined to extend the doctrine of trespass to chattels to include “an otherwise harmless electronic communication whose contents are objectionable.”¹¹¹ Second, many rules pertaining to the exclusion of unwanted electronic communications are governed by federal statute, not state common law.¹¹²

107. RESTATEMENT (SECOND) OF TORTS § 821D (AM. LAW INST. 1965).

108. *Id.* §§ 821F, 822.

109. *See id.* §§ 158, 822.

110. *See id.* § 822.

111. *Intel Corp. v. Hamidi*, 71 P.3d 296, 308 (Cal. 2003).

112. *See, e.g.*, Controlling the Assault of Non-Solicited Pornography And Marketing Act of 2003, 15 U.S.C. § 7704 (2012) (“It is unlawful for any person to initiate the transmission, to a protected computer, of a commercial electronic mail message, or a transactional or relationship message, that contains, or is accompanied by, header information that is materially false or materially misleading.”); Telephone Consumer Protection Act of 1991, 47 U.S.C. § 227 (2012) (“It shall be unlawful for any person within the United States, or any person outside the United States if the recipient is within the United States—to initiate any telephone call to any

Some online games create wholly virtual worlds, inhabited by avatars controlled by users; these users can own property within the game.¹¹³ That property could be destroyed if the game's owner shuts down or wipes its servers.¹¹⁴ End-User License Agreements typically grant rights to the game owners anyway, but courts may recognize the property interests of users.¹¹⁵ In some instances, virtual worlds might develop their own, in-game legal remedies to govern their virtual communities.¹¹⁶ So, mechanisms exist for governing property rights in the real world and the electronic and virtual worlds, but so far there is no satisfying solution for governing the area where the virtual and the real worlds overlap.

III. ANALYSIS

Thus far, proposed solutions to the legal issues implicated by AR are inadequate. This Part addresses some of those reactions and explains why they fall short. To illustrate potential effects of previously proposed solutions, this Note introduces four hypothetical AR applications, to which it applies the potential solutions. It considers application of traditional property law, as well as AR-specific solutions put forward by attorneys and commentators.¹¹⁷ In evaluating solutions, this Note considers how a solution might impact the development of new AR applications—which can help promote the highest and best use of land—and how much a solution protects a landowner's right to exclude and that landowner's personhood interest in property.

A. Four Hypothetical AR Applications

First, imagine an application called BlueBox that places a virtual blue box at the geographic coordinates of every privately owned home.¹¹⁸ The blue boxes do nothing. They do not move; they do not open. They just appear to exist on privately owned property when

residential telephone line using an artificial or prerecorded voice to deliver a message without the prior express consent of the called party . . .”).

113. See F. Gregory Lastowka & Dan Hunter, 92 CAL. L. REV. 1, 30 (2004) (“Central to the operation of most modern virtual worlds is a property system, with all of the familiar real-world features of exclusive ownership, persistence of rights, transfer under conditions of agreement and duress, and a currency system to support trade.”).

114. See *id.* at 40.

115. See *id.* at 50–51.

116. See *id.*

117. See, e.g., Complaint 2, Pokémon Go Nuisance Litigation, Case No. 3:16-cv-04300 (N.D. Cal. 2016) (No. 46); Hern, *supra* note 3.

118. Thanks to Professor J.B. Ruhl for originally posing this hypothetical.

a user views the property through a smartphone camera. Second, consider an application called TURNS that, through high-tech windows and windshields installed in cars, gives drivers turn-by-turn directions to their destinations, allowing them to navigate effectively without ever looking away from the road. The application is free for users, but developers monetize the application by selling advertisements. In addition to seeing turn-by-turn directions, drivers see signs advertising products, services, and political candidates that appear to exist on the lawns of privately owned homes, but owners have no control over the advertisements that appear on their lawns.¹¹⁹

Third, imagine an application called Graffiti GO that allows users to draw virtual images on houses and other buildings. Those drawings become permanent within the application, like graffiti. Some users paint beautiful works of art while others write obscene words on the side of houses. Finally, imagine an application called History GO, developed by a non-profit educational organization and designed for school-aged children. History GO highlights historical sites as users visit them. It provides information about the sites and allows users to earn badges (in-game accolades, similar to real-life merit badges) for visiting sites and completing in-game tasks like quizzes designed to promote retention of information.

These four hypothetical applications demonstrate the wide range of potential uses of AR, and each presents policy considerations and consequences that will differ based on different potential legal responses to AR. Because not all applications will present the same problems and benefits as Pokémon GO, it is important to consider the consequences of a variety of applications when choosing a method of regulating the property rights implicated by AR.

B. Common Law Property Doctrines Do Not Fit an AR Scheme

An obvious solution to the potential problems AR poses is to apply traditional property law concepts of trespass and nuisance to AR. However, applying traditional trespass to AR is over-inclusive and will deter development of AR applications. Trespass is limited to entry onto land, which is presumably physical.¹²⁰ Therefore, virtual intrusions do not fit neatly into traditional trespass doctrine. If, however, trespass were expanded to include virtual intrusions, all

119. Augmented reality windshield displays are not yet commonplace, but the technology is possible today. The Rinspeed Oasis, a self-driving Swiss concept car, uses just such a windshield. See *CES 2017 in Las Vegas*, RINSPEED, <http://www.rinspeed.eu/aktuelles.php?aid=20> [<https://perma.cc/MT7Y-JZ3P>] (last visited Feb. 18, 2017).

120. See RESTATEMENT (SECOND) OF TORTS § 158 (AM. LAW INST. 1965).

virtual intrusions would be forbidden absent consent from landowners.¹²¹ Requiring developers to seek consent from all landowners before launching an application is unrealistic for applications that, like Pokémon GO, utilize a digital map with virtual presences nationwide.¹²²

Applying trespass to the hypotheticals previously set out, History GO would have to seek permission from every site it sought to include in its application before release. This could incentivize landowners to hold out and demand compensation when the aims of the application are educational, not for profit, and generally beneficial to society. TURNs might need to seek permission to include addresses and would almost certainly be barred from placing advertisements, pushing costs onto application users. This kind of limitation would chill development of similar applications and likely limit development to large companies with the capital to purchase virtual easements.

Nuisance seems like the best way to regulate AR under traditional property law, since virtual intrusions are nontrespassory.¹²³ However, nuisance would likely prove under-inclusive, only providing compensation for landowners if the virtual intrusion caused “significant harm.” Also, nuisance fails to deter unwanted intrusions because, in the context of virtual intrusions, it is likely that injury will be intrinsic and difficult to define or measure. In *Jacque*, the court allowed punitive damages because Steenberg intentionally trespassed on the land of another, even though it was efficient to do so.¹²⁴ The Jacques’ decision to refuse payment in exchange for the right to cross was not an economic one.¹²⁵ Similarly, the damage done by Steenberg was not economic: “[I]n certain situations of trespass, the actual harm is not in the damage done to the land, which may be minimal, but in the loss of the individual’s right to exclude others from his or her property.”¹²⁶ Nuisance law’s additional restrictions preclude recovery merely for the loss of the right to exclude.¹²⁷ If nuisance law is strictly applied, only the effects of virtual intrusions, not the intrusions themselves, would be regulated. If the intrusion draws third parties to the land and incentivizes them to trespass or in some way disturb landowners’ use

121. See *id.* §§ 158 cmt. c, 167, 892A.

122. See Wingfield & Isaac, *supra* note 29.

123. See RESTATEMENT (SECOND) OF TORTS § 821D (AM. LAW INST. 1965).

124. *Jacque v. Steenberg Homes, Inc.*, 563 N.W.2d 154, 156–57 (Wis. 1997).

125. See *id.* at 157 (“Mr. Jacques responded that it was not a question of money; the Jacques just did not want Steenberg to cross their land.”).

126. *Id.* at 159.

127. See RESTATEMENT (SECOND) OF TORTS §§ 821F, 822 (AM. LAW INST. 1965).

and enjoyment of the property, or if a virtual presence affects the market value of property, the intrusion could be excluded. However, this fails to serve the values underlying *Jacque* or Justice Rehnquist's sentiments in *Kaiser Aetna v. United States*, chiefly a broad respect for a landowner's right to exclude, whether or not the intrusion does actual harm.¹²⁸

Applying this to the hypotheticals, Graffiti GO could be excluded only after a factual finding that virtual drawings affect the use and enjoyment of land, which would be difficult and unpredictable. Developers would have to screen individual drawings as they are produced. Also, it would be difficult to prove the effect of a virtual presence on the enjoyment or market value of property. BlueBox would likely be insulated from suit, even if a particular landowner believed the intrusion to be as intolerable as the *Jacques* found the transportation of a modular home over their land.¹²⁹

One source already suggests that Pokémon GO could implicate attractive nuisance doctrine and that Niantic should indemnify property owners when users trespass and become injured.¹³⁰ However, attractive nuisance requires five elements: (1) an artificial condition in a location that the landowner knows or has reason to know that children are likely to trespass upon, (2) the landowner knows or has reason to know the condition has an unreasonable risk of death or serious bodily harm to children, (3) children do not appreciate the danger, (4) the artificial condition's utility is slight compared to the risk to children, and (5) the possessor does not take reasonable care to eliminate the danger.¹³¹ Virtual objects cannot present a risk of death or serious bodily harm because they do not exist in the physical world. Therefore, AR applications fail the second prong of the attractive nuisance test and the doctrine cannot properly regulate AR.¹³²

Furthermore, this solution's reliance on indemnification only serves to protect a landowner from a suit by a third party, and only after that third party brings a suit.¹³³ It does nothing to protect

128. See *Kaiser Aetna v. United States*, 444 U.S. 164, 176 (1979) (Rehnquist, J.); *Jacque*, 563 N.W.2d. at 159.

129. See *Jacque*, 563 N.W.2d at 157.

130. See *Is PokemonGo Illegal?*, ASSOCIATE'S MIND, <http://associatesmind.com/2016/07/11/is-pokemongo-illegal/> [<https://perma.cc/8EXX-RMCT>] (last updated July 13, 2016).

131. RESTATEMENT (SECOND) OF TORTS § 339 (AM. LAW INST. 1965). For example, a swimming pool without an adequate fence might constitute an attractive nuisance. See, e.g., *King v. Lennen*, 348 P.2d 98, 101 (Cal. 1959).

132. See RESTATEMENT (SECOND) OF TORTS § 339 (AM. LAW INST. 1965).

133. See *Is PokemonGo Illegal?*, *supra* note 130.

landowners against a virtual intrusion itself and gives no cause of action to the landowner against an application developer.¹³⁴

C. Current Proposed Solutions for AR Regulation Are Inadequate

Since the AR technology for applications like Pokémon GO is new, so are the property law issues arising from it. However, commentators have already considered whether landowners have the right to exclude virtual intrusions.¹³⁵ While legal scholarship in this area remains as yet undeveloped, some solutions have been proposed.¹³⁶

1. Class Actions

One possible solution is to allow private parties to regulate AR through class action lawsuits. In fact, some homeowners have already filed such suits. As mentioned above, in September 2016, a series of class action suits were consolidated in the United States District Court for the Northern District of California, collectively styled *In re Pokémon Go Nuisance Litigation*.¹³⁷ The complaint alleges nuisance, trespass, and unjust enrichment, and it proposed a class action brought under Federal Rule of Civil Procedure “23(a) and (b)(2) and/or (b)(3)” consisting of owners of land on or near which Niantic has placed Pokéstops and gyms.¹³⁸ The complaints in the initial suits did not allege that the Pokémon, Pokéstops, or Pokémon gyms themselves

134. See *id.*

135. *Pokémon GO and the Law of Augmented Reality*, TECHNOLLAMA (July 12, 2016), <http://www.technollama.co.uk/pokemon-go-and-the-law-of-augmented-reality> [<https://perma.cc/E8XX-HWWU>] (“Should there be a virtual location right of some sort? Should people be able to legally object to a physical location being tagged in some form without their permission?”).

136. See, e.g., Donald J. Kochan, *Playing with Real Property Inside Augmented Reality: Pokémon Go, Trespass, and Law’s Limitations*, 38 WHITTIER L. REV. (forthcoming 2017). Professor Kochan proposes an opt-in system in which landowners choose for their land to be included in an AR application. *Id.* Requiring landowners to consent to inclusion of their land may be a viable solution for one game, especially one with Pokémon GO’s popularity, but requiring developers of all new AR applications to seek the consent of many landowners before launching creates a barrier that some applications, especially those developed by small companies, will not be able to overcome. See *id.*

137. See Complaint, *Pokémon Go Nuisance Litigation*, Case No. 3:16-cv-04300 (N.D. Cal. 2016) (No. 46).

138. See *id.* ¶ 52. The class is defined as: “All persons in the United States who own property (i) the GPS coordinates of which were designated by Defendants, without authorization, as Pokéstops or Pokémon gyms in the *Pokémon Go* mobile application or (ii) near property the GPS coordinates of which were designated by Defendants, without authorization, as Pokéstops or Pokémon gyms in the *Pokémon Go* mobile application.” *Id.* ¶ 53.

constituted a trespass.¹³⁹ Upon consolidation, however, the plaintiffs amended the complaint to add a cause of action for trespass, alleging that Niantic trespassed on their property by causing Pokéstops, Pokéstops, and Pokémon gyms to enter the virtual space around their land.¹⁴⁰

Regulating AR through class action lawsuits is problematic for two reasons. First, there may be difficulties with certifying a class due to the uniqueness of each piece of property and the fact that some owners may actually prefer to have Pokéstops nearby and are helped rather than harmed by Niantic's placements.¹⁴¹ It will therefore be difficult for the plaintiffs to prove commonality, a requirement for class actions to proceed under Rule 23.¹⁴² In a suit against the hypothetical developers of Graffiti GO, the damages to each individual property would be different—some use, enjoyment, and value of property enhanced by artistic drawings, some use, enjoyment, and value diminished by crude drawings and obscene words.

Second, this system both over- and under-regulates development of new applications. It is over regulatory because small, start-up developers will be unable to defend a class action suit. Thus, some developers will be priced out, potentially curbing innovation of new, beneficial applications. Meanwhile, the system is under regulatory because, if a class action does proceed, it will likely end in a settlement. Unless this settlement includes a total injunction against the application, landowners would receive payment and continue to be subjected to the virtual intrusions. Landowners who want the virtual intrusion removed will then be unable to sue for relief, no matter how offensive they find the intrusion.

2. State Statutes

Illinois state representative Kelly Cassidy proposed H.B. 6601, colloquially known as “Pidgey’s Law” (“Pidgey” is a Pokémon

139. See Complaint, *The Villas of Positano Condominium Association, Inc. v. Niantic, Inc.*, Case No. 3:16-cv-05091 (N.D. Cal. 2016) (No. 1); Complaint, *Dodich v. Niantic, Inc.*, Case No. 3:16-cv-04556 (N.D. Cal. 2016) (No. 1); Complaint, *Marder v. Niantic, Inc.*, Case No. 3:16-cv-04300 (N.D. Cal. 2016) (No. 1).

140. See Complaint ¶¶ 50–54, *Pokémon Go Nuisance Litigation*, Case No. 3:16-cv-04300 (N.D. Cal. 2016) (No. 46).

141. See, e.g., *Pokémon GO and the Law of Augmented Reality*, *supra* note 135 (“[T]his could be fantastic for businesses, it is not beyond the realm of possibility that businesses would want to become stops and gyms.”).

142. See FED. R. CIV. P. 23; see also Michael Smith, *Evaluating the Pokemon Go Class Action Lawsuit*, MICHAEL SMITH’S L. BLOG (Aug. 2, 2016), <https://smithblawg.blogspot.com/2016/08/evaluating-pokemon-go-class-action.html> [<https://perma.cc/4ZN7-44YY>].

commonly found in Pokémon GO).¹⁴³ The bill would allow owners, managers, and custodians of real property to request a “site or location” be removed from a “location-based video game.”¹⁴⁴ Upon receipt of a request, a developer would have two business days to remove the location and would thereafter be charged a civil fine of up to \$100 per day that the location is not removed.¹⁴⁵

This solution is partially effective, but is too narrow. The bill defines “location-based video game” as “a game primarily played on a mobile device, including, but not limited to, smartphones and tablets, that encourages users to travel to specific real property sites, locations, or coordinates for the purpose of achieving specific goals within the game.”¹⁴⁶ This restrictive definition excludes non-game AR applications and applications that do not encourage travel to specific sites.¹⁴⁷ Applying the statute to the four hypotheticals introduced above, this statute would only apply to History GO. BlueBox does not encourage anyone to go anywhere, and it has no “specific goals,” so Pidgey’s Law would not cover it.¹⁴⁸ Similarly, TURNs is purely utilitarian—a regular turn-by-turn directions application could hardly be considered a game. Graffiti GO is also likely not a game with “specific goals” because it simply provides users with an opportunity to draw on the world around them as they wish, with no in-application reward for doing so.¹⁴⁹ Further, while statutory codification provides consistency, allowing the common law to evolve in response to AR allows flexibility, which is necessary in this constantly changing field. The Illinois bill is a short-sighted reaction to Pokémon GO that does not adequately consider possible future AR applications.

3. Virtual “No-Fly” Zones

Other solutions do strike at the heart of the property rights issue, specifically addressing the question whether and to what extent land ownership extends to the virtual space “around” a piece of real

143. See 99th ILL. GEN. ASSEMB., H.B. 6601 (2015 & 2016), <http://www.ilga.gov/legislation/fulltext.asp?DocName=&SessionId=88&GA=99&DocTypeId=HB&DocNum=6601&GAID=13&LegID=98270&SpecSess=&Session=> [https://perma.cc/NMX5-GW7K]; Kim Janssen, *Lawmaker: Pokemon No-Go Zones, Including North Side Nesting Grounds*, CHI. TRIB. (Aug. 25, 2016, 1:59 PM), <http://www.chicagotribune.com/news/chicagoinc/ct-pidgeys-law-pokemon-go-0826-chicago-inc-20160825-story.html> [https://perma.cc/7VRS-MAB8].

144. 99th ILL. GEN. ASSEMB., H.B. 6601 (2015 & 2016).

145. See *id.*

146. *Id.*

147. See *id.*

148. See *id.*

149. See *id.*

property.¹⁵⁰ In an article for *The Guardian*, Alex Hern suggests the legal system look to airspace law as its guide in regulating AR.¹⁵¹ Hern suggests that, soon, a virtual equivalent of a no-fly zone could exist, allowing landowners to simply bar all developers from putting virtual intrusions on their land without having to contract with individual developers.¹⁵² Hern also draws comparisons to data protection laws.¹⁵³ The National Do Not Call Registry is a better analogy for preemptive exclusion of virtual intrusions, and such a solution sounds appealing to landowners who want a wholesale ban on AR on their property.¹⁵⁴

The flaw with this solution, however, is that it places a preemptive bar on virtual intrusions.¹⁵⁵ Consider, for example, a real estate developer wishing to exclude Graffiti GO from a new subdivision but wanting to allow access to TURNs, which potential residents would find useful in their new neighborhood. The developer must make an all-or-nothing choice about AR, which is not desirable in this instance. Drivers, who might rely on TURNs to navigate the new development, would be frustrated by a neighborhood-wide “gap” in the application’s direction-giving capabilities. Meanwhile, landowners might be frustrated by the possibility that their new homes could soon be virtually scrawled with racial slurs or painted with lewd drawings. A real estate developer in this situation would likely be unsatisfied with either outcome and would probably prefer to simply choose to exclude Graffiti GO and allow TURNs in the new subdivision. Wholesale registration of large areas as virtual no-fly zones could even curb the development of new, potentially useful AR applications.

IV. SOLUTION

Existing property law is not equipped to respond to AR. Current law and proposed solutions will either chill development of

150. See Hern, *supra* note 3.

151. See *id.*

152. See *id.*; see also Jesse McKinley, *In Pokémon Go, Lawmakers Fear Unexpected Entrance of the Sexual Predator*, N.Y. TIMES (July 29, 2016), https://www.nytimes.com/2016/07/30/nyregion/in-pokemon-go-lawmakers-fear-unexpected-entrance-of-the-sexual-predator.html?_r=0 [<https://perma.cc/9NJH-AYDH>] (discussing proposed state legislation that would require removal of “any ‘in-game objective’ within 100 feet” of certain classes of sex offenders’ homes).

153. See Hern, *supra* note 3.

154. See *National Do Not Call Registry*, FED. TRADE COMM’N, <https://www.donotcall.gov/> [<https://perma.cc/2D92-T2TV>] (last visited Mar. 7, 2017).

155. See Hern, *supra* note 3.

potentially useful AR applications or diminish the right to exclude in a virtual context. If landowners do not have the right to exclude virtual intrusions, they lose the ability to control something that has practical, real effects on the character of their property. To both promote development of AR applications and preserve the right to exclude, state supreme courts should develop property law and apply an adapted version of the open range model of the right to exclude.

This solution would allow developers to create new applications and place virtual intrusions on privately owned land without needing to first seek permission from landowners, just as the open range system allowed ranchers to let their cattle graze without first seeking permission.¹⁵⁶ However, if a landowner wishes to exclude virtual intrusions, that landowner could affirmatively do so, just as a landowner could erect a fence under the open range system.¹⁵⁷ This scheme would differ from a pure open range system because landowners would only be able to exclude developers once the virtual map is announced or launched. Additionally, the exclusion would be on an application-by-application basis.

The rule would operate simply and between private parties, except in the case of noncompliance. Before or concurrent with the release of a new AR application, a developer must publish a website that provides access to a clearly labeled opt-out form. Landowners wishing to exclude their property could access the website at any time and fill out the form with their address information. From the time of submission, developers would have a reasonable time frame, such as ten days, to process the request and update their maps to remove all virtual intrusions from the submitted location. Failure to comply with a request in a timely manner would constitute actionable trespass. Landowners could also opt back in if they change their minds or if they acquire property that previously opted out. The developer would be free to honor the opt-in request or not and could do so on its own time. Additionally, landowners and application developers would be free to contract to keep certain areas open to an application.

This would be superior to a blanket opt-out, as proposed by Hern, because an all-or-nothing approach would force landowners to choose a total ban on AR applications, including the beneficial ones, and total allowance of AR applications, including unsavory ones.¹⁵⁸ Similarly, it would serve societal interests by allowing non-landowners to access useful AR that does not bother landowners. Opting out requires effort, albeit minimal, so landowners would likely only do so

156. See Andes, *supra* note 100, at 485.

157. See *id.*

158. See Hern, *supra* note 3.

when they have sufficient motivation. Returning to the hypothetical applications discussed above, the most sensitive landowners—those who believe that, on principle, they must have an absolute right to exclude—could exclude BlueBox. Sensitive landowners might exercise the right to exclude with the TURNs application if they believe their property is unjustly enriching the developer through advertisement revenue, but many would likely not go to the trouble of opting out because the application's use of their land is beneficial. Landowners would likely exercise their right to exclude intrusions by Graffiti GO on a case-by-case basis and might do so if the drawings on their property are crude or offensive. Landowners who experience disruptions in their daily lives could exclude History GO, but others who wish to further the application's educational ends could allow inclusion of their property.

The circumstances surrounding the initial rise of the open range system parallel the circumstances surrounding the rise of AR. In the nineteenth-century American west, there was an abundance of land.¹⁵⁹ Similarly, there is an abundance of virtual "space." No matter how many Pokémon Niantic populates areas of its map with, other developers will be able to populate their own maps with different virtual intrusions. There is no scarcity of resources. Therefore, allowing developers to fill digital maps with virtual intrusions, even if those intrusions appear on private property, would not detract from anyone else's ability to use the land. The only thing potentially lost is a landowner's sense of ownership. Landowners will only wish to exclude virtual intrusions when these intrusions violate that sense of ownership, and the modified open range system allows landowners to do just that. In other cases, it leaves AR developers unencumbered and incentivizes them to create new applications.

This solution is similar to Hern's idea of a virtual no-fly zone, but it allows landowners to make a case-by-case decision about specific applications rather than forcing them to choose between total exclusion and no exclusion at all.¹⁶⁰ The ability to completely opt out does present advantages—it is more efficient for landowners who actually wish to opt out of all virtual intrusions, and it prevents landowners from being subjected to offensive invasions in the first place. However, if landowners have the opportunity to remove their property from all AR applications, they might do so, limiting the use for beneficial applications in areas where there are many landowners who opt out.

159. See Andes, *supra* note 100, at 486.

160. See Hern, *supra* note 3.

As with Pidgey's Law, the modified open range solution allows for application-by-application exercise of the right to exclude and assumes that virtual intrusions are permitted until a landowner affirmatively excludes them.¹⁶¹ However, the modified open range solution has two distinct advantages over Pidgey's Law. First, it closes the loophole created by the bill's narrow definition of games—virtual intrusions caused by any application, regardless of in-application incentives, could be excluded.¹⁶² Second, the modified open range system is a common law solution. By leaving regulation of property rights where they have traditionally rested—with state courts—they will continue to develop as they have done for hundreds of years. When other unforeseeable technological developments arise, courts will remain free to further the development of the common law without constraint from an outdated statute. While there is a risk that courts crafting different solutions in fifty-one jurisdictions could complicate matters for AR developers who create applications for the whole nation, companies will be able to cope if the systems are not too different.

V. CONCLUSION

AR presents challenges to property rights, and it will continue to do so if property law does not evolve to meet them. When considering how best to meet the legal issues AR raises, potential future applications must be considered, not just applications already widely released. A solution must respect owners' rights to exclude without destroying incentives to create new applications. Applying a modified version of the open range system of regulation will do this. This will allow developers to place virtual intrusions "on" private property unless landowners affirmatively exercise their rights to exclude. This system balances the interests of individual landowners with society's interest in further development of AR technology. It is unclear what AR developments the future will bring, but the legal system can, and must, be ready to cope with them when they come.

*Samuel Mallick**

161. See 99th ILL. GEN. ASSEMB., H.B. 6601 (2015 & 2016).

162. See *id.*

* J.D. Candidate, Vanderbilt University Law School, 2018; B.A., Vanderbilt University College of Arts & Science, 2014. The Author thanks Sarah Dotzel for her tireless guidance and assistance; Professor J.B. Ruhl for his insight; Laura Powell, Natalie Gabrenya, and the staff of the VANDERBILT JOURNAL OF ENTERTAINMENT & TECHNOLOGY LAW for their work in bringing this piece to publication; and his parents and brothers for their support.

