Preface

Recent advances in computer display technology are changing the way we perceive and interact with the world—and, by doing so, are challenging the law on several fronts. Not the least of these are disputes that involve the design and use of virtual and augmented reality worlds. Once fledgling technologies that resulted in theoretical discussions of what law “might” apply, virtual and augmented reality are now mainstream, giving rise to legal disputes in the here and now. Courts are already struggling with questions of who has property rights in virtual content and they are beginning to wrestle with questions that arise when our interaction with virtual and augmented reality spills out into “brick and mortar” interactions. The goal of the *Research Handbook on the Law of Virtual and Augmented Reality* is to provide an up-to-date discussion of such legal questions, as well as those which may arise as the technology continues to develop and find use in more and more spheres of our daily lives. Just as consumers’ embrace of the Internet transformed the way people communicated, worked, shopped, invested their money, and shaped and tended to their reputations—and raised numerous legal questions as it did so—so might virtual and augmented reality change the way we experience public space and interact with each other, and, in doing so, require a rethinking of many areas of law.

The transformation of society generated by virtual and augmented reality technologies is likely to bring novel changes. These technologies will allow users to enter worlds which are far beyond our normal experience. When they do so, they can allow people to learn new skills, explore new places, and experience times and events in ways that otherwise would have been impossible. With the aid of virtual reality, an individual can have the experience of flying to, or walking upon, Mars, or scaling down and traveling inside the human body, or defying gravity, or hovering over an imaginary city—or a real city (such as New York or Paris) when they are miles away from it. The virtual world viewed on a headmounted display becomes the world one sees and hears, replacing the physical environment blocked out by the headgear.

More recently, newer versions of virtual reality have also provided haptic or olfactory feedback, thus stimulating more of the human senses (and raising further issues for the law to consider). Augmented reality extends this virtual reality technology in another way: it supplements our experience of the physical environment rather than replacing it. It overlays information (or images such as fantasy game creatures) over real-life visual scenes that continue to reach our eyes from the surrounding environment—through the lenses of glasses, smartphone screens, or some other interface that can display what is in front of us, but also blend in virtual pictures or words. Moreover, thanks to such augmented reality technology, what was once tied to a specific physical setting can now be experienced with mobile technology in the form of augmented reality provided by smartphones or low-cost virtual reality gear. A benefit of augmented reality is that it allows computer-generated information to be accessed by the user any time and at any place.

Until recently, virtual and augmented reality technologies were used mainly by researchers and test subjects in research laboratories. However, due to dramatic cost reductions

in display technology and a proliferation of applications, virtual and augmented reality are now mainstream technologies used by millions of people around the globe. In fact, virtual and augmented reality technologies have been used for a wide variety of applications. They have been used in hospitals to train physicians to perform complex surgical procedures. They are increasingly used in psychotherapy. They have also been used in online virtual games for play, such as *Second Life*, a virtual reality world visited by millions of people yearly.

In the past few years, technology companies such as Google, Sony, HTC, Microsoft, and Apple have raced to provide consumers virtual reality videogame consoles (such as Oculus Rift, HTC Vive, and Playstation VR) and enter a growing commercial market. Some of the same companies have touted new augmented reality platforms that enable the development of applications that superimpose upon real world images a smartphone camera image—such as an illusory monster (as part of a location-based virtual game), a virtual piece of furniture (that a home owner can thus better envision in her own home before a purchase), or historical information about the neighborhood or building by which the viewer is wandering (as part of a self-directed tour).

As noted earlier, this increasing use of augmented and virtual reality has raised a host of questions about how to apply legal doctrines developed for the brick and mortar world, or for earlier information and Internet technologies, to the new, less familiar realm of virtual and augmented reality. Many of the chapters in this *Research Handbook* discuss some of these ongoing lawsuits. Individuals, for example, have filed suits (alleging nuisance and other tort violations) against users and the designer of Pokémon Go, claiming that this augmented reality game is leading droves of players to trespass onto private land and cause damage or create nuisances there as they hunt for the fictional Pokémon monsters they must target in the game. Milwaukee has likewise taken action to limit such use of augmented reality, focusing not only on Pokémon Go, but on all location-based augmented reality games. More specifically, that state has enacted an ordinance—under legal challenge at the time of writing—restricting the “introduction” of certain virtual and augmented reality games in its public parks. Additionally, Linden Lab, the company that operates the *Second Life* virtual world, was sued by an individual whom it barred from future access to its virtual world. This, said the individual, effectively deprived the individual of virtual property he had spent years obtaining, and which he had spent substantial money to acquire. Further, individuals in virtual worlds have considered themselves to have been sexually assaulted when subjected to “unconsented to” touching of their virtual world avatar (the character they control within a virtual world), even though the touching occurs in virtual reality and not in physical space.

And still other legal questions are on the horizon. Avatars, for example, are becoming increasingly smart and autonomous: They are no longer simply virtual world puppets, controlled in every action by a flesh and blood person. They are artificial intelligences that can generate their own decisions. When, in such situations, do legal rights or liabilities attach to their AI-generated actions? Are they subject to criminal liability for the acts they perform? Do smart avatars receive legal protections against restrictions of their activities? Which activities occurring in virtual and augmented reality should be considered speech under the First Amendment and what degree of protection should courts afford such speech? And how should copyright law apply to virtual reality worlds? Further, when individuals reuse virtual and augmented reality content that is meant to faithfully

represent the real world, is this an infringement of a copyright owned by the creator of such an image?

The *Research Handbook on the Law of Virtual and Augmented Reality* contains 20 chapters from US and international legal scholars on a wide range of topics, such as whether virtual sex experienced using haptic technology is a form of protected speech under the First Amendment, or the extent to which virtual images projected in real space for advertising purposes can be regulated by the government. The federal and state law of the US is the focus of the book but to provide the reader a broader view of legal issues related to virtual and augmented reality, especially given its global proliferation, this book also contains chapters from legal scholars in Asia and the European Union exploring how the law of these jurisdictions might apply to virtual and augmented reality technology and applications. Additionally, since the use of augmented reality raises challenges to established legal doctrine that may be distinct from those raised by virtual reality technology, several chapters focus specifically on questions about how the law applies to augmented reality—for example, whether a virtual image projected over the real property of another person can be considered a trespass or a nuisance, and how the law of contract might be challenged by the use of augmented reality.

One of the central issues addressed in the *Research Handbook on the Law of Virtual and Augmented Reality* is the extent to which “real-world” legal doctrine (in its existing form) can be applied to activities occurring in virtual and augmented reality—or whether lawmakers (or virtual and augmented reality creators or users) need to instead generate new or modified legal doctrines that are a better fit with this technological landscape. For example, in virtual and augmented reality worlds, the law of tort may be relevant if one’s virtual avatar is defamed by, or has her privacy invaded by, another avatar. But this depends on whether (and when) avatars can be liable for torts, or the subject of a tort—and where they cannot be, the ways in which avatars’ actions can and cannot establish tort liability for the individuals (if any) who exercise some control over them. And in the area of criminal law, as more people use virtual reality for a range of tasks, new vulnerabilities may be created for people within virtual worlds, and new ways for criminals to exploit the virtual environment may develop. But how criminal law will apply here depends in part on what virtual law harms generate criminal liability (and when virtual reality designers, individuals operating virtual avatars, or the avatars themselves) can be liable for virtual-world crimes.

Additionally, intellectual property law is especially likely to be relevant for activities occurring in virtual and augmented reality worlds, given that both technologies rely on use of visual images and that the storylines they use to engage participants may be protected by copyright law. If a company’s trademark is visible on a virtual billboard displayed in virtual or augmented reality, and if the image is used without permission, there may be a cause of action for trademark infringement. And if a virtual avatar resembles the appearance of a famous actor, there may be a “right of publicity” cause of action to protect the celebrity from misappropriation of his/her name, likeness, voice, image, or other recognizable element of personal identity. The above examples suggest that the law developed for the real world will likely be applicable for some activities occurring in virtual and augmented reality. But as both technologies evolve and allow more senses to be realistically stimulated, established law may be insufficient to account for the new experiences that virtual and augmented reality will provide for users.

While the chapters discuss the current law, which applies to virtual and augmented reality, they are also “forward looking” in that they raise interesting questions about how the law may respond to continuing advances in virtual and augmented reality technologies. We hope the book will stimulate discussion on how the law should apply to virtual and augmented reality worlds and that it provides a valuable resource to legal scholars, judges, and legislators in determining how to protect the rights of all parties involved in the design and use of virtual and augmented reality.

Woodrow Barfield, Chapel Hill, North Carolina
Marc Jonathan Blitz, Oklahoma City, Oklahoma