Virtual Violence
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ABSTRACT

Immersive virtual reality may change the way we interact with each other. In the future, we may be technologically capable of experiencing every aspect of an interaction except its physiological consequences. So what does this mean for interpersonal violence? If virtual reality creates a strong sense of “presence,” such that virtual experiences seem comparable to their physical counterparts, can virtual violence have comparable psychological consequences to physical violence? If so, how should the law deal with such violence? Virtual reality may force us to confront complicated questions about how we define acts of violence, and how significant we find physical consequences, as opposed to the mere subjective experience of violence.

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INTRODUCTION

With the release of Oculus Rift, followed closely by the HTC Vive, it seems the virtual reality revolution is finally on its way. Several companies either have released their own versions of virtual reality headsets or intend to soon, virtual reality experiences have started appearing at film festivals, and McDonald’s has made a Happy Meal box that turns into a low-cost cardboard virtual reality headset. While mainstream success of virtual reality has yet to be fully realized, reports already coming in on the newest high-end virtual reality products suggest that the technology for effective immersion is already here.

One word that comes up often in discussions about virtual reality achievements is “presence.” Presence is the feeling of being, well, present, in the virtual environment. The theory goes, if the quality of the depiction of the environment is high enough, and more importantly if the tracking system to allow you to “look around” by turning your head is responsive enough, the headset tricks your brain into feeling like you are really there. Whatever your conscious mind knows, effective presence can make you forget or doubt: that the wall in front of you is not solid, that the face you see in the simulated mirror is not yours, that a zombie is not trying to bite you.

Current technology, of course, focuses on sight and sound to create that feeling. A headset with headphones can make you see and hear whatever it wants you to, simply by providing the sight and sound. We are not (yet) plugging ourselves into the Matrix, with full sensory input including touch, smell, and taste. Current virtual reality technology creates an exciting, often very convincing, illusion—but it is inherently limited, and is not quite a match for actual, natural, physical reality.

Yet blurring that line between virtual and real is the goal of virtual reality. We do not have the technology to touch a virtual wall and feel the temperature, the texture, and the firmness, to be unable to go through the wall that is not actually there . . . yet. People are working on adding to virtual reality, incorporating more senses, more sensations, more reality. Creating a fully immersive virtual reality system capable of being indistinguishable from (non-virtual) reality is not just a fantasy; for some, like virtual reality company Oculus VR, it is a very real quest. Someday soon, reality will no longer have a monopoly on tangibility.

So at what point does virtual reality have enough in common with reality for traditional distinctions from the physical to blur? For an act performed through an avatar to be treated as one performed in physical space? Given the often less-than-civil interactions of anonymous Internet users, how blurred can the line become between physical and virtual violence? At what point is the appearance of danger or harm—one that is realistic enough to give the user a sense of presence—sufficient to be treated as genuine danger or harm? And when we have reached that point, could, and more importantly should, an act of virtual violence be considered a crime?

Concerns about violence in video games tend to focus on its effects on players who act out the violence; virtual reality provokes a different conversation focused on its effect on victims of virtual violence. In most video games, “victims” of violence tend to be purely fictional constructs (non-player characters, or NPCs) or consenting friends participating in player-vs.-player (PvP) combat. There are already virtual worlds that go beyond basic gameplay, however, and uses of virtual reality are expected to go well beyond video games, so it is hardly far-fetched to conceptualize realistic virtual interactions without the rules and structure of a video game. Regular Internet users already troll, harass, and bully one another in a variety of virtual settings. When realistic immersion is added to these interactions, it is easy to imagine them resulting in realistic violence.

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5. While others may remain interested in old questions about violence in video games, particularly as it becomes more vivid, I have little interest in players who act out virtual violence without harming others.
8. Lest anyone doubt the sometimes nonconsensually violent nature of virtual interactions, a text-based rape occurred in a virtual world as early as 1993. Julian Dibbell, A Rape in Cyberspace. VILLAGE VOICE (Oct. 18, 2005, 4:00 AM), http://www.villagevoice.com/news/a-rape-in-
cause real harm through virtual violence, and how will society—and the law—respond?

It might be tempting to draw a line between the virtual and the physical, and to treat anything sufficiently “real” as though it is physical. But the precise effects of virtual actions, and therefore the way they should be governed, depend on more than a simple calculation of presence. They depend on choices made by people who create and use the virtual reality technology. Virtual reality has the potential to become a whole new way of interacting, one that is more physical than the online communication we are now used to, but, unlike normal physical interaction, is designed. How we look, how things feel when we touch them, the precise effect we have on the world around us as we interact with it—these things are largely outside of our control in normal, physical reality. We are limited in our control over not only our environments, but also our interactions with the environment, and with each other. When two people shake hands in physical reality, neither can control the effect of the contact on the other person. Virtual reality can change that by creating a space where every aspect of our bodies, our environments, and the ways we interact (with our environment and with other bodies) are the products of human choices, from the developers to the users. An action that may seem parallel to a normal, physical action will actually be, in a way, something new.

This new form of interaction will not have the same predictable effects as interactions in physical reality. That is not to say, however, that it will have no effect at all; contact with another virtual reality avatar may not be identical to physical contact, and its effects will vary according to the technology and software settings, but it will be a type of contact, and have some effect. While our physical bodies will be largely immune to virtual interactions, virtual reality has the potential for serious psychological impact, and with that potential may come the risk of some harm. Such a novel form of contact, with an accompanying potential for harm, raises many questions related to how we treat human contact, socially, morally, and legally.

Violence is only one form of human contact, but it is one that typically has both physical and nonphysical impact. If and when harmful virtual violence becomes technologically possible, how should we handle it? One answer might be to apply to violent acts in virtual reality the same response as in physical reality: criminal law. If we look to criminal law for these answers, we

cyberspace-6401665 [https://perma.cc/L82B-NHY8] (republishing the original article published in The Village Voice on December 23, 1993). The incident deeply upset many people in the community. Id.
will be forced to reconsider not only how we define violence, but also why we criminalize violent acts against others, and how and when those reasons apply in virtual reality. A simple dismissal of virtual acts as unreal may no longer suffice, but we also should not simply treat them as identical to physical acts.

A more nuanced response to virtual violence will be one that accounts for the technology and its applications. This may involve an approach to criminalization based on nonconsent, similar to sexual conduct or violent sports. Alternatively, protection or escape from unwanted violence could be built into the technology itself. In specific circumstances involving deliberately bypassing technological safeguards to do someone harm in virtual reality, criminal law may have a place; even then, its role may not be to prosecute the harmful virtual acts, but the malicious tampering itself. I do not mean to suggest a specific response to virtual violence, but to explore some of the complexities that might arise in what could be a whole new way of interacting. Ultimately, our virtual future may reduce the risk of physical injury from human interaction, but may retain and even spawn other types of harm. It will be important to consider how society should respond to such dangers.

I. VIRTUAL REALITY CAPABILITIES

Current virtual reality technology varies slightly depending on the particular brand, and experiences of virtual reality depend on the virtual environments developed for it. Most commercially available virtual reality consists of a headset, with a goggle-like screen in front of the user’s eyes and a built-in sound system. Some have positional tracking via sensors placed around the room,⁹ some have handheld controls for interacting with the virtual environment,¹⁰ and some are simply cardboard holders for regular smartphones.¹¹

From the perspective of the user, the more advanced virtual reality systems allow you to look around and have the virtual environment update and track your head seamlessly so it really feels like you are surrounded by the virtual environment. Positional tracking allows you to move through the virtual environment and see it from different angles. The controls allow you to interact with the virtual environment in ways ranging from shooting games to creating three-dimensional virtual sculptures. As far as your eyes and ears are

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concerned, the virtual environment is just another environment you are in—and your brain trusts your eyes and ears with little questioning.¹²

Future developments in virtual reality are only likely to increase virtual reality’s power over its users, for good or ill. Developers are not sure yet what form virtual reality will take in the future—although it seems unlikely to involve “plugging in” via direct brain contact, like in The Matrix and some other science fiction worlds—but developers are actively looking for ways to add to the experience.¹³ Potential future additions include mimicking the sense of movement through the vestibular system, the sense of pressure (as in, feeling that something is there, and solid), and more detailed tactile sensations such as texture, heat, or moisture.¹⁴ One can imagine the sense of touch starting small, affecting only the user’s hands through a pair of gloves that stimulate the nerves, then evolving into full-body involvement through some sort of pod or suit. At any given time there will be a range of degrees, types, and methods of immersion with virtual reality, just as there is now from Oculus Rift to Google Cardboard, depending on what users want and can afford.¹⁵

One possible future addition may be more difficult to imagine, but is relevant here: pain. It may seem strange to imagine developers making a system to simulate something inherently unpleasant, or customers wanting them to. But pain is just another sensation that can add to the realism of an environment or experience, and there may be reasons for at least mild forms of it. Training simulations may want to include simulated consequences, to avoid trainees becoming desensitized to danger and to maintain the realism of the scenario by including tangible risk. Users wanting the “real” experience of boxing, or climbing Mount Everest, or even a horror movie or game may insist on having the option. Extreme versions of otherwise comfortable sensations such as heat or sharpness that

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¹³ Direct application of virtual reality technology to the nervous system may not be completely far-fetched; inventor Ray Kurzweil has said microscopic computers could create full virtual realities from within the nervous system by 2033. See Darren Waters, Virtuality and Reality ‘to Merge’, BBC News (Feb. 22, 2008, 1:16 GMT), http://news.bbc.co.uk/2/hi/technology/7258105.stm [https://perma.cc/CSY2-5WAM].


¹⁵ Oculus Rift is an advanced but expensive virtual reality system designed for an extreme sense of immersion. See Oculus Rift, OCULUS, https://www3.oculus.com/en-us/rift/ [https://perma.cc/MRW4-GC8M]. Google Cardboard is a cheap headset made of cardboard into which the user inserts his or her smartphone, but does not offer the level of interaction with the environment or the quality of visuals that other systems offer. See GOOGLE CARDBOARD, supra note 1.
virtual reality might create could reach a level of pain if the circumstances call for it. And all this does not even address sexual applications.

Finally, one potentially key aspect of virtual reality technology development is how full-body immersion might be achieved. Currently, in order to allow freedom of movement in virtual reality, users can set up sensors around the room to track their movements. This requires a good amount of space to move in. Physically moving while in virtual reality has its hidden dangers, even if you clear sufficient space: Reports and videos are already popping up of people attempting to make use of virtual furniture and sitting or leaning on nothing, embarrassing and potentially injuring themselves. Experts suggest, though, that this level of movement is necessary to feel fully immersed in the virtual environment, which is why some people don’t consider virtual reality without such tracking, such as 360-degree video, to be true virtual reality.

So if future versions of virtual reality want to include full-body tactile sensation in addition to such movement, how will it be achieved? Will it continue to involve a setup in the room itself, à la Star Trek holodecks? Will we wear full-body suits and move blindly through cleared-out living rooms, dangle in midair from the ceiling, or install large multidirectional treadmills? Or will they find a way to mimic the movement as well as the sensation? Science fiction portrayals of virtual reality rarely involve users stumbling around tripping over furniture; they tend to be in a pod or lying still, hooked up to something static. Their apparently physical movement is as virtual as the environments themselves, and the virtual environment most closely resembles a dream world.

If this virtual reality-as-dreamland idea comes to pass, we will not be physically moving when we send signals to our bodies to do so. Whether this is achieved through some kind of restraint or sleep paralysis, it means that leaving virtual reality will not be as simple as removing the equipment: Our movement to remove it will have no real-world effect. If something frightening or harmful occurs in virtual reality, it will be feasible for a user to become trapped in it. Even in less extreme versions, such as a full-body suit suspended from the ceiling or on a treadmill, removing the equipment with hands covered in tech could be quite difficult. Of course, there will be some way of leaving virtual reality; it would be required for virtual reality to be useable. What that mechanism is, and how reliable

18. E.g., The Matrix (Warner Bros. 1999); eXistenZ (Miramax Films 1999).
and easy it is, may become relevant when we are evaluating the types of harm virtual reality could theoretically cause.

All told, at some point in the future, a virtual experience may be capable, for most intents and purposes, of being equivalent to a real one, with the primary (and eventually, maybe the only) differences being the physical safety of the body and the absence of the physical limitations of reality.

The fact that it might be technologically possible to have a virtual world that functions and affects users just like the physical world, however, does not mean it will take such a form. It is likely that people will use the endless possibility of virtual reality to pick and choose what they like about reality. Want to climb Mount Everest, but hate the cold? You can pick the aspects of the experience you want, without all the discomforts you do not. Want to socialize with strangers but are picky about your companions? You can mute the people who bother you, even block them so their avatars become invisible to you and they effectively cease to exist (to you) for as long as you want.

Designers of virtual environments can make similar choices about user capabilities and experiences. Virtual reality movies may involve users without avatars, able to move anywhere in a scene, able to feel the environment—its heat, wind, the texture of the floors and walls—but unable to interact and influence the story. The user, in turn, could choose to disable some sensory input of the movie’s environment. The precise level of customizability by the user will be partly a function of the user’s available technology and the choices of virtual environment designers. The potential for total customizability of subjective reality and experience raises questions about consent, while the potential for every user to have a different experience of a single event complicates the predictability of an action’s consequences. These are just a few complexities virtual reality may bring; the future may present us with many more.

Virtual reality will ultimately be built from aspects of reality chosen by users and developers. In this way, an act in virtual reality will not be identical to a physical act, but nor will it be wholly distinct. The effects of a virtual act on the actor, on the environment, and especially on other people will often be different than the effects of a physical act in the physical world. But, importantly, they will not necessarily be less.

II. HARM FROM VIRTUAL VIOLENCE

When asking how physical and virtual acts compare, particularly in terms of their consequences for the people involved, the obvious place to start is their effects in the physical world. If virtual violence has direct effects on the physical
body of its victim, it is easily comparable to physical-world violence. More specifically, virtual and physical violence become comparable in a way that allows virtual acts to be treated similarly to physical acts under criminal law and other means of governing human activity.

Without knowing details about the future path of virtual reality technology, or the downstream effects of its psychological impact, we cannot rule out the possibility that acts in virtual reality could cause a real-life physical harm under some circumstances. If and when virtual reality reaches this level, it is entirely possible there will be some who use it maliciously, and new and interesting cases of violent crimes will arise in virtual contexts. These are, however, relatively easy cases. If the harm is clearly real and physical, then the virtual reality used to commit the violent act is merely a new type of weapon. If someone deliberately causes physical harm to another, it can be violent and criminal whether the interaction takes place in a virtual environment or not.

The clearest hypothetical case is homicide. Assuming no virtual reality manufacturers create a machine with the known effect of killing its users, virtual murder is unlikely to cause actual death beyond that of the avatar. Even if actual death does ensue when an avatar dies, or if a user suffers a fatal coronary in response to the actions of another user, the evaluation of whether the incident is criminal homicide does not change just because it involves virtual acts.

A homicide occurs when one person causes the death of another. If one virtual reality user dies in real life as a result of the other’s actions, it was homicide. It becomes criminal homicide if the person who causes the death has the required mens rea, and the concept of mens rea is not bound up in physical reality. A user who knows of his friend’s weak heart, his phobia of snakes, and the level of realism of his friend’s virtual reality headset, and who then drops his friend in a virtual snakepit, might be considered negligent or reckless with his friend’s life; other circumstances can be imagined where such a result might be deliberate. Difficult questions might arise about mens rea, about obtaining proof of the identity of an avatar, or about jurisdiction; however, when the consequences of the act are unambiguous, applying real-life criminal law would be easily justified, and such problems are not unique to virtual reality contexts.

Any other physical injury or effect that exists outside of virtual reality is likely to be seen the same way as it would if it resulted from real-world interactions. If someone is accidentally injured because they walked into a wall wearing a virtual reality helmet, it is an accidental injury, while if someone uses virtual reality to trick a user into walking off a roof or tripping down a flight of stairs to hurt them, it is no less real, or less violent, than other means of causing such injuries. Increased immersion or presence may make these types of attacks easier, but it is
not the realism of the virtual environment, or the perceived violence of the virtual interaction itself, that makes these acts violent or not, but rather the physical results outside of the virtual environment.

Harm from virtual reality violence is (generally) unlikely to be physical, but several questions remain: What are the nonphysical consequences of violence? Can virtual reality cause those consequences? Are those consequences sufficient, without the accompanying risk of physical injury, to equate virtual violence to real violence? Is emotional or psychological injury sufficient to justify criminalizing some virtual acts?

Physical violence is a type of conduct we seem most willing to criminalize.\textsuperscript{19} This is unsurprising: Not only does violence cause us harm, it is also frightening. Our bodies are fragile, and the prospect of someone inflicting harm on our bodies evokes a natural response of fear and anger. We want to keep ourselves safe. But we also want to feel safe, and to be able to function in society without fear of victimization. Do we criminalize violence as a reaction to a general fear of violence, or do we criminalize violence because we want to reduce the need for immediate fear of violence? Are we trying to prevent and reduce danger, or fear?

Obviously we want to prevent physical harm, and be physically safe, but if part of criminalization of violence is also to prevent fear of harm and to feel physically safe, virtual reality may force us to confront that distinction. With occasional exceptions, virtual reality violence would not be physically dangerous, but may cause users to feel unsafe. Our ability to recognize when we are in physical danger (and when we are not) can be severely impaired by sufficiently immersive virtual reality.

Along with fear of its potential, physical violence causes harm to victims beyond the physical injury. The experience of being helpless, of pain, of violation from unwanted physical contact (sexual or otherwise) can do real psychological damage. There is no reason to think that we criminalize violence to protect people from only the physical consequences, or that society does not care about these other, nonphysical harms. The fact that assault without battery and that rape without injury are both considered violent crimes suggests that these harms are sufficient on their own to justify punitive measures.

Demo versions of current virtual reality technologies have already invoked a wide range of reactions. In one, the user’s avatar is tied to a chair and stabbed in the leg, and users who were well aware of its virtual nature have flinched and

\textsuperscript{19} For a deep discussion of the interaction between violence and criminal law, and the role of physicality in both, see generally Alice Ristroph, \textit{Criminal Law in the Shadow of Violence}, 62 ALA. L. REV. 571 (2011).
panicked in response to the attack. In another, a multiplayer game portrayed cartoonish avatars with realistic body language that responded to player movements, and one player reported being very disturbed at seeing another avatar commit suicide. People walking across a narrow board over an illusory pit have reported an unwillingness to step off, in spite of knowing—and having seen, moments before—that there is solid ground on either side. Some are already recognizing the potential for use (or misuse) of virtual reality to terrify users with jump scares that feel genuinely real.

At the moment, this seems harmless. Even a nonconsensual interaction of this sort seems akin to tricking a friend into watching a horror movie or jumping out at someone while wearing a frightening mask. But the level of immersion in full 360-degree environments, with headsets strapped on such that it is difficult to quickly extricate oneself, suggests an illusion of inescapability that might have more of a psychological effect than it seems.

Virtual reality’s potential for real psychological impact is not a new idea, and not inherently negative. Psychologists have been experimenting with virtual reality therapy for years, providing safe, controlled exposure therapy for people with post-traumatic stress disorder (PTSD) or phobias. An experience that was obviously illusory, and that did not feel genuine, would be less helpful for such therapies. For veterans, in particular, virtual reality combat scenarios feel like the real thing.

These therapeutic studies suggest that real potential for psychological effects from virtual reality already exists with current technology. At least one study suggests that the psychological benefit of exposure therapy in low-budget

20. See Thomas McMullan, Virtual Reality Will Change the Way You Think About Violence, ALPHR (Feb. 18, 2016), http://www.alphr.com/games/1002731/virtual-reality-will-change-the-way-you-think-about-violence [https://perma.cc/2SA7-7HT4]. Keep in mind that the demos that have evoked these reactions are chosen to be widely appealing, showing only the positive potential of virtual reality. Imagine the range of experiences available when virtual reality has become widespread, including scenarios designed by other users.


23. The founder of Oculus VR has been actively discouraging it, and even one virtual reality horror developer has described jump scares as potentially dangerous. Gary Alexander, VR Jump Scares Can Be ‘Pretty Dangerous’ According to A Chair in a Room Dev, WORDS ABOUT GAMES (Feb. 23, 2016), http://wordsaboutgames.net/2016/02/23/vr-jump-scares-can-be-pretty-dangerous-according-to-a-chair-in-a-room-dev [https://perma.cc/T64H-ZS2].

virtual reality from 2002 equaled the benefit of exposure therapy in vivo.\textsuperscript{25} Since the purpose of exposure therapy is to create stressful experiences to develop coping mechanisms, this makes virtual environments useful for training and therapy, but also suggests they have at least some power to do psychological damage. The extent of that potential is difficult to determine at this time, since obvious ethical concerns prevent us from deliberately trying to traumatize subjects just to see how bad it can get. The use of virtual reality outside of controlled demonstrations and laboratories is not widespread enough yet to start seeing effects in the general population.

If virtual reality’s ability to invoke a visceral fear response and lasting psychological effects has already been realized, imagine the effects of advancing technology. An attack sensed through the eyes and ears in a headset can make you flinch and cower; an attack you can feel, that feels like real touch, could do so much more damage. If virtual reality becomes a sort of computerized lucid dream, you could even become trapped, unable to escape the virtual environment by removing a headset. Even without physical pain or injury, violence in this context could do serious psychological harm.

The comparison of future virtual reality to fully immersive dream states raises another aspect of virtual reality: It is no longer limited by physical reality. As a result, virtual reality could enable wholly new ways to inflict harm. Malicious users would not be limited to acts analogous to physical violence performed through avatars with human capabilities. Avatars could have superpowers, allowing an attacker to go beyond his or her usual physical limitations. An attack would not need to be through an avatar at all, and could entail placing a user in a nightmare, forcing him or her to live through a personal phobia or universal fear. The only limits could be the imagination of the attacker.

Are people likely to become virtual Freddy Kruegers?\textsuperscript{26} It may be less likely than avatar-based violence, particularly if manipulating another user’s environment against their will takes some technical skill or special access. But the technology to create effectively any virtual environment will (and in fact already does) exist, and it is a tool that could easily be used with malice. These attacks (for lack of a better word) would not necessarily resemble physical violence at all. If someone merely manipulates a virtual environment to become psychologically hostile, harm could be done without any apparent interaction.


\textsuperscript{26} Albeit without the \textit{Nightmare Elm Street} movies’ effect of characters dying in their reality when they were killed in their dreams. \textit{A NIGHTMARE ON ELM STREET} (New Line Cinema 1984).
Ultimately, the type and extent of psychological damage virtual reality can do will probably depend on several factors specific to the victim. Some users will be more or less vulnerable than others due to personal traits like age, extent of desensitization, and past trauma. There may be psychological variation in the population not yet researched that affects the degree of presence, and how aware a user is that what they experience is not physically real. Some experiences will have no effect on some users and traumatize others, such as phobias and triggers of past trauma.

Other factors affecting these harms might be more legally relevant than the choice of victim. Technological change and variation that affects the extent of presence, for instance, will affect how much harm an experience can do. Extreme immersion with several senses contributing to the experience, potentially creating a high degree of presence, will probably come closer to real violence in the harm it does than low levels of presence involving only a few senses. If a user has virtual reality equipment set up to allow him or her to feel pain for the sake of simulation, an attack that triggers the simulated pain will affect the user differently than an attack without it. Virtual reality equipment that a user cannot readily remove or exit will probably increase the damage done by any potentially harmful experience, because it will extend the duration of the experience and make the user feel more trapped. Whatever form an attack takes, abuse of virtual reality is likely capable of causing serious psychological harm under certain circumstances.

III. RESPONDING TO HARMFUL VIRTUAL VIOLENCE

A resemblance to physical violence and other criminal activity might create a temptation to apply real-life criminal laws to virtual acts, as some have already contemplated in other circumstances. But criminalization of virtual violence requires the criminal law to recognize purely psychological harms. If a user suffers psychological harm from a virtual encounter, there is always the possibility of a civil suit. Criminal law, however, tends to address tangible harms like loss of

27. See Susan W. Brenner, Fantasy Crime: The Role of Criminal Law in Virtual Worlds, 11 VAND. J. ENT. & TECH. L. 1, 75–94 (2008) (arguing that violent crimes like rape and murder in on-screen virtual worlds do not cause tangible enough harms for criminalization); Orin S. Kerr, Criminal Law in Virtual Worlds, 2008 U. CHI. LEGAL. F. 415, 427 (arguing that criminal law should not apply to virtual worlds “so long as harms remain virtual ones”).

28. See generally John J. Kircher, The Four Faces of Tort Law: Liability for Emotional Harm, 90 MARQ. L. REV. 789 (2007) (describing in depth the various means of tort liability for emotional harms, including torts not explicitly about emotional harm such as assault). Depending on how courts apply words like “contact” to virtual contact, torts such as assault may translate fairly seamlessly into the virtual realm.
property or physical injury to the body.\textsuperscript{29} Purely psychological harms are rarely addressed directly by criminal law, even when those harms are arguably far worse than the physical effects of a criminal act.\textsuperscript{30} This avoidance of criminalizing psychological harms may be changing, however, for better or worse. Recent years have seen a number of new statutes written explicitly to protect victims from nonphysical harm, criminalizing acts such as harassment or bullying.\textsuperscript{31}

Some argue that developments in neuroscience will enable visualization of psychological harms, reducing or eliminating the distinction between bodily harm and psychological damage.\textsuperscript{32} Realistic virtual violence may be another way for criminal law to confront the question of psychological harms. Its resemblance to physical violence, minus only the physically injurious results, may allow virtual reality to bridge the gap between physical and psychological injury in a way not yet achieved by neuroscience. A single high-profile victim of virtual violence might suffer enough to force us—and criminal law—to acknowledge that physical harm or danger is not a prerequisite for very real injury. Such an acknowledgment could have repercussions for other areas of criminal law, such as rape law, where psychological harm is central but sometimes only discussed implicitly.\textsuperscript{33}

Earlier, I suggested that violence is criminalized in part because it is frightening. I raised the question of whether we respond to a general fear of violence, and its accompanying physical harm, by criminalizing it, or whether we criminalize violence to protect ourselves from the fear itself. Virtual reality violence would not risk actual physical harm, but has plenty of potential to cause fear that might be equivalent or nearly equivalent to fear of violence in the real world, so this distinction may become key to determining how criminal law might apply to virtual reality. If criminal law only cares about physical harm, it should not apply at all, but if criminal law exists to make people feel safe, why should that sense of safety have to be waived in virtual reality?

Criminal law in the physical world does often cover fear itself, without actual harm or even risk thereof.\textsuperscript{34} Criminalization of acts that inflict purely

\begin{itemize}
\item \textsuperscript{29} See generally Francis X. Shen, \textit{Mind, Body, and the Criminal Law}, 97 MINN. L. REV. 2036 (2013).
\item \textsuperscript{30} See Francis X. Shen, \textit{How We Still Fail Rape Victims: Reflecting on Responsibility and Legal Reform}, 22 COLUM. J. GENDER & L. 1, 34–35 (2011) (discussing how the psychological impact of rape is long-lasting and serious, but juries tend to undervalue the nonphysical damage).
\item \textsuperscript{31} See generally Avana K. Eisenberg, \textit{Criminal Infliction of Emotional Distress}, 115 MICH. L. REV. 607 (2015) (discussing a number of criminal statutes that explicitly criminalize acts that cause purely emotional harms).
\item \textsuperscript{32}  Shen, supra note 29, at 2055.
\item \textsuperscript{33} See Eisenberg, supra note 31, at 610; Shen, supra note 30, at 36.
\item \textsuperscript{34} Eisenberg suggests that criminal law treats fear differently from other emotions, providing us with more protection from it, because it is more objectively measurable than other emotions, so it is
psychological injuries, however, has its problems, even in physical reality.\textsuperscript{35} Such acts can be difficult to define well enough to provide adequate notice,\textsuperscript{36} there can be wide cultural and personal disagreement about what constitutes emotional distress to a reasonable person, and perhaps most importantly, constitutionally protected expression can cause emotional injury, and such expression can be difficult to distinguish from conduct.\textsuperscript{37} Virtual reality may prove an interesting way to force us to confront these issues, to find a way to balance the very real\textsuperscript{38} harm from psychological damage with the dangers of wanton criminalization of infliction of nonphysical damage.

Ultimately, it is easy to imagine at least some criminalization of virtual acts that cause psychological damage. But even now, at the very beginning of the virtual reality revolution, we can already see that virtual reality would involve many complications that criminal law is ill equipped to deal with.\textsuperscript{39} Some problems are purely practical, and not all are new. Crimes involving the Internet already complicate prosecutions due to jurisdictional questions, investigation difficulties posed by user anonymity, and a lack of technically savvy investigators, lawyers, and fact-finders. These problems are neither unique to virtual reality nor tied to the particulars of virtual violence.

Other problems relate to the variety of applications of virtual reality. One of virtual reality’s greatest benefits is that it allows users to experience things that would be impossible or unsafe to experience in reality, including violence. It is no coincidence that at least one early demo involved the user being attacked by a horror character with a knife; there is clearly a market for frightening experiences that do no physical harm. Others are player-vs.-player (PvP) combat simulations or games, where players can shoot each other. It would be absurd to outlaw such gameplay in the name of protecting users, when the safe experience of violence is more possible to establish how a reasonable person would react to it than other emotional situations. Eisenberg, supra note 31, at 619. This raises an interestingly tricky question about reasonableness. Normally, a victim can feel reasonable fear even from an impossible threat, such as an unloaded gun, because the victim does not realize the threat is impossible. But what if we find through experience with virtual reality that fear from a virtual violent act is just as damaging and feels just as real as fear from a real act? Does the knowledge that an overtly violent experience will not result in physical injury make that fear necessarily “unreasonable”?

35. Id. at 640–51.
36. Given the ability of virtual actions to look like just about anything, defining a harmful act seems practically impossible. How do you write a statute outlawing the creation of unique nightmarish experiences?
37. These arguments and more against criminalization of emotional distress are discussed by Eisenberg. Eisenberg, supra note 31, at 640–51.
38. And with neuroscience, potentially empirically provable. Shen, supra note 29, at 2055.
39. In his 2008 paper on virtual crimes, Orin Kerr calls criminal law “a blunt instrument that should be used only as a last resort.” Kerr, supra note 27, at 417.
what those users want.\textsuperscript{40} Acts in virtual reality can have great value in terms of expression, experimentation, and simple entertainment.

The difficulty is in protecting users from harm without chilling or punishing valuable virtual acts, particularly given the variation between virtual worlds and user interests.\textsuperscript{41} In physical reality, the desire to remain uninjured physically is nearly universal, so we can assume that physically injuring or endangering someone (outside of, say, a boxing ring or an operating table) crosses the line from acceptable to criminal behavior. That line is not always perfectly clear, but we have some guidance based on physical vulnerabilities. Without that unifying vulnerability, the line is far blurrier, and we can imagine a single act having a huge range of consequences depending on the circumstances. This makes it difficult to foresee the consequences of even a simple action, let alone establish laws that apply across platforms and virtual environments.

If the law cannot reasonably apply one standard across virtual worlds, perhaps it should not try. Instead, rules could be established world by world, allowing designers or other virtual environment-specific entities to establish the rules for participation.\textsuperscript{42} A PvP game environment could allow some forms of PvP combat, but not others. A nongame context could establish a more detailed rule system to parallel that of the real legal system. Such rules will generally be established anyway. But should we place the responsibility of virtual law in the hands of developers and users, whose expertise is unlikely to be in lawmaking, and who may not be sensitive to the risks?\textsuperscript{43} Would the real criminal justice system enforce laws established outside the real-world democratic process, and if not, would in-game penalties be sufficient to protect users?

\textsuperscript{40} This idea is related to the broader “magic circle” argument, which “considers at least some subset of virtual world activities to be a state of play—a ‘magic circle’—which, like the fence around a schoolyard playground, should shield activities performed therein from outside intrusion or intervention by the government.” Trey Hickman & Kristin E. Hickman, The Myth of the Magic Circle: Rejecting a Single Governance Model, 2 U.C. IRVINE L. REV. 537, 539 (2012).

\textsuperscript{41} One of the most crucial and complicated issues with criminalizing virtual activity is its potential protection by the First Amendment. This question is thoughtfully explored in Marc Jonathan Blitz, The Freedom of 3D Thought: The First Amendment in Virtual Reality, 30 CARDOZO L. REV. 1141 (2008).

\textsuperscript{42} We have precedent for this approach in existing criminal law. When applying criminal law to acts during sports, courts look to the rules and general practices of the sport in question. Jeffrey Starden, The Manly Sports: The Problematic Use of Criminal Law to Regulate Sports Violence, 99 J. CRIM. L. & CRIMINOLOGY 619, 626 (2009).

One approach might be to treat virtual violence similarly to sexual assault, whether the virtual acts themselves are sexual or not, and require nonconsent as an element of any virtual crime. Players of a PvP virtual reality game cannot be expected to ask for consent before each act of combat, but consent could be built into playing the game, such as an on-screen waiver players see when they purchase or enter a game. The scope of consent would be approximated by the rules and norms of the game, much like when criminal law is applied to violent sports.

Assuming we want to criminalize at least some virtual violence, where should we draw the line? Should such laws cover all virtual violence without consent, or only acts that risked psychological harm to the victims? That harm, as we have seen, would depend on a lot of factors. An assault on a Second Life user who enters the virtual environment with a top-of-the-line, full-body, touch-, pain-, and movement-enabled virtual reality system would likely do more damage than an assault on a user who controls their avatar through a PC, with a keyboard and mouse. So would one be a crime, but not the other? This could have the effect of protecting users with expensive systems more than those who cannot afford them. It would also be unfair if the attacker did not know which avatars were which, although this could perhaps become part of a mens rea element of the crime.

To some extent, variations in impact on users will result from customization by the users themselves. Could enabling certain sensations or interactions be considered consent, or at least assumption of risk? This could allow for fine-tuned conceptions of consent, where users enable—and therefore specifically consent to—specific aspects of interaction with other users or environments. This framework is potentially problematic if users find themselves forced to accept hostile versions of virtual interactions in order to experience positive ones; nearly any sensory input could imaginably be used for good or ill. But when users have control over their subjective experience of an activity, violent or otherwise, such control may protect them better than criminal laws. Framing such control as a form of consent could allow the legal system to apply to virtual activity without overly restraining virtual interactions.

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44. Consent is not a perfect proxy for harmlessness; some experiences may be harmful even with consent. But consensual acts are rarely criminalized, and even then crimes are limited to cases of physical harm. See Ristrop, supra note 19, at 591–93 (discussing the role of consent in laws about mayhem and violent sports). I therefore am assuming that a genuinely consensual virtual act, as it would directly cause no physical injury, should not be criminalized, even if it does harm.

45. See SECOND LIFE, supra note 6.
Even if we could all agree on what virtual acts, under what circumstances, justify punishment under criminal law, would such a system be an effective enough deterrent to justify the costs of such punishment? Enforcement would be more difficult than in physical reality: Users will likely be anonymous much of the time, and tracing an avatar to its user could be slow and difficult. This could be exacerbated in contexts where the violence is done more remotely, by programming a non-player character to carry out the attack, or by Freddy Krueger-style virtual environment manipulation. Even if enforcement is doable, users might not be deterred if the disconnect is great enough. Enforcement by in-virtual-reality penalties, such as expulsion from the virtual environment or loss of privileges, may be more enforceable, and may even be effective, at least for some users.\textsuperscript{46}

A more effective means than punishment, by criminal or virtual law, might be to build technological protections into virtual systems themselves.\textsuperscript{47} Rather than enforcing rules by penalty schemes, breaking a rule could be impossible without hacking the program. In the popular virtual reality novel *Ready Player One*,\textsuperscript{48} certain zones within the “OASIS” (a near-universal virtual reality used by anyone with access to the technology) are not PvP enabled, so when a user tries to strike another user there is no contact, only an error message informing them of the rule against PvP.\textsuperscript{49} When the protagonist attends his virtual high school, a number of acts are not enabled for his avatar, including speaking out of turn, getting out of his seat during class, and fighting with other students.\textsuperscript{50} Since the programming of each particular virtual environment will be tied to its purpose, this type of limitation makes sense. The technology may be capable of violence, but the avatars within the virtual reality may not be. Still, at least some virtual environments would likely be free-for-all, where any form of act or interaction is technologically enabled, at least by the environment itself.

Virtual system-based protections like these could be left up to the market and user choice: Users who want to feel safe in virtual reality will gravitate to virtual reality brands that better protect them or include fewer means of violence, just as moviegoers who do not want to be frightened just do not go to horror

\textsuperscript{46} The previously mentioned text-based rape in 1993 involved the expulsion of the perpetrating avatar. Dibbell, *supra* note 8. The user then apparently returned under a different name, but did not reoffend. *Id.*

\textsuperscript{47} For an in-depth discussion of the use of software to directly prevent unwanted behavior, see generally James Grimmelmann, Note, *Regulation by Software*, 114 YALE L.J. 1719 (2005).


\textsuperscript{49} *SecondLife* has a similar setup, where the majority of its regions are peaceful, but some regions are combat-enabled. Brenner, *supra* note 27, at 39.

\textsuperscript{50} *Id.* at 29, 47.
Virtual Violence

movies. If a virtual game or environment becomes known for hostility or trauma, some users may avoid it, or the company behind the hostile world may take steps to improve user experience.\textsuperscript{51} At the same time, anyone willing to risk violent contact can venture into the virtual wild wests, environments or games with no rules or restrictions; anyone looking for the thrill of danger can embark on deliberately terrifying adventures that might be damaging to others.

Of course, a user’s choice of virtual reality brand (or particular virtual environment within a brand, or location or zone within a virtual environment) would probably depend on many other factors, including the quality of technology, cost, and what a user’s friends are using. Damaging virtual violence will probably not be foremost in customers’ minds when making purchase choices. If a dominant form of social interaction in the future becomes, for example, Virtual Facebook, people will use it with or without protection from virtual violence.

As an alternative to, or in addition to, relying on software, or on enforcement of in-virtual reality rules, or on criminal laws, developers of the virtual reality technology hardware could approach the possibility of user violence—along with any other potential source of trauma—as a safety concern. One straightforward way to mitigate that risk might be a means of easy escape from virtual reality. Current technology consists of a headset strapped onto a user’s head, so is relatively easy to remove if the user becomes overwhelmed. Exiting virtual reality may become more difficult and take longer as the technology advances, such as if controllers or gloves on a user’s hands prevent easy manipulation of headset straps, or the equipment grows to cover the entire body. Next-level virtual reality that plugs users fully into a virtual reality, so that virtual movement does not translate to physical movement, could make exiting even more difficult, since whatever the user does in virtual reality would not affect the equipment in reality.

Developers would therefore need to ensure that users can leave easily, through an emergency signal of some sort, such as a safe word or panic button that functions regardless of the particular program being used. Alternatively, there could be a home space in virtual reality that a user could exit to at any time, without leaving virtual reality entirely. The ability to instantly leave virtual reality

\textsuperscript{51} Online gamers, as a group, are already known for hostility. See Brendan Maher, \textit{Can a Video Game Company Tame Toxic Behavior?}, NATURE (Mar. 30, 2016), http://www.nature.com/news/can-a-video-game-company-tame-toxic-behaviour-1.19647 [https://perma.cc/6SKH-CMWA]. Some companies are, in fact, working to find ways to reduce the problem. The most widely-played online game, \textit{League of Legends}, is being used as a platform for experimenting with such solutions. \textit{Id.; see also Jeremy Hau, Inside the Largest Virtual Psychology Lab in the World}, BACKCHANNEL (Jan. 27, 2015), https://backchannel.com/inside-the-largest-virtual-psychology-lab-in-the-world-7c0d2e43ca5#.q81kisfla [https://perma.cc/LAY4-M5QA].
entirely would be necessary for emergencies outside of virtual reality, such as a fire
or other physical danger, so to have an option to trigger it internally would make
sense.

Having technological protections in some form does not eliminate the
possibility of a role for legal intervention. Perpetrators of virtual reality violence
could be sued civilly. Safety requirements in hardware and software could be
legally mandated. If some form of safe word or escape button becomes ubiqui-
tous in virtual reality, it could become a crime to override such safety features
during another’s use, particularly if it is overridden with intent to cause harm,
through virtual violence or otherwise.\textsuperscript{52} Since this type of safety feature would
enable the user to move freely in physical reality, interfering with it would effect-
tively restrain the user via their virtual reality equipment. In other words, such
interference would have physical effects on the user’s body, even if all direct in-
teraction between users were virtual. It would in effect be kidnapping or false
imprisonment.

\textbf{CONCLUSION}

My intent is not to argue for a particular regulatory scheme or substantive
criminal law. Until we see how the technology evolves, and how people use it, we
cannot know what would be best. But virtual reality has great potential as a world
free of most physical consequences, with opportunities for people to experi-
ment, to experience, and to interact in new ways. It will be limited only by the
combined imaginations of all of its creators and users. We can therefore expect
a huge spectrum of applications, customizations, and receptions. Slow to
change and wielding grave consequences, the criminal law should take a sec-
ondary role, at most, in regulating such a new world. While virtual interactions
may be as consequential as their physical counterparts, they should not be seen
as legally identical. Instead, decisions about what activity is acceptable, includ-
ing violence, should be left primarily to users and developers, in the form of
consent, user customization, software and hardware limitations, and any other
future developments we cannot yet see.

Technology has already transformed much of human activity and interac-
tion, but the new ways of doing things have been, for the most part, nonphysical.

\textsuperscript{52} If combined with a consent approach, this could create a presumption of consent for any user not
using an available exit, but a presumption of nonconsent wherever someone makes this sort of escape unavailable for a user. Taking it one step further, if a user’s settings allow for an experience
we could presume consent, while tampering with such settings by another user could indicate
nonconsent.
We talk to a friend through text and Facebook messages, we find dates through a computer or smartphone screen, and we shop with a click of a mouse. Virtual reality has the potential to bring physicality back to a lot of these activities, without abandoning the convenience of the new methods. It will not be a return to physical interactions, it will be a new kind of interaction, with a great deal of potential both good and bad. It is important for us to think carefully about how this new reality will affect us, so we can move forward safely without stifling the positive aspects of that potential.

The rise of virtual reality may change everything. It may change how we interact with each other, how we teach and learn, how we travel, how we entertain ourselves, and how we see ourselves. It will also be an opportunity to question many of our assumptions and definitions. If we take up that challenge, it could cause us to revisit difficult legal and policy questions about harm, consent, risk, and violence.