

## Introduction

Should computer code that is designed to act like real world property be regulated and protected like real world property? This article contends that it should.

Much computer code is just one step removed from a pure idea. It is non-rivalrous; that is, one person's use of the code does not stop another person from using it. This kind of code is, correctly, protected by the law of intellectual property. Intellectual property protects the creative interest in non-rivalrous resources. If intellectual property did not exist, creators would not be able to recoup the costs of creation.

But there is another kind of code, rarely discussed in the technical or legal literature. This kind of code is designed to act more like land or chattel than ideas. It pervades the internet and comprises many of the most important online resources. Often, this kind of code makes up the structural components of the internet itself. Domain names, URLs (uniform resource locators), websites, email accounts, and entire virtual worlds are all examples of this second type of code. They are rivalrous. If one person owns and controls them, others do not. They are persistent. Unlike the software on your computer, they do not go away when you turn your computer off. And they are interconnected. Other people can interact with them. This kind of code I term "virtual property."

There is, however, a problem. In general, we continue to govern virtual property through the law of intellectual property. Even where there has been some recognition that virtual property is somehow "different," no clear articulation of that difference has been offered. As a result, holders of intellectual property rights have been systematically eliminating emerging virtual property rights by the use of contracts called End User License Agreements ("EULAs"). Despite (or perhaps because of) these contracts, no distinct protection for property rights in virtual property has appeared in the United States, even though millions of people and billions of dollars are involved in gray-market transactions in such property. In comparison, China, Taiwan, and Korea have already made significant steps toward protecting ownership interests in virtual property, hoping to attract the burgeoning industry of virtual worlds.

Why is it important that we have a theory of virtual property? The common law of property works to ensure that resources are used well. **If we do not have a good theory of virtual property, then virtual property will be poorly used.** For example, a key step in the development of the internet was the adoption of a property-style regime in the form of the International Corporation for Assigned Names and Numbers ("ICANN"), an organization that acts as a recording system for internet addresses. Property law also lowers search costs associated with the sale of resources by permitting a limited number of property forms that are easier to search. For example, a title search on a house is less expensive because there are a fixed and limited set of ways in which the house could be encumbered. Similarly, property law lowers negotiation costs by limiting fragmentation of property rights. To give an example of fragmentation, if property rights in a tractor were split such that one person owned the wheels while another owned the chassis, you would have to negotiate with both people to be able to use the tractor as a whole, which would be more expensive. Thus, a theory of virtual property is critical to ensure efficient use of internet resources, lower search costs, and reduce negotiation costs that would otherwise prevent the flow of high-value resources to high-value uses.

**A good theory of virtual property is also important to the future of the internet.** If we protect virtual property, the internet could become a three-dimensional global virtual environment. The possibilities for medical, commercial, social, military, artistic, and cultural advancement offered by such a virtual environment have just begun to be explored. Thus, we should care about the protection of virtual property not only because markets already value it immensely, but because we will all come to value it more due to the potential it offers for societal advancement.

**Finally, a theory of virtual property is important to maintain the equilibrium of the law as it adapts to new contexts.** The common law is a complex system that has evolved over time to encode many different factors into its rules. In particular, the law of contract and the law of property traditionally balance each other.

The law of contract permits parties to realize the value of idiosyncratic preferences through trades. The law of property traditionally limits the burdens that parties may place on the productive use or marketability of high-value resources by means of contract. For example, unreasonable contractual restraints on alienation are eliminated by the law of property. But currently in the context of the internet, we have imported the common law of contract wholesale, without the counterbalance of property law. As a result, emergent useful property forms are being eliminated by contract.

## I. What Is Virtual Property?

The "space" in cyberspace refers to something in particular: the rivalrousness, or "spatial" nature, of certain internet resources, like URLs, domain names, email accounts, virtual worlds, and more. We use the term cyberspace not because we are bad analogists, but because many online resources mimic physical properties. For example, a chat room is, in many ways, similar to a conference room; a URL is similar to real estate in the real world. This type of code is ubiquitous and important. It forms much of the structure of the internet. This section will define virtual property, discuss several examples of it, and show how virtual property is evolving.

### *A. Virtual Property is Rivalrous, Persistent, and Interconnected Code that Mimics Real World Characteristics*

Virtual property shares three legally relevant characteristics with real world property: rivalrousness, persistence, and interconnectivity. Based on these shared characteristics, subsequent sections will show that virtual property should be treated like real world property under the law.

Much code is designed to act as a purely non-rivalrous resource. One person's use of the code does not impede another person from making use of it. Non-rivalrousness enables the creation and distribution of many perfect copies at nearly zero cost. The non-rivalrousness of code is the novelty of the internet that has most captured the legal and public imagination, in the form of lawsuits against music and movie downloaders and producers of filesharing software, for example.

But not all code is non-rivalrous. Rivalrousness, in the physical world, lets the owner exclude other people from using owned objects. We often desire the power to exclude in cyberspace too, and so we design that power into code. By design, we make code that can only be possessed by one person. Thus, rivalrousness exists also in code. If one person controls rivalrous code, nobody else does. For example, no one but the owner of an internet address (or those the owner permits) can post content to that address. If person A owns a given internet address, person B cannot put her website up at that address. If one person has a given email address, nobody else can receive mail at that same address.

There are other characteristics drawn from the physical world that are incorporated into code as well. Objects and places in the physical world are persistent. For example, a statue need only be sculpted once. After that, it remains in the city square for hundreds of years. Similarly, code is often made persistent - that is, it does not fade after each use, and it does not run on one single computer. For example, an email account can be accessed from a laptop, a desktop, or the local library. When an email account owner turns her laptop off, the information in that account does not cease to exist. It persists on the server of her Internet Service Provider.

Objects in the real world are also naturally interconnected. Two people in the same room experience exactly the same objects. Objects in the real world can affect each other, by the laws of physics. Similarly, code can be made interconnected, so that although one person may control it, others may experience it. The value of a URL or an email address is not solely that the owner can control it; the value is that other people can connect to it, and can experience it. They may not be able to control it without the owner's permission, but - as with real estate in the real world - with the owner's invitation they may interact with it.

To recap: these traits - rivalrousness, persistence, and interconnectivity - mimic real world properties. If I hold a pen, I have it and you don't. Rivalrousness. If I put the pen down and leave the room, it is still there. That is persistence. And finally, you can all interact with the pen - with my permission, you can experience it. That is interconnectivity. Why is code trying so hard to mimic these properties? Rivalrousness gives me the ability to invest in my property without fear that other people may take what I have built. Persistence protects

my investment by ensuring that it lasts. \*1055 Interconnectivity increases the value of the property due to network effects - not least of which is the fact that other people's experience of my resource may be such that it becomes desirable, and hence marketable, to them.

### *B. Examples of Virtual Property*

A URL is an internet address consisting of an access protocol (e.g., http), a domain name (www.microsoft.com), and occasional additional information. There is no particular creative value associated with creating a URL. But it undoubtedly has value. It is a piece of internet real estate. A URL is rivalrous, persistent, and interconnected. Because it is rivalrous, the owner of a URL can exclude other people from posting content to that URL. Independent of the right of exclusion, only one website can exist at a given address. Because it is persistent and interconnected, other people can interact with the content posted to the URL without vitiating the owner's interest in it.

Email accounts are another example. Email accounts are rivalrous - no two people can have the same address. They are persistent - unless the owner of the account deletes the information, it will continue to be stored on the service provider's server. And they are interconnected - the entire value of an email account (as well as its vulnerability) is that anyone who has or guesses an \*1056 address can communicate with it. It is true that email accounts are not like physical property in many respects. But it is also true that we treat them quite differently than we do software licenses. Email accounts are personal spaces. They are alternate identities. They are unique to us. Law has begun to respond to this shared sense that an email address is something more than a routine license. For example, legislation and case law dealing with spam email attempt to enforce a right to not be contacted. That is a right that derives from being contacted on or through one's property. No corresponding right to refuse unwanted contact obtains in public places.

The question of whether online accounts are property has immediate relevance. A growing dispute is forming over who owns the online accounts of deceased soldiers in the Iraq war. The families of soldiers claim that the accounts - which often contain pictures and journals - are the property of the decedent's estate. The ISPs claim that the accounts cannot be released for privacy reasons - if property claims are able to touch online accounts, ISPs assert, the value of privacy that people find valuable in such accounts will be eliminated. Whether the accounts constitute property or not will drive how they are treated in probate, whether they are devisable, and whether they are alienable.

The virtual property phenomenon is not limited to accounts. Websites also mimic characteristics of physical space. Think of the internet as a spider web of connections. The relative position of websites to one another is intangible, but also non-duplicable and absolutely rivalrous. For example, Amazon.com maintains a salesperson program, whereby individuals may create links from their personal homepages to books sold by Amazon. Whenever a book is sold by someone who traveled through the link, the person who maintains the personal page receives a commission. Thus, Amazon's position within the \*1057 spider web of electronic connections is immensely valuable. It is also rivalrous, persistent, and interconnected. In the Amazon example, it is its location within a network of links that gives Amazon's website the characteristics of virtual property.

Another commonly occurring example of virtual property is a chat room devoted to discussing stocks. There is a focusing effect that draws people to the chat room - the more people that are involved in the conversation, the more valuable the discussion becomes. You cannot take over the chat room from its creator, so it is rivalrous. But people can join the conversation because of the interconnectivity and persistent traits of the space, just as they might go to a restaurant where stockbrokers are known to meet. There is a reason we call it a chat "room," entirely divorced from the pseudopsychological sense of being in a space: the space may be electronic, but it has encoded into it some of the characteristics of a real room.

Virtual property also plays an important part in financial institutions - a bank account may be one of the earliest forms of virtual property. Bank accounts exist as loci within an interconnected network. The owner of an account has an exclusionary right over a nexus of electronic credits and debits located at that nexus. The bank account is persistent - even though the account balance is merely an entry, that entry remains in the bank if

undisturbed. The bank account is interconnected - other people can send money to the account, and the owner of the account can authorize money to flow to other account holders.

The development of virtual property as a concept also makes possible useful secured transactions. Possession, under the Uniform Commercial Code, is a cheap way of establishing a relationship with an interest that is quickly and commonly traded. The law therefore has set forth technological requirements \*1058 that describe an infrastructure under which electronic chattel paper may be meaningfully "possessed" for perfection purposes. The relevant attributes of this electronic chattel paper are that it must be capable of being possessed by one person only, it must persist (since the value it represents must be maintained), and it must be able to be freely traded to other people who themselves can cheaply establish rights of possession. Electronic chattel paper therefore is rivalrous, persistent, and interconnected - and thus virtual property.

These examples are necessarily limited, and critics can likely think of reasons to exclude one or another example. What is important to draw from the above examples is that certain kinds of code are designed to act like real world objects. When a design decision has been made to make code act like real world objects, the question is whether the law ought to enable or ignore this fact. It is that question we must bear in mind as we examine the future of virtual property: virtual environments.