

278-283

## Editors' Introduction

### "Greased" Property

With recent advances in computer technology, most forms of intellectual property can now be digitized – for example, novels, stories, essays, poems, diaries, journals, magazines, newspapers, charts, diagrams, maps, drawings, photos, databases, musical recordings, movies, television programs, university courses, and on and on. But digitizing intellectual property has led to a nest of thorny ethical problems that could take decades to resolve. How did information technology bring about such a crisis for intellectual property? The answer lies in the fact that ownership essentially involves the right to *control* what one owns, and digitizing one's property can cause one to lose control of it.

Copies of digital entities are essentially identical to their originals. And, as Moor has pointed out (see chapter 11 above), once an item has been digitized and entered into a networked computer system, it becomes "greased data" that can easily slip from computer to computer across the network. Owners can thereby lose control of their property. Perhaps the most important loss for most owners is the ability to sell, lease, or rent the property and thereby make a profit. The ease and trivial costs of digital copying have thereby "greased" the world's intellectual properties, making them vulnerable to worldwide dissemination free of charge. Famous examples of this phenomenon include Napster-disseminated music files [see box 3] and Morpheus-enabled swapping of movies and television programs. New possibilities like these have led to major "policy vacuums" requiring significant revision of ownership laws, treaties, and acceptable business practices. Society might even be forced to rethink the fundamental concept of "ownership" itself.

### Box 3 Napster

The most well publicized IPR [intellectual property rights] issue on the Internet involves the digital exchange of music. The very existence of Napster (and related software such as Gnutella) raises pressing ethical questions. The Napster software program was originally created to allow Internet users to quickly and easily exchange files for free over the Internet. However, Napster is primarily used for the exchange of copyrighted songs. A product whose only use is for illegal activities is clearly unethical, but a product which has both legal and illegal uses is more problematic. If a product is created for legal purposes but is then used almost exclusively for illegal acts, is the creator responsible?

Napster has been involved in an ongoing legal battle with major music companies who are trying to prevent their songs from being downloaded with the software. This issue is such a complex one that it has even caused rifts within the community of musicians.

Music companies claim that they are losing tremendous amounts of profits because potential customers are stealing music online instead of purchasing it directly from the companies. The companies are supported in their claims by several top musicians, notably the hard rock band Metallica who brought on the original lawsuit.

On the other side of the argument are unknown musicians who see Napster as an opportunity to spread their music. The purpose of IPR laws is to expand knowledge and intellectual property. Unknown musicians say that this can happen just as well through Napster. Many musicians also see Napster as a way to free themselves from the high fees of music companies, allowing them to directly reach their fans.

Source: From Gros, M. and Meir, A. (2001). *Values for Management*, 6 (April). [http://www.besr.org/journal/besr\\_newsletter\\_6.html](http://www.besr.org/journal/besr_newsletter_6.html)

### What is Ownership and How Can It Be Justified?

What does it mean to say that someone "owns" a house, a car, a musical composition, or a computer program? Ownership is typically explained as having a set of rights to control one's property, including the right to use it as well as the right to say whether and how others may use it. If you own a house, for example, you have the right to live in it, to raise your family in it, to entertain friends in it, and so on. You also have the right to determine who else may use your house and for what purposes. This includes the right to sell it or lease it to others, or give it away as a gift, or leave it to someone in your will.

The right to control one's property, however, is not absolute. For example, a person may not burn down his house if doing so will endanger a neighbor's house. If someone owns a knife, she has the right to use it for a variety of purposes, but she does not have the right to plunge it into someone else's chest or to give another person permission to do so. A person may drive his car down the street, but only at an appropriate speed and only on the proper side

of the road. Ownership, then, is typically defined as a limited set of rights to control what one owns. But how does one acquire these rights? Philosophers have offered a number of theories to ethically justify ownership.

*The labor theory of ownership* Perhaps the most famous theory of ownership is that of the English philosopher John Locke. He argued that a person who mixes his labor with resources that are not owned by others, and thereby creates a product, has gained the right to own the resulting product. Because the laborer has invested a part of his life to create the item, and no one else did the same, the laborer has a right to control what he has created. Locke added an important proviso that the laborer must leave "as much and as good" of the original resources for the next person, so that anyone else could also mix her labor with those resources to create a product for herself. Although Locke applied his theory of ownership to physical objects created from natural resources (e.g., log cabins in the wilderness), his theory can easily be extended to cover intangible entities – intellectual property – like poems created from the words of a language, or musical compositions created from the notes of a music scale, or a computer program created from the resources of a computer language. Creating items from these resources leaves as much and as good for everyone else to make their own intellectual properties.

*The personality theory of ownership* Another justification of ownership, used by the German philosopher Hegel, is the "personality theory." This theory is similar in many ways to Locke's, and it applies most easily to intellectual property. A poem, a musical composition, a painting, or some other product of human creativity is considered to be an expression or extension of the creator's personality. The creator, therefore, has the right to control it – that is, to use it and to say whether and under what circumstances others may use it.

*The utilitarian theory of ownership* According to this view, property rights should be recognized, promoted, and protected in order to maximize happiness and well-being within the community and minimize pain and sorrow. Humanity benefits when people invent new products and processes that are useful, informative, or entertaining. Property rights provide incentives for creative people to generate a continuous flow of new creations, which in turn will contribute to the greatest happiness for the greatest number of people.

*The social contract theory of ownership* This account of ownership explains and justifies property by making it part of a complex social agreement. The community agrees to pass laws and create conditions that are conducive to property ownership. The owners, in return, agree to use their property in ways that society considers appropriate. Owners and society must keep their

promises to each other by fulfilling their contracts. If the overall goal within a given community is to maximize happiness and minimize harm, then the social contract theory becomes a version of the utilitarian theory. But a community might aim, instead, at *different* ends like obeying the commands of a god, or establishing a meritocracy, or some other non-utilitarian goal; so the social contract theory is *not* just the utilitarian theory under a different name.

Today, many countries of the world use primarily utilitarian grounds for establishing and defending intellectual property rights. In the United States, for example, the Constitution (Article I, Section 8) grants to Congress the power to "Promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." The rights of ownership, therefore, are used as incentives for the creation or discovery of useful new products and processes that will likely benefit society as a whole.

## Current Varieties of Ownership of Intellectual Property

The three most common forms of ownership for intellectual property are (a) copyrights, (b) patents, and (c) trade secrets.

### Copyrights

When an author writes a literary work, or a composer makes a musical composition, or an artist creates a painting, he or she can acquire a copyright for that work in any country that has signed the Berne Convention for the Protection of Literary and Artistic Works (149 countries by early 2002). The Berne Convention protects nearly all text-based items, as well as musical creations, works of art, films, videos, photographs, etc. In 1996 the World Intellectual Property Organization (WIPO) Treaty explicitly added computer programs to the list of copyright-protected works (see Article 4 of that treaty).

By 1996, when the WIPO Treaty was adopted, most industrialized nations had already granted copyright protection to software (e.g., the United States did so in 1980). Nevertheless, even today, after decades of scholarly debate and court cases, there are issues of software ownership that have not been fully settled. Copyright law is complex and constantly evolving, and additional decades will likely be needed to resolve the important issues. In spite of this, American courts have already identified several aspects of computer programs that can be copyright protected, including (a) the original source code, (b) any translation of the source code (including

machine translations), (c) the "look and feel" of some computer programs, and (d) the "structure, sequence and organization" of the elements of some programs.

Copyright is a long-lasting form of ownership which extends 70 years beyond the death of the creator. It prevents others from directly copying, distributing, or publicly performing a work without permission from the copyright holder. On the other hand, copyright is a rather *weak* form of ownership because it does not provide monopoly control to the owner. Thus, if someone independently creates a work that is very similar to or even identical to an already copyrighted work, the original copyright holder cannot prevent the new creator from using and disseminating the work. In addition, the burden of proof is on the copyright owner if he or she believes that others have copied the original.

For owners of computer programs, an important shortcoming of copyright protection is the fact that copyrights do not protect the *algorithm* – the underlying sequence of computer commands embedded within the program. For most owners of a computer program, the algorithm is exactly the part that most needs protection, since it is the "functional" part that gives software the power to control a computer. In addition, creating the algorithm normally requires the most time, resources and creativity.

## Patents

A stronger kind of ownership is the *patent*, which provides *monopoly control* of one's intellectual property for 17 years (often renewable for 5 more years). For example, if someone has a patent on a piece of software, he or she can stop anyone else – for 17–22 years – from using, copying, distributing, or marketing that software without permission. Even if the other person did not copy the original program, but instead created it independently, the patent holder can nevertheless prevent the new creator from using his own independent creation.

Because patents give monopoly control to owners, it is understandable that software writers would want patents to protect their programs. Until the early 1980s, however, courts in the United States were reluctant to grant patents for software. Even though most computer programs did fulfill the usual requirements of being "useful, novel and non-obvious," they were not considered able to meet the test of being "a process, machine, manufacture or composition of matter." Also, a computer program was viewed as a sequence of ideas or mathematical formulas, and these are not supposed to be patented because they are "the building blocks of science and technology." Patenting them would remove them from the public domain and thereby impede progress in science and technology. This would defeat the

primary goal of patents, which is to encourage new scientific and technological discoveries and inventions.

In 1981 the watershed case of *Diamond v. Diehr* led American courts to view many computer programs as similar to step-by-step manufacturing processes. As a result, after 1981 the sequences of commands (algorithms) embedded in many software programs were allowed to be patented. This new development opened the floodgates, and tens of thousands of computer programs were patented after 1981. Many people today are alarmed by this new situation because they worry that significant aspects of science and mathematics are being removed from the public domain. In addition, it has now become very expensive to conduct a patent search in order to make sure that one's new software does not infringe on thousands of already patented programs. Only very wealthy corporations can afford to conduct such searches, and this puts small software companies and individual programmers at a huge disadvantage. Instead of encouraging new developments in science and technology, which patents are supposed to do, software patents may actually be hindering such progress. It should be noted that, currently, in many other countries software patents are unlikely to be granted.

### Trade secrets

A third form of ownership for intellectual property is trade secrecy. This type of ownership allows a company to create something in-house and then use it within the company to carry on the business. A trade secret might be, for example, a manufacturing process, a food recipe, a chemical formula, or a software program used within the company. To qualify as a trade secret the protected entity must be novel, the company has to make a significant investment of effort and resources to create it, and the company must also make a significant effort to keep it a secret from potential competitors. License agreements, employee contracts, encryption efforts, and other devices are typically used to preserve secrecy.

Trade secrecy can be used to protect the same kinds of intellectual property as copyrights and patents combined. Nevertheless, trade secrecy has some significant shortcomings as a form of ownership. For example, if a competitor happens to create or discover the same thing independently, the competitor may be allowed to use it without permission of the original owner. In some cases, the competitor might even file for a patent or copyright and force the original company to pay royalties. In addition, if the secret somehow leaks out, the property may no longer be protected by law.

Trade secrecy is an especially troublesome form of ownership for software, because most software is created for distribution to large numbers of