PART I: INFORMATION

We begin our exploration of *Information Law and Governance* (including the governance processes of cybersecurity) with a focus on two essential questions: (1) what is information; and (2) why does it matter? As you will learn and explore throughout this book, the answers to these seemingly mundane questions are not so easy to find, in part because there are different meanings and usages of the word "information" in different fields. Depending upon which definition of information is used, and who owns and controls a particular set of information, the answer to the second question — why does information matter? — can change significantly.

Information surrounds us. It is created, collected, processed, stored, accessed, shared, and discarded daily. We collect it through all our senses and share it by multiple means of communication, including word-of-mouth, the print media, the broadcast media, and the internet. Some of it is unanalyzed raw data or facts, while other parts of it reflect knowledge gained and refined over time. Some of it is in the public domain and freely circulating, and other parts of it are held in strict confidence and claimed as "property" by individuals or companies. Some information is highly personal information that individuals would prefer to keep confidential, while other information involves important matters of public concern that should be disclosed. Some information is true and accurate, and other information is false or incomplete. Some information (actually, a lot of it) is digitized, and some of it exists in other forms, such as hard-copy books or our lived experiences in the world around us.

Chapter 1 explores the meaning of information, particularly as it has evolved over time, and how it has come to be understood by various scholars and information professionals, including philosophers, librarians, records and information management (RIM) professionals, computer scientists, information scientists, and cognitive scientists. Chapter 2 is an introduction to information law; specifically, the different modalities that might be used to regulate the creation, collection, processing, storage, accessing, sharing, destruction, and flow of information. As you will learn, some information can be protected by law and other information cannot be. Chapter 3 introduces you to the theories and public policy concerns that underlie the choices that have been made about what information deserves protection and what information should be allowed to flow freely. Throughout this book we refer to this as "the information dichotomy" because sometimes information law is about protecting information and other times it is about the diffusion of information.

While the regulation of the means by which information flows – including through the media, telecommunications channels, and the internet ("the pipes and platforms") – is an important aspect of "information law" writ large, the focus of this book is on the laws, regulations, and policies that govern the different types of information that are handled by businesses. This explains the "information governance" part of the book's title; it is a central premise of this book that businesses, together with their lawyers and information professionals, must take a holistic approach to information management. To do so requires a knowledge of the myriad laws and regulations that govern the protection of information, many of which are typically taught separately. The regulation of the pipes and platforms through which information flows is typically the focus of courses on communications and internet law but will be touched upon throughout this book.

CHAPTER 1:
WHAT IS INFORMATION?

Anticipated Learning Outcomes:
By the end of this chapter, students should be able to: articulate the meaning of "information"; identify the various types of information that individuals, businesses, and governments create, collect, store, and share; and explain how humans use information.

Problem to consider as you read this chapter:

Imagine that you found a smart phone laying in the street. You pick it up and notice that it is not password protected so you can open the various applications (apps) on the phone and read its content. What information would you be able to learn about the person who lost the phone? What information about the person would you not be able to learn?

If it were your phone that was lost, would you care if the person who found the phone looked through the information that was stored on it? What if they copied the music, photographs, and contact information that was stored in your phone? What information would you be without during the period your phone was lost and you were able to replace it?

Now pretend that you are the Chief Executive Officer (CEO) of a company that just developed a new dating app designed to match people with similar interests. What information about your consumers would you want to collect and how would you use that information? How might the information that is stored on the lost phone be of benefit to your new company?

A. WHY IS INFORMATION IMPORTANT?

In addition to raising several legal issues that will be explored throughout this book, the foregoing vignettes reveal various ways that humans use "information." Because we are sentient beings with multiple senses, we constantly perceive, collect, create, record, process, store, access, share, discard, and even lose, information. The collection and use of information is a natural (and some would say, necessary) part of human existence. Indeed, philosophers have long pondered how humans use and process information to develop an understanding of the world around them;

an understanding that often leads to "knowledge."

As John Locke explained in 1689 in *An Essay Concerning Human Understanding*, "perception is the first operation of all our intellectual faculties, and the inlet of all knowledge in our minds." As a modern day cognitive scientist and the "father of artificial intelligence," Martin Minsky, explained: "You don't understand anything until you learn it more than one way." To do so, of course, requires the collection of relevant information.

What do you think?

Consider how you use information? What are the sources of that information and how is it collected, recorded and shared? Do you pay for the information or is it free? Do you trust the source of the information? If so, why? What information do you share with others or transmit over the internet? Do you expect that information to be kept confidential?

There are many things that we can do with information, and much that we can learn from it. There are also many things that we cannot do (particularly, well) in the absence of information. Critically, we cannot acquire knowledge and understanding without information, but there are many different types of information with different degrees of value and veracity. Some information is gathered through our personal observations and experiences, and other information is fed to us by others, including through the main-stream media, the internet, and social media platforms. Some information has been fact-checked, and other information is just "raw data" waiting to be analyzed by scholars and scientists, including data scientists. Information surrounds us and, to make sense of it, we must process it either with our minds or a computer.

As the philosopher George Berkeley explained in his *Treatise Concerning the Principles of Human Knowledge*, published in 1710:

> But, besides all the endless varieties of ideas or objects of knowledge, there is likewise something which knows or perceives them; and exercises divers operations, as willing, imagining, remembering, about them. This perceiving active being is what I call mind, spirit, soul, or myself.

Today, we might also call this "something" a robot, like Siri, Alexa, or Watson, because the entire field of artificial intelligence (AI) depends upon the existence of information and data. Without information and information processing (either by mind or computers), we cannot learn and grow as a

society or as human beings, and we cannot invent and create.

Information is also necessary for, among other things: health and well-being; the proper operation of democratic institutions; the safe and efficient operation of businesses; and the development of personal relationships. Indeed, the ability to share information with another is at the heart of all interpersonal communication, whether that information is in the form of data, facts, opinions, or feelings. That is why many of us have smart phones and spend countless hours on social media platforms like Facebook and Instagram; we *need* to share information about ourselves and receive information about our friends and family and the world around us (and apparently, social media companies have figured out how to manipulate those human needs to create addictive behavior in their use). As the opening vignette about the CEO illustrates, some individuals and companies think they cannot make money without the ability to monetize information, including about you!

A lot has changed since Locke's and Berkeley's times in terms of the ways that we collect, store, and share information, and awareness of that history will help you see the early antecedents of modern information law. In the late 17th and early 18th Centuries, the ways that information was perceived, recorded, and conveyed were extremely limited. Most observations were conducted by humans unaided by mechanical devices, although rudimentary telescopes and microscopes had been invented in the late 16th and early 17th Centuries. Similarly, although block type had been used by the Chinese and other cultures by at least the 7th Century, and Johannes Gutenberg invented his famous printing press in the 15th Century, the methods of recording information were, for most of human history, limited and expensive. This meant that much of the information that was perceived before the more widespread availability of books consisted of observations and reflections made by individuals that were either stored in their minds or recorded by hand in a one or a few artifacts. It also meant that those who had the financial means to utilize more expensive means of recording and sharing information controlled the information that was recorded and shared.

One of the means of recording and sharing information that was in existence during Locke's and Berkeley's time was the visual arts, including the paintings of Renaissance masters like Michelangelo, Leonardo da Vinci, and Raphael. Have you ever wondered why early paintings are much more realistic than the abstract art that now lines the galleries of modern art museums? One reason is because those paintings were often used to convey

information to people who did not have access to books or who were illiterate, such as the numerous biblical stories depicted in the art on the walls of the Vatican. Before the advent of the printing press, increases in literacy rates, and the mass distribution of the written word, the human quest for information and knowledge was not absent, but it was often limited by what could be perceived through direct observations, including art. Interestingly, this art often depicted great thinkers and their search for knowledge, as the following painting depicts.

The School of Athens, by Raphael

In today's world, we tend to take information for granted because it is so prevalent and accessible. With each advance in technology that improved the ways that individuals could perceive, collect, create, access, record, process, store, and share information came increases in the amount of information and our ability to use and commercialize that information. For instance, the first floppy disk (used to store information in early personal computers) had a capacity of 79.7 kilobytes (kB) of data, with each kB equaling 1000 (decimal) (or 1024 binary) bytes. By comparison, the internal storage capacity of most smartphones sold in 2018 was between 16 and 64 gigabytes (GB) of data, with each GB equaling 1,000,000,000 (or 1,073,741,824) bytes. That means that the storage capacity of one GB is a million times that of a kB! Now information is stored on a memory chip that is the size of your fingernail instead of an 8 x 8-inch diskette, and with far greater information storage capacity.

According to information gleaned from a variety of online searches, key information-related inventions and the dates of the first invention in the field, include:

A. Inventions that increased our ability to *access, perceive, and collect* information: eyeglasses (13th Century); microscope (1595); telescope (1608); x-rays (1895); hearing aids (first electric, 1898); blood tests (1930s); magnetic resonance imaging (1971); computed tomography imaging (1972).

B. Inventions that increased our ability to *create or record* information: ink (256 BC); paper (likely before 200 BC); printing press (1439); photographic camera (1816); pen with metal nibs (1822); typewriter (beginning in 1575, but perfected in 1829); sound recordings (1877); linotype machine (1884); motion pictures (1892); magnetic tape (1928); copy machine (commercialized in 1959); hard disk drive (1956); floppy disks (mid-1970s); word processing software (1979).

C. Inventions that increased our ability to *process or store* information: abacus (2700-2300 BC); slide-rule (1622); Charles Babbage's analytical engine (1833-1871); filing cabinets (mid-1880s); information theory (1948); mainframe computer (1960s); electronic calculator (early 1960s); personal computer (early 1970s); smartphone (1992); and tablet computer (2000).

D. Inventions that increased our ability to *share* information: written language (Sumerian, c. 3300 to 3000 BC); libraries (2600 BC); universities (1088); newspapers (1605); telegraphy (optical, from ancient times and electric telegraph, 1830s); government mail service (U.S. Postal service established in 1775); telephone (1836); gas powered automobile (1885); radio (1899); airplane (1903); the transistor (1948); packet switching (early 1960s); mobile telephone (1973); and the internet (widespread commercial use began circa 1994).

What do you think?

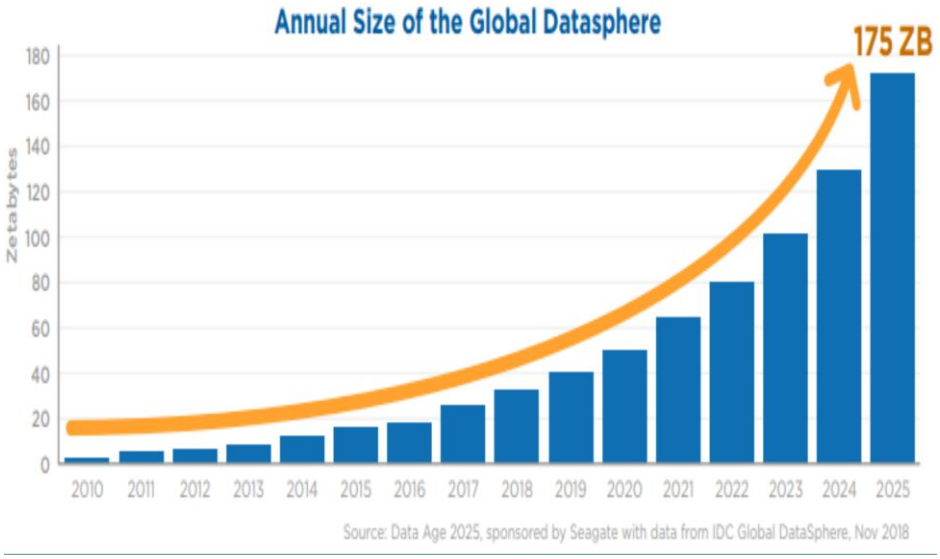
Can you think of other inventions that have changed how we perceive, access, collect, create, record, process, store, and share information? How have your information practices changed since you were young? Do you collect, store, and share more information now than in the past?

All the foregoing inventions are remarkable, not only for their advancements, but because most of them led to follow-on inventions that further increased the collection, storage, and dissemination of information and knowledge. But in terms of the sheer magnitude of information that has been collected and stored, nothing compares to what has happened since the

dawn of the new millennium in 2001 due to: (1) the widespread availability of computing devices (including smartphones); (2) the digitization of vast amounts of information; (3) increased storage capacities; and (4) the internet. In fact, the amount of information that has been collected and stored since the beginning of the 2lst Century in 2001 far eclipses the amount of information that was collected and stored during the entire course of human history through the year 2000.

At a conference in 2010, then Google CEO, Eric Schmidt, stated: "we create as much information in two days now as we did from the dawn of man through 2003." But the collection of information has continued to grow since 2010. According to a late 2017 report by DOMO titled, *Data Never Sleeps 5.0,* "ninety-percent of all data that exists today was created in the last two years."

Moreover, the amount of information that we create each year is increasing exponentially. In its November 2018 report *Data Age 2025: The Digitization of the World From Edge to Core* , International Data Corporation (IDC) estimates that by 2025 the "Global Datasphere" (defined as "a measure of all new data that is captured, created, and replicated in any given year across the globe") will grow from approximately 35 zettabytes (ZB) in 2018 to 175 (see figure below). One ZB equals one trillion gigabytes, but this number is generally meaningful only to mathematicians, technologists, and those very familiar with computing. To put that 175 ZB number in perspective for everyone else, IDC explains that if "you were able to store the entire Global Datasphere on DVDs, then you would have a stack of DVDs that could get you to the moon 23 times or circle Earth 222 times."



What are we to do with all the information that has been created, collected, and stored? Of course, there are challenges. As previously discussed, information is important to each of us personally because it is a necessary component of our human existence; our ability to learn and grow; and our social engagements. (Just imagine how you would feel and how little you would accomplish without access to information.) Information is important to society because society is better off when its citizens attain greater knowledge and understanding, particularly if that knowledge makes their lives easier and more productive, leads to more invention and creativity, and improves the democratic process.

On the other hand, not all information that is collected and stored is truthful and accurate; errors in the collection, recording, interpretation, and dissemination processes can occur. Additionally, even if stored information reveals knowledge and is accurate, it can be misused and misrepresented. Combined with the fact that people interpret information based upon their own perspectives and biases, the "Information Age" presents a complex regulatory challenge. As renowned diplomat George F. Kennan famously wrote in his masterpiece, AMERICAN DIPLOMACY, over 60 years ago: "The truth is sometimes a poor competitor in the marketplace of ideas– complicated, unsatisfying, full of dilemmas, always vulnerable to misinterpretation and abuse."

It is both the pros and cons of information that makes information of importance to all, but particularly to you as future lawyers or information

professionals. Because the collection and use of information now represents a large sector of the economy and the world struggles to understand how our vast network of information is impacting our society, there is a dire need for lawyers (and, more broadly, information management professionals) to fill an advisory role; one that is not only reactive, but proactive. Information scientists, communication experts, records and information management (RIM) professionals, archivists, librarians, and privacy officers have long explored these issues, and continue to do so. We believe that properly trained lawyers can assist with these efforts by: (1) looking at the relevant issues through the lens of the law; and (2) helping their business clients develop appropriate information governance strategies.

B. DEFINING "INFORMATION"

A logical beginning step to the study of information law and governance is to define what is meant by "information." The problem is that there are different definitions of "information" in different settings, in different disciplines, and under different legal doctrines. In fact, this one question is the topic of an entire book, James Gleick's history of information titled THE INFORMATION: A HISTORY, A THEORY, A FLOOD (2012). As Mr. Gleick explains in recounting the nascent days of digitization and the "information theory" that led to it:

> A few engineers, especially in the telephone labs, began speaking of *information.* They used the word in a way suggesting something technical: quantity of information, or measure of information. [Claude] Shannon [the founder of information theory] adopted this usage.
>
> For the purposes of science, *information* had to mean something special. Three centuries earlier, the new discipline of physics could not proceed until Isaac Newton appropriated words that were ancient and vague—*force*, *mass*, *motion*, and even *time*—and gave them new meanings. Newton made these terms into quantities, suitable for use in mathematical formulas. Until then, *motion* (for example) had been just as soft and inclusive a term as *information.*
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> ***
>
> It was the same with information. A rite of purification became necessary.

> And then, when it was made simple, distilled, counted, in bits, information was found everywhere. Shannon's theory made a bridge between information and uncertainty; between information and entropy; and between information and chaos. It led to compact discs and fax machines, computers and cyberspace, Moore's law, and all the world's Silicon Alleys. Information processing was born, along with information storage and information retrieval.

Id. at 7-8 (emphasis in original). Thus, the definition of information as data points (bits and bytes) is pervasive in the fields of computer science (CS) and information technology (IT), but even in those fields, it is not the only definition of information.

In his doctoral thesis titled *A Critical Analysis of Information Poverty from a Social Justice Perspective* (2007), Johannes Britz, then of the University of Pretoria, explained that "information" is hard to define:

> Various experts in the fields of, among others, linguistics, information science, computer science and communication have attempted to arrive at a standard definition of information. Despite their efforts, information remains vague, and confusion continues to reign. Collier … correctly calls it a "fuzzy field." Geldenhuys … adds that in the legal field, information has been called an amorphous concept which defies definition.

Id. at 33. Nonetheless, while the above quote suggests the challenges attendant to defining "information," the practice of information law and governance requires some understanding of the term. As you will learn, however, the applicable definition is often contextual, depending upon the field in which it is used.

Due to the development of computers and the increased use and collection of digitized information (often referred to as data) beginning in the late 20th Century, defining "information" is hardly a new effort. The field of information science developed as a direct response to computerization, and people in that field have long considered the meaning of "information." In the mid-1980s, information law pioneer Professor Jon Bing argued that "[e]xperts have not yet even agreed that the information law framework idea is an appropriate legal approach to the regulation of information technologies and data flows." Jon Bing, *Information Law: A Brief Introduction*, 5 J. MEDIA L. & PRAC. 134 (1984). One of the problems in defining information law, he asserted, derived from the ambiguous meaning of the word "information."

Part of the problem relates to the nature of the compiled information and the knowledge that it conveys.

In the above article, Professor Bing distinguished between the terms "data" and "information," arguing that in everyday use, the term information is applied loosely "to whatever is transmitted through conversation, news, reports, books, films, etc." and is "knowledge," thus distinguishable from "data." *Id.* Professor Jacqueline Lipton grappled with these same foundational issues in her 2015 book, RETHINKING CYBERLAW, in which she attempted to define "information" in the context of cyberlaw. At the top-level, she explained:

> Most dictionary definitions contemplate that the term "information" is best defined in terms of "knowledge," "data," "communications," or "input." Most definitions comprise aspects of both content per se, and of communication of content. In other words, definitions tend to have a static aspect and an active/exchange aspect. The idea of information itself seems to comprise the importance of not simply compiling, learning, or knowing something, but also the act of sharing or disseminating it with others.

Id. at 9. Professor Herbert Zech's more recent analysis of information as a concept has added, with reference to the work of Professors Yochai Benkler and Lawrence Lessig, that "it is very important to distinguish between 'raw' data and actual knowledge." Herbert Zech, *Information as Property*, 6(3) JIPITEC 193, 194 (2015).

In a paper titled, *Trends in analyzing access to information*, 35 INFO. PROCESSING & MAN. 45 (January 1999), Professors Maureen McCreadie and Ronald E. Rice surveyed the different meanings of information since the late 1940s. In A *definition of information*, 52(9) ASLIB PROCEEDINGS 343, 345 (October 2000), Professor Andrew D. Madden summarized McCreadie's and Rice's findings as follows:

> **Information as a representation of knowledge.** Information is stored knowledge. Traditionally the storage medium has been books, but increasingly electronic media are becoming important.
>
> **Information as data in the environment.** Information can be obtained from a range of environmental stimuli and phenomena; not all of which are intended to "convey" a message, but which can be informative when appropriately interpreted.

> **Information as part of the communication process.** Meanings are in people rather than in words or data. Timing and social factors play a significant role in the processing and interpretation of information.
>
> **Information as a resource or commodity.** Information is transmitted in a message from a sender to receiver. The receiver interprets the message as intended by the sender. There may be added value as the information is disseminated or exchanged.

Similarly, in her article, *What is Information?*, 18 J. OF INFO. SERVICES AND USE 243-254 (1998), Jennifer Rowley defined the following five categories of information: (1) information as subjective knowledge; (2) information as useful data or as a thing; (3) information as a resource; (4) information as a commodity; and (5) information as a constitutive force in society. From a legal and public policy perspective, each of these different types of information may require different regulatory approaches.

In his aforementioned article, Professor Zech suggests yet another definition of information when he explains:

> Traditionally, information is understood as something being exchanged between a sender and a recipient in the act of communication. However, with the establishment of information technology software as a new kind of data where information can be widely exchanged, the classical understanding of information has been altered. Software is a kind of information which is meant to be received only by machines (i.e., computers), not human recipients. Software is a special type of data with the function of steering machines. Data can be understood as information encoded in a way that can be processed by machines comprising software and application data alike. Neither data nor software as a special form of data need to carry any special meaning . . . for a potential human recipient.

Zech, *supra* at 193. Thus, "information" can also be computer code and related data that is exchanged between machines, and it is the machines themselves and exchange of data that must be regulated.

In this book, we use the term "information" in all the foregoing meanings, but context matters! Thus, one definition may be more appropriate in some settings than in others. The challenge for lawyers and information

professionals is to know which definition of information is best for which contexts, because the required legal analysis will depend on which definition is applied. It is also important to discern how a client and its employees use the term "information" in different contexts, otherwise there is a risk of communication errors.

Both the above chart of data collection statistics and the list of inventions illustrate important distinctions between the different conceptions of information. Primarily, they illustrate distinctions between: (1) information as knowledge; (2) information as data; (3) information as a communicative act; (4) information as a commodity or resource; and (5) information as code. But consider the practical ramifications of these different types of information. For instance, when the quoted sources speak about the amount of information that is being collected daily, they are referring to "raw" or "unstructured" data that is reflected in the bits and bytes that make up each trillion of gigabytes. The number of bits and bytes says little about the nature, quality and veracity of the information. Nor does it answer the question whether this mass of data is adding anything to our society?

As discussed earlier, a lot of data is not organized and is duplicative and, therefore, does not convey "new" knowledge. Other bits of data, including the underlying code, are meaningless to humans unless they can be translated into human readable form and placed into a specific context. For instance, the bits that comprise your computer password have little meaning unless someone can figure out that it is a password that belongs to you or that is connected to your computer. Some of the stored data represent accurate facts, like when you first logged onto your computer in the morning, but some of it is not accurate because the information it purports to represent was inaccurately collected or inputted (intentionally or unintentionally) by a human or a machine. But not all data needs to be completely accurate to be useful, it depends upon what information the data seeks to convey or how it is used.

For instance, in contrast to the information that comprises the above statistics about data (information as data), the above list of inventions is information that is intended to communicate facts (information) that will lead to knowledge. Thus, both the source and veracity of the quoted information matter, but to what degree depends upon the factual precision that is needed given the intended use of the information. As students of the law, you should know that although internet searches (information as a commodity) are good starting points for legal and factual research, without more research designed

to verify an initial online search, the search results should not be relied upon or presented in court as fact. The search results may represent stored knowledge, but until you can verify what you assert are facts, it is just "data in the environment." Generally, only verifiable or reliable facts can be admitted into evidence as a basis for establishing truth. But note the differing communicative aspects of the list of inventions. Even if it the list and related dates are not entirely accurate, they still communicate an important message about how information-related inventions developed over time and how our collection and storage of information has increased exponentially as a result.

Although information can take many forms and have different functions, broadly speaking, "information" means all the bits and bytes of data that we perceive and process, including with computers, and how that information is organized, communicated, and processed. What those bits and bytes of data mean and how they can be used ultimately depends upon how the data is interpreted. When our brains process the data they collect, sometimes greater knowledge and understanding results; other times, it is just "white noise." The same principle applies to the processing of data by computers, including AI devices; sometimes it will result in important insights and knowledge, and sometimes it won't. It will depend upon how the underlying software is coded. In all cases, it is important for lawyers and information professionals to understand the inherent weaknesses and limits of information in all its forms. While we are surrounded by information and cannot live without it, ultimately, it reflects what was perceived, recorded, and processed by someone and/or something. Thus, information is always bound to be incomplete and biased to some degree. It is the job of the law and other modalities of regulation, as discussed in the next chapter and throughout the book, to make sense of it all.

C. IS INFORMATION PROPERTY?

An enduring question about information is whether it is a form of property, either personal or intangible. The simple answer is that information is treated as property in some contexts, but not others. This is because, as the court in *Silvaco Data Systems v. Intel Corp.*, 184 Cal. App. 4th 210, 239 (2010) succinctly explained: "information is not property unless some law makes it so."

Of course, whether information is property also depends upon the definition of property that is being used. For instance, it may be easier to see "information as a commodity" and "information as code" as forms of

property more so than "information as knowledge" or "information as data." On one hand, we may want to incentivize companies to collect, organize, and verify data by, for instance, providing legal protection for databases, thereby allowing database owners to benefit from "information as a commodity." On the other hand, when "information as knowledge" is hidden behind a paywall or a nondisclosure agreement, the information that individuals and businesses need to make informed decisions is reduced. Thus, labeling information as property often reflects a choice to prefer information protection over information diffusion.

What do you think?

Is the information that you perceive around you properly labeled as property? What about the knowledge that you acquire as you process the information that you see, hear, smell, taste, and feel? Is the information that is stored in a smartphone property? If so, who owns it? Is the knowledge you acquire in school or on the job property?

The question of whether information is property and, if so, to what extent, has garnered the attention of a lot of legal scholars and commentators since at least the 1980s. In her 2004 article, *Information Property: Rights and Responsibilities*, Professor Lipton synthesized this scholarship into three questions:

> Can you own information? If so, what is the theoretical justification for ownership, and precisely what rights does ownership confer? What is the impact of ownership of information and ideas on society and the public domain?

Jacqueline Lipton, *Information Property: Rights and Responsibilities*, 56 FLORIDA L. REV. 135, 136 (2004). These are the questions that we will explore throughout this book, and that continue to be debated by legal scholars, policymakers, and database owners.

While those who create the systems that collect and compile massive amounts of information, like Facebook, are inclined to claim ownership in everything that they collect and often rely on Locke's "natural rights theory" or the "sweat-of-the-brow doctrine" to do so, the law has never been that generous. Thus, just because a person or company goes to the time, trouble, and expense to collect information doesn't necessarily mean that they have a legally enforceable property interest in the information. And, even when property rights in information are recognized, they are not absolute but are limited in scope and enforceability.

As you will learn in Chapter 3 and throughout this book, there are important public policy reasons why rights in information, if they exist at all, are limited. Usually, when information is protected, it is because society gets something in return. As Thomas Jefferson explained in his 1813 *Letter to Isaac McPherson*:

> If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possesses the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density in any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement or exclusive appropriation. Inventions then cannot, in nature, be a subject of property. Society may give an exclusive right to the profits arising from them, as an encouragement to men to pursue ideas which may produce utility, but this may or may not be done, according to the will and convenience of the society, without claim or complaint from anybody.

The question, according to Jefferson, was what "things" are "worth to the public the embarrassment of an exclusive patent." More broadly, we can ask: under what circumstances, and for what purposes, should we protect information and limit its dissemination to, and use by, the public? The case that follows begins our exploration of this critical question.

What do you think?

As you read the case that follows, determine if there is a property interest being protected and how it is defined. Does this seem like a property interest worth protecting? Why or why not? Also, what are the scope and limits of protection for the subject information?

E.I. duPONT deNEMOURS & COMPANY, Inc., v. CHRISTOPHER
United States Court of Appeals, Fifth Circuit, 1970
431 F. 2d. 1012

GOLDBERG, Circuit Judge:

This is a case of industrial espionage in which an airplane is the cloak and a camera the dagger. The defendants-appellants, Rolfe and Gary Christopher, are photographers in Beaumont, Texas. The Christophers were hired by an unknown third party to take aerial photographs of new construction at the Beaumont plant of E. I. duPont deNemours & Company, Inc. Sixteen photographs of the DuPont facility were taken from the air on March 19, 1969, and these photographs were later developed and delivered to the third party.

DuPont employees apparently noticed the airplane on March 19 and immediately began an investigation to determine why the craft was circling over the plant. By that afternoon the investigation had disclosed that the craft was involved in a photographic expedition and that the Christophers were the photographers. DuPont contacted the Christophers that same afternoon and asked them to reveal the name of the person or corporation requesting the photographs. The Christophers refused to disclose this information, giving as their reason the client's desire to remain anonymous.

Having reached a dead end in the investigation, DuPont subsequently filed suit against the Christophers, alleging that the Christophers had wrongfully obtained photographs revealing DuPont's trade secrets which they then sold to the undisclosed third party. DuPont contended that it had developed a highly secret but unpatented process for producing methanol, a process which gave DuPont a competitive advantage over other producers. This process, DuPont alleged, was a trade secret developed after much expensive and time-consuming research, and a secret which the company had taken special precautions to safeguard. The area photographed by the Christophers was the plant designed to produce methanol by this secret process, and because the plant was still under construction parts of the process were exposed to view from directly above the construction area. Photographs of that area, DuPont alleged, would enable a skilled person to deduce the secret process for making methanol. DuPont thus contended that the Christophers had wrongfully appropriated DuPont trade secrets by taking the photographs and delivering them to the undisclosed third party. In its suit DuPont asked for damages to cover the loss it had already sustained as a result of the wrongful disclosure of the trade secret and sought temporary and permanent

injunctions prohibiting any further circulation of the photographs already taken and prohibiting any additional photographing of the methanol plant.

The Christophers answered with motions to dismiss for lack of jurisdiction and failure to state a claim upon which relief could be granted. Depositions were taken during which the Christophers again refused to disclose the name of the person to whom they had delivered the photographs. DuPont then filed a motion to compel an answer to this question and all related questions.

On June 5, 1969, the trial court held a hearing on all pending motions and an additional motion by the Christophers for summary judgment. The court denied the Christophers' motions to dismiss for want of jurisdiction and failure to state a claim and also denied their motion for summary judgment. The court granted DuPont's motion to compel the Christophers to divulge the name of their client. Having made these rulings, the court then granted the Christophers' motion for an interlocutory appeal under 28 U.S.C.A. § 1292(b) to allow the Christophers to obtain immediate appellate review of the court's finding that DuPont had stated a claim upon which relief could be granted. Agreeing with the trial court's determination that DuPont had stated a valid claim, we affirm the decision of that court.

This is a case of first impression, for the Texas courts have not faced this precise factual issue, and sitting as a diversity court we must sensitize our Erie antennae to divine what the Texas courts would do if such a situation were presented to them. The only question involved in this interlocutory appeal is whether DuPont has asserted a claim upon which relief can be granted. The Christophers argued both at trial and before this court that they committed no ‘actionable wrong’ in photographing the DuPont facility and passing these photographs on to their client because they conducted all of their activities in public airspace, violated no government aviation standard, did not breach any confidential relation, and did not engage in any fraudulent or illegal conduct. In short, the Christophers argue that for an appropriation of trade secrets to be wrongful there must be a trespass, other illegal conduct, or breach of a confidential relationship. We disagree.

It is true, as the Christophers assert, that the previous trade secret cases have contained one or more of these elements. However, we do not think that the Texas courts would limit the trade secret protection exclusively to these elements. On the contrary, in *Hyde Corporation v. Huffines*, the Texas Supreme Court specifically adopted the rule found in the Restatement of Torts which provides:

‘One who discloses or uses another's trade secret, without a privilege to do so, is liable to the other if (a) he discovered the secret by improper means, or (b) his disclosure or use constitutes a breach of confidence reposed in him by the other in disclosing the secret to him * * *.’ Restatement of Torts § 757 (1939).

Thus, although the previous cases have dealt with a breach of a confidential relationship, a trespass, or other illegal conduct, the rule is much broader than the cases heretofore encountered. Not limiting itself to specific wrongs, Texas adopted subsection (a) of the Restatement which recognizes a cause of action for the discovery of a trade secret by any ‘improper’ means. The defendants, however, read *Furr's Inc. v. United Specialty Advertising Co.*, … as limiting the Texas rule to breach of a confidential relationship. The court in *Furr's* did make the statement that:

‘The use of someone else's idea is not automatically a violation of the law. It must be something that meets the requirements of a ‘trade secret’ and has been obtained through a breach of confidence in order to entitle the injured party to damages and/or injunction. …

We think, however, that the exclusive rule which defendants have extracted from this statement is unwarranted. …

The question remaining, therefore, is whether aerial photography of plant construction is an improper means of obtaining another's trade secret. We conclude that it is and that the Texas courts would so hold. The Supreme Court of that state has declared that ‘the undoubted tendency of the law has been to recognize and enforce higher standards of commercial morality in the business world.’ *Hyde Corporation v. Huffines*. That court has quoted with approval articles indicating that the proper means of gaining possession of a competitor's secret process is ‘through inspection and analysis' of the product in order to create a duplicate. *K & G Tool & Service Co. v. G & G Fishing Tool Service*. Later another Texas court explained:

‘The means by which the discovery is made may be obvious, and the experimentation leading from known factors to presently unknown results may be simple and lying in the public domain. But these facts do not destroy the value of the discovery and will not advantage a competitor who by unfair means obtains the knowledge without paying the price expended by the discoverer.’

We think, therefore, that the Texas rule is clear. One may use his competitor's

secret process if he discovers the process by reverse engineering applied to the finished product; one may use a competitor's process if he discovers it by his own independent research; but one may not avoid these labors by taking the process from the discoverer without his permission at a time when he is taking reasonable precautions to maintain its secrecy. To obtain knowledge of a process without spending the time and money to discover it independently is improper unless the holder voluntarily discloses it or fails to take reasonable precautions to ensure its secrecy.

In the instant case the Christophers deliberately flew over the DuPont plant to get pictures of a process which DuPont had attempted to keep secret. The Christophers delivered their pictures to a third party who was certainly aware of the means by which they had been acquired and who may be planning to use the information contained therein to manufacture methanol by the DuPont process. The third party has a right to use this process only if he obtains this knowledge through his own research efforts, but thus far all information indicates that the third party has gained this knowledge solely by taking it from DuPont at a time when DuPont was making reasonable efforts to preserve its secrecy. In such a situation DuPont has a valid cause of action to prohibit the Christophers from improperly discovering its trade secret and to prohibit the undisclosed third party from using the improperly obtained information.

We note that this view is in perfect accord with the position taken by the authors of the Restatement. In commenting on improper means of discovery the savants of the Restatement said:

‘f. Improper means of discovery. The discovery of another's trade secret by improper means subjects the actor to liability independently of the harm to the interest in the secret. Thus, if one uses physical force to take a secret formula from another's pocket, or breaks into another's office to steal the formula, his conduct is wrongful and subjects him to liability apart from the rule stated in this Section. Such conduct is also an improper means of procuring the secret under this rule. But means may be improper under this rule even though they do not cause any other harm than that to the interest in the trade secret. Examples of such means are fraudulent misrepresentations to induce disclosure, tapping of telephone wires, eavesdropping or other espionage. A complete catalogue of improper means is not possible. In general they are means which fall below the generally accepted standards of commercial morality and reasonable conduct.’ Restatement of Torts § 757, comment f at 10 (1939).

In taking this position we realize that industrial espionage of the sort here perpetrated has become a popular sport in some segments of our industrial community. However, our devotion to free wheeling industrial competition must not force us into accepting the law of the jungle as the standard of morality expected in our commercial relations. Our tolerance of the espionage game must cease when the protections required to prevent another's spying cost so much that the spirit of inventiveness is dampened. Commercial privacy must be protected from espionage which could not have been reasonably anticipated or prevented. We do not mean to imply, however, that everything not in plain view is within the protected vale, nor that all information obtained through every extra optical extension is forbidden. Indeed, for our industrial competition to remain healthy there must be breathing room for observing a competing industrialist. A competitor can and must shop his competition for pricing and examine his products for quality, components, and methods of manufacture. Perhaps ordinary fences and roofs must be built to shut out incursive eyes, but we need not require the discoverer of a trade secret to guard against the unanticipated, the undetectable, or the unpreventable methods of espionage now available.

In the instant case DuPont was in the midst of constructing a plant. Although after construction the finished plant would have protected much of the process from view, during the period of construction the trade secret was exposed to view from the air. To require DuPont to put a roof over the unfinished plant to guard its secret would impose an enormous expense to prevent nothing more than a school boy's trick. We introduce here no new or radical ethic since our ethos has never given moral sanction to piracy. The market place must not deviate far from our mores. We should not require a person or corporation to take unreasonable precautions to prevent another from doing that which he ought not do in the first place. Reasonable precautions against predatory eyes we may require, but an impenetrable fortress is an unreasonable requirement, and we are not disposed to burden industrial inventors with such a duty in order to protect the fruits of their efforts. ‘Improper’ will always be a word of many nuances, determined by time, place, and circumstances. We therefore need not proclaim a catalogue of commercial improprieties. Clearly, however, one of its commandments does say ‘thou shall not appropriate a trade secret through deviousness under circumstances in which countervailing defenses are not reasonably available.’

Having concluded that aerial photography, from whatever altitude, is an improper method of discovering the trade secrets exposed during construction of the DuPont plant, we need not worry about whether the flight

pattern chosen by the Christophers violated any federal aviation regulations. Regardless of whether the flight was legal or illegal in that sense, the espionage was an improper means of discovering DuPont's trade secret.

The decision of the trial court is affirmed and the case remanded to that court for proceedings on the merits.

Questions

1. What information is at issue in the case? Is it property? If so, how are the property rights in the information established and defined?
2. Why and how does DuPont seek to keep control of its information? What are its potential uses by competitors?
3. What are DuPont's methods, if any, for controlling access to the alleged trade secrets? What was the court's view of DuPont's efforts, or lack thereof?
4. If you were advising corporate clients based upon this case, what would you say is the standard for protecting their information from today's prying eyes? Is that standard adequate given today's threats to information access, control and flow?

Despite *Christopher*, debate persists concerning whether information should be treated as property and, if so, when and under what conditions. The drafters of the Uniform Trade Secrets Act (UTSA), promulgated in 1979, essentially ignored this debate, focusing instead on defining the elements of a trade secret misappropriation claim. Many proponents of "information as property" cite the decisions of the U.S. Supreme Court in *Ruckelshaus v. Monsanto*, 467 U.S. 986 (1984) and *Carpenter v. United States*, 484 U.S. 19 (1987) in support of their position. However, consistent with the above statement that "information is only property when the law says it is," there is more to the analysis than the results of those cases might indicate. For important public policy reasons, even if information is "property," it is typically a limited property right that ends when the information becomes generally known or otherwise enters the public domain.

The following excerpt from an article by Professor Pamela Samuelson explains many of the nuances.

Information as Property: Do Ruckelshaus and Carpenter Signal A Changing Direction in Intellectual Property Law?
Pamela Samuelson
38 Cath. U. L. Rev. 365 (1989)

As a matter of common sense, certain characteristics of information make it inherently difficult to recognize property rights in it. For one things, standing alone, information has no tangible existence. It can, of course, be put in some sort of tangible form, but recording it in a medium does not change its essentially intangible character. A related problem involves the difficulty of defining precisely what we mean by information, and of specifying the types of information capable of being subjected to property interests. Information is almost infinitely expandable and malleable, depending on how individuals characterize it, and upon their purposes in having or using it.

In addition, information is inherently 'leaky.' It may be shared readily by many people through virtually limitless forms of communication. Consequently, information is very difficult to maintain in any exclusive manner unless kept secret by its discoverer or possessor. Although one can bind another in confidence not to disclose information, that bond is very different from placing a physical object under lock and key. Once someone has obtained information, he or she lacks the capacity to return it to its source. In general, the more valuable the information, the more likely it is that others will want to share it, or to seek ways of using it at odds with the exclusivity its discoverer might wish to exert. Recent scandals over insider trading, and situations in which Pentagon officials sold information about military systems to defense contractors to enable the contractors to bid more precisely on government contracts, exemplify the considerable value raw information can have in our society.

We are also unaccustomed to thinking of information as the sort of thing that can be property. A legal system implementing a decision to enforce private property rights in raw information would face a formidable challenge in persuading the populace to accept this novel notion, and might face massive problems in administration of the new regime of property rights. Perhaps the very difficult of conceptualizing the far reaching implications of such a regime explains why the American legal system generally resists characterizing information as property.

One can construct an argument, however, for treating information as property, at least under some circumstances. John Locke's theory of property holds that one can acquire property rights in something not already owned by virtue of the labor expended to gather or produce it. Gathering information can certainly require labor, and may, in fact, be a very expensive and time-consuming task. As with other goods obtained through an expenditure of labor, information often has a substantial exchange value. Those who do not

have it may be willing to pay large sums to acquire it. This was true long before the Information Age commenced and will continue to be true in any post-Information Age society.

Examining the ‘information as property’ issue from a legal perspective, one can see that information may share some attributes commonly associated with other forms of property. The term property has a flexible meaning in the law, and is often used to describe the holder's ‘bundle of rights' in something. Depending on the nature of the subject and on the nature of the person's interest in it, the bundle may be thicker or thinner, but need not have a particular thickness to rise to the status of property. While it is difficult to define with precision what we mean by property, it is still possible to make some generalizations about the most important kinds of rights that tend to be found in the property bundle: (1) rights of possession, use, and enjoyment; (2) rights of transfer; and (3) rights to exclude others.

Information cannot be possessed in the same way that one can possess land or a jewel, but it does not unduly strain the definition of the word to say that a person can ‘possess' information. Holders of information also may use, enjoy, buy, and sell it, give it away, or license its use. At least when those who know certain information can be persuaded to hold their tongues, others may be excluded from acquiring it. Information, in other words, can share essential qualities associated with other forms of property.

The intangibility of information alone does not disqualify it, for copyright and patent law have recognized exclusive rights in certain intangible aspects of works once certain requirements are met. For example, a playwright may infringe a copyright in a dramatic work despite the fact that the second play takes no dialogue from the first play, if there are elaborate structural similarities between the works. A firm may infringe a patent if it builds a machine equivalent to that described in the patent, even if that machine appears to be quite different from the patentee's machine.

In common with other intangible intellectual products, information has the ‘public goods' problem that a grant of property rights may partially rectify. One common characteristic of certain kinds of public goods is that use by one person does not diminish the supply available to others once the good is produced. Because such public goods may not be physically scarce, it can be difficult to create incentives to produce them, in that the exclusivity necessary to recoup production expenses is difficult to maintain. The property rights granted by copyright and patent law artificially create a kind of scarcity for qualified intellectual products in order to improve incentives for creating

these kinds of socially desirable public goods. Creating property rights in information arguably might do the same thing, that is, improve incentives for producing and distributing information, a socially desirable category of public goods. The law's general rule against enforcing private rights in information thus does not arise from some inherent incapacity of information to be property but from a policy choice against characterizing it as property.

In large measure, copyright and patent laws' scrupulous avoidance of protecting information is traceable to the belief of the framers of the Constitution that unfettered and widespread dissemination of information would promote technological and economic progress. The drafters of the Constitution, educated in the Enlightenment tradition, shared that era's legacy of faith in the enabling powers of knowledge for society as well as the individual. They viewed free access to knowledge as an essential step in building the fledgling nation. Intellectual property policy was an integrated part of the plan to promote a wide range of social, political, and economic goals. Granting exclusive rights to authors and inventors was thought to provide needed incentives to encourage innovation, while simultaneously promoting free and widespread dissemination of information.

A related reason why patent and copyright law have not protected information is that there are other aspects of an intellectual creation, besides the information, that the laws could protect. A copyright protects a writing's 'expression,' not the facts contained in the writing. A patent does not protect an inventor's discovery; it only prevents the invention from being 'practiced' by others during the seventeen year life of the patent without the patentee's permission. Although 'information' is not one of the aspects of a copyrighted work which section 102(b) of the current copyright statute expressly states that it will not protect, it is well established that copyright cannot protect information. Copyright law regards the information in published works as public domain material. Statements abound in copyright cases and commentary identifying the goal of copyright as promotion of learning and widespread dissemination of knowledge. Refusing to enforce property rights in information itself is believed to aid in achieving these objectives.

Despite the copyright principle against protecting information, judges have, on occasion, applied copyright law in a way that makes it difficult to distinguish between protecting expression and protecting information. This is particularly true in the area of compilations of information. Although the copyright statute strains to define what a compilation copyright can cover without including information, namely, the selection and arrangement of the information, in individual cases it can prove very difficult to implement the

rule. When information widely available to the public is compiled in a single source, the 'sweat of the brow' of the compiler may be all that separates unprotected information from protected expression.

On the patent side, free dissemination of knowledge is also a goal of the system. Although people hardly write patents to be read as others write novels, a fundamental principle of the American patent system from its inception has been that, as a prerequisite to issuance of a patent, a prospective patentee must be prepared to disclose how to make his or her invention—indeed the best mode of making the invention—in a way that an ordinary person skilled in the field could follow. Disclosure of this information is often said to be the quid pro quo the public receives in exchange for the grant of exclusive rights to the inventor. Although others are forbidden to make, use, or sell the invention for the seventeen years of the patent's life, the patent system makes available immediately the knowledge revealed in the patent which can spur additional innovation, often by persons other than the patentee. Follow-on inventors may obtain patents for their improvements on the original invention. When improvement patents issue, the new knowledge embodied in them also becomes available to the public. The patent system anticipates that this process will continue indefinitely, bringing about continuing technological progress.

Trade secret law has come the closest to designating information as property. Indeed, some cases expressly call trade secrets property. The more accepted view, however, has not regarded trade secrets in this way. According to Justice Holmes' classic formulation in *E. I. Du Pont de Nemours Powder Co. v. Masland*, protection flows from basic notions of fair and equitable conduct. Hence, when one acquires commercially valuable information through a confidential relationship, the law will not suffer abuse of the confidence by unauthorized disclosure of the information to the economic detriment of the confider.

Breach of confidence or use of improper means to obtain a trade secret are the two principal trade secret violations. It is simply unnecessary to call trade secrets 'property' to enforce confidences and penalize those who use improper means to obtain a valuable secret. That it is also consistent with prevailing Enlightenment philosophy not to regard information as property probably helps to explain why even trade secret law has resisted use of the property label.

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As you read the following chapters, keep the "information as property" debate in mind because it is an important part of the "information dichotomy" that was introduced in this chapter. Some of the laws and cases that you will read concern efforts to protect information, while others concern limitations on the protection of information. A property characterization is often used when a choice is made to protect information, but the benefits of information diffusion are stressed when limits are placed on the scope of protection.

NOTES

1. **More on the property/not property debate.** One reason that individuals and companies that possess information tend to like the property label is because of the rhetorical power of "theft." These same individuals and companies also favor the natural rights and labor theories of property whereby the person who creates or collects information should be able to own and control it. Even if information was collected from public sources or received from others, these individuals and companies frequently argue that it is "their" information and that no one has a right to use it without their permission.
But information law has never gone so far, and how far it should go is a question that is asked throughout this book.

As you will learn in Part II, all forms of information law include limitations on the scope of available protection, including the overarching limitation that legal protection is not available for information that is generally known or otherwise "in the public domain." Even where compilations of information can be protected by law, including contract law, typically only the "new" portions of those compilations are protected from theft. Moreover, in addition to asking what information is protected by law (based upon a property theory or otherwise), we must ask the question: Protected from what? Typically, the right to acquire and read information and independently learn and reveal information is not restricted by law.

2. **Be careful what you wish for.** There are numerous consequences that flow from a property characterization that may not be favorable to the owner or recipient of information. For instance, an information owner, like DuPont, may be thrilled that its information is "property" when it seeks to recover damages for the theft of that information, but it would prefer that the same information not be treated as property for purposes of taxation. Similarly, the federal government may be thrilled to receive information about government fraud from a whistleblower, but not so thrilled when the

whistleblower argues that the information was his "property" so that the tax rate on his payout should be taxed as capital gains instead of ordinary income. (*See e.g.*, Alderson v. United States, 718 F. Supp. 2d 1186 (2010).) Also, there are responsibilities that can flow from ownership or possession of property, for instance the obligation to secure information or otherwise keep it confidential. When information is generally known or otherwise in the public domain, typically those obligations do not apply.

3. **The public domain, information lock down, and the access to knowledge movement.** It is one thing to adopt laws and regulations that limit the scope of information protection, and quite another to ensure that individuals have affordable and meaningful access to the available body of information, whether in the public domain or not. To be able to access information, it must be recorded, catalogued, and stored in ways that it can be found, obtained, and read. Historically in the United States, public libraries and public education played an important role in the diffusion of information, but as information is being digitized, the costs of information access are increasing as more and more information is being controlled by private companies with a profit motive. At the same time, however, this digitalization (defined as the use of digital technologies to provide revenue) of information is making more information available over the internet, albeit at a price. Concerns about information lockdown, or what has been dubbed the "second enclosure movement," have led to a counter movement collectively referred to as the "access to knowledge" (or A2K) movement which consists of efforts to ensure the low cost (and often free) availability of information. *See* Amy Kapczynski, The Access to Knowledge Mobilization and the New Politics of Intellectual Property, 117 YALE L. J. 804 (2008).

4. **Bibliographic note.** For more information about the topics discussed in this chapter, see: James Boyle, THE PUBLIC DOMAIN: ENCLOSING THE COMMONS OF THE MIND (Yale University Press 2008); Lawrence Lessig, FREE CULTURE (New York: Penguin, 2004); Anupam Chander, *The New, New Property*, 81 TEX. L. REV. 715, 733-48 (2003); R. Polk Wagner, *Information Wants to be Free: Intellectual Property and the Mythologies of Control*, 103 COLUM. L. REV. 995 (2003); Jacqueline Lipton, *Information Wants to be Property: Legal Commodification of E-Commerce Assets*, 16 INT'L REV./ L. COMPUTERS & TECH. 53 (2002); Lawrence Lessig, THE FUTURE OF IDEAS: THE FATE OF THE COMMONS IN A CONNECTED WORLD (New York: Random House, 2001); J.H. Reichman & Pamela Samuelson, *Intellectual Property Rights in Data?*, 50 VAND. L. REV. 51 (1997); Andrew Beckerman-Rodau, *Are Ideas Within the Traditional Definition of Property?: A Jurisprudential Analysis*, 47 ARK. L. REV. 603, 614-16 (1994); Wendy J.

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