EXPLAINING INTELLECTUAL PROPERTY: 
THE EMERGENCE OF INTANGIBLE PROPERTY CONTRACT REGULATION IN THE XXI CENTURY

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Abstract

The rise of the digital environment and the Internet during the last decades resulted in a number of novel issues in the field of intellectual property rights (IPRs) and Internet contract (IC) regulation. Many doctrinal approaches have attempted to elaborate adequate models for the management of IPRs and IC implementation. From the technical point of view, several solutions to managing IPRs and implementing IC exist. We still miss, however, a fully-fledged theoretical framework that articulates the features of the new kinds of property that arise in relation to digital goods and the role of users’ input. The lack of a legal and regulatory theory of new kinds of property is often at the origin of provisions that are not very accurate or stringent to the users who are held accountable and responsible for their actions. The aim of this dissertation is to suggest basic subject-matter design principles that should be taken into account when drafting and enacting intellectual property and contract laws:

Principle 1: Provide precise, clear, and unambiguous definitions of key concepts and terms such as intangible property, intangible property rights, intangible property works and goods, IPM. This principle is needed for achieving a certain level of legal certainty and limiting the scope of the laws implementation. The analysis of existing intellectual property (IP) and IC laws in different jurisdictions across continents suggests that according to the development and creation of new forms of creativity it is possible to defining core terms of intangible property protection.

Principle 2: Enforce IP legislation in the context of intangible property provisions. The review of legal regimes under various legal frameworks as well as the overview of legislation in the U.S. and in Europe suggests that intangible property provisions tend to change the allocation of rights previously embodied in the respective national IP laws. Particularly significant shifts can be observed in areas such as rights of use, access, communication and traditional user privileges such as fair use or the 'right' to make private copies. Thus, it is crucial to carefully design the framework applicable to IPM, provide appropriate mechanisms for the effective enforcement of rights, analyse the interplay of the exception regime with the
other core elements of the IP framework.

Principle 3: Enforce IC discretion with regard to principles of contract law and remedies and adhere to the principle of the new transaction environment. IC frameworks provide some degrees of flexibility in new method of manifesting contractual intention and analytical process of establishing the contents of a contract. Establishing the obligations of the parties should carefully consider the analytical process of defining the contents of a contract, thereby following the principle of contractual intention (PCI). Among the usual options to be considered are the analytical process of establishing the obligations of the parties, the incorporation of descriptions of the contractual subject matter and assertions as to its quality or performance and liability perspective. In addition, the interplay among the liability provisions and the other elements of the framework, including scope and exceptions, must be equilibrated.

Principle 4: The monitoring and review of the effects of the IPM need to incorporate necessary procedures and tools of intangible property rights protection. It is crucial to establish mechanisms that take into account the effects of Internet innovations. Such processes and tools might include technical, legislative and procedure review and might focus, among others things, on the core zones of concern outlined in the context of this dissertation with special attention on the IPM.

In sum, IP and IC law might provide a helpful structure for intangible property regulation with these principles in mind. The discussion of the various options and approaches helps to determine the necessary components and infrastructure of the IPM.

Keywords: Intellectual property, Intangible property, Contract laws
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Chapter 1: Intellectual Property in the Internet between Property and Contract Laws

1.1 Introduction and research question

Intellectual Property laws are defined by individual nations. Although international treaties such as those administered by the World Intellectual Property Organisation (WIPO) or the World Trade Organisation (WTO) have facilitated international harmonisation of intellectual property laws, countries implement these treaties under their own laws or legal systems. Therefore users from different nations, which have diverse laws, procedures, and cultural norms, confront with the issue of intellectual property with legal controversies that cut across national jurisdictions and that call for ways to solve legal international problems. Moreover, the presence of a global, multipurpose medium, the Internet, exacerbates the complexity of intellectual property challenges.

Social dependencies on the use of digital information and integration of such use into almost every aspect of daily live, give rise to novel intellectual property questions. Does the use of the Internet call into existence new forms of intellectual property? If new forms of intellectual property are created, what are their material effects on practical activities? Is it possible to define core terms of new forms of intellectual property and to define new approaches to their regulation, protection, and formulation of contractual relationships? The research question of this dissertation relates to all of these issues: What is the impact of current and future developments of new forms of intellectual property on the regulation of intellectual property, of the ways to protect it, and on the related contractual forms? Can we undertake a novel approach to effectively address the variety of novel kinds of interaction between Internet users?

A main argument of this dissertation is that the need for new forms of intellectual property is real – that is, that at present there are deficiencies in intellectual property regulation and protection, and that they do create issues of legal rights protection, both online and in the 'real' world, in a number of different ways. First of all, property rights are questioned by those who wish to claim the existence of new forms of intellectual property. Some of these new forms of intellectual property relate to the need or wish for access and communication; others are related to an interest to trade. If we agree that in the present age the Internet opens up several new ways of social and economic interaction, we should take seriously the claim that new forms of intellectual property exist, and aim to provide precise, clear and unambiguous definitions of key concepts and terms if we are to assist the development of legal doctrine and juridical profession for the years to come. In addition, we
should be wary that, if we do not pay attention to emergent Internet-related phenomena and parallel claims for new forms of intellectual property, the present legal framework may not provide appropriate means to effectively enforce intellectual property rights in the future. Accordingly, the present dissertation aims to contribute developing a framework for legal regulation that takes into account the characteristic of the new Internet-based transaction environment in the field of intellectual property and of the emergent Internet contract regulation.

A second main argument of this dissertation is that we need to develop a complex right-based subject-matter legal approach on intellectual property in the Internet age that, by using an appropriate set of property rights, could begin to address these issues and begin to orient towards the solution of the aforementioned problems. This dissertation sets out some of the rights that might do this – and attempts to demonstrate, through an examination of case studies from recent years, how and where they might be successful.

The third, more tentative but ultimately more important, argument of this dissertation is that intellectual property and Internet contract law can provide adequate basis for legal regulation frameworks. This argument is relatively tentative at present, because the contemporary technological, social, and economic environment is highly changeable and, as the case studies contained in the present dissertation will show, there is still an unfulfilled need for an extensive and powerful framework for the legal regulation of new forms of intellectual property.

1.2 The Internet in modern life

In practice, for most people the Internet is a significant aspect of daily life in developed modern societies. The Internet allows communications and transactions to take place over an 'open network', with no required security apparatus, between a potentially unlimited number of participants who may have had no pre-existing contacts between them. During the last a couple of decades, the Internet has rapidly evolved from a scientific and academic network into a global net whose principal feature, the World Wide Web, has brought mass adoption. It is the open nature of the Internet, along with its multifunctional character and increasingly low-cost access, that has released the potential for the creation of new forms of intellectual property. Significant aspects of intellectual creation take place on the Internet – intellectual creations like art forms are becoming increasingly electronic, not only in terms of access to information but also in terms of their dynamic and interactive nature (for example, as in creativity commons projects, user generated content,

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virtual property and much more).  

The Internet induces the emergence of a brand new system of social relationships which calls for the development of novel laws about the features and properties of new intellectual products as an object of legal relationship. In this respect, it is necessary to understand the structure and regulation of the Internet. Regulation refers to 'different forms of deliberative collective action in matters of public interest'. According to this definition, the concept of regulation goes beyond command and control concepts of the regulation policy type and focuses in a wider perspective on the development and application of public or private rules directed at specific population targets.

Regulation has an impact on technology but is also affected by it. Not only do technological innovations alter the issues, objects, and circumstances but also the modes and tools of regulation, including the aspects of who is able and legitimised to regulate. It would be misleading to search for a viable unitary regulatory model operating in the Internet. Given the increasingly complex and rapidly changing commercial and social usage of the Internet, with the World Wide Web being a trans-border platform, we cannot even expect to find a tightly-knit web of regulatory rules. Rather, we encounter a patchworks of partly complementary, partly competing regulatory elements in the form of legal rules and ordinances, mandatory and voluntary technical standards and protocols, international and national contracts and agreements, and informal codes of conduct and 'netiquette' (e.g. social conventions that are meant to guide all cyber-related interactions).

Most of all the literature on Internet regulation focuses on content and conduct rather then on infrastructure issues. The regulation of infrastructure (code) means, however, also regulation through infrastructure, as most efforts to design, develop, and shape technology can be understood as the search for technological solutions and, thus, as a purely coordinative effort. Regulatory or more generally political implications of these efforts are ignored or not fully appreciated.

It is undisputed that the Internet was only able to grow into a global network because it had met the critical operational requirements that any decentralised set of communication system must satisfy.

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fulfil in order to function as a single cohesive system. These requirements are compatibility, identification, and interconnectivity. Compatibility facilitates the smooth interoperation of networks in technical terms and it is usually achieved through conformance to technical standards. Identification is accomplished by the assignment of unique addresses (numbers or names) to all users or objects that inhabit the networks. Interconnectivity entails the commitment or obligation of the providers, or operators of networks to link their networks to one another in compliance with compatibility and identification requirements.

The most prominent regulatory area at the infrastructural level relates to identification and domain name system (DNS). The allocation of an unambiguous address (i.e., a 32-bit string of numbers) to each host that is connected to the network is essential for the routing and transmission of data packets. The system of domain names makes it possible to communicate through e-mails and to search web sites in the conventional 'WWW address' style. Originally designed as a coordinative tool, the DNS - especially names in the generic top-level domain '.com' – came to be regarded as a valuable business resource which could be used for branding. The attribution of an economic value to web addresses transformed the process of allocation of domain names from an act of coordination to one of resource allocation, with potentially negative consequences for those who claim a specific domain name (e.g., a trademark owners) while they find this name already allocated to somebody else (e.g., a competitor).

Just at the time when the significance of the DNS increased and an organisation with some regulatory authority was needed to cope with emergent coordination and technical problems, the US government removed the authority over the assignment of numbers and names and some other managerial functions from the Internet Assigned Names and Numbers Authority (IANA), which worked as a relatively autonomous kind of US government agency, and delegated it to ICANN, the Internet Corporation for Assigned Names and Numbers. ICANN, a private, non-profit corporation incorporated in California, assumed this mandate in 1998. It was designed as a 'complex multi-stakeholder global institution based on the principles of internationalisation and privatisation of governance.' Since its inception, however, ICANN has been overseen by the US government (Department of Commerce), while other countries' governments have been prevented from controlling ICANN. The original intention of US government to subsequently weaken its central

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role in this area and grant more influence to other governments and private stakeholders did not fully materialise. Thus, on the one hand the US government delegated authority to ICANN, but on the other hand a hierarchical political element remained in this arrangement. ICANN operates in 'the shadow of the state' from which it derives its authority. Whether this shadow is needed is an open question.  

ICANN has the authority to formulate and implement the substantive and procedural rules within its jurisdiction entirely on its own. This includes the power to authorise new top-level domain such as '.biz' and '.info' and the control of the operation of the so called root servers, which keep and distribute up-to-date, authorised information about the concept of the name space of the top-level domains. The root servers are consulted as the highest instance of the domain name hierarchy if a data packet otherwise cannot find its destination. ICANN oversees the organisations which run and maintain the top-level domains such as '.uk' or '.jp'. Registries must agree to ICANN's terms and conditions. ICANN has also established a dispute resolution mechanism to process conflicts over domain name allocation through approved dispute resolution service providers. ICANN's Uniform Domain Name Dispute Resolution Policy (UDRP) has been used to resolve thousands of disputes over the rights to domain names. ICANN claims that it does not control content on the Internet, that it is unable to stop spam, and that it does not deal with access to the Internet. It stresses its role as coordinator of the Internet's naming system in order to promote the expansion and evolution of the Internet. ICANN has an international board of directors which represents all parts of the world and diverse groups of stakeholders. It is open for input from various advisory committees including governmental advisory committee. 

Private self-regulation on the technical layer of the Internet has a long tradition. Given the decentralised structure of the Internet, safeguarding compatibility has high priority. Ever since the US National Science Foundation decommissioned the operation of what was, until 1955, a public-funded academic and research network (CSTB, 1999), it has not been possible for the central authority to impose the necessary compatibility requirements. 


\[11\] Ning, H., & Wang, Z., (2011), 'Future Internet of things architecture: like mankind neural system or social
development was guided by the Internet Engineering Task Force (IETF), formed in 1986 but with roots dating back to the times of ARPANET in the early 1980s. The IETF adopted many standards, i.e. technical rules, to be implemented in the network, and it has been the guardian of the Internet's generic protocol suite TCP/IP. Participation in the IETF and its numerous working groups is open to anyone, and a broad and unrestricted discussion of proposals via electronic mailing lists is possible. The standards are adopted on the basis of consensus and published online in the so-called Request for Comments (RFC) series. Their use can not be mandated and they are traditionally available for implementation free of charge (open voluntary standards). IETF activists have always stressed the non-hierarchical, non-bureaucratic, voluntary, and consensus-based process of standard-setting. In an IETF meeting in 1992, David Clark, one of the architects of the Internet, voiced an oft-repeated characterisation of the IETF: 'We reject kings, presidents and voting. We believe in rough consensus and running code.' In this meeting, the IETF rejected the adoption of components of the Open System Interconnection (OSI) network protocols developed by one of the established international standardisation organisations, which at the time ignored the IETF and questioned its legitimacy.\(^\text{12}\)

The other decisive standardisation organisation focusing mainly on components and applications of the Web is the World Wide Web (W3C), founded in 1994. Virtually all Web standards that are of relevance today were developed by the W3C. Like the IETF, the W3C is a non-commercial organisation of volunteers, but in contrast to the IETF, the volunteers are organisations rather than individuals, and they are charged more than a nominal membership fee. As an international industry consortium, the W3C has about 400 member organisations-companies from the industry and service sectors as well as research and education institutions. All stakeholders who are members of the consortium have a voice in the development of W3C standards which are adopted on the basis of consensus and are also available free of charge.\(^\text{13}\)

Despite all the differences between the W3C and the IETF, both organisations emphasise the promotional and coordinative character of their work and the voluntary nature of their standards.\(^\text{14}\) Formally, no one can be compelled to comply with them. However, such a view is too narrow.

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\(^\text{12}\) Frydman, B., & Rorive, I., (2002), 'Regulating Internet content through intermediaries in Europe and the USA', Zeitschrift für Rechtssozioologie, 23(1), 41-59.


Being technical rules, all standards carry a cognitive or normative expectation of compliance. Moreover, particularly in network industries such as telecommunications and information technology including the Internet, coordinative standards can attain a quasi-mandatory status as a consequence of network effects. If a standard becomes prevalent in such an industry, it may eventually lock in. This means that producers and users of a specific feature or service of the Internet may be compelled to conform to the prevailing standard and stick to it once they have implemented it. Internet standards are rarely purely technical, but they may obscure commercial interests, political preferences, and moral evaluations at the same time that these underlying interests and choices are brought to bear.15

In addition to combining single networks to networks of networks, the operational requirement of interconnectivity encompasses issues of access to and differentiation or fragmentation of the Internet. Unlike the operators of telephone networks and providers of telephone services, Internet network operators and services providers are not controlled by any industry-specific interconnection regulations in most countries. In this respect, Internet is an unregulated network.

Social and territorial differences regarding access to the Internet were one of the central concerns tackled at the World Summit on the Information Society (WSIS).16 Digital divide is the popular metaphor used to describe this issue. While some delegates to WSIS regarded the divide as a transitory phenomenon, others emphasised the need for funds to support the development of information and communication technologies and bridge the divide between developed and developing countries. There can be no doubt that the digital divide has been shrinking in terms of numbers of Internet users. But looking only at these numbers conceals the dynamic of the divide, which includes Internet usage and usage patterns. Digital divide or digital differentiation tends to reproduce itself in the sense that with highly-innovative Internet technology, ever-never features and services are developed which turn out to be sources of new lines of differentiation, or with a view to broadband connections, as soon as one source of technological inequality seems to be diminishing, another one emerges: differential access to high-speed broadband services.17

Since the Internet's inception, political factors including deliberate abstention from

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regulation have accounted for the emergence, as well as, the mitigation of differences concerning access to and use of all features of the Internet. Network operators and services providers play an important role in this context. Most of them are private companies. They have agreed to interconnect their networks and services via network access points. Initially, the operational costs of these network access points were shared among those connected to such a point (peering). Later, peering was complemented and in some cases replaced by transit arrangements, which obliged smaller networks to compensate larger networks for the traffic they send to them because large networks receive much more traffic from small networks then they send to them. Peering and transit arrangements are achieved through commercial negotiations. It is argued that the strong positive network externalities generated by the fast-growing Internet have provided sufficient incentive to enter into interconnection agreements on a voluntary basis. Thus, in principle, interconnection is governed through market processes and voluntary coordination.\textsuperscript{18}

The Internet market offers providers not only inducements to interconnect but also incentives to differentiate products into a variety of 'dedicated services' which attract specific users groups and also content providers who are willing to pay a higher price for privileged and faster access to Internet services. Conversely, network and service providers may charge different prices to different content providers for a similar service, block websites or portals of some providers, or selectively direct users to others. This has raised concerns that the architecture of the Internet will change, losing its traditional openness, and end-to-end character. According to the end-to-end design principle, most of the network's 'intelligence' is located at its ends (services, work station, PCs), while the network remains comparatively 'stupid', only providing the 'pipes' through which the bits and bytes are delivered. In such a best-effort network it will be virtual infeasible to privilege certain providers over others. It can be disputed that the Internet has been ever 'stupid'. In any case, several architectural changes made for the sake of secure e-commerce and a variety of other reasons have already eroded the original principles. The fragmentation of the network is no longer technologically impossible and it is particularly likely to occur where only one or two providers control local or regional markets for high-speed services.\textsuperscript{19}

The specter of fragmentation has triggered-under the heading of 'network neutrality' - a debate in the US and EU over the need for regulatory intervention partly akin to the common carrier

\textsuperscript{18} Norton, W. B., (2001), 'Internet service providers and peering', In Proceedings of NANOG (Vol. 19, pp. 1-17).
\textsuperscript{19} Blumenthal, M. S., & Clark, D. D., (2001), 'Rethinking the design of the Internet: the end-to-end arguments vs. the brave new world', ACM Transactions on Internet Technology (TOIT), 1(1), 70-109.
or universal service regulation of the telephone industry through specialised regulatory agencies. Proponents argue that without regulatory control, the Internet's opportunities will be taken away from users and shifted to network and service providers in the name of efficient network management, and at the expense of the innovative potential of decentralised discretionary use. Opponents contend that market competition between providers will mitigate these problems and also encourage broadband deployment as long as antitrust enforcement agencies monitor provider's behaviour and prevent the abuse of market power. They also stress that the Internet, which up to now has been unregulated with regard to network neutrality regulation, has enabled the area of user-generated content in social networking sites and blogs, potentially breaking the hegemony of traditional content generators as the primary sources of content.

The emergence and development of the Internet can be described as an evolutionary process which, despite the decisive promotional role of US government, was never guided by a master plan. Voluntary, private self-regulation coordinated the actions of the early architects of the Internet. This tradition has survived particularly in the area of technical standardisation. Also the administration of the domain name system by ICANN shows strong elements of self-regulation, occasional attempts by the US government to intervene not with standing. Organisations such as the IETF and the W3C, and even ICANN have gained authority and legitimacy through the successful coordination of the global expansion of the Internet, which is in the common interest of most private and public stakeholders. IP addresses, domain name, and Internet standards cross national borders and have global validity. In contrast to identification and compatibility, interconnectivity tends to be regulated by governments within the territorial confines of their authority. This description has traditionally characterised telephone regulation, which comes in national and regional variants within a liberal telecommunications regime.

Whether the existing hybrid constellation of regulation of the technical infrastructure will endure for the next decade is an open question, given the rapid changes and the increasing commercial importance of the Internet. The regulatory arrangement that has emerged is criticised from two opposite camps. On one side are those who argue that there is too much regulation and propose that functions such as domain name management could be left completely to the market. Network neutrality rules are declared absolutely unnecessary and dispensable. On the other side are

those who call for more regulation, particularly for more political leverage for all interested or affected states on all relevant aspects of the technical infrastructure. Intergovernmental organisations or forums might have the legitimacy and the sanctioning power to implement regulations.23

While the regulation of the technical infrastructure aims at shaping the general opportunities and constraints of utilising the Internet, the regulation of content touches more explicitly upon values, norms, and rules. This may happen, for example, in deals that contain hate speech, discrimination and more generally provisions to enable (or restrain) the free flow of information. This may also happen in any form of regulation of conduct. The latter relates to commercial and other electronic transactions which can be hindered through electronic deception and fraud, infringement of privacy, unsolicited content, and hostile attacks. Compared to the regulation of the infrastructure, content regulation is an extremely broad and heterogeneous policy domain in terms of the issues and actors involved.24

The Internet represents a de-materialised and largely de-territorialised world which challenges national social, political, and legal cultures and traditions. In contrast to proprietary telecommunications networks, the decentralised (end-to-end) technical infrastructure of the Internet allows for distributed creativity, peer production, and sharing, making it hard to trace and control social, economic, and political action. The commercialisation of the Internet and its increasing significance as a global platform for commercial transactions of all kinds have created a pressing need for a reliable and secure environment – or whether a singular body of cyber law must be developed.25

Legal regulation is based first and foremost on national law. National law frequently addresses commercial, civil or criminal action on the Internet because these actions are typically not yet strictly 'cyber'. If, however, the adjustment for existing rules to the cyber environment is necessary or new legal regulations are required, slow political rule-making procedures often reduce their effectiveness. Traditional legal forms of regulation encounter limits which are left even more directly in the context of law enforcement. The validity of national law ends at a country's borders, but Internet transactions can easily cross these borders and escape from national jurisdiction. As

soon as more than one political authority is affected by a transaction and the legal rules regulating this transaction differ from one country to the other, a multilateral agreement is needed to reach a common solution and enforce regulation. Only in a limited number of cases can we find internationally shared or accepted rules.\textsuperscript{26} Given these problems and the fear of both the Internet industry and of the users for what they see as either regulatory failure or political over-regulation, private (self)regulation is often proposed as the preferred policy. Self-regulation originally emerged in areas such as standard-setting and protocol development. But even so-called netiquette had - inter alia - a regulatory purpose, aiming to secure freedom of speech and the free flow of information. From there self-regulation diffused into commercial and other areas where profits and specific interests, along with moral values, are at stake.\textsuperscript{27}

The developments in the underlying technologies have changed the expressions and exchanges of creativity and innovation. The Internet has affected both the form and the substance of intellectual property. Today, it is possible to tell that the Internet serves as a system to deliver the intangible product itself, such as a piece of music or software, a film or a publication. This distribution can take place almost instantaneously, and the intangible product e.g., software or music, may travel virtually without restriction across national borders. Issues of intellectual property that have had such relevance in the physical (off-line) world, involving rights in respect of patents, trademarks, industrial designs and copyright, among others, also arise in relation to digital format, but with different aspects to be addressed. New technologies throw existing legal regulation out of balance and the analysis of the Internet leads to a new understanding of property.

1.3 Property and the Internet

The single idea that ties together both the analysis of the Internet and the analysis of intellectual property and contract laws is property.\textsuperscript{28} At the beginning of the present discussion on new form of intellectual property, it makes sense to ask exactly what property is. However, it turns out that this is a harder question than it appears at first glance. With the development of the digital environment, property becomes a controversial subject: there is not only argument about what the institution of property ought to be, there is also dispute about what it is. The property institution creates and maintains certain relationship between people. The institution is assumed to have been made and to keep up for some purpose: human needs, which would determine what the institution

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is; or to meet the wants of the classes which from time to time have set up the institution or have reshaped it. Property is both an institution and a concept and over time the institution and the concept influence each other. It is not easy to define a changing and purposeful concept like property. In the meaning which property has in current common usage, property is things; in law, property is not a things but rights, rights in or to things.29

The concepts of an Internet of things take the integration between the online and offline worlds one step forward. In effect, different types of property are commixed as the Internet creates opportunities to integrate into 'real' life new kind of intangible property with communication of property things. To take one example, digital painting gathered in the 'real' world in imaging devices (property 'things'), which includes digital works and property software, that are held in way that they can be accessed and use online as well as in traditional way.

The right to use is the most fundamental attribute of the global right to property. The historic transition from common ownership to private ownership began with the acceptance of the concept that a particular person was entitled to utilise certain resources (a use right somewhat akin to the modern usufruct). The other traditional attributes of the right to property such as exclusivity and alienability are viewed as later additions. The right to use evolved over time into an exclusive right that could be transferred to others. Today the right to use is inherent in ownership. Indeed, the centrality of the right is so obvious that its existence is often assumed rather than specified. The acknowledgement of 'the right to own property' in the Universal Declaration of Human Rights (UDHR)30 is routinely interpreted as including the right to use as a necessary component of ownership. The right to use may be limited, e.g., by municipal law. However, the authority of a state to control the use of land or other assets is not absolute. While the existence of the right is undisputed, its parameters remain somewhat hazy. The right to use entitles a natural or legal person to enjoy and utilise movable and immovable things in the manner that he or she deems appropriate. In his classic exposition of the incidents of ownership, AM Honoré observed that 'the right (liberty) to use at one's discretion has rightly been recognised as a cardinal feature of ownership.' He explained that the right has three aspects: (a) the personal right to use and enjoy a thing; (b) the right to 'decide how and by whom the thing owned shall be used'; and (c) the right to receive the fruits, rents, profits, and other income that it generates.31

30 Universal Declaration of Human Rights, UN GAR 217(III), UN Doc A/RES/217(III) (December 10, 1948).
The utilitarian theory grounded the primary justification for the right to use. If private property exists to maximise the overall happiness or 'utility' of all citizens, as the theory posits, then allowing each owner to determine the manner in which land or other things will be used is vital. An economically rational owner will maximise the productivity of assets by using them in the most appropriate manner, given factors such as their nature, character, and location and relevant economic, social, and technological conditions. If the highest and best use for a particular parcel of land is growing wheat, for instance, an owner will presumably select this use. The sum total of these individual decisions by different owners, the theory suggests, produces the optimum yield from all resources, thereby benefiting all of society.32

The right to use in international law, primarily functions as a shield against certain forms of undue state interference. The state must respect an owner's right to use land or other things as a general matter, even though it has the authority to restrict the right to some degree. In narrow situations, the state must also take affirmative steps to prevent private actors from interfering with the right to use. In contrast, the law does not require the state to fulfill this right. The concept that the right to use is a core component of ownership is ancient. Aristotle explained that 'wealth as a whole consists of using things rather than in owning them; it is really the activity - that is, the use - of property that constitutes wealth.'33

The Roman property law was more concerned with defining how ownership could be acquired or terminated than with analysing its content. It is widely agreed that this law reflected the twin concepts of *jus utendi* and *jus fruendi*: one holding ownership or *dominium* was entitled to use the thing and to obtain its fruits and profits. Although no Roman text contains a complete definition of ownership, medieval scholars were able to reconstruct the meaning of the term from other references. The Digest of Justinian defines a usufruct to include 'the right to use and enjoy the property of others.'34 Because ownership is broader than a mere usufruct, scholars rightly concluded that ownership in Roman law logically included the right to use.

The importance of the right to use positing that the concept of property arose from private use of common resources. Hugo Grotius explained that in the state of nature each person had a 'universal right' to 'take whatever he wished for his own needs,' which 'served the purpose of private ownership' because 'whatever each had thus taken for his own needs another could not take from

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Thus, 'the right to use the goods in question was originally acquired through a physical act of attachment, the very source...of the institution of private property.' For Grotius, the heart of ownership was the right to use. In much the same manner, Samuel Pufendorf reasoned that 'God allowed man to turn the earth, its products, and its creatures, to his own use and convenience, that is, He gave men an indefinite right to them.' This dominion consisted of 'using things at one's own pleasure.' John Locke similarly declared that God gave the world 'to the use of the industrious and rational (and labour was to be his title to it).’ As a result, 'every one had a right...to as much as he could use' of the things God had provided.

In Western theory the concept that the right to use is an inherent part of the general right to property was firmly embedded by the eighteenth century. William Blackstone explained that the right to property under English law included 'the free use and enjoyment...of all acquisitions, without any control or diminution, save by the laws of the land.' In France, the Declaration of the Rights of Man and Citizen proclaimed that 'the right of property is that which belongs to every citizen to enjoy...his goods, income, and...the fruits of his labor and his skill.' Robert Joseph Pothier expanded on this theme, observing that the right to property included both the 'right to reap all the fruits born by the thing' and the 'right to use the thing, not only for the purposes for which it is naturally intended, but also for whatever purpose' the owner wished.

Protocol 1 of the Convention for the Protection of Human Rights and Fundamental Freedoms (ECHR) of Regional human rights conventions guarantee the right to use property. Article 1 provides that each person is entitled to the 'peaceful enjoyment of his possessions.' The right to use is inherent in this provision, as evidenced by a later clause in the article that permits a state to 'control the use of property' under certain conditions. The American Convention on Human Rights (ACHR) defines the right to property as including the right to use: 'Everyone has the right

38 Locke, J., (1764), 'Two Treatises of Government', vol 2, ch V, para 33.
39 Locke, J., 'Two Treatises', vol 2, ch V, para 46.
40 1 Bl Comm 134.
41 Article 16 of Declaration of the Rights of Man and Citizen, 1793, France.
42 Pothier, R. J., (1772) 'Traité du Droit de Domaine de Propriété', 6 - 7.
45 ECHR protocol 1, art 1.
46 American Convention on Human Rights (San José, November 22, 1969, 1144 UNTS 123).
to the use and enjoyment of his property.\textsuperscript{47}

Municipal law recognised the right to use as a fundamental attribute of property under. In some states, the constitution expressly guarantees the right to use. The Constitution of Argentina, for example, provides that all inhabitants are entitled 'to make use...of their property.'\textsuperscript{48} The Constitution of Ethiopia defines the right to property as including 'the right...to use...property.'\textsuperscript{49} Another illustration is the Constitution of Russia, which declares that everyone has the right 'to possess and use' property.\textsuperscript{50} More commonly, the national constitution establishes the right to property as a general matter, leaving its components to be defined by statutes and other non-constitutional sources.

The major legal traditions of the world uniformly recognise that the right to use is an integral part of the right to property. In the civil law tradition, the French Civil Code famously defines 'ownership' as 'the right to enjoy...things in the most absolute manner.'\textsuperscript{51} The statutory definition of ownership in Germany explains that an owner may 'deal with the thing at his discretion' or, in other words, use it as he wishes.\textsuperscript{52} The Draft Common Frame of Reference formulation of ownership similarly includes 'the exclusive right...to use and enjoy...the property.'\textsuperscript{53}

In common law systems the right to use is a foundational concept. In England, owners traditionally had the absolute right to use their things as they wished, subject only to the restriction that they not harm the rights of others. This theme was expressed in the maxim \textit{sic utere tuo ut alienum non laedas}. The same approach is still generally followed today, subject to specialised restrictions such as land use constraints. The law in the United States reflects the same view, presuming that owners have unfettered freedom to use, absent injury to others or statutory limitations.\textsuperscript{54}

The access concept implies, inter alia, cognitive processing occurring inside the recipient's mind once exposure to the information signals takes place. Though the information model assumes a human recipient, it is not impossible to imagine reception of signals by a non-human agent. This possibility is especially important in the context of computer programs and digital communication. In those cases, reception of information is rather a technological procedure, which, in its own right

\textsuperscript{47} ACHR art 21(1).
\textsuperscript{48} Constitution of Argentina art 14.
\textsuperscript{49} Constitution of Ethiopia art 40(1).
\textsuperscript{50} Constitution of the Russian Federation art 35(2).
\textsuperscript{51} Article 544 C civ (France).
\textsuperscript{52} § 903 BGB (Germany).
might surely entail considerable legal and economic ramifications. The distinction between human and technological access is relevant particularly within the broader debate over digital works. To highlight this distinction, access by human agents is referred to as human-access, whereas access by nonhuman agents is termed technological-access. Once the physical signals representing the information (e.g., sound waves or light beams) reach the sensorial receptors of the recipient, they initiate an internal process of recording, processing, and interpreting, at the end of which the percipient can be said to have 'accessed information.' Human-access involves both sensorial and cognitive processes in reaction to external stimuli. Listening to music, reading a book, looking at an advertisement poster, appreciating a painting in a museum, or watching a play are all examples of human-access to information. Reading or smelling perfume are also forms of human-access achieved via the senses of scent and touch.

The physical conditions allowing human-access can influence regulation (e.g., the physical position or location of the subject and/or the object). At the same time, the process of reception triggered by exposure to external stimuli is intrinsically internal and therefore, essentially non-regulatable. Access to information creates alteration in the minds of recipients, which, to some extent results in their obtaining 'possession' of the information. In this sense, the human recipient becomes a new 'possessor' of the information that remains captured in his memory. In this limited context, upon access the recipient 'acquires' information in a process that is significantly irreversible. Acquisition of information via the mechanisms of the human organism alone has limitations dictated by the imperfect processing and storage capacities of the human brain. Still, in his new status as possessor, the recipient can communicate the information to others directly or with the aid of logistic media.

Only human agents can originate a medial information as only such actors can have the will and the urge to communicate.\(^{55}\) Further, the function of the human recipient is to absorb, process, and possibly retransmit informational signals. At the same time, it is clear these communicative capacities are not inherently human. Non-human agents ('machines' and their 'components') can store, manipulate, reproduce, and emit information signals, often at a much higher degree of intensiveness, fidelity, and precision than humans. The underlying assumption is that non-human agents can perform some communication functions (beyond serving as mere conduits) and that these operations are relevant to a fuller conceptualisation of the term access in the present context. Accordingly, the term technological-access describes certain processes in which absorption (and related processing or manipulation) of information signals occur independently of human-access to

\(^{55}\) Cherry, C., (1957), 'On human communication; a review, a survey, and a criticism'.

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information.

Technological-access can take place when operations are executed by software and similar tools, which are designed to interact with machine-readable information. The involvement of a human agent in a given operation may be limited to launching the process executed by the software according to a preprogrammed and predictable pattern. For example, it can be said that technological-access to information takes place when a computer program identifies, interacts, or operates against information that represents a certain binary-encoded message.

It is necessary to put technological-access in the context of copyright law and digital works. Every work protected under copyright law is either initially expressed in digital code or can be digitised (whether simultaneously with creation or at a later stage). Human-access to the naked binary code does not ensure reception because the message is not comprehensible to the recipient expected to decipher the code. Thus, human-access to bits representing a novel or a musical piece does not accomplish the reception of the information as the binary strings of ones and zeros must first be converted into comprehensible elements such as letters, images, and sounds. The conversion process is conducted by machines equipped with appropriate hardware and software, which essentially correspond to the definition of multifunctional media. The process of converting binary digits to intelligible messages involves technological-access to the encoded messages-access that is performed by computer programs. Technological-access also takes place as more than one application software interacts with one another to achieve a certain result or perform an operation. In cases where the software can manipulate binary data, or where software can exchange information with another computer program residing locally or remotely, it could be said the software has 'accessed' information, or that technological-access has occurred. Human-access may or may not be relevant to such operations.

The right to exclude under international copyright law requires that states respect the owner's right to prevent others from using the work without authorisation. Three intertwined strands of international law delineate the right to exclude in this context. First, the International Covenant on Economic, Social and Cultural Rights and other human rights instruments recognise the right

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56 Digitisation is the process of converting information into a digital format, where information is organised into discrete units of data (called bits) that can be separately addressed, usually in multiple-bit groups (called bytes). This is the binary data computers and similar devices can process. See, Dreier, T., (1993), 'Copyright digitised: philosophical impacts and practical implications for information exchange in digital networks', In WIPO worldwide symposium on the impact of digital technology on copyright and neighboring rights: Harvard University, Cambridge, Massachusetts, United States of America, March (Vol. 31).

57 Legal definition of computer programs describes them as 'set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result.' See 17 U.S.C. § 101.

of creators to benefit from the 'material interests' resulting from their artistic, literary, and scientific creations. 59 States are required to take positive actions to 'achieve the full realisation' of this right. 60 Second, the Berne Convention for the Protection of Literary and Artistic Works (Berne Convention), 61 the Paris Convention for the Protection of Industrial Property, 62 and related treaties effectively require that member nations adopt global minimum standards governing copyrights, patents, trademarks, and other types of intellectual property. Finally, international trade law as embodied in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) expands the application of the core intellectual property treaties to virtually all states and requires that states adopt adequate measures to enforce intellectual property rights. 63

Most of its substantive provisions of the concept of the right to exclude guarantee that the creator of a protected work will have the 'exclusive right' of authorising particular uses by another person or entity, such as reproductions, translations, performances, or adaptations. 64 As a general matter, no one else may legally use the particular work without such authorisation. 65 The creator's right to refuse permission for use of the work is, in substance, the right to exclude. Notably, the Berne Convention does not provide that the creator may use the work, a subject which is left to municipal law.

The TRIPS provision that describes the 'rights conferred' upon a patent owner. For example, it provides that a patent for a product gives the owner the 'exclusive right...to prevent third parties...from the acts of: making, using, offering for sale, selling, or importing...that product.' 66 But nothing in TRIPS or any other related treaty guarantees that the patent owner has the right to actually use the product. Similarly, TRIPS describes the 'rights conferred' by a trademark as the 'exclusive right...to prevent all third parties...from using in the course of trade identical or similar signs' that would be likely to result in confusion with the trademarked goods. 67

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3). ICESCR art 15(1)(c).
60 ICESCR art 15(2).
61 Berne Convention for the Protection of Literary and Artistic Works (Berne, September 9, 1886, 828 UNTS 221).
63 Agreement on Trade-Related Aspects of Intellectual Property Rights (Marrakesh, April 15, 1994, 1869 UNTS 299).
64 eg Berne Convention arts 8, 9, 11, 11bis, 11ter, 12.
65 The exclusive rights are subject to narrow exceptions. eg Berne Convention arts 9(2), 10, 10bis.
66 TRIPS art 28(1)(a). These rights are limited, in turn, by TRIPS articles 30 and 31.
67 TRIPS art 16(1). The scope of this right is limited by TRIPS article 17.
1.4 Underlying questions and a paradigm shift

One implication of focus on the Internet is that it raises one of the underlying questions that will be addressed throughout this dissertation: Should the Internet or digital intellectual resources be considered as digital commons and if so, what does that imply? In terms of rights of individuals as they browse the web or use internet-based services as well as in terms of the obligations of those providing or hosting websites or internet-based services it is an important question. It is a complex question, and it brings up a lot of issues: what is digital intellectual resources and what is the Internet? In practice, the Internet is owned and run privately and the owner of web sets particularly rules in terms of use. Is it a collection of private connected spaces or a public space? In certain ways Internet should be considered as common space, with public rules, norms and rights. With varying degrees of success, in many different ways law has been applied to online life.

1.5 Approach and methodology

This dissertation takes an essentially liberal perspective. The central part of the analysis focuses on the description of mutual interactions of the legal system as a whole and its particular branches, especially intellectual property and contract law.

Simultaneously, the study reconstructs the mutual interplay between the legal system and the following elements that comprise environment in which the legal system acts: technology, social norms and collective interests of four groups representing most important actors in the described model, namely the state authorities, creators, public and the intermediaries on the market between the creators and the public. It shows how the interactions of those elements with one another and with the legal system led first to the introduction of the proprietary paradigm in the protection of intellectual creations, and then to the development of this paradigm that caused the contemporary crisis of copyright law in the digital era and proposal for alternative regulation.

Legal system hereafter is understood as an autonomous, self-referential normative system that is separate from other normative systems (i.e. religion, morality, social norms), and which is independently setting its own boundaries in the process of autopoietic operations according to the bilateral code: legal vs illegal.68

Technology is approached in this paper in a broad sense, as approached in this paper in a

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broad sense, as technology includes all tools, machines, instruments, housing, clothing, communicating and transporting devices and the skills by which we produce and use them.\(^6^9\)

Social norms are here interpreted as normative statements that identify social expectations arising in the course of repeated interactions.\(^7^0\) Social norms might, but do not necessarily have to, coincide with legal norms. Even if they do coincide, they belong to diverse normative systems.

1.6 Themes, case studies and related rights

Information itself becomes property, valued for its uses and applications, and acquiring exchange value by the very fact of being susceptible to packaging as units and then to being reified, that is, turned into varieties of 'institution-things', forms of 'intellectual property'. Reflection on intellectual property is instructive for the light it casts on the interaction of private law and economy. The 'property-character' of the norms in question depends on their function to facilitate transferability. This may be transferability between persons either of the property-item, some particular copyright or particular patent itself, or of some of its incidents, as in the case of licenses to copies of the literary work or to manufacture goods by means of the patented process. The reflection of exclusive privileges of this kind, by making them into interpersonally transferable entities, at the same time commercialises authorship and invention, making them processes of new wealth-creation as marketable objects.

Intellectual property items have use-value by virtue of the regime that gives them exchange-value. They are of course connected to useful objects – software, avatar, for example. But they are not themselves the 'object' in use, rather they are the pattern of, or template for, what is produced and used. They are ways of capturing and rendering exclusive what is not naturally scarce, namely ideas, nor naturally exclusive, for anyone can entertain ideas without wearing them out or preventing anyone from at the same time entertaining them or inviting others to do so. The law, in reifying intellectual property, creates an artificial scarcity by assigning an exclusive privilege of exploitation to the person it qualifies as owner of licensee of the relevant institution-'thing'. Thereby exchange-value becomes possible, to the extent that there proves to be demand for the fruits of exercising the privilege.

This dissertation primarily concerns is legal regulation of new kind of intellectual property,


rights protection, Internet contract regulation and their control with the users activities concerning
new kind of property In the current stage of intellectual property regulation there are several
problems concerning legal and regulation solution of new kinds of property which are often the
origin of provisioning of users illegal use.

New development of the Internet and users creativity which will be touched upon software,
computer databases, virtual property and online computer games regulation will suggest the
analysis of existing intellectual property and Internet Contract laws in different jurisdictions across
continents. As will be noted in the context of dissertation, legal response to new kinds of
intellectual creations which based on review in practice (as example digital art) and theory of
various controversies surrounding the implementation and application on access, use and
communication.

In addition, necessary procedures and tools of property rights protection will correspond to
new effects of Internet innovation. Such processes and tools might include technical, legislative and
procedure review and might focus, among others things, on the core zones of concern outlined in
the context of this dissertation. with special attention on the IPM. The complex discussion of the
various options and approaches will help to determine necessary components and infrastructure of
the Intangible Property Model.

The availability, reproducibility, and circulation of intangible goods have fundamentally
transformed by the Internet and Web space as a storage device. The ease with which digital content
can be copied and transmitted has fomented the creation of file sharing networks which argue that
free and equal access to cultural goods is a human right which should not be sacrificed for the sake
of the profits. Historically, intellectual property was governed solely by domestic laws that varied
widely among states. However, with the development of technology IP protection has been
extended and strengthened at the international level. The 1883 Paris Convention for the Protection
of Industrial Property (Paris Convention)\textsuperscript{71} and the 1886 Berne Convention signaled a shift toward
international coordination. Successive treaties further developed the international framework. Yet
the standards that arose from these instruments were not comprehensive, and the mechanisms for
enforcing intellectual property rights were weak.

Later, under the aegis of the World Trade Organisation (WTO), a major step toward
international harmonisation of intellectual property laws was the adoption of the Agreement on
Trade-Related Aspects of Intellectual Property Rights (TRIPS) in 1994. TRIPS covers seven types

of intellectual property: copyrights; trademarks; geographical indications; industrial designs; patents; designs of integrated circuits; and trade secrets. It (a) creates overarching standards that apply to all types of covered intellectual property, (b) establishes minimum standards for each type of intellectual property, and (c) mandates an effective enforcement regime to ensure national compliance. TRIPS acknowledges that 'intellectual property rights are private rights,' and seeks to provide 'adequate standards and principles concerning the availability, scope and use' of such rights in the context of international trade. All member states must adhere to the minimum standards required by TRIPS, but any state is free to provide greater protection for such intellectual property under domestic law. Under the national treatment principle, each party must 'accord to the nationals of other Members treatment no less favourable than that it accords to its own nationals with regard to the protection of intellectual property,' with limited exceptions. TRIPS establishes a general rule that the term of a patent must be at least 20 years. A state could choose to provide greater protection under its domestic law, such as by establishing a 25-year term. However, the national treatment requirement means that it must provide the same patent term for nationals of other parties. Another overarching TRIPS principle is most favored-nation-treatment. If a member state grants any 'advantage, favour, privilege or immunity' to the nationals of another member, it must be 'accorded immediately and unconditionally to the nationals of all other Members.'

TRIPS imposes global minimum standards for each of the seven types of covered intellectual property, which parties must implement through municipal law. This follows the model of the Berne Convention, which developed uniform copyright standards at the international level in the nineteenth century. TRIPS largely incorporates the Berne Convention standards for copyright, but it creates new substantive standards for each other form of covered intellectual property. Also TRIPS establishes a framework for the enforcement of intellectual property rights by both private actors at the domestic level and states at the global level. It establishes minimum uniform standards that member states must follow in order to allow private owners of intellectual property to enforce their rights in domestic courts. Members must 'ensure that enforcement procedures as specified in this Part are available under their law so as to permit effective action against any act of infringement of intellectual property rights covered by this Agreement.' States must 'make available to right holders civil judicial procedures concerning the enforcement' of such rights that

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72 TRIPS preamble paras 2(b), 4.
73 TRIPS art 3(1).
74 TRIPS art 33.
75 TRIPS art 4.
76 TRIPS art 41(1).
meet specified standards for fair and equitable procedure.\textsuperscript{77} Significantly, the judicial authorities must have the authority to order the infringer to pay compensatory damages to the right holder, in an amount 'adequate to compensate for the injury the right holder has suffered' due to the infringement.\textsuperscript{78}

The more powerful enforcement mechanism is at the international level. As a condition of joining the WTO, all states must consent to a binding international system for the resolution of trade disputes, including disputes arising under TRIPS. A state which believes that another state has violated its TRIPS obligations may file a complaint with the WTO Dispute Resolution Body. If a member state fails to comply with the decision of the panel charged with adjudicating the controversy, it may be subject to trade sanctions. In the context of intellectual property disputes, the Dispute Resolution Body functions as an international tribunal with the power to both (a) interpret the meaning of TRIPS provisions and (b) enforce its decisions with meaningful sanctions. WTO panel decisions have begun to create a corpus of intellectual property jurisprudence at the international level.

At the domestic level protect copyright laws adopted the rights of authors in literary and artistic works. Beginning with the adoption of the Berne Convention, substantial progress has been made in harmonising national copyright laws to ensure a minimum level of protection for all authors, regardless of nationality. Today over 160 nations are members of the Berne Convention, and the incorporation of most Berne Convention protections into TRIP\textsuperscript{79} extends its reach to additional states.

The heart of international copyright law is the Berne Convention. It applies to 'literary and artistic works,' which are defined to 'include every production in the literary, scientific and artistic domain, whatever may be the mode or form of its expression,' such as books, lectures, dramatic works, musical compositions, movies, paintings, sculptures, architectural works, photographs, maps, choreographic works, and applied art.\textsuperscript{80} Translations, adaptations, and other alterations of such works are also covered.\textsuperscript{81} In addition, collections of literary or artistic works such as encyclopaedias and anthologies are protected by copyright to the extent that the selection and arrangement of their content involves creative work.\textsuperscript{82} TRIPS supplements this coverage by

\begin{itemize}
\item \textsuperscript{77} TRIPS art 42.
\item \textsuperscript{78} TRIPS art 45(1).
\item \textsuperscript{79} TRIPS requires member nations to comply with Articles 1 through 21 of the Berne Convention, except for Article 6bis. TRIPS art 9(1).
\item \textsuperscript{80} Berne Convention art 2(1).
\item \textsuperscript{81} Berne Convention art 2(3).
\item \textsuperscript{82} Berne Convention art 2(5).
\end{itemize}
providing that computer programs are protected as literary works.\textsuperscript{83}

The Berne Convention covers the 'expression' of a literary, scientific, or artistic 'production' indicates that it would not encompass a mere idea for such a work. TRIPS eliminates any doubt on this point, stating that copyright protection does not extend to 'ideas, procedures, methods of operation or mathematical concepts as such.'\textsuperscript{84} This creates a derivative prohibition on the ability of states to create property rights in these items under domestic law. For example, a state may not authorise its nationals to obtain property rights in the idea for a novel, painting, or other literary or artistic work.

For covered works the Berne Convention mandates two types of protection. Each state must follow the principle of national treatment: 'authors shall enjoy...in countries of the Union other than the country of origin, the rights which their respective laws do now or may hereafter grant to their nationals...'.\textsuperscript{85} In addition, every state must ensure that its laws provide at least the minimum international standards specified in the convention. This harmonisation requirement has established a common core of copyright protection in all member states. Any state is free to extend a greater degree of protection for authors, consistent with the national treatment principle.

The Berne Convention guaranteed that the rights may 'not be subject to any formality,'\textsuperscript{86} such as registration with a government office. Rather, they arise automatically when an author creates a covered literary or artistic work. The prohibition of formalities means, in turn, that once such a work is created it is entitled to copyright protection in all states that are parties to the convention, without the need for applications or filings in individual states. In this sense, the convention authorises an international copyright that is valid and enforceable in all member states.

Term of protection created by the Berne Convention is the life of the author plus 50 years, although states may provide a longer term.\textsuperscript{87} This protection extends both to the author’ and his successors in title’ - a provision that acknowledges the author's right to transfer his copyright to others.

The Berne Convention mandates that each party provide an author with a series of exclusive rights in the work, which constitute derivative property rights. For example, an author has the exclusive right to authorise the reproduction of the work,\textsuperscript{88} with special exceptions for uses such as teaching, scholarship, and press quotations. Other protections include the right to authorise the

\textsuperscript{83} TRIPS art 10(1).
\textsuperscript{84} TRIPS art 9(2).
\textsuperscript{85} Berne Convention art 5(1).
\textsuperscript{86} Berne Convention art 5(2).
\textsuperscript{87} Berne Convention arts 7(1), (6).
\textsuperscript{88} Berne Convention art 9.
public performance of a dramatic or musical work,\(^\text{89}\) the broadcasting of the work to the public,\(^\text{90}\) and the public recitation of a literary work.\(^\text{91}\) Similarly, the author holds the sole right to authorise 'adaptations, arrangements and other alterations' of the work.\(^\text{92}\) Although the convention provides the author with an exclusive right to distribute only cinematographic works and cinematographic adaptations,\(^\text{93}\) the subsequent WIPO Copyright Treaty expands this right to the public distribution of copies of all types of literary and artistic works.\(^\text{94}\)

The Berne Convention authorises states to place additional limitations on the reproduction right in (a) 'certain special cases' as long as (b) this does not conflict with 'a normal exploitation of the work' and (c) it does not 'unreasonably prejudice the legitimate interests of the author.'\(^\text{95}\) TRIPS Article 13 extends this provision to all the exclusive rights recognised by the convention in almost identical language.

The meaning of Article 13 was explored by a WTO panel considering a complaint brought by the European Union against the United States.\(^\text{96}\) At the time, Section 110(5) of the US Copyright Act provided that certain restaurants, bars, and retail stores could broadcast music to their customers without any payment to the copyright holder. The European Union challenged this 'business exemption,' claiming that it was not justified by Article 13, and the panel agreed. First, the panel concluded that Section 110(5) did not involve a 'certain special case,' mainly because the law exempted a large number of businesses; it noted that 'a substantial majority of eating and drinking establishments and close to half of retail establishments are covered by the exemption.'\(^\text{97}\) It also concluded that the second criterion was not satisfied because the substantial number of businesses exempted would be 'a major source of royalties' that copyright owners would expect to receive.\(^\text{98}\) Finally, it defined 'unreasonable prejudice' to mean an 'unreasonable loss of income to the copyright owner.'\(^\text{99}\) Although the annual loss estimated by the parties varied widely (from less than $1,000,000 to over $53,000,000), the panel found that it was too large for the third criterion of Article 13.

\(^{89}\) Berne Convention art 11.
\(^{90}\) Berne Convention art 11bis.
\(^{91}\) Berne Convention art 11ter.
\(^{92}\) Berne Convention art 12.
\(^{93}\) Berne Convention art 14(1).
\(^{94}\) WIPO Copyright Treaty art 6(1). However, a state may provide that this right is exhausted after the first sale of a particular copy of the work with the author's authorisation. WIPO Copyright Treaty art 6(1). The treaty also provides that authors of computer programs, cinematographic works, and phonograms shall have the exclusive right to authorise commercial rentals of such works, subject to limiting conditions. WIPO Copyright Treaty art 7.
\(^{95}\) Berne Convention art 9(2).
\(^{96}\) United States - Section 110(5) of the US Copyright Act, WT/DS160/R.
\(^{97}\) United States - Section 110(5) of the US Copyright Act para 6.133.
\(^{98}\) United States - Section 110(5) of the US Copyright Act para 6.206.
\(^{99}\) United States - Section 110(5) of the US Copyright Act para 6.229.
The Berne Convention also requires states to adopt legislation to protect the moral rights of an author, even after the author has transferred the economic rights in the work. One protected interest is the right of attribution: 'the right to claim authorship of the work.' The other moral right recognised by the convention is the right of integrity: 'the right to object to any distortion, mutilation or other modification of the work which would be prejudicial to the author's honor or reputation.' Absent a waiver, these moral rights continue to exist after the death of the author 'at least until the expiry of the economic rights' and may be exercised by the author's successors as authorised under domestic law.

Patent protection is inherently territorial. An inventor must apply for a patent in each state where protection is desired. Accordingly, a global patent does not exist. The principal function of international property law in this area is to harmonise municipal law. Three conventions dominate the field: (a) the 1883 Paris Convention; (b) the 1970 Patent Cooperation Treaty; and (c) TRIPS, which is the most important instrument.

The Paris Convention contains a number of provisions dealing with patents, but fails to establish a comprehensive regime. For example, the convention seeks to resolve conflicts between the domestic laws of different states that impair an inventor's ability to secure patents for the same invention in multiple states, in part by providing a temporary right of priority. In addition, it adopts the overarching principle of national treatment for patents and other covered forms of intellectual property. Foreign inventors 'shall have the same protection' that nationals enjoy under domestic law, and 'the same legal remedy against any infringement of their rights.' Finally, the convention authorises parties to adopt legislation providing for the issuance of compulsory licenses to use a patented invention when the exclusive rights are abused by the patent holder, such as 'failure to work' the patent.

The Patent Cooperation Treaty facilitates the process for obtaining patent protection in multiple states. It authorises an inventor to file a patent application with an 'international searching authority,' which will review existing patents and other literature, and provide a written opinion as

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100 See the discussion of the right of integrity in ch 12C(1).
101 Berne Convention art 6bis(1).
102 Berne Convention art 6bis(1).
103 Berne Convention art 6bis(2).
105 Paris Convention art 4.
106 Paris Convention art 2(1).
107 Paris Convention art 5. The convention also provides the equivalent of the right of attribution for an inventor. Paris Convention art 4ter.
to whether such an application would be successful at the domestic level. In the second phase of the process, the inventor can submit the application to the patent office of each state where protection is sought.

In contrast to these piecemeal efforts, TRIPS establishes minimum global standards for patent protection. It provides that patents 'shall be available for any inventions, whether products or processes, in all fields of technology' as long as they are 'new, involve an inventive step and are capable of industrial application.' Parties must require the applicant to 'disclose the invention' with sufficient clarity and detail that it could be 'carried out by a person skilled in the art.' However, a party may deny patent protection for inventions in certain circumstances, such as to 'protect ordre public or morality' or where the invention could impair human, animal, or plant life or health or cause serious harm to the environment. Protection may also be refused for diagnostic, therapeutic, and surgical methods, and for plants and animals other than microorganisms.

TRIPS specifies that a patent shall confer on its owner certain 'exclusive rights.' In the case of a product patent, the owner has the right to prevent third parties from 'making, using, offering for sale, selling, or importing for these purposes that product' without the owner's consent. When the subject of the patent is a process, the owner may prevent others from 'using, offering for sale, selling, or importing for these purposes at least the product obtained directly by that process.' The patent owner also has the right to assign or license the patent, and to transfer it by succession. The term of protection provided under a patent must continue for at least 20 years from the application date.

Under TRIPS, states may provide exceptions to the owner's exclusive rights, but this must not 'unreasonably conflict with a normal exploitation of the patent' or 'unreasonably prejudice the legitimate interests of the patent holder.' In addition, states may allow third parties to use a patent without the owner's consent under narrow circumstances. Such an authorisation must, inter alia, (a) be based on its 'individual merits,' (b) occur after the proposed user has made efforts to obtain

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109 TRIPS art 27(1).
110 TRIPS art 29(1).
111 TRIPS art 27(2).
112 TRIPS art 27(3).
113 TRIPS art 28(1).
114 TRIPS art 28(1).
115 TRIPS art 28(1).
116 TRIPS art 28(2).
117 TRIPS art 33.
118 TRIPS art 30. See eg Canada—Patent Protection of Pharmaceutical Products, WT/DS/114/R (April 7, 2000), finding that domestic law that permitted stockpiling of pharmaceuticals violated Article 30 because the quantity was not 'limited.'
permission from the owner on reasonable commercial terms, (c) be non-exclusive and non-assignable, (d) be predominantly for the domestic market of the party, and (e) provide for payment of 'adequate remuneration' to the owner, considering the 'economic value of the authorisation.'

International law historically provided little protection for trade secrets. The Paris Convention required member states to extend protection against unfair competition, including 'any act of competition contrary to honest practices in industrial or commercial matters.' But this vague provision was ineffective.

TRIPS established global standards for the protection of trade secrets under the rubric of 'undisclosed information.' In this context, undisclosed information is defined as information that: (a) 'is secret,' in that it is not 'generally known among or readily accessible to persons within the circles that normally deal' with that kind of information; (b) 'has commercial value because it is secret'; and (c) 'has been subject to reasonable steps under the circumstances' to keep it secret on the part of the person who lawfully controls it. Each member state must ensure that persons may prevent such information lawfully within their control from being 'disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices.' The term 'a manner contrary to honest commercial practices' includes (a) breach of contract, (b) breach of confidence, (c) inducement to breach confidence, and (d) the 'acquisition of undisclosed information by third parties who knew, or were grossly negligent in failing to know, that such practices were involved in the acquisition.'

The Internet and Web space have fundamentally transformed the availability, reproducibility, and circulation of immaterial goods. From a socio-cultural perspective, the technological opportunities have triggered a clash of conflicting values, norms, and ideas concerning the meaning of culture, cultural production, and cultural consumption.

Under copyright law economic rights are the legal means to facilitate extraction of economic value from copyrighted Works. The immediate goal of these rights is to safeguard pecuniary interests. Economic rights are commonly divided into two classes: (reproduction of the work in a material form, and public dissemination of the work in a non-material form) copy-related and copy-unrelated rights. Copy-related rights control exploitations that involve physical objects, in which signals are fixed in a fairly stable manner. Copy-unrelated rights, by comparison, concern

119 TRIPS art 31.
120 Paris Convention art 10bis(2).
121 TRIPS art 39(2).
122 TRIPS art 39(2).
exploitations that do not necessarily involve fixation in tangible objects. The infringements of copy-related and copy-unrelated rights simply involve forms of communication in which media are used in different ways. Prima facie infringements of the economic rights concern the dissemination of valuable works. The impetus of exclusivity is to defend this economic value, as certain acts by unauthorised third parties might put that value at risk. The risk to authors' exploitation opportunities rests precisely in the communicative value of actions the law considers potentially infringing because the market value of works emanates from the ability to provide and charge for access. The creation and dissemination of Works (whether legitimately or illicitly) are actions that potentially generate pecuniary value on which the actor seeks to capitalise, and the connection between the communicative and pecuniary value is evident both in cases of legitimate exploitation and of infringement. In other words, there is a direct, unequivocal thread connecting economic value, economic interests, and communication-related behavior.

The emerging literature has begun to identify and explain the core traditional features of private property within the framework of an information cost paradigm. Information cost theory is premised on the universal proposition that regulation always imposes certain economic costs. One sort is information costs. In the context of property entitlements, the legal rule generally carries with it two types of information costs: The first type concerns information about the res itself, its conceptual and physical boundaries, its attributes, qualities, and so on. These costs relate to ascertaining what the 'work' is and what distinguishes it from other objects. The second type of information costs relates more directly to the legal entitlements surrounding the res. It includes first information about the fact the object is a private property res, and second, information concerning the content and scope of the property entitlements surrounding the object. As a practical matter, nonowners need to know (at least) what they can and cannot do without talking to rights-holders first.

The three main groups of nonowners affected by property regulation can be called avoiders, challengers, and transactors. Avoiders are likely to make up the largest group. Avoiders simply wish to keep away from infringing on others' private property rights and minimise the risk of incurring liability. Accordingly, they must be able to identify the object and comprehend their set of

negative abstention duties concerning that object. It is possible to view avoiders' information cost as externalities resulting from the allocation of property rights to rights-holders.\textsuperscript{127}

Challengers vindicate antagonistic claims with respect to the res. As a logical preliminary step, they should be able to resolve information uncertainties so as to realise they are challengers in the first place. In other words, they need to know what the object is and what rights are attached to it in order to ascertain conflict with their own expectations regarding the same res. Next, they need information about the scope of their opponents' rights to formulate their own claims.

Transactors endeavor to acquire property rights via consensual exchange. They obviously need to valuate the object, good. To make an accurate assessment, transactors need detailed information about the attributes of the res (e.g., its quality, age, origin, functionality, or marketability).\textsuperscript{128} They further need to know who their potential contractual partners are and what rights they hold in order to assess what rights the potential partners can legally transfer. In the course of ascertaining rights and identifying rights-holders, information about challengers' actual and potential claims and the prospects of successfully undermining the legal position of the rights-holders are relevant factors in the decision-making process. In this respect, information costs are a central component in the overall transaction costs involved in dealing with economic goods.

Parties affected by the allocation of property rights must acquire information relevant to their profile - but acquiring this information is costly. The basic idea of the information cost theory is that the legal rule, which imposes lower net information costs, is better than a rule imposing higher net information costs. The net information costs entailed by each alternative regulation depend on multiple variables (e.g., the number of persons affected by the rule, the attributes of the res, and the complexity of the property arrangement surrounding it). Smith described the regulation dilemma as the choice between two strategies, an exclusion strategy and a governance strategy.\textsuperscript{129}

\textsuperscript{127} Externalities can be described as 'side effects' of economic activity. Standard economic analysis distinguishes between consumption and production externality. See Varian, H. R., & Repcheck, J., (2010), 'Intermediate microeconomics: a modern approach (Vol. 7)', New York: WW Norton. If property rights are the 'good' in the focus, then 'consumption' by rights-holders (i.e., the exercise of rights) imposes negative (information) externalities on duty holders. This application might seem rather plastic, though it suffices for explaining the general point of information costs that attach to legal rights. Note the notion of externalities in economic theory intimately relates to the notion of transaction costs. See, e.g., Dahlman, C. J., (1979), 'The problem of externality', Journal of law and economics, 141-162.

\textsuperscript{128} As Coase explained: 'In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up the contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on. These operations are often extremely costly, sufficiently costly at any rate to prevent many transactions that would be carried out in a world in which the pricing system worked without cost.' see Coase, R. H., (1960), 'Problem of social cost', the. JL & econ., 3, 1.

\textsuperscript{129} Smith, H. E., (2002), 'Exclusion versus governance: two strategies for delineating property rights', The Journal
According to Smith, in exclusion, 'decisions about resource use are delegated to an owner who, as gatekeeper, is responsible for deciding on and monitoring specific activities with respect to the resource. To set up such rights, rough proxies like boundaries and the *ad coelum* rule are used. These exclusion rights are used when the audience (of duty holders) is large, and their simplicity reduces the processing costs that would be high for such a large and anonymous audience.\textsuperscript{130} By contrast, Smith describes governance rules as picking out specific uses and users. As governance rules contain more details, they impose a greater informational burden on a definite group of duty holders. Any given legal rule generally falls somewhere on the spectrum between the exclusion and governance poles.\textsuperscript{131}

Information cost theory has been applied to provide an economic rationale to the existence and justification of long-standing property concepts - kind of antithesis challenging the 'disintegration' thesis. The paradigmatic example of exclusion strategy is the prevalence of the right to exclude in positive property law. According to Smith, 'property includes a basic exclusionary regime with refinements of the governance type.'\textsuperscript{132} Instead of positively specifying in detail the uses exclusively reserved to the owner - thereby imposing correlative duties on nonowners to respect them - the law employs a rough proxy, bunching all those uses under the simple norm stipulating negative exclusion from making any unauthorised use of the resource. Nominally, the information costs of knowing a simple negative rule are expected to be lower than those of knowing a complex positive regulation. The information cost theory would justify the right to exclude if rough exclusion proxies (sending on/off works, goods telling uninvited nonowners always to stay clear) are more efficient than refined proxies contemplated under a governance rules. Exclusion rules are less precise on the one hand, but are cheaper to process and enforce on the other. By comparison, governance rules are more precise but entail more processing and enforcement cost. It follows there is an inevitable trade-off between the preciseness of the rule and the information costs it imposes. It is equally obvious exclusion strategy is not always 'better' than governance simply because it lowers net information costs. More accurate proxies may be necessary both as a matter of

\textsuperscript{130} Long proposed a taxonomy classifying nonowners (in the intellectual property context) into avoiders, transactors, and builders. See Long. Note classifications here are analytical and not mutually exclusive, as in reality, a single nonowner may exhibit attributes of one or more groups.

\textsuperscript{131} Smith writes: 'The theoretical limit, achievable only under conditions of zero transaction costs, would be one in which every potential Hohfeldian legal relation (right/duty, privilege/no right, and so on) is specified between every pair of members of the society. At the opposite extreme would be a total absence of specification of rights (anarchy or complete open access). In between are situations in which rights are specified, but they bunch together what would be separate rights in the fully specified zero-transaction-cost world, and so fall further toward the exclusion end of our spectrum.'

economic efficiency and broader policy considerations. The information costs argument only underlines its unique focal points as such that might help to shape the legal rule among other factors that should guide lawmakers.

Information cost theory underscores and reinforces the economic-functional rationales of traditional property concepts. Property law is about the regulation of access and use of resources ('works, goods'), making an intensive use of an apparatus called the right to exclude, which avails against the rest of the world, of which violation entails injunctions and other legal sanctions. All these basic features of property law reemerge as the discussion proceeds to the area of intellectual property, at times yet with greater vigor. It shall be shown the persuasive force of information costs perspectives is also reinforced when the property res is stripped from any physical attributes - namely, when the res is intangible.

Moral rights generally have different rationales, it seems the communication aspect encapsulated in the rules that outlaw their breach is no less prominent. Moral rights protect 'ideal' rather than monetary interests. The focus is on 'the relationship of authors to their works' and the 'sacred bond' between the authors and works. In this case, the linkage between the infringement and communication does not necessarily emanate from the economic value of providing access, but rather rests on the possible impact on the Author, which, in turn, might shape the Author's image of the creator. For that reason, it is difficult to think of a violation of moral rights that exists outside the communication sequence and that is divorced from the element of author and impact on the audience.

The timing of initial dissemination, and occasionally, related issues such as the place and form of initial publication controls by the right of first publication. It seeks to protect authors' entitlement to decide at which stage the work shall be exposed to the public, if at all. By its terms, the right concerns publication, which roughly means large-scale diffusion of the work. In jurisdictions where the divulgation right is explicitly protected, the scope of the right intrinsically relates to the legal definition of publication. Publication is a form of communication that is somewhat more restrictive than communication in general; its precise meaning and scope is usually determined by legal definitions found in the respective copyright laws. For instance, a given

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\[^{134}\text{Ginsburg, J. C., (1989), 'Tale of Two Copyrights: Literary Property in Revolutionary France and America', Tul. L. Rev., 64, 991.}\]

\[^{135}\text{For example, Art. 3(3) of the Berne Convention provides: 'The expression 'published works' means works}\]
definition might delineate publication according to the number and identity of Users or to the copy-related or copy-unrelated nature of the dissemination. In any case, the legal notion of publication is always nestled within the more general concept of communication. Violation of the divulgation right must involve communication, which the law sometimes considers unlawful if at the time of the alleged violation, the author was not yet ready to expose his creative engagement to the public. Therefore, in determining liability one of the critical questions is whether the author has already exhausted the right to be the first to release (or authorise the release of) the work to the public prior to the communication act under discussion.

The right of attribution (or the right of paternity) protects the non-pecuniary interest of authors to be acknowledged as such in connection with their works. Attribution is often relevant in connection with the dissemination of works to the public. Although dissemination is not always a formal, statutory element of violation in jurisdictions that recognise this right, it is difficult to imagine a violation of the attribution right that lacks any communicative dimension whatsoever. Assume arguendo that the author has exercised her right of first publication while making sure her name is properly attached to all legitimate copies. From a communication perspective, the identity of the source is often a very important aspect of Work interpretation and the attribution of value/relevance to it by the User. Omitting or obscuring the identity of the source is likely to have communication-related implications that might in some cases harm the source (namely, the author). The law considers the interest to be associated with the work as its maker warranted and that it deserves protection. Applying the terminology of information and communication theories, violation of the attribution right might introduce noise to the communication, inasmuch as the violator obscures the original Work. This application suggests that when an author publishes a work with her name attached to it, the source element becomes indispensable to the Work itself, as deleting it would impair the Work and the operation of the dissemination process. To the extent that such actions harm authors, this harm would almost certainly occur in communicative constellations, namely, when reception takes place without the Users being aware of the identity of the (true) Author. In other words, the magnitude of the harm to authors increases as more Users are exposed to the damaging work.

published with the consent of their authors, whatever may be the means of manufacture of the copies, provided that the availability of such copies has been such as to satisfy the reasonable requirements of the public, having regard to the nature of the work. The performance of a dramatic, dramatico-musical, cinematographic or musical work, the public recitation of a literary work, the communication by wire or the broadcasting of literary or artistic works, the exhibition of a work of art and the construction of a work of architecture shall not constitute publication."  

Chapter 2. Property Theories in Modern Laws

Physical relations has a long lineage with property law which traditionally defined relations of persons with regard to physical 'things', or relations between persons concerning 'things'. Property doctrines around problems of possession and use of physical resources, in which legal and actual-physical relations often merged has been developed under the Roman law. Legal scholars and courts enshrine physical relations within property doctrines under occupancy and possession theories. Possession and occupancy property doctrines essentially presuppose the existence of an object, or, put in the legal vernacular, a res. The res is not simply an element in the property formula; it is its centerpiece. There must always be a thing, a resource, with respect of which the property regime creates rules of access and use.

The central importance of res as the signifier of property law is evident in civil code jurisdictions, which occasionally classify property regimes as the 'law of things'. Mere manifested relations between persons and resources usually do not suffice to confer legal property rights absent social recognition in that person-thing relation. Property is not only a legal, but also a social institution in which members of society make assumptions and claims. Property law regulates behavior of individuals in social settings, where legal rules mirror social conceptions and conventions about the legitimacy of private possession and the duty to respect it. The complex interrelation between the law of private property and social recognition is starkly reflected in theories of social contract or social consent, tracing back to early thinkers such as Grotius, who spread this idea at the dawn of Western liberal thought. Some contemporary scholars similarly emphasise the crucial role of social consent within the foundation of theoretical justification of property.

Grotius and other liberal thinkers derived the social consent requirement from the general proposition that prior to private property, resources are owned by mankind in common. Though theorists may disagree about the social contract tenet and its role in explaining and justifying private property in things, as a practical matter, it seems pointless to speak of private property in the abstract without considering both its social functions and social ramifications—and the manifestation of property entitlements as a part of social life, conventions, and institutions. In that social structure, property is associated most often with physical spaces and/or objects capturing physical space in a world. Scarcity of space and valuable resources generates conflicts for which the

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law seeks to provide the institutional framework for resolutions. In this light, one central mission of property law is to clarify ownership entitlements and secure the ability of owners to reasonably enjoy, improve, protect, and transfer resources.

At the same time, the thing subject to property arrangements need not always be tangible, and the reason for the emergence of property rights in intangible things is not always (and not directly) rooted in scarcity. But either way, it is always about things. In this light it is safe to propose that property entitlements have at least two necessary elements. One is the subject, which is the person having a claim. The second is the object, the property res. Various property systems expressly establish the status of ownership or owner, denoting the person holding entitlements in the thing over which ownership reigns. Other systems are more ambivalent in their stipulations concerning the content of ownership. Generally speaking, ownership vests in the person(s) holding all or some of the entitlements to the thing. As a rule of thumb, a person is often considered the owner if she holds three core interests in the thing: the right to exclude, the privilege to possess/use, and the power of transfer.

The right to exclude (jus prohibendi) is a keystone element, perhaps the most important among all private property entitlements. Some commentators consider the right to exclude the very essence of private property. In an unruly world, a person having a claim in a resource could still exclude others from it by using physical force or physical barriers. But legal thinkers and common sense predict exclusion that depends solely on self-help measures would furnish a rather 'miserable' possession. State-supported exclusory entitlements provide the essential guarantee to owners, with the law ensuring their individual claims shall be respected by their fellow citizens. With legal exclusion rights, owners may expect to have the resource available for use, enjoyment, and transfer without the need to ceaselessly watch for challengers.

The right to exclude is a negative entitlement: it commands third parties to forbear, rather than support duties to perform acts. Holders of exclusory entitlements may prevent unauthorised entering, touching, use, and other physical interference with the res. In the absence of the ability to exclude, control over the resource is impaired and its value to the owner is expected to diminish. The right to exclude is often celebrated as the hallmark of ownership, as it provides the necessary underpinning for virtually all (or most) other ownership-related property entitlements. Private exclusion is the most direct measure to combat the problem giving rise to the need for private property in the first place, namely, competition over valuable resources under conditions of scarcity. Further, as the right to exclude is transferable, it can increase the exchangeable value of the
Negative-exclusory entitlements and positive-use entitlements are often intertwined. The negative right-claim to exclude indirectly secures the rights-holder's opportunity to exercise positive enjoyment privileges herself. Exclusion capacity can be said to encapsulate within itself positive use entitlements, as making positive use often become feasible indirectly by virtue of the ability to exclude strangers. Accordingly, positive use entitlements are implied and inferable from a broad exclusion entitlement. (We do not attend here to situations in which 'standing-alone' positive use rights conflict, and where the law's recognition in such positive rights might influence the legal analysis.) In any event, property rights (both negative and positive) are rarely unqualified. Public and private interests of others may trump private ownership rights to use the object where the law considers it more beneficial or just.139

The in rem principle goes hand in hand with the right to exclude. It addresses the second question mentioned in the introduction to this section: who is affected by the right to exclude? Exclusion in rem usually means the right avails 'against the world.' The law does not identify or specify duty holders, but every person is generally under a duty to respect the private dominion.

The in rem operation of property exclusion entitlements draws an important distinction between the domains of property and contract law. In the property scenario, duty holders are indefinite and numerous. One of the most important distinctive characteristics of property right connects precisely to that impersonal aspect. Rights-holders do not need to know the duty holders or have a personal connection to them. No less important, duty holders do not need to know the rights-holders or have any connection to them either. This feature is particularly significant in the constellation of exchange. As property rights are usually impersonal, according to the in rem principle, the fact a property interest has changed hands does not affect the obligation of nonowners in general; the only thing nonowners need to know is that the resource is owned by someone. Among other things, this aspect of property rights reduces the information cost of nonowners, who need not inquire about the precise identity of rights-holders in order to assess the scope of their duty. Though property rhetoric speaks of rights against the world, the circle of persons actually affected by property rights held by owner A with regard resource X clearly does not extend so broadly. Rights in rem actually affect only those nonowners whose activities might conflict with the exclusive rights held by A. For analytical purposes, one may classify affected nonowners according to certain distinctions. For example, nonowners who only wish to avoid violation of exclusion

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139 Rights, P., (2002), 'Legal pluralism and dynamic property rights'.
rights can be distinguished from those advancing conflicting claims over the resource. Other groups of nonowners are those interested in transactions with rights-holders or those who are adversely affected by the use performed by rights-holders. Most importantly, the in rem principle generally situates all nonowners on an equal footing, and the scope of their duties is initially independent of classifications and subjective inclinations.

Numerus clausus means literally “closed number.” As a legal principle, it reflects the observation that the design of property rights is subject to structural limitations. In the United States, some property scholars have contended that property rights are limited in number and form, and that this feature is unique to property entitlements. They argue (descriptively) that property rights are fixed and limited in a menu of basic choices. The principle implies structural and quantitative constraints on the possible emergence of property rights in any given scenario. Specifically, private parties cannot create property rights that are not already recognised as such.

The numerus clausus principle indicates the property system, with some exceptions, is generally intolerant to the novel, idiosyncratic formulation of interests. That means the law would generally refuse to enforce nonrecognised entitlements against persons who are not in contractual privity with each other. In other words, nonrecognised entitlements usually will not “run with the asset” to bind third parties other than the original parties to an agreement. Commentators generally agree the numerus clausus principle is reflected in property systems, though they might disagree about its description and main function. For instance, whereas Merrill and Smith argue the numerus clausus principle operates to reduce information costs, Hansmann and Kraakman challenge that view, proposing instead that the principle, in fact, regulates the types and degrees of notice required to establish different property rights, and that its purpose is to facilitate verification of ownership of rights offered for conveyance. In any event, both views offer an economic-functional explanation to the numerus clausus principle, which focuses on information-related dimensions and consequences of property rights on such costs.

Calabresi and Melamed articulated in their well-known account the distinction between property and liability rules and its implications in the following manner:

In our framework, much of what is generally called private property can be viewed as an entitlement which is protected by a property rule. No one can take the entitlement to private property from the holder unless the holder sells it willingly and at the price at which he subjectively values the property. Yet a nuisance with sufficient public utility to avoid injunction has, in effect, the right to take property with compensation. In such a circumstance the entitlement to the property is protected only by what we call a liability rule: an external, objective standard of value is used to
facilitate the transfer of the entitlement from the holder to the nuisance.\textsuperscript{140}

Calabresi and Melamed identified a typological distinction between legal rules endowing holders a priori veto powers to suppress unapproved use on the one hand, and on the other legal rules that excuse unapproved action, but mandate ex-post compensation. Significantly, Calabresi and Melamed constructed an economic framework for their analysis. For example, they explain the existence of liability rules as buttressed by a straightforward economic efficiency rationale. At the same time, they did not neglect to mention noneconomic rationales to liability rules (e.g., distributional reasons).

The distinction between property and liability rules receives concrete outlines when one closely examines the legal-positive formulation of a given legal entitlement. Does the law grant to the rights-holder an in rem veto power to prevent actions, or rather, does it create a compensatory cause of action valid against wrongdoers? An important aspect (or rather, a consequence) of having a property entitlement is the availability of injunctions to the rights-holder, which is a typical characteristic of a property regime. Property rules, as identified by Calabresi and Melamed, signify property entitlements, whereas liability rules exhibit a deviation from the common property formulation of rights and duties. As noted, their perspective gives much weight to legal remedies and their impact on stakeholders (i.e., the legal consequences of violations). Injunctions and super-compensatory (punitive) damages are typical consequences of property rules’ violations, whereas judicial awards of compensation to remedy violations by stipulating monetary damages based on approximate market value or actual harm are more typical of liability rules.\textsuperscript{141}

Calabresi and Melamed suggested that a liability rule is generally preferable when transaction costs are high, whereas a property rule is preferable when transaction costs are low.\textsuperscript{142}

The economic rationale behind this proposition is elementary: when a property rule controls a situation in which high transaction costs prevented a more efficient allocation through contracting, it is more efficient to shift to a liability rule, under which non owners are allowed to extract utility without consent, but must pay compensation that would approximate a hypothetical efficient transaction. Thus, when transaction costs are prohibitively high, or in holdouts and strategic behavior situations, it would be generally more efficient to follow a liability rule. The contribution of the property/liability rule distinction to the conceptualisation of property is important, as it helps to identify private property entitlements according to their general adherence to the property rules


\textsuperscript{142} Supra note 140.
scheme. According to this scheme, the legitimacy of using a privately owned resource depends on its owner's consent most of the times and for most purposes, and consent is the key to extracting enjoyment and utility from the res. Infringement of private property rights is likely to entail severe legal consequences in the form of injunctions and overcompensatory damages awards.

2.1 The Traditional Property Theories

The profoundly influence of modern property theories can be found in works of John Locke.\textsuperscript{143} The main idea is labor-based justification of private property rights. The theory proclaims a natural right to property born out of exercising labor upon not-yet-appropriated resources found in the state of nature. Locke's initial premise is that to extract utility, persons must exercise labor upon natural raw resources. The raw resources in the state of nature are held in common by all mankind until appropriation via labor occurs, as labor morally justifies a reward. The laborer's claim for reward furnishes the core normative justification for the grant of an exclusive property right in the resources he has extracted from the state of nature. The discussion here focuses mainly on one critical point, namely, the baseline problem and its relation to copyright.

Locke begins with proposing that a person has a property right over his own body.\textsuperscript{144} He describes the state of nature as containing resources given to mankind from God in “common.” However, these resources cannot be utilised or enjoyed in their natural state – instead, individuals must exercise labor upon them. When a person mingles his efforts (the 'labour of his body, and the work of his hands') with the raw, uncultivated materials of nature, thereby removing them from the state of nature, the resulting product should to be his. Mixing labor with a natural resource endows property rights in the resource and distinguishes it from the common. The status of resources in the state of nature as 'common' suggests the appropriation applies to resources not yet appropriated through labor by someone else. Locke suggested that appropriation through labor of common resources is justified under two main conditions (provisos). The enough-and-as-good proviso requires that in ex post appropriation, there are enough and as good resources left in common for others to exercise labor upon. In other words, appropriation should leave the world with similar appropriation opportunities as it has been ex ante. Locke also introduced the no-waste proviso condemning excessive accumulation of property leading to destruction of goods before they can be utilised. According to Locke, property is a 'natural' right not in the sense that persons are born with that right, but that their individual endeavors give rise to the right, as opposed to dependency on

\textsuperscript{143} Dunn, J., (2003), 'Locke: a very short introduction', Oxford University Press.

positive stipulation by the state.

The argument emphasises the 'pains' suffered by the laborer, which renders his claim superior to the expectations of residual claimants, who anyway are left with enough-and-as-good appropriation opportunities. At the same time, Locke makes several assertions having instrumental-utilitarian flavor. Importantly, Locke seems to have strayed away from the path marked by early natural law thinkers such as Grotius and Puffendorf by questioning the theory of social agreement/tacit consent. Grotius, for instance, insisted natural property rights must be based on the community's acknowledgement. By contrast, Locke did not seem to condition appropriation out from the common with the consent of all commoners or society in general. Locke warned that if private use of natural resources depended on the consent of all mankind, man had starved, notwithstanding the plenty God had given him.

The numerous important objections to the Lockean justification cannot be reviewed here. One significant point is Locke appears to have downplayed the obvious problem of scarcity, that is, taking from the common under scarcity conditions almost inevitably diminishes the opportunity of other commoners to do the same. A possible solution to this problem resides in Locke's enough-and-as-good proviso, yet to serve this purpose, the proviso must be sustainable under real-life conditions. In Locke's reality, exploring the vast, uncultivated plains of the New World or drinking from an ever-rushing pond that is permanently generating water to quench the thirst of men, served as examples of appropriation that left enough-and-as-goods resources in common. It is clear, however, that natural resources are more often scarce and exhaustible than otherwise. Simple logic warrants that under scarcity conditions, any taking from the commons would reduce the quantity of remaining resources left for others. It also follows that a taking from the commons necessarily affects others’ ability to appropriate for themselves. It is open to debate whether the proviso strictly requires that commoners shall have enough and as good appropriations opportunities, or whether they shall merely have enough and as good opportunities to use/enjoy/benefit from resources. Locke's own formulation, requiring 'there is enough, and as good left in common for others,' seems to better correspond to the first alternative because it does not include enjoyment from resources not in common ownership any longer. The first alternative is obviously more difficult to satisfy in practice.

Nozick proposed a modification to Locke's argument based on a lenient interpretation of the enough-and-as-good proviso. Nozick suggested the increase in social products resulting from the private property right can alleviate the problem of applying the proviso under scarcity conditions. Nozick is careful to distinguish between his proposed modification to the proviso and utilitarian
interpretations, as his does not seem to consider the labor rationale (including its provisos) as part of the normative justification of private property. Accordingly, appropriating from the commons does not necessarily worsen the position of other commoners under scarcity conditions, and persons whose overall situation is improved by the existence of property rights protection in general cannot complain about being impoverished via individual acts vesting private property rights in certain assets labored upon.

A second well-documented critique of Locke's property rationale relates to the problem of proportion. Locke seems to hold the laborer is entitled to private ownership in the entire product or resource he has labored upon. However, there is no clear indication the intensity or scope of property rights earned are commensurate with the intensity or amount of labor invested, or that their scope should be proportional to the value added to the resource through labor. In an imaginary reality of inexhaustible resources, this might not amount to a serious distributional problem. However, under scarcity conditions, there is a strong sense of unfairness if the investment of minimal input. Correction of this problematic outcome possibly should include a mechanism for determining the scope of property rights according to the amount of self-resources invested (i.e., labor) and the amount taken away from the commons (i.e., the value of expropriated common resources, possibly offset by the benefit to the public resulting from the appropriation). Or at the very least, it seems this is what a moral labor-based system of property rights would need.

The Lockean argument itself does not contain elements that would a priori foreclose application to ideal objects, perhaps to the contrary: some property theorists find the argument particularly attractive in the context of intellectual property. Indeed, the labor theory of acquisition seems, if anything, stronger here precisely because intellectual property does not require any form of mixing with tangible forms. Rather, these types of property appear to be the result of pure labor, which the creator, therefore, cannot keep because first possession of a tangible object allows him only to protect the paper on which the draft is written, rather than the draft itself. Yet by the same token, the author has not taken anything else out of the commons and so does not run into the joint contribution objections that undermine the power of the first possession rule for tangible objects. The only function of legal intervention here is to protect that investment in labor without any expropriation. Authors do not expropriate commoners by acquiring exclusive rights in works they have created, and the enough-and-as-good proviso can be more easily satisfied, depending on the scope and nature of exclusive rights granted. For example, if copyright protection extends only to

the original elements of the work, arguably the position of other would-be authors ex post appropriations is not worse as a result of copyright exclusivity relating to nothing more than that. According to this view, later-day authors enjoy at least the same number and quality of informational resources as compared to their position before copyrights have been acquired. To the extent a system of property rights in expression improves the position of later-day authors (e.g., by enriching their intellectual heritage and sources of inspiration), the objection based on questioning the viability of the enough-and-as-good proviso might lose much of its vigor.

The information environment surrounding the author may be used by the author for creating his own expression, constituting together the 'raw material' labored upon. Author creates a work, which is essentially the subject matter of copyright. Before origination, the work has been purely a subjective thought, whereas now (ex post origination) the work becomes an artifact that is both legally and economically relevant. The author used impressions which are not subject to any property right in themselves in the work. These impressions becomes a component of property subject matter as expressed in the work, if provided the originality threshold is met. Authors routinely use ideas, constructions, and formulations that are the result of others' intellectual achievements. Now, the proportion between the intensity of using for creating a work does not change the facts that (1) there is no reasonable way to subject creation to property rules, and (2) the work will always include parts of other works that (also under a Lockean worldview) could and sometimes should be subject to property rules.\textsuperscript{147} The most important point is that this parts of other works does not fit within the Lockean depiction of the common as untouched resources, as a raw gift from God. The information environment consists of works that owe their existence to the actions of other persons. In this sense, the baseline problem denotes the inability of one to determine when (based on the labor justification) property begins and the information commons ends. Put differently, there is no baseline from which one can be allocating property rights out of the commons to individuals based on the principle of labor on not-yet-labored-upon resources in their 'state of nature.'

Two recognitions emerge from this problem. First, it is evident the critical challenge is defining the information commons ex ante appropriation. Second, this commons cannot mean untouched resources. Therefore, our conception of ex ante appropriation resources cannot rely on Locke's depiction of the 'plenty of natural provisions there was a long time in the world.' Yet the Lockean argument appears to heavily rely on the assumption that not-yet-labored-upon resources do

\textsuperscript{147} Locke, J., (1849), 'An Essay Concerning Human Understanding'. Locke believed that no knowledge is innate and that all knowledge is acquired throughout life's experience.
exist in the world ex ante appropriation. Some possible interpretations of the commons in the context of intellectual property theory. Each version of the commons stipulates a different criterion for defining zones of freedom to create new messages under an information property regime. Fisher's portrayal takes into account the possibility information resources could indeed exist independently of human communication. For example, reachable ideas are defined as 'all ideas that lie within the grasp of people today,' and possible ideas are defined as 'all ideas that someone might think of.' According to this interpretation of the commons, amorphous, wholly abstract ideas reside in a metaphysical universe, waiting to be plucked by a genius mind who will endow them with a communicable form. This potential may or may not materialise into an expression. Although applying Locke's analysis to the intangible realm would not do violence, for the intangible reality of intellectual property must be defined differently.

As shown, approximations and modifications to the original labor argument must be made, as in its original formulation it cannot justify initial allocation of property rights in creative works. The crux of the labor argument is that strangers have a weaker moral claim to a product that costs the laborer with toil and sweat. A modified argument will have to explain why the claim of the author is superior despite his usage of other works.

The key justification underpinning a moral claim to exclusive rights in the work is not so much the toil of communication as it is the social value added by the author-originator. As noted, desert theories tend to depart from Locke's naive depiction of a laborer removing material from the state of nature and move towards instrumentalist and consequentialist arguments. The next question is how much property would be morally justified under the value-added justification. Insoluble questions of measuring and apportionment are involved. First, it would seem unfair to reward the author for elements she has taken from other authors. Second, it is practically impossible to measure the precise individual contribution of value added to information resources as a result of producing the work.148 Work cannot be dissected precisely according to their original and borrowed elements. One may argue that a given author labored on her expression as a whole; therefore, she deserves exclusive rights in the entire message, negative categories elements excluded. In this case, the conceptual indivisibility of the message plays to the hands of present authors, who claim exclusive rights in the entire work as one whole. And allocation of exclusive rights can never scrupulously correspond to the actual contribution of each and every individual origination in past and present communication sequences. At the same time, the law cannot flatly prohibit any such unauthorised 'taking' as the result would be both ridiculous and unjust. Some accommodations and compromises

must be made, but either way, a calculus based on moral issues should also factor in authors' moral 'debt' to their predecessors.\footnote{Lethem, J., (2007), 'The Ecstasy of Influence: A Plagiarism', HARPER's.}

One practical strategy is to allow some other work taking and grant exclusive rights in the output, but simultaneously diminish the intensity of the 'harm' to others by reducing the intensity of exclusive rights. In particular with respect to free speech rights for a detailed interpretation of the labor argument through the lens of the obligation not to harm others. A modified approach would necessarily apply rough approximations, yet any compromise of this sort seems to diminish the direct relations between labor and reward. Epstein offered a pragmatic solution: he proposed an approximation rationale he named 'confession and avoidance.' He argued in favour of a practical, rough-justice rule that mixes influences from the added-value approach. Accordingly, he who contributed the lion's share to the finished product, making it worthy of our attention, shall be morally entitled to the entire property claim. This argument demonstrates the clear nexus between the justification to copyright and the perception of the author as originator in the meaning of the information model. Further, Epstein suggested the author's property claim could be morally justified if the author contributed an 'equal measure' to the common pool of knowledge.\footnote{Epstein, R., (2005), 'Liberty Versus Property? Cracks in the Foundations of Copyright Law', San Diego L. Rev., 42, 1.}

Let us summarise the critique: Proponents of the Lockean labor argument as a justification to copyright protection must come to terms with serious compromises in the initial formulation of the labor justification and the way justifying property rights in expressions operate. So far it has been assumed, without proof, that human communication generally falls within the notion of Lockean 'labor' for which originators deserve a reward in the form of property rights. However, this might turn at times a very weak assumption. Often, the originator's primary reward for the 'toil' involved in creating a work is purely communicative: the joy and benefit of being socially involved, noticed, and understood by others. To the extent authors-originators contribute to the information process additional (valuable) messages that otherwise would not have existed, assessing their contribution to society seems to better fit within the value-added variation. Indeed, the value-added approach would undermine the 'pains' element as the crux of the moral justification for reward and shift the focus to adding value to the information environment.

At this point saying that communication adds value is one thing. Saying that such contributions morally justify individual reward in the form of exclusive rights in expressions is yet another. After all, the urge to communicate is a basic human need, and as such, it is not inherently something that automatically creates a societal debt from the collective to the individual
communicator.

Even assuming arguendo that authors in general deserve a reward for creating messages, and assuming their net contribution to society can be measured. Lockean labor theories do not seem to offer satisfying answers to these concerns.

Personality theories of property inspired by the philosophy of Hegel and Kant focus on the relationship among property, autonomy, and personal development of the individual\textsuperscript{151}. It is possible to distinguish between development-based and identification-based personality theories. The former category of arguments focuses on the process of personal development and the need to secure the freedom to become a person, whereas the latter focuses on the psychological relationships and dependencies persons develop with respect to things. As one example of identification-based theory, Radin offered a distinction between 'personal property' and 'fungible property,' with the former type relating to personal autonomy manifested in the object, a recognition having a potential influence on the scope and nature of positive property rights in objects. According to many personality approaches, property is an essential condition for freedom, autonomy, and self-actualisation.

Hegel's account of the relations between persons, freedom, and property, as laid out in the Philosophy of Right (Grundlinien der Philosophie des Rechts), proves remarkably viable in the contemporary theoretical discourse on property law. Property plays a critical role in Hegel's broader political-philosophical discussion while assuming its great importance both as being the initial right of persons and as providing the logical basis for the rights to life and liberty. The logical beginning is the free will - a universal, infinite potential. The will is free in the sense that in its abstract, initial mode as 'self' it has no physical characteristics; as it has no physical dimensions, free will is not subordinated to natural conditions or needs, even those of time and space\textsuperscript{152}. The will is free and true as a 'thinking intelligence.'

Free will resides in persons who are likewise free in the initial stage of their individual development: 'The abstract will, the will which exists for itself, is a person.' The will can actualise its abstract freedom only through acts against external objects/things, which, by definition, are not subjects as they do not exist in and for themselves. External objects are distinguished from subjects on the basis that they lack free will of their own. The physical attributes of persons, and the external reality in which they must operate, imposes restrictions on the will. In that reality, through will-


driven conducts directed against external things, the personality - initially a shapeless, contentless and abstract entity - progressively develops its actual freedom and individuality. Hegel suggested will-driven conducts executed against external things is a necessary condition for actualisation of freedom and personal development: 'A person must give to his freedom an external sphere, in order that he may reach the completeness implied in the idea.'

In the Hegelian sense 'right' is an extension of freedom, and free persons have a 'right' to actualise their freedom and develop their individuality via external objects. As noted, in Hegel's philosophy, the subject is an end-in-itself. As such, the person has a right to direct his free will upon every thing and thereby make it his property. Hegel's argument is logical and systematic: as persons have a right to actualise their freedom, and as the only way to do that is to act against external objects, a person must have a right to external objects. Hegel initially speaks of appropriation of unowned things. Through taking possession of external objects, the subject seeks to achieve self-recognition; he distinguishes himself thereby from unfree objects and from other subjects with respect to which he seeks to relate himself.

The function of property in Hegel's ethical composition is multifaceted. Property is first and foremost a result of a mental act of willing, a claim that creates rights. Hegel draws at the outset an important dialectic distinction between right in the legal sense and right in the philosophical sense. Further, Hegel defined abstract right as having to do with personality, as the proper safeguarding of freedom within the special juridical sense. Abstract right is derived from the personal entitlement to develop and actualise freedom. In line with this distinction, the positive (formal) right granted by the state in particular cases may or may not mirror the full spectrum of acts covered by the abstract right. Further, having a formal-positive right is not proof the rights-holder has an abstract right to begin with.

In The Philosophy of Right, Hegel pointed out three external aspects of appropriation. The embodiment of the will occurs in the process of progression thought levels of development - from a purely abstract existence towards objective and external freedom - which is manifested in possession, use/consumption, and alienation. It is possible to think about the three forms as delineating the stages in the evolution of the relations between the person and the object. Possession begins the relation, use or consumption maintains it, and alienation often marks the end of it.

For possession to take effect, two necessary conditions need to be fulfilled: first, the subject must have will to appropriate the object, and second, some physical interaction between the will-contained body and the external object must take place. As to the physical-objective phase,
possession is manifested partly as occupancy, partly as forming, and partly as mere marking.

The thread of external manifestation continues to the next stage of property relations. Use or consumption of the object is recognised through the alteration of the object in some way, where the change in form is attributed to the claim of the will. In Hegel's framework, the nexus between property rights and use/consumption is crucial. This manner of property externalisation signifies a direct and immediate relationship between the will and the thing. The thing is openly and unambiguously subject to the individual will; the relational hierarchy between the willing subject and the thing is salient. The subject-object interaction, signified by use (or deformation) of objects, launches a process of recognition-by-negation through which subjects and objects are recognised as such.

Hegel not endeavoring to precisely draw limits on the legitimate power of state intervention regarding conduct of individuals. In this vein, Hegel further did not provide specific guidelines for the proper allocation of property entitlements. Hegel the proposition that all persons are entitled to some private property rights. Accordingly, everyone is entitled to at least a modicum of private property, but we do not know exactly how much. A positive legal system should support private property via organisations and political institutions while conducting rational decision-making processes that determine the actual scope and limits of private legal rights.

The possibility of disposing of property rights follows the same rationale for acquiring them in the first place, namely, the relation to the will. When the element of will-driven actions embodied in external objects fades away, so does property. Hegel recognised that some things are inalienable: those elements of the inner self such as personal freedom, morality, religious convictions, and life itself. However, Hegel clearly regarded property as alienable in principle, inasmuch as such alienation does not compromise an ongoing, present exchange between the free will and the object. The issue of alienation proved particularly challenging. However, Hegel clearly regarded property as alienable in principle, inasmuch as such alienation does not compromise an ongoing, present exchange between the free will and the object. The issue of alienation proved particularly challenging. The problem of alienation is that at the intersection of a contract, the will of the transferee already implicitly exists in the object, and unlike in the traditional property sense of passing 'good title,' the property rights of the transferee do not depend on simultaneous existence of precisely the same property rights in the transferor. Legal relationships relate only to the creation of legal subjects - persons capable of bearing rights and duties. The legal subjectivity mutually constituted with abstract right is, therefore, equally abstract and formal.\textsuperscript{154}

\textsuperscript{154} Hegel, supra note 152
Classic utilitarian thinkers considered utility, welfare, and happiness as bedrock concepts in legal theory and legislation. State protection of property expectations enhances the sense of security among members of the public, thereby contributing to greater happiness. Property protects the basis of expectations that is founded on existing rules - and by securing these expectations through the institution of property, society can expect some level of productivity.

A well-known exposition of the utilitarian stance in the positive law is the Intellectual Property Clause of the U.S. Constitution, vesting in Congress the power to legislate patent and copyright laws "[t]o promote the Progress of Science and useful Arts."\(^{155}\) This clause exhibits a consequentialist, means-ends relationship between the exclusive rights and the grand project those rights are destined to serve. By contrast to backward-looking reward theories that seek to compensate authors for past achievements such as Lockean labor, utilitarian approaches to copyright aim to encourage the production of creative works in the future. The key assumption is that authors and other rights-holders can be incentivised via exclusive copyrights to create and produce more than what they would otherwise do. With this assumption in mind, an extensive body of theoretical literature deals with applying law-and-economics analysis to intellectual property issues.\(^{156}\)

Economic analysis of copyright law emerged more-or-less simultaneously with the inception of modern law-and-economics literature. Standard economic analysis of copyright law considers the main task of the law as ameliorating the free-rider problem.\(^{157}\) Actors who invest economic resources in creating and producing information products should be able to recoup their production costs. Creators usually cannot compete with a copyist, who only needs to cover the marginal costs of producing an additional copy (which are comparatively very low).\(^{158}\) Actors who invest economic resources in creating and producing information products should be able to recoup their production costs. Creators usually cannot compete with a copyist, who only needs to cover the marginal costs of producing an additional copy (which are comparatively very low).\(^{159}\) Exclusive rights to reproduce, distribute, communicate, etc. provide supercompetitive advantages to rights-

\(^{155}\) See U.S. Constitution, art. 1, § 8.


\(^{158}\) See Gordon, Intellectual Property, supra note 110, at 619.

holders and are designed to secure a level of protection that will offset the social costs of monopoly with the value generated by providing economic incentives to produce and create new works.

Contemporary conversations about property in general - and intellectual property more specifically - can draw important insights from both perspectives on private property as a social and legal institution. It was further argued that instrumental-economic approaches to property law might even reinforce the conceptualist's view on property (for instance, under the assumptions and methodology of information cost theory). In the same vein, both traditional property concepts and legal nominalism are constructive for addressing various aspects and complex philosophical, normative, and pragmatic questions of intellectual property law. Especially in the context of copyright protection in the digital environment, high protection proponents tend to uphold the physical property metaphor to support their views, including arguments for a broad right to exclude in rem being applicable to copyrighted works as well. Yet as their critics often maintain, a sweeping analogy between intangible goods and conventional property already bears significant risks at the level of the basic assumptions of that analogy.

As shown in the discussion above, justifying strong copyright protection solely on moral/personality grounds is especially problematic, a recognition that has been arising also in jurisdictions such as Germany and France. Among the many discrepancies between classic moral justifications of private property and copyright law, elaborated on problems in Locke's original labor-based argument as the basis for exclusive rights in works. By comparison, Hegel's position viewing positive intellectual property protection merely as a department of commercial regulation is far less an 'ethical' underpinning to copyright as it is often thought to be the case.

At the framework level, no single theoretical approach to copyright is capable of providing conclusive answers to the regulative challenges, and at the same time, neither should be dismissed on its face as plainly 'false'. In addition, some longstanding conceptual tenets of property, within which the right-to-exclude in rem plays a central role, can provide a useful orientation point for analysing the nature and function of various property structures, including the one controlling creative works. In the context of digital copyright protection, a clear view of the way in which private property law principally operates is important for understanding the transition of the legal system from regulating works in analog formats to covering digital information.

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2.2 *Contract and Property*

Property right regimes and IP rights over digital creations clash violently with individual freedom in the Internet. The Internet has set the stage for the new ways of creation and share (of) digital works. The ordinary ways in which individuals create and share culture fall within the reach and regulation of the law, which has expended to draw within its control a vast amount of culture and creativity that it never reached before. The technology that preserved the balance between uses of culture that were free and uses of culture that were only upon permission has been undone. I do not think that mere use of digital creation is the type of freedom that ought to trump a claim of individual property. At the same time, I recognise a serious social interest in digital market.

Classical contract law is centered around the problem of enforcing promises in discrete transactions. It asks whether a promise or a set of promises made by a party should be enforced or not in a discrete and presentiated exchange. Relational contracts are anchored in the more flexible and less presentiated exchanges and they are of great importance to sustain long-term collaboration. The total legal obligation of the classic contract is set at the beginning of the exchange when an offer meets its acceptance. In contrast, a relational contract is more flexible and adaptable to the future.

The proliferation of new licensing practices appears to reflect the development of collaborative creativity and a new, more dynamic position of the user in the network environment. Each user is now, thanks to readily available digital technologies and media hardware and software, a potential consumer, producer, creator and distributor of creative work. While licensing is finely tuned for the analog world, the digital environment has changed the way in which copyright content is marketed, distributed, delivered and consumed, and this has had significant consequences for the upstream and downstream processes of rights clearance.

Examples of recently developed forms of contract law - copyright licensing include the Free and Open Source Software (FOSS), which rather than representing renunciation or abandonment of copyright are actually new ways of exercising the rights provided under copyright and a form of distribution that relies upon the copyright owner's exclusive rights. FOSS is increasingly used for commercial purposes and more and more their use appears associated to more traditional, proprietary licenses as in software products which combine both proprietary and open source code in the same technology or application. The use of FOSS in mixed platforms can offer important benefits in product development, including high quality solutions, reduced costs and shortened development periods. But this mixed approach raises technical or licensing implications that require
2.3 The Common Concept

The commons is a relatively under-theorised concept in legal and political theory. The principal texts on property theory recognise three prototype institutions for organising access to and use of valuable resources - private, public and common property. In every modern state, irrespective of its political and economic constitution, each of these models for holding resources co-exists to one degree or another. What distinguishes them is the question of who (if anyone) has the de jure authority to make decisions regarding access to and use of given resource. It may be a private individual or legal entity, a state official, or no specific individual or entity at all. Private property refers to a state of affairs where one or more individuals or a private legal entity is recognised under the law as having a right to exclude all others from access to and use of an object. Similarly, public property refers to where the state, or one of its agencies, is recognised under the law as having the right to exclude others from access to and use of a given object. In respect of each, the non-owning population is under a correlative legal duty not to interfere with the designated owner's exclusive right. The essence of ownership, whether it be the public or private variety, is legally authorised and enforceable exclusion. The beauty of the analytical account of property is that it enables one to assess the basic normative operation of the institution without the ideological baggage that comes with justificatory theory. Property, from this perspective is a regulatory device; whether it is a tool of state/capitalist oppression or the servant of justice is another matter.

Nowadays most assets of economic value are held as either public or private property. Common property, or 'the commons', during the political conflicts of the twentieth century have been largely overlooked. Reduced to its conceptual minimum it entails a situation where no specific individual or entity is recognised under the law as having a right to exclude others from access to and use of a given resource. Thus when a resource is held in common everyone has an equal privilege to use it and likewise no one is under a duty to anyone else (including the state) regarding how they may take actions or decisions that involve that resource.

Roman property law used a sophisticated classification system for distinguishing between

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the different resource holding institutions. Each property classification is prefaced with the noun res (literally translated as a 'thing') and qualified by an adjective that specifies the nature of the particular object of property and hence it is treatment under the law. For instance res privatae referred to property that was owned by private individuals, i.e. private property, and res publicae to items of state property. Of relevance to the present discussion is the explicit recognition afforded to the commons (or analogous institutions) under Roman law. Three categories of common property are of particular interest.\textsuperscript{164}

Res nullius referred to those objects that are in the common until such time as an individual appropriates them. The main class of objects that fell into this category was ferae naturae, i.e. wild animals and fish. A wild creature was common property until such time as a person captured it. At this point it became the private property of the person who caught it rather than the landowner on whose land it was found. The taking possession of an object-occupation-was one of the recognised ways in which title could be validly acquired. It can be said to be one of the few examples of where Locke's labour theory took effect in practice, i.e. the admixture of labour with the wild creature transformed something that exists in the commons into an item of private property.

Res communes omnium referred to those objects which were, by their nature, incapable of individual ownership. Justinian's laws made explicit reference to this category, though not much further was said of it in the legal text.\textsuperscript{165} it is generally regarded as referring to air, the sea and sunlight. These, as has been discussed previously, are the archetypal examples of common property. There are in such abundance as not to require a managed system of allocation. Carol Rose makes the neat observation that intellectual property law affects ideational objects by transforming them from res communes omnium into res nullius.\textsuperscript{166} Ideational objects are by their nature incapable of individual ownership, however, intellectual property law facilitate exclusion and thereby make them ripe for individual appropriation.

Res divini juiris were objects which, because of their sacred or specific nature, were barred from private ownership. It further subdivided into res sacrae (formally consecrated objects), res religiosae (objects related to burial) and res sanctae (objects related to the defence of Rome, e.g. city walls). The classification of these objects as 'common property' is somewhat anomalous


\textsuperscript{165} Schulz, F. Classical Roman Law.

\textsuperscript{166} Tamm, D. Roman Law and European Legal History.
because the state imposed strict criminal sanctions on persons who interfered with them. The state, though not strictly speaking the owner of these objects, nevertheless acted as their guardian.

It would be churlish to overstate the importance of the commons to the Roman property system, thought the categories discussed above capture the essence of the concept: Roman law does, however, serve as an historical example of how the commons can be institutionalised into an property system that also recognises public and private ownership. The common law does not have an equivalent conception of common property, though it does, of course, lay down rules for governing certain co-ownership institutions.

Environmental and institutional economists have developed a large body of work that goes under the heading 'common property theory'. The original impetus behind this line of scholarship seems to have been the economic analysis of fisheries resources carried out by Scott Gordon and Anthony Scott. They demonstrated the difficulty of maintaining sustainable fish stocks without some form of regulation. Garret Hardin's well-known easy, 'The Tragedy of the Commons', wherein he described the overuse and ultimate destruction that arises when open-access to pastures and the like is permitted, crystallised the 'blacklash' by common property theorists. Hardin recommended that the only solutions to the tragedy of the commons were the imposition of either government or private ownership regimes in respect of the common resource. In retrospect it seems quite extraordinary that Hardin's article resulted in the response that it did. His comments regarding the problem of collective action were simply restating what had been recognised by Aristotle two and a half thousand years ago (and by many others in between). Nevertheless, the project pursued by common property theorists since 1968 has been to demonstrate how well managed common ownership regimes, rather than public and private alternatives, can avoid the threat posed by the tragedy of the commons. it is a sort of 'third way' response to overuse of natural resources.

Contemporary common property theory makes a number of important distinctions that help clarify the analysis of natural resource management. First, one must contrast the nature of good from the property regime. Contemporary common property theory is, in general, concerned with what Elionor Ostrom terms 'common-pool resources'. There are resources whose benefits are (a) difficult to exclude, but (b) subtractable, i.e. one person's enjoyment lessens the consumption opportunities of others. The property regime on the other hand refers to the institutional mechanism for holding common-pool resources, i.e. public, private or joint (common) ownership. Second there

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167 Gadsden, G. The Law of Commons.
168 Hardin, G. The Fishery: The Objectives of Sole Ownership.
169 Ostrom, E. Governing the Commons.
is the distinction between the resource system and the flow of resource units. The resource system is the facility that generates a flow of resource units over time. For example, a lake is a resource system whereas the fish that swim in it are the flow of resource units. Finally, one must contrast, as Ciriacy-Wantrup and Bishop advised in their well-known article, between common property and open access regime.\textsuperscript{170} For contemporary common property theorists, common property refers to a resource holding institution consisting of a limited numbers of members who have right to exclude non-members. An open access regime, on the other hand, refers to where non-one at all has a right to exclude others from access to the resource system and /or exploitation of the resource units. In truth therefore contemporary common property is concerned with analysing what Harris terms 'communitarian property'. They have shown how this very old community institution can successfully overcome the threat of overuse that open-access regimes entail. Thus, they represent a third option (private and public ownership being the other two) for avoiding the tragedy of the commons.

Elison Ostrom and Charlotte Hess have explored the viability of transposing common property theory to information that is communicated via the Internet.\textsuperscript{171} They propose that a distinction be made between (a) the facility, i.e. the Internet, (b) the artefact, i.e. the digital file in which an informational object is represented, and (c) the idea behind the artefact. They also make suggestions regarding the adoption by scholarly authors of open-publishing and archiving strategies for online delivery. They nonetheless fail to show the relevance of contemporary common property theory to the management of informational resources that are communicated via the Internet. The common property theory of Ostrom and Hess is concerned with institutional arrangements for managing common-pool resources. These are naturally occurring material objects that are susceptible to overuse and therefore require some form of regulated control. Common property regimes are an alternative regulatory model to private and public ownership. Information on the other hand is not a common-pool resource: it is a pure public good and therefore requires no exclusionary or internal management norms in order for it to be efficiently allocated or managed. In fact, the most efficient means for allocating informational objects is to absent them from exclusionary and management norms. The only 'economic' problem suffered by information is a provisioning one. Contemporary common property theory does not therefore offer any useful insights on the production and distribution of commonly held information.

The Internet information commons is refer to any instance where an individual, group or

\textsuperscript{170} Ciriacy-Wantrup, S. & Bishop, R. Common property.
\textsuperscript{171} Ostrom, E. and Hess, C. Ideas, Artefacts, and Facilities: Information as a Common Pool Resource.
legal entity creates and makes available an informational object via the Internet on the understanding, either expressly or by implication, that non-owners are not under a legal duty to refrain from engaging in communicative or transformative acts with respect to that informational object.

The informational commons is characterised by the absent of the economic interest on the part of the de jure owner. This insight is sufficient for providing a satisfactory analytical account of what is and what is not in the Internet informational commons. Accordingly we need to consider four scenarios that may arise when a person creates and makes available a work via the Internet:

First, there is the situation where the de jure owner(s) makes available a copyright work via the Internet and expressly conditions on the payment by recipients of monetary sum. This is a clear example of where the copyright owner asserts his economic interest and thereby exercises his property right. All paid-for Internet content falls into this category. Well-known examples include the iTunes service.

Second, there is the situation where the de jure owner(s) makes available a copyright work via the Internet, he does not condition access on the payment of a monetary payment, but nevertheless signals to recipients of the information that they are expected to adhere to their legal duty not to communicate the informational object to other people. The signal can be by way of copyright notice, a set of terms and conditions that stipulate the conditions of access and/or the reasonable implication as to the intentions of the owner, bearing in mind the likely reason for him having engaged in information production. This is example of where copyright owner indirectly asserts his economic interest and thereby exercises his property right. There are numerous rational explanations (in the economic sense) for why an owner would make access to his proprietary information free of charge, while at the same time demanding that individual recipients do not engage in further communicative acts with respect to the informational object. The principle business model that reflects this rationale is the advertising supported free-to-view information service (WIPO Magazine). Other rational explanations for adopting this strategy include the practice of offering an informational object as a loss leader for some other product or service (e.g. the free legal information provided by law firms on their websites) and offering a free version so as to stimulate sales of paid-for equivalents that are available in other media (e.g. the Times newspaper website). It is reasonable to assume that the economic interest is present whenever an information owner signals that he expects recipients to adhere to their duty not to communicate information. Informational objects made available on this basis do not therefore fall within the information
commons.

Third, there is situation where the *de jure* owner(s) makes available a copyright work on the Internet free of charge and expressly releases recipients from their duty not to engage in further communicative acts with respect to the work. By adopting this course of action the information owner unambiguously signals that he is foregoing the economic interest, which copyright is designed to serve. By so doing he in effect abandons his property right and thereby donates the informational object to the information commons. The best known example of this seemingly irrational behaviour is the software released under the General Public license (GPL) of the Free Software Foundation. The Creative Commons project for instance allows artist to release their works on a free distribution bases.\(^{172}\) When information good is made available under the aegis of one of these licenses, the fundamental principles of welfare economics dictate that each unit will be cost at or near to zero.\(^{173}\) Thus the decision to release recipients from their duty to engage in further communicative acts must, according to economic logic, destroy the economic interest underpinning the property right conferred by copyright law. it is therefore appropriate to deem these objects as forming part of the information commons.

Fourth, there is the situation where the *de jure* owner(s) makes available a copyright work on the Internet free of charge, though is silent on the matter of whether or not he requires recipients to refrain from engaging in further communicative acts with respect to that work. This is a grey area, requiring a subjective analysis of the owner's intentions and motivations. If the owner makes the informational object available on the implicit understanding that recipients are released from their duty not to engage in further communication acts, one can infer that it too forms a part of the information commons. These implicit cases are difficult to identify with certainty: however it does not take a great stretch of the imagination to classify the abundant information made available by inter alia non-governmental organisations, think-tanks, university professors, web bloggers as example of where the property rights over information, for all practical purposes, has been abandoned. In general, no economic interest of these authors is served by imposing restrictions on recipients' communicative activities with respect to the informational object.

An omission from the above list is the category of public domain works. Public domain works are, as a matter of law, exempt from property norms and therefore don not require any further analysis. They form, by definition, a part of the Internet information commons once they are

\(^{172}\) http://www.creativecommons.org

\(^{173}\) Quah, D. Digital Goods and the New Economy.
published on the Internet.

Recognition that the Internet supports a healthy information commons counters many of the pessimistic predictions of enclosure and excessive commercialisation in . Cyberspace may be viewed as part of the global commons: a 'region' outside the territorial jurisdiction of any state, like the high seas or outer space. The concept that cyberspace exists in a spatial sense—that it is a place—is a helpful metaphor. Cyberspace has a physical structure in the form of computer servers, cables, and other equipment spread across the planet; and most of this structure exists within national borders. Yet no single state has sufficient control of this physical infrastructure to regulate the entire network.

Territorial borders are meaningless in cyberspace. A cyberspace user in State B may utilise the internet in a manner that adversely affects a national of State C, leaving that person with no effective recourse under domestic law. Moreover, although a user does 'enter' cyberspace in a sense, it may be difficult to determine the name, location, and nationality of that person—unlike the traditional situation where a state can easily identify and regulate anyone seeking to enter its territory.

From the perspective of property law, analogizing cyberspace to a global commons has two implications. First, a global commons region is open for use by any state—and, in a derivative sense, any national of any state—absent a contrary norm. Accordingly, as a general principle, each person holds a derivative property right to use cyberspace, unless precluded by law. The second implication of the analogy is that effective regulation—including property rights in cyberspace and analogous interests—can only occur at the international level.

In respect of informational resources, the commons represents an effective, and sometimes superior, model for organising social access and use.

2.4 Protection of legal rights

Person is the bearer of a right when a duty is imposed in order to serve or protect interest. Duties in the course of representing or protecting the interests of the right-holder is the most interesting feature of rights. The imposition of a duty which brings into existence a right will make the beneficiary a right-holder. A right exists only when the reason for imposing the duty on others is a person's interest. The assertion of a right is the assertion that a person's interest is of sufficient weight to ground a duty. Rights indicate the existence of duties in an interesting fashion. It is
possible to say that rights serve as reasons in practical reasoning. A right is an interest of sufficient importance to the person who has it to serve as an exclusionary reason guiding the action of others.

Intellectual property rights (IPR) score relatively high in terms of scientific and technological content and knowledge factors. It is generally accepted that copyright occurs in the domain of cultural creation, and is closely related to cultural innovation and the culture industry; patent rights arise in the field of technical applications, and are closely allied with technical innovation and technology industry; and trademarks function in the area of business operations and involve a number of issues such as product sales and market trading. The implementation of an IPR system can have a profound impact on a country's economic development, technological progress, and cultural and educational prosperity. IPR protection also involves international politics and trade as well as cultural and technological exchange and cooperation between countries.

IPR are rights belonging to private individuals. They are concerned with private interests; they are not public rights shared by everyone. They are rights that have been confirmed by private law. IPR's having become a private right as a result of the non-material wealth. Theory of 'intangible property' provides essential conceptual and intellectual material for the immateriality of property. As the object of IPR, intellectual property is different from the 'real thing' protected by real rights. Since intellectual property is a specific object that differs from tangible property, it would seem inappropriate to group it under the category of things. Nevertheless, intellectual property can become an object of exchange like tangible property. Intellectual property can achieve an external 'being determinate' through 'expression' in a particular form. According to civil law theories of the object, objectivity is the general characteristic of the objects of rights, intellectual property included. The objectivity of tangible property (things) is manifest as an objectified physical entity, and the objectivity of intellectual property can be understood as an objectified knowledge system. The different between objects serves as the basis for the classification of types of rights. The distinction between IPR and other property rights consists precisely in the intangibility of the objects.

The aim of IPR is to protect the legal rights and interests of creators and to promote the wide dissemination of knowledge and information. Based on the spirit of civil rights, IPR needs to establish two basic legal viewpoints, the first which is the protection of private rights. The construction of intellectual property law fully demonstrate that idea of private law as oriented toward the domain of private rights. As IPR is the form of right that relates to knowledge property, it possesses similar basic attributes to real right, and should therefore fall into the category of civil rights and be integrated into the system of right. Although intellectual property law contains some
provisions from procedural law and public law, it still belongs to a system of private right based on real law. For example, procedures for acquiring, changing and managing rights and relief for rights all center on the creator's rights. Intellectual property law, rights determine obligations. The second viewpoint, is that of balance the interests. The interests of parties involved, of the subjects of rights and obligations and of individuals and society, should be consistent with the idea of fairness. The balance of interests emphasized by IPR legislation is in practice linked with particular forms of limitation and utilisation of rights.

2.5 Intellectual property

The important challenges of 21 century are the legal and regulatory responses to mobile technological environment where one innovation in information and communication technology follows the other.  

The Internet, as high technology application, induces the emergence of a brand new system of public relations which leads to new law features and properties of intellectual product as an object of legal relationship. As a kind of 'creative environment' that radically reconfigures the human creativity by broadly replacing traditional form of intellectual creation and communication, the Internet creates the complex problems of legal regulation at the intersection of different branches of law. The complexity of the Internet becomes more clear when one considers the key legal issues such as intangible property, intelligent things, IP protection, enforcement of legal rights and Internet contracts.

The various forms of human-computer interactions between social systems and


technological systems introduces the changing nature of law as a socio-technical problem. In such environment, technical innovations are often also legal innovations and legal developments require socio-technical analysis as well as social, legal, political and cultural approaches. Examples of areas in which Internet innovations are already receiving legal attention are rife. A non-comprehensive listing includes rights that concern beginning but not ending with those raised by human creativity embedded in intangible property and Internet content, which are the most widely discussed and those of which the public is most aware. They are raised by liability issues for objects that range from content to the Internet of Things.

In the context of this dissertation, the legal and regulatory analysis of the Internet should be based on three basic objects of regulation. We view Internet content in terms of generator of intellectual creation and use of standardised techniques for various forms of legal and contract regulation (see Figure 1.1). The first is regulated by traditional regulators and general law applicable to the Internet content (1). The second is user generated content (UGC) whose regulation will be discussed in this study within the field of creation of new form of IP - intangible property. The third extends down into the framework of the intangible property model (IPM) and contract regulation.

![Figure 1.1 Internet content as forms of legal and contract regulation](image)

The intangible property model (IPM) is a proposal for redesigning legal rules as applied and

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enforced in the realm of digital intellectual creations. It is clear that there are several different legal approaches that can be taken to such analysis. To develop the intangible property model, we need to define methods and techniques to align this model with the processes that users support. This balance has the objective to improve the definition and the development of the intangible property system at all layers, from the owners of intangible property works and goods where the strategy of the intellectual property rights is elaborated, down to the application layer where the production activities are supported by dedicated and well tailored contract propositions.

![Figure 1.2. Strategy of Intangible property.](image)

The technological potential view (1) considers Internet innovations as the incentive both for designing the intangible property model, firstly, and for elaborating the intangible property structure and processes, secondly. The implementation view (2) considers the incentive for the organisational infrastructure and processes creation, and the intangible property infrastructure and processes elaboration. The competitive potential view (3) illustrates the case where new intangible property opportunities generate new products and goods and, as a result, the organisational infrastructure and processes. The service level view (4), as the competitive potential view, is also driven by intangible property opportunities which necessitate fast changes of the intangible infrastructure and process that support end users interest.
Chapter 3: Classical Contract in the Copyright Perspective

Contract law, like intellectual property, can give legal sanction to determinants of intangible property, although here the law may play a more structural role. The provision of contract is just as important as what rights are generated in the first place. The traditional theory of contract law is well understood. Contract has significant regulatory dimensions, because whether or not entitlements and transactions are valid and effectiveness depends on state definition and enforcement of the rules that comprise the legal infrastructure. Classical contract law is centered around the problem of enforcing promises in discrete transactions. It asks whether a promise or a set of promises made by a party should be enforced or not in a discrete and presented exchange. Relational contracts are anchored in the more flexible and less presented exchanges and they are of great importance to sustain long-term collaboration. The total legal obligation of the classic contract is set at the beginning of the exchange when an offer meets its acceptance. In contrast, a relational contract is more flexible and adaptable to the future.

The proliferation of new Internet contracts practices appears to reflect the development of collaborative creativity and a new, more dynamic position of the user in the network environment. Each user is now, thanks to readily available digital technologies and media hardware and software, a potential consumer, producer, creator and distributor of creative work. While contracts are finely tuned for the analog world, the digital environment has changed the way in which intellectual content is marketed, distributed, delivered and consumed, and this has had significant consequences.

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for the upstream and downstream processes of rights clearance. In this respect, intangible property rights start out with content of intellectual creation, the envisioned welfare enhancement requires transfer of those rights to those who utilise and value them.

The Internet contract may be seen as the source of rules governing distribution of rights among content owners, licensees or purchasers, and the general public. Contract law regulates intellectual content by granting legal control over new creations in order to prevent, delay, or raise the cost and encourage investment in creation.

3.1 Licensing Model for copyright content

It is likely that copyright and related rights holders will increasingly rely on licensing and contracts, together with copyright law to manage their intellectual property. As content has become more fluid and its means of delivery to users more variable, market offerings can now be tailored to suit the particular needs of individual consumers, or groups of consumers, sharing common requirements. A more diversified range of products is reflected in a corresponding need for greater flexibility in the structure of legal relationships between content providers, intermediaries and consumers. Contract law also allows greater flexibility in managing these relationships.

Right holders of proprietary software often use shrink-wrap and click-wrap licenses. Two terms of shrink-wrap licenses are visible through the shrink-wrap boxes containing the software program. By breaking the shrink-wrap, the buyer is deemed to agree to the terms for using the software and a contract is formed. Some courts have held that shrink-wrap licenses are unenforceable as contracts of adhesion, while other courts have considered them valid. An adhesion contract is a bargain drafted unilaterally by a dominant party, and presented as a final offer to a party with very little bargaining power. The terms are generally presented as a preprinted form to the weaker party, who lacks any real ability to negotiate the terms. If an individual chooses to return the product, however, they are no longer bound by the terms of the contract.

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Intellectual property rights in software have traditionally been proprietary and protected by copyright and, in some jurisdictions, patent law. On the other hand, the open source movement in the software industry has adopted a different position towards asserting intellectual property rights in software. Open source refers to the development of software whose source code is publicly available in conformity with the certification standard issued by the Open Source Initiative (OSI). The software, although usually copyright protected, is distributed free of licensing restrictions and the developer encourages users to run, modify, copy and distribute the software freely, so long as certain conditions are met, including that the program's source code remains publicly available and the holder of the source code license does not collect royalties. The movement is designed to encourage collaborative software development, to remove programming errors or bugs and promote derivative works. The open source business model is based on the copyright system as well as contract, because copyright provides the legal infrastructure for open source software. Some such software is distributed under the General Public License (GPL), which grants licensees the freedom to reproduce the software under GPL conditions. Users of such software are bound by the GPL.

Another licensing model has been developed by a collaborative effort known as Creative Commons (CC). In 2002, CC released a set of copyright licenses free for public use, that rely upon copyright for their enforcement like the GPL. Unlike the GPL, however, Creative Commons licenses are not designed for software, but rather for other kinds of creative works: websites, scholarship, music, film, photography, literature, courseware, etc. Creative Commons is working on a project to internationalise Creative Commons licenses for jurisdictions around the world.

3.2 Creative Commons

Creative Commons is predominantly known as a project that provides a set of licenses that support the share, reuse and remix of digital content in online environments. Creative Commons as a term may thus denote three things: First, the whole project aiming at the legal reuse of online material; second, the set of standardised licenses that make the objectives of the project possible; and third, the CC organisation.185

The Creative Commons project was founded by Lawrence Lessig while he was a professor at Harvard Law School, the Berkman Center for Internet and Society.186 Lessig was influenced by

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185 Creative commons. – Creative Commons, 2001.
186 Bridle, A. J., 'Berkman Center for Internet & Society'.
Richard Stallman's General Public license in the sense of providing a standardised license for the free distribution and remix of material on the Internet. The core concept of the project was to allow novel forms of creativity that were taking place on the Internet to be conducted in a legal way. The basic idea of those forms of creativity was that they were based on pre-existing works and that the obtaining of permission from the original rights-holders was becoming increasingly difficult. Lessig and his colleagues have originally sought for a solution from the U.S. Copyright Office. However, the latter's suggestion that there was no available legal instrument to solve the problem had led Lessig to become creative in the sense of producing a novel regulatory instrument, i.e. the CC licenses. Such an instrument was set to define a 'middle ground' between a 'no-rights reserved' approach as found in the case of file-sharing culture and the 'all-rights reserved approach adopted by the Copyright industry.187

The CC project seeks to achieve its objectives by putting in place specific mechanisms that are based on the assumption that the regulatory intervention should occur in three levels: legal, technical and semantic. In the legal level, the Creative Commons project provides six versions of its licenses that are produced as the result of the combination of one fixed (Attribution) and three variable elements (ShareAlike, NonCommercial, No Derivative Works). The most open licenses allow the reproduction and adaptation of the licensed material with no obligations on behalf of the licensee other than the attribution to the original author. The least open licenses allow only verbatim reproduction of the licensed content with the obligations to attribute the original author and not to use the material for commercial purposes.188

Unlike the General Public license, in the case of CC there is no single set of licenses valid across all jurisdictions; instead each jurisdiction that opts to adopt the CC project also has to adapt the CC licenses to its own legal system and national language. This process is called 'porting' following the computer science terminology denoting 'the process of adapting software so that an executable program can be created for a computing environment that is different from the one for which it was originally designed (e.g. different CPU, operating system, or third party library). The term is also used in a general way to refer to the changing of software/hardware to make them usable in different environments'. All CC licenses of the same kind, e.g. the Creative Commons Attribution, ShareAlike, NonCommercial v.3.0 licenses are comprised of the same legal features irrespective of the jurisdiction in which they have been ported. In that sense, the structure of each license looks as a pyramid where the license type is at the top and all compatible license of the same

Such structure is reflected on the international organisational structure of the CC project: an international office responsible for the coordination of all licensing drafting processes in the respective jurisdictions is based in Berlin. This is called the Creative Commons International office and is staffed by a CC International Director and two Assistants. After getting in touch with local communities, the CC International appoints in each jurisdiction a Hosting Institution, and one or more Legal Project and Public Project Leads. The Hosting Institution tends to be an influential organisation within the jurisdiction that the license is to be ported.

The Legal Project Lead is responsible for the coordination of the drafting process for the national version of the licenses, whereas the Public Project Lead is responsible for the community building. The Hosting Institution signs with Creative Commons a Memorandum Of Understanding (MoU) that sets the terms under which the CC trademarks are to be used and the way in which the license development process is to be instrumented. Objective, thus, of the National CC projects structure is not solely to port the licenses from one jurisdiction to another but also to construct local communities and get feedback from the experience from national communities and embed it into the licenses. In October 2007, 38 jurisdictions had completed the licensing porting process and 11 more were still in the process of discussing the licenses to be implemented.

Returning to the issue of the CC licenses, besides their legal dimension they have a technological expression in terms of meta-data that may be added to any item that may be identified on the World Wide Web through a Uniform Resource Identifier (URI). Once the legal text of the licenses is completed the respective national teams produce XHTML versions of the six licenses that are then stored on the servers of CC Corp. in San Francisco. Each of the national six versions of the CC license is thus linked to unique URI. Once a licensor decides to distribute a work under a CC license, then she has to follow a 'license wizard' on the CC website. By using the wizard not only she is able to choose the license that is most suitable to her needs, but she also tags her work with the meta-data that describe the kind of license she has chosen for her work. This is done through the inclusion of a reference to the URI of the license type she has chosen to use. Reference to the URI that links to the licensing information of the work needs to be provided along each copy

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or adaptation of the licensed work. Such information allows search engines to identify the number of works licensed under CC licenses and the user of a work to easily identify with the assistance of technical means the kind of rights she may have in relation to a specific work.

As indicated above, the CC licenses also have a third dimension, that is, their basic parts are expressed in plain language and simple icons, so that their operation is understood even by a non-legal expert. This was deemed as necessary due to the nature of the CC licenses as public standardised documents that are to be used by creators that do not have a legal service at their disposal. Such a creator would require not only a set of licenses that would be easy to use but also to understand their operation. Note, that this was not the case with the GPL which was addressed to a fairly coherent community (software developers) that were well accustomed to the social norms the GPL expressed in legal terms. The Commons Deed, which is the term used by CC in order to denote this high-level simple language expression of the various CC licenses, is produced by the national CC teams and is then sent to the CC headquarters along the XHTML version of the legal text of the licenses so that is incorporated in the CC licensing wizard. The link between the three levels of the licenses (legal text, meta data and Commons Deed) is provided by the CC web-site and explains their relationship.

The CC licenses are at the core of the Creative Commons project; however, they are not its sole focus and objective. As the CC project expands in number of jurisdictions and works that are licensed under the CC licenses it also become more diversified in terms of the project it covers and the objectives it has. The introduction of the iCommons project and organisation in Summer 2006 serves this transition to an umbrella organisation, which to a great degree as its purpose to support all forms of open culture and free content dissemination. Hence the last years we have seen the emergence of organisations like Science Commons, that deals specifically with the promotion of Open Knowledge in the areas of Science and Academia or the CC Learn, which aims at the introduction of Open licensing in Education. Finally, following the ccMixter initiative that aimed at the support of the music-remix culture through the provision of the relevant platform, in Autumn 2006 CC has introduced the CC+ project, which is a platform encouraging artists using the CC

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192 see e.g. sections 4b and 5d of the Unported CC Attribution - ShareAlike – NonCommercial v.3.0 license, Creative Commons, 2007b
193 Guibault, L., (2008), 'Creative Commons: struggling to 'keep it simple'.
licenses to get syndicated and commercially exploit their works.

While the CC project is constantly expanding and getting diversified, the licenses still remain its most central aspect. Appreciating the mode of CC development and the way of their operation is a presupposition for a good understanding of the whole of the CC project.

3.3 Copyright, Patent and FOSS.

Free and open source software (FOSS) development is a production model that exploits the distributed intelligence of participants in Internet communities. This model is efficient because of two related reasons: it avoids the inefficiencies of strong intellectual property regime and it implements concurrently design and testing of software modules. FOSS project can be seen as generating a software commons, in which source code is freely accessed, used, modified and redistributed under certain rules specified in a corresponding FOSS license.

FOSS licensing indicates that a FOSS commons is different from the public domain that is a property-free zone. FOSS programmers do not relinquish their IP rights altogether, but they rearrange the initial entitlements as conferred by IP law. The use of licensing schemes mainly reflects the pragmatic side of the FOSS movement. Licensing is not intended to, and cannot be, a complete overhaul of the existing IP system, but they are workarounds or makeshift solutions to particular defects of the legal system as identified by FOSS programmers. FOSS licenses rely primarily on copyright, which protects software programs as if they are literary works. To patent software is hugely controversial in the Anglo-American world and hard-core free software programmers are normally against the use of patents. In order to protect their goodwill and reputation, it is not unusual nowadays for FOSS programmers to seek trademark protection for indicators of the origin of their projects and associated products or services.

From the late 1970s onwards, developments in statutory and case laws in the Anglo-American world gradually established copyright as the main mode of legal protection for computer programs. In the US, the 1978 final report prepared by the National Commission on New Technological Uses of Copyrighted Works (CONTU) recommended that copyright should be extended to software.\(^{197}\) This recommendation was enacted by the 1980 amendment of the US 1976 Copyright Act that expressly included 'computer program' as a subject matter. In this amended Act,

a computer program is defined as 'a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result' and is protected as a kind of literary work.\textsuperscript{198} the existing general copyright principles should in a wholesale fashion be applied to software programs just like any other copyright subject matter.\textsuperscript{199}

In the UK, the Copyright (Computer Software) Amendment Act 1985 for the first time specifically included software programs in the 'literary work' category under the 1956 Copyright Act. The subsequent 1988 Copyright Design Patent Act (CDPA) also provides that copyrights subsist in software programs as 'literary works'. Section 3 (1b), defines 'literary work' as 'any work, other than a dramatic or musical work, which is written, spoken or sung, and accordingly includes [...] a computer program [...]'.\textsuperscript{200} Unlike the US copyright law, the CDPA does not have a definition for 'computer program', which arguably has the advantage of being flexible to include new technologies such as HTML programs.\textsuperscript{201}

There are two possible routes to get legal protection for the functions of software by intellectual property law. The first route is to stretch copyright to cover the non-literal elements of software, while the second route is to patent software as computer-implemented inventions. Strictly speaking, there is no such thing as 'software patent', because software or computer programs standing alone or 'as such' are normally excluded from being a patentable subject matter under the Anglo-American patent law. In fact, the term 'software patent' is often merely used in a loose sense and it does not really have an agreed-upon legal meaning.

It is better to use the term 'software-related invention' (or simply 'software invention') or 'computer-implemented invention', either of which is slightly more accurate in reflecting the actual state of affairs. The reason behind this preference is as follows: what is under the heated 'software patent' debate concerns not the easy case of clearly unpatentable software as such, but the more complicated case of the alleged 'inventions' employing 'software' as a component. Because the legal boundary of these software inventions is not always clear-cut, its wide reach may well profoundly affect FOSS collaborative projects. However, this terminological preference for 'software-related invention' should not be read as a call for categorically banning the use of 'software patents' in the literature. To the contrary, it is intended to give a clearer picture of what much-discussed 'software

\textsuperscript{198} 17 U.S.C.


\textsuperscript{200} UK CDPA, 1998; Accordong to Section 3 (1c), 'preparatory design material for a computer program' is also protected as 'literary work'.

\textsuperscript{201} Stanley Lai, 'The Copyright Protection of Computer Software in the United Kingdom'.

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patent' as a legal phenomenon is really about and why it is so strongly opposed to by hard-core abolitionist free software campaigners. As patent laws about software-related inventions are not exactly the same in the UK (and within the bigger context of European Patent Convention) and the US, I will explain the two patent regimes separately. This explanation will set the scene for a critical understanding of the debate between the 'software patent' abolitionists and reformists within the FOSS community.

In the UK, the statutory language makes it a clear rule that a computer program 'as such', however innovative it may be, cannot be a patentable 'invention' as defined by the Patent Act (PA) 1997.202 This rule is the localisation of the Article 52 of the European Patent Convention (EPC), though its wording fails to adopt the official English text of the EPC.203 Under the EPC, whether a subject matter is patentable depends upon the definition of 'invention' provided by the EPC: 'European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application.'204 It is noteworthy that the text 'in all fields of technology' was later inserted to the original wording of the EPC 1973, in order to synchronise the European patent system with the requirement in Art. 27 (1) TRIPS Agreement 1994.205 European patent system with the requirement in Art. 27 (1) TRIPS Agreement 1994 Very importantly, Art 52 (2) EPC narrows the meaning of 'invention' as in Art. 52(1) by making a list of unpatentable subject matters including 'programs for computers'. So far the rule seems to be reasonably clear that computer programs are excluded from the meaning of 'invention' and are thus unpatentable, but the third paragraph in the Art 52 would cause much confusion and eventually lead to a divergence of opinion on software-related 'inventions' between the UK Court of Appeals and that of the European Patent Office (EPO). This Art 52 (3) is often known as the 'as such' proviso and it reads: [The EPC] excludes the patentability of the subject-matter or activities referred to therein only to the extent to which a European patent application or European patent relates to such subject-matter or activities as such.

Far from spelling an end to the debate over the patentability of software, this 'as such' proviso simply invites more confusion and demands further interpretation of its meaning. It is believed that the text of Art. 52 turns out to be the source of 'the ongoing uncertainty of the scope of

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202 ss. 1 (1) & (2), UK Patents Act 1977
203 In particular, the EPC was amended in 2000 to synchronise with Art. 27 of TRIPS Agreement be adding patents should be allowed in 'all fields of technology'. This change has not been reflected in the PA either.
204 Art 52 (1)
205 Art. 27 (1) reads: '[...] the patent should be available for any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application.' The UK PA has not incorporated this phrase so far
the exclusion form patentability of computer programmers' and the meaning of 'as such' is 'anyone's guess during the past two decades'. After the mid-1980s, in an attempt to give some level of certainty to the meaning of 'invention' in relation to software under the EPC, the Technical Boards of Appeal (TBA) of the EPO made a series of decisions focusing on whether a subject matter has the necessary 'technical character' to be a patentable 'invention'. Among these cases, TBA's 1987 landmark decision on Vicom/Computer-related invention, where a method of processing digital images was examined, stands out as the one of most significance. In Vicom, TBA established the famous 'technical contribution' test: 'Decisive is what technical contribution the invention as defined in the claim when considered as a whole makes to the known art'. In the other words, a claimed subject matter would not be patentable if it fails to make a non-obvious 'technical contribution' to the known art. This Vicom test is important because it sets the scene for the TBA to interpret the 'technical character' that qualifies the subject matter to fall under the meaning of 'invention' under Art. 52, and it was also later adopted by the UK Court of Appeal in Merrill Lynch's Application and Gale's Application. A variant of the Vicom test later made its way into the final text of the abortive EU Directive on Computer-Implemented Inventions, where the 'technical contribution' was expressly required for patentability: 'Member States shall ensure that it is a condition of involving an inventive step that a computer-implemented invention must take a technical contribution.'

Unfortunately, the TBA, in the following years, gradually drifted away from its own technical contribution test used in Vicom, towards a more expansive interpretation of 'technical character'. The abandonment of the 'technical contribution' test did not happen at one stroke but it started almost imperceptibly and then unfolded through a series of incremental changes without express disapproval of Vicom by the TBA. Three cases, i.e. PBS Partnership/Pension Benefits System, Hitachi/Auction Method and Microsoft/Clipboard Format I&II, are often singled out to show a trajectory of TBA's gradual deviation from Vicom to embrace the new 'any hardware'

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207 For the chequered history of EPO's decisions on the meaning of 'invention' and the patentability of CII in the 1980s, see Justine Pila, 'Dispute over the Meaning of 'Invention' in Art. 52 (2) EPC – The Patentability of Computer-Implemented Inventions in Europe'.
208 EPO Board of Appeal. T208/84 [1989] RPC 561
209 [1991] RPC 305
210 Art. 4 Eu Directive on CII
211 David Bainbridge, 'Legal Protection of Computer Software'.
212 Case T931/95 [2002] EPOR 522
213 Case T258/03 [2004] EPOR 548
214 Case T424/03 [2006] EPOR 39; Case T411 [2006] EPOR 40
test. Note that the *old Vicom* test is actually an 'inventive step' test in disguise because a patentable subject matter must make a non-obvious technical contribution to the known art in the first place. In contrast, the new 'any hardware' test eliminates this built-in 'inventive step' requirement. If the claim is made to a physical apparatus, it will be considered to be a patentable subject matter, regardless of whether this 'invention' makes 'technical contribution' to the known art. The 'any hardware' test substantially expands the meaning of 'technical character' and thus lowers the patentability threshold, which moves ever-closer to the removal of the statutory prohibition of patenting software as such under Art. 52 (2) and (3).

The EPO's embrace of the 'any hardware' approach has caused both confusion and frustration to the UK Court of Appeal, which struggles to stick to the 'technical contribution' approach adopted by the its own binding precedents such as *Merrill Lynch's Application*\(^{216}\) and *Gale's Application*\(^{217}\). In *Aerotel LTD. v. Telco Holdings Ltd*, Jacob L.J argues that it becomes very difficult for the English court to be perfectly in keeping with the recent development of EPO's ever-changing jurisprudence on patentability of software-related inventions. He finds that the TBA does not follow its own precedents rigorously but it has come up with six different interpretations of 'technical character' of a patentable 'invention' (including three variants of the 'any hardware' test), none of them are consistent with each other among themselves. The UK court has no choice but to follow its own precedents by using the more onerous technical contribution test due to the doctrine of *stare decisis*.\(^{218}\) The upshot of the *Aerotel* decision is that the UK insists on a higher patentability threshold than the current standard used by the EPO.

To summarise, there has been great definitional uncertainty surrounding the meaning of patentable 'invention' as defined by the Art. 52 of the EPC. The EPO has tried to reduce the uncertainty by pegging the issue to the meaning of 'technical character', which turns out to be equally difficult to pin down. Although the EPO has failed to produce a consistently used test to determine the 'technical character' of a claimed subject matter, it has the tendency to gradually stretch the elastic reach of 'technical character' and thus lower the patentability threshold over the years. It has also led to an unfortunate divergence between the EPO and the UK Court of Appeal on this issue.

FOSS programmers do not endorse 'intellectual property' as a unified body of law, but argue

\(^{216}\) [1989] RPC 561
\(^{217}\) [1991] RPC 305
\(^{218}\) [2007] 7 RPC 117; In a more recent Uk case *Symbian Ltd. v Comptroller-General of Patents*, the Court of Appeal, though using a less hostile tone to the EPO's case law, confirms that technical contribution test should be retained in the UK. [2008] Bus. L.R. 607
that a more subtle understanding is required. There are three observations coming out of a scrutiny of the subtleties of this issue. Firstly, FOSS programmers generally endorse copyright, which is the main legal basis for them to license their software in a non-exclusive fashion. However, they are against some companies' efforts to stretch copyright further to cover the non-expressive part of software. Secondly, standalone software is normally not a patentable subject matter in either EPC countries or the US. Under the EPC jurisprudence, the patentability of a software-related invention depends on whether the claimed subject matter has the right kind of 'technical character'. Since the 1987 *Vicom* decision until now, the EPO has failed to apply a single consistently used interpretation about the meaning of 'technical character', a fact that has led to great uncertainty over this issue. Among FOSS programmers, patents have remained a divisive issue. Non-corporate volunteer FOSS programmers tend to have an anti-patent position because they are more vulnerable to patent infringement allegations, while corporate open source participants tend to be more interested in reforming the patent system than abolishing it altogether.

3.4 Formation of Contract

The main goal of FOSS licensing is to securing software freedom in radically decentralised FOSS project. As programmers may well have different and evolving expectations about the outcomes of their collaborative efforts, it is important for a license to standardise the minimum legal commitments for all contributors in order to prevent a given FOSS project from freewheeling into a Babel of legally incompatible fragments. These legal commitments, when verbalised by the licenses, must be pursuant to the FOSS stewardship responsibility under the Free Software Definition and the Open Source Definition.

Although the goal that FOSS licenses intend to achieve is undoubtedly important, the legal basis on which these licenses are made enforceable is not always clear. This is largely due to the fact that FOSS licenses are mainly take-it-or-leave-it standard forms, which are electronically disseminated alongside software through the internet on a mass scale. These licenses do not seek affirmative assents from licensees or adhering parties through traditional bargained-for exchanges, but they are most likely to be given in either of the two types of electronic standard forms, i.e. clickwrap and browsewrap. The clickwrap requires users to click through the 'Yes, I Agree' button before downloading or installing a particular piece of software, while the browsewrap is merely an electronic notice containing licensing terms and conditions. As most users do not read, let alone...
fully digest, all information contained in clickwrap or browsewrap licenses, their assents are said to be 'presumed' rather than 'actual'. The upshot is that there seems to be no obvious moment when the meeting of minds between licensors and licensees unequivocally happens in a non-bargained - for process like this. When put under the strict scrutiny of classical contract law, the absence of 'actual' assents or that of the meeting of minds poses a serious challenge to the legal validity of all sorts of non-negotiated standard forms\textsuperscript{219}, and FOSS licenses are no exception.

FOSS licenses are better understood through the lens of Relational Contract Theory (RCT) than they are through the lens of the classical contract model. There are two equally important reasons for software licensing jurisprudence to incorporate insights from the RCT. First, proponents of RCT believe that the total obligation does not merely arise from a single moment when parties’ minds are supposed to meet, but more realistically the obligation may also be shaped by ongoing relations among parties. In FOSS projects, contributors’ consent to their obligation of making contribution takes place in a more incremental way and are often derived from rich collaborative relations among contributors. It is worth noting that RCT does not make 'consent' completely irrelevant in a standard form. To the contrary, RCT only alleviates the heavy burden on explicit 'consent' as the sole legitimating mechanism of imposing obligations against the adhering parties. Secondly, a sustaining FOSS project relies on rich and dynamic collaborative relations among contributors in a community, but it is not a product from a single or even multiple discrete transactions between utility-maximising strangers as understood by classical contract theory.

The radically decentralised FOSS production and its licensing schemes defy classical contract law in two senses: they are neither discrete, nor can they be presented. First, FOSS is designed to be extensible and customisable, and it invites users to become co-developers to modify and improve the software wherever they see appropriate. Stallman observes that FOSS development is like 'an evolutionary process, where a person would take an existing program and rewrite parts of it for one new feature, and then another person would rewrite parts to add another feature'.\textsuperscript{220} From proprietary software developers' viewpoint, the indefinitely long 'evolutionary process' is unwieldy and unmanageable, because it threatens the transactional discreteness that is more conducive to commercialisation of the software products. In contrast, FOSS developers see the long 'evolutionary process' exactly as a strength that should be celebrated. Unlike short-lived discrete transactions, the non-discrete collaborative relations make FOSS projects capable of growing and perfecting for a

\begin{footnotesize}
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  \item [\textsuperscript{220}] Stallman, R., (1992), 'Why software should be free'.
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considerable period of time. FOSS licenses here play an important role in facilitating the collaborative efforts among programmers, though they are not collaborative relation itself. Secondly, total presentation is very unlikely to take place in a radically decentralised environment where FOSS is produced. This is because the collaborative relations in FOSS projects are rather open-ended and improvisatory and it is impossible to presentiate future creative efforts onto one present paper or electronic document that is intended to binding.

The idea of 'bare license' is a relatively unfamiliar concept to software licensing jurisprudence, because it is usually discussed in the land or real property context. It is interesting to see that the old doctrine of 'bare license' initially used in land law is now being revived in the FOSS world. This attempt is championed by Free Software Foundation (FSF), which interprets that the General Public license (GPL) is a bare license but not a contract. According to them, the permission under the GPL is unilaterally granted to licensees, which seems to be a one-way operation. Unlike a classical contract where an offeree needs to unequivocally 'accept' an 'offer', licensees of the GPL as a bare license are not required to verbally 'accept' the license. Because all GPLed software is copyrighted in the first place, one would have infringed the copyright without the permission from its owner. In other words, to obey the terms of the GPL is the condition of using the GPL covered work. Section (9) of the GPL v3.0 makes it clear that the 'acceptance' in a classical contract is not required in the GPL as a bare license:

You are not required to accept this License in order to receive or run a copy of the Program. [...] However, nothing other than this License grants you permission to propagate or modify any covered work. These actions infringe copyright if you do not accept this License. Therefore, by modifying or propagating a covered work, you indicate your acceptance of this License to do so.

Eben Moglen, in the first International Conference on the GPL v3.0 (intending to clarifying FSF's jurisprudence behind this new version of the GPL to the community), reiterates two points supporting FSF's official position that the GPL is not a contract. First, bargained-for exchanges do not exist in the GPL. Second, the GPL is a copyright license, without which one's use of the GPLed software would lead to copyright infringement.

We [on behalf of the FSF] have not argued now, nor will we, nor can anyone argue, who reads the text of the language, that the receipt of the code is some quid-pro-quo for the acceptance of some terms. [...] arguments based on the contractual exchange of the code for promises of

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222 Section 9, GPL 3.0
compliance have nothing to do with us. We give permissions here and the enforcement weight of our license lies in the fact that you have no permission to propagate, that is, you have no permission to do what copyright law requires permission to do, but through this license. That's our legal theory and we are sticking to it.223

Furthermore, there are also two policy reasons why the FSF insists that the GPL is not a contract but a bare license. First, FSF's position has to do with its attempt to avoid the unpopular model contract code UCITA, which derives its jurisprudence from the controversial ProCD ruling.224 The UCITA that treats software licenses as contracts is essentially a product of proprietary software lobbying efforts.225 By arguing the GPL is a bare license, the free software movement keeps a critical distance from the legal theory behind the UCITA-type contract law. Second, Moglen argues that contract laws in different countries around the world are by no means uniform, and it would be difficult for the new globally applicable GPL v3.0 to handle the diversity within the world contract regimes.226 When the GPL is a bare license, it will base its validity solely on software copyright. Because most countries' copyright laws are modelled upon the same set of international agreements such as the Berne Convention, it is more conceivable to reconcile approaches than when dealing with world contract laws. Even with a single country like the US where different states have their own contract laws (while the Copyright Act is federal), the many state contract regimes can be unwieldy for individual licensors and licensees alike in the US to handle. For this reason, the enforcement of the GPL would be better off when treated as a non-contractual bare license.

One of the most obvious weaknesses of a bare license is that it is only binding on the licensee but not on the licensor. A bare license can be unilaterally terminated or revoked at the pleasure of the licensor. In other words, a FOSS license as a bare license is not mutually binding. This problem might lead to unfairness when the licensee has contributed modified source code back to the project or merely formed reliance by using the licensed software.

Anglo-American contract law insists on three main components being present to form a contract: offer, acceptance and consideration. If a FOSS license has to be recognised as having a

223 Moglen and Stallman,'Transcript of Opening Session of First International GPLv3 Conference'
224 Note Easterbrook treats 'licenses' are 'ordinary contracts accompanying the sale of products' but he deliberately leave the question 'why licenses are contracts' unanswered: '[w]hether there are legal difference between 'contracts' and 'licenses' [...] is a subject for another day.' ProCD v. Zeidenberg, 86 F.3d 1447 (7th Cir.1996) at 1450
226 GPL 2.0, when it was first written, was only intended to be used within the US. The popularity of this license around the world makes the FSF decide that the new GPL 3.0 should be globally applicable.
contractual status, then it must have all these three components. It is a relatively straightforward issue to find an 'offer' in a FOSS license. An offer is a licensor's manifested willingness to give users permissions to access, use, modify or redistribute a piece of FOSS and these permissions are usually accompanied by some restrictions pursuant to Free Software Definition and Open Source Definition. The willingness to offer can be manifested by posting the software to a publicly accessible FOSS repository website on the internet so that 'all prospective licensees will be able to retrieve the software under the terms of the license'.

According to the classical contract model, an acceptance should be the 'mirror image' of the offer, that is, it must be 'absolute' and must 'correspond with the terms of the offer'. The offeree needs to unequivocally convey his intention to accept 'without leaving room for doubt as to the fact of acceptance, or as to the coincidence of terms of the acceptance with those of the offer'. An offeree may accept an offer through verbalised agreements, but he may also manifest his acceptance through non-verbal forms of conduct, which is not unusual in the mass-market off-the-shelf software world. There are three main ways that software licensing terms may be offered to potential licensees for acceptance - shrinkwrap, clickwrap and browsewrap - each of which will be discussed in turn.

The last leg of contract formation – consideration - seems to be an even more unsettled issue in FOSS licensing. Under the doctrine of consideration, common law courts do not generally enforce a simple donative promise, but only enforce one party's promise that is reciprocated with another party's promise or performance. In short, a consideration must confer some benefits and detriments to the promisee and promisor.

A consideration must have some value, though common law cares very little about how valuable it needs to be. Treitel points out that 'an act, forbearance or promise will amount to consideration only if the law recognises that it has some economic values' and it 'may have such value even though the value cannot be precisely quantified'. So when it comes to 'non-monetary performance of doubtful economic value to the promisor', it becomes a difficult issue to decide whether it can be qualified as the right kind of consideration recognised by law. In most FOSS projects, volunteer licensees' contributions are mostly non-monetary performances (e.g. reporting

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bugs or testing submitted patches etc.) and it is not always clear whether these performances can have the right 'economic values' to qualify as consideration as defined by Treitel above.

As has been discussed, the attempt to enforce FOSS licenses as contract are likely to encounter two uncertainties: 1) lack of explicitly verbalised assents from users and 2) lack of consideration understood by classical contract law.

Copyright law requires that programs be original to merit protection. Anglo-American copyright law does not set a very high threshold for 'originality', but it is not always an easy task to ascertain the degree of 'originality' that qualifies a piece of code for copyright subsistence. In the US copyright subsists in 'original works of authorship' and a work is 'original' in the sense that it is 'independently created by the author (as opposed to copied from other works), and that it possesses at least some minimal degree of creativity'. In the UK the threshold is arguably even lower, with no explicit requirement of a work to be minimally creative. Copyright may subsist in a work as long as it is not copied from other human-made sources and is a result of the author's own skill, judgment or labour. In contrast, the European continental legal tradition tends to have a more demanding requirement of originality for works including computer programs. In an attempt to harmonise national differences among countries in Europe, Article 1(3) of 1991 EU Software Directive gives a definition of 'originality' as follows: a computer program shall be protected if it is original in the sense that it is the author's own intellectual creation.

The Directive further makes it clear that the author's 'intellectual creation' is the sole criterion of copyright subsistence and '[n]o other criteria shall be applied to determine its eligibility for protection.' Unfortunately, the UK draftsman responsible for preparing the implementing regulations assumes that the existing UK copyright originality standard has already been practically compatible with the Directive's definition of originality as the 'author's own intellectual creation' and there was no need to change the wording in the corresponding section of UK copyright law.

There can be three types of 'original' copyrightable contributions arising from a FOSS project. First, if the code is completely written from scratch by contributors for the project, it is highly likely to pass any of the three aforementioned tests of originality for having a 'minimal degree of creativity' (US), or using programmers' 'skill, judgement and labour' (UK), or being authors' 'own intellectual creation' (EU). Secondly, copyright may also subsist in modifications of

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232 17 U.S.C
233 For example, German courts 'did not only require individuality as compared with pre-existing programs, but also that the ability shown in the engineering process considerably surpassed average programming ability'. Stanley Lai, 'The Copyright Protection of Computer Software in the United Kingdom'.
preexisting code if these modifications are 'original' enough to be recognised by copyright law. In
the US, a copyrightable modification can be a 'derivative work' which means the work 'based upon
one or more preexisting works [...] or any other from in which a work may be recast, transformed,
or adapted.\textsuperscript{235} Similarly in the UK, the modified code may give rise to a fresh copyright if it passes
the minimum threshold of originality. As software is also a functional artifact, there is a domino
effect, where one tiny modification may lead to a series of follow-up changes in order to make the
whole program operate properly. Even if a single modification is too trivial to be original, the many
modifications together may cumulate to qualify for fresh copyright. That a fresh copyright is
recognised as subsisting in modifications or derivative works is crucial to peer-produced FOSS
project. Because FOSS collaboration is built upon incremental creativity by many collaborative
programmers rather than a single breakthrough invention by the initial creators.

Thirdly, there can be a 'compilation' copyright that subsists in the aggregated work
comprising all submitted contributions to a FOSS project as a collective whole. The UK copyright
protects 'compilation' as a kind of 'literary work',\textsuperscript{236} which is different from the term 'database' as
defined in the CDPA.\textsuperscript{237} In the US context, the term 'compilation' has a slightly different meaning
than that in the UK. The US 'compilation' copyright covers 'collective works' where 'a number of
contributions, constituting separate and independent works in themselves, are assembled into a
collective whole.'\textsuperscript{238} The copyright in software as a 'collective work' is a reflection of the originality
of the collection and its organisational structure rather than of individual components. Most
software is a copyrightable collection of modules. The arrangement and organisation of the
collection of individual modules are often the most original aspects of a software program. The
recognition of originality in 'compilation' or 'collective works' has a largely positive impact on
FOSS projects, whose design of the modular architecture prises the lead developers' creative efforts
in aggregating individual contributions into a coherent collective whole.

In summary, although the threshold of originality to qualify for copyright subsistence is low,
it does exist for computer programs. All sustained FOSS projects would contain a huge number of
contributions with various degree of originality. The biggest problem that FOSS projects face is not
about whether contributed code is 'original' enough to attract copyright protection. Most
contributions will easily pass the originality threshold individually on their own merit. On top of

\textsuperscript{235} 17 U.S.C
\textsuperscript{236} s. 3(1) (a) CDPA 1988
\textsuperscript{237} Note that the CDPA has explicitly incorporated the European standard of originality for 'database' copyright: a
database is 'original' if it constitutes 'the author's own intellectual creation'. s.3 A, CDPA 1988.
\textsuperscript{238} 17 U.S.C.
this, these contributions together will also cumulatively give rise to copyright in 'compilations' or 'collective works'. The really difficult problem that needs to be tackled is that many original contributions will form a huge network of ownership interests by many copyright holders. It is not always an easy task to coordinate these many ownership interests for the purpose of building one coherent project and the copyright system will not automatically splice them together. In this scenario, FOSS licenses step in to solve the problem of coordination by standardising the legal commitments of many copyright holding contributors. These licenses make peer-produced contributions legally compatible with each other in a decentralised environment.

3.5 Scope of Exclusivity: Restricted and Permitted Acts

It is understandable that to analogise a computer program to a literary work has the advantage of fitting software as a new technological form into an existing copyrightable subject matter, but this is not an entirely accurate analogy. Software is not ordinary literary text written and read by human beings, but, more importantly, it contains instructions that operate computerised functions. In short, software has a dual nature of being both expressive like literal text and functional like machines. Recall that software is written in source code by programmers and it can be compiled into object code that can be executed by computers. On the one hand, the human-readable source code is just like any other form of human expression such as novels, speech scripts or sheet music scores. On the other hand, the machine-readable object code turns software into functional artifacts that instruct computers to 'manipulate symbols leading to virtual or physical effects, such as making calculations, displaying information on a screen, controlling the path of a cutting device or an industrial process.'

As a general rule, copyright protects expressions, but not functions, of software: 'it is a programmer's expression of some functionality that may be protected by copyright, and not the functionality itself. Unfortunately the water has already been muddied in reality, partially because it is not always easy to separate functionality neatly from expression in computer

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239 Internationally, it has also become settled that software – including both source code and object code – are subject to copyright protection as 'literary works'. According to the 1994 Agreement on Trade Related-Aspect of Intellectual Property Rights (TRIPS), '[c]omputer programs, whether in source or object code, shall be protected as literary works under the Berne Convention(1971)'. Article 10(1), TRIPS Agreement 1994.


242 Software Freedom Law Cente, 'Originality Requirements under U.S. And E.U. Copyright Law'.
programs. There is no shortage of attempts by proprietary software developers to broaden copyright protection to cover functionality of software.

Software programmers, as the original authors of their works, have some exclusive rights to do certain restricted acts in relation to their programs. However, these exclusive rights do not amount to the software authors’ total and absolute ownership of their works, and they are normally subjected to various exceptions mandated by copyright law. These exceptions in effect narrow the scope of exclusivity by allowing non-owners to do certain acts without the original programmers’ permission. In the US, the Copyright Act 1976 gives copyright holders five exclusive rights 1) to make copies, 2) to prepare derivative works, 3) to distribute copies of the original work or derivative works, 4) to perform certain kinds of works publicly and 5) to display certain kinds of works. Specific to software, there are two important limitations on these exclusive rights. Firstly, users are allowed to make a copy or adaptation of the computer program 'as an essential step in the utilisation' of it. Secondly, users are also allowed to make back-up copies of the program for archival purposes. In other words, lawful computer users can do these two acts without permission from software authors.

In the UK, the copyright holders have a slightly different list of exclusive rights to do the certain acts 'restricted' by copyright. They are the exclusive rights (a) to copy the work; (b) to issue copies of the work to the public; (ba) to rent or lend the work to the public; (c) to perform, show or play the work to the public; (d) to communicate the work to the public; (e) to make an adaptation of the work or do any of the above in relation to an adaptation. Outside the purview of these exclusive rights, there is also a host of general 'permitted acts' that can be done without a copyright holder's permission. Specific to computer programs, there are four important 'permitted acts' that further narrow the scope of programmers' exclusive rights. It is not an infringement of copyright for a lawful user to 1) make back up copies of program; 2) to decompile the program to achieve interoperability; 3) to observe, study and test the functioning of the program; 4) to copy or

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244 17 U.S.C 106
245 For example, a lawful user can copy a program to a disk or memory when this is essential to run the program on a computer. 17 U.S.C. 117(a)(1)
246 However, all archival copies need to be destroyed 'in the event that continued possession of the computer program should cease to be rightful'. 17 U.S.C. s.117 (a) (2)
247 s. 16 (1), CDPA 1988
248 ss. 29-31 CDPA 1988
249 s. 50 A, CDPA
250 s. 50 B, CDPA (implementing EU Software Directive Article 6 on decompilation for the purpose of achieving
adapt the program necessary for his lawful use especially for the purpose of correcting errors in the program.\textsuperscript{252} It is important to note that it is not possible to contract out of the first three exceptions by means of licensing agreements. Under s. 294A(1) CDPA, licensing terms that forbid lawful users from doing these three permitted acts are unenforceable:

Where a person has the use of a computer program under an agreement, any term or condition in the agreement shall be void in so far as it purports to prohibit or restrict - (a) the making of any back up copy of the program which it is necessary for him to have for the purposes of the agreed use; (b) where the conditions in section 50B(2) are met, the decompiling of the program; or (c) the observing, studying or testing of the functioning of the program in accordance with section 50 BA.\textsuperscript{253}

However, it is possible to contract out of the fourth exception, which allows copying or adaptation of a program when necessary for the purpose of its 'lawful use'.\textsuperscript{254} This permitted act is sometimes seen as an equivalent of the 'non-derogation from grant' doctrine making its way into UK software copyright law. This doctrine means 'that a grantor will not be allowed to derogate from his grant by using property retained by him in such a way as to render property granted by him unfit or materially unfit for the purpose for which the grant was made [...]'.\textsuperscript{255} Section 50 C of the CDPA codifies this doctrine by preventing software copyright holders from imposing unnecessary restrictions that would otherwise defeat the purpose of the lawful use of the software in the absence of a contrary agreement.

In the spirit of Section 50 C, it is worth noting that the CDPA does give lawful software users a highly circumscribed right to debug software. Section 50 C (2) stipulates that it may 'be necessary for the lawful use of a computer program to copy it or adapt it for the purpose of correcting errors in it' provided that there is no agreement to the contrary. It is understandable that most proprietary software companies would contract out of this permitted act by not giving users the right to correct errors by themselves in the licensing schemes. This is because these companies have 'a vested interest in providing on-going maintenance, including error correction, to their licensees'.

\textsuperscript{251} 'Interoperability' between programs)

\textsuperscript{252} s. 50 BA, CDPA 1988

\textsuperscript{253} s. 50 C (1) (2) CDPA

\textsuperscript{254} 296 A, CDPA

\textsuperscript{255} 'It is not an infringement of copyright for a lawful user of copy of a computer program to copy or adapt it, provided that the copying or adapting – (a) is necessary for his lawful use; and (b) is not prohibited under any term or condition of an agreement regulating the circumstances in which his use is lawful.' s. 50 C (1), CDPA

It is not difficult to find that a wide scope of exclusive rights that have been given to software authors by copyright is not really conducive to FOSS collaboration based on the peer-production model. In order to build up a large-scale FOSS project, 'peers' must work in an environment where each other's code can be readily reproduced, modified, debugged and redistributed on a frequent basis. The copyright regime, by default, seems disproportionately skewed towards the economic interests of proprietary software developers who have little intention to collaborate with software users. It assumes that software programs are discrete products that are mainly developed by software programmers in isolation from the outside world and at the same time these programmers' efforts must be rewarded by exclusive property rights. This assumption is too simplistic to account for many collaborative non-proprietary software programming activities that do not rely on exclusive property rights. In this light, FOSS licenses are designed to squeeze the broad scope of exclusive rights by copyright owners in order to create a software commons suitable for decentralised collaborative programming. Under these licenses, programmers voluntarily relinquish almost all of their exclusive rights and everyone is invited to freely 'copy' or 'adapt' each other's code. Perens's three principles distilled from the Open Source Definitions illustrate how software users are empowered by having three 'rights' to software under FOSS licensing schemes: they have 1) The right to make copies of the program, and distribute those copies. 2) The right to have access to the software's source code, a necessary preliminary before you can change it. 3) The right to make improvements to the program.256 These three rights substantially expand the scope of software users' 'permitted acts' than are initially allowed by copyright.

256 Perens, B., 'The Open Source Definition'
Chapter 4: Legal Regulation of Intellectual Property

4.1 Legal regulation of Intellectual property

Like any fields of legal regulation Internet consists of federal and state cases, administrative rulings, statutes, regulations, and local ordinances. Nevertheless, legal regulation of Internet Issues also consists of social norms, industry standards, international conventions, EU regulations, directives, and conventions as well as foreign law from hundreds of countries. Internet regulation is not a unified body of law; it lacks comprehensive international conventions, codes, or directives covering diverse topics such as computer security, e-commerce law, Internet contract, Internet privacy, intellectual property, content regulation and cross-border jurisdictional rules. Internet raises inevitable jurisdictional issues because, by its very definition, the Internet involves transborder communications across hundreds of countries.

4.2 International level

Intellectual property law plays a role in giving legal protection to the rights associated with some objects which can include intangible property. Some commentators who have engaged with link between intangible property and intellectual property have tended to focus on the question of motives and associated market values. For example, legal protection of intellectual property is that it turns intangible assets into exclusive rights and makes intangible assets more tangible by turning them into valuable exclusive assets that can often be traded in the market place.

It is true that intellectual property protects the rights to benefit from the protection of moral and material interests resulting from authorship of scientific, literary and artistic productions. Intellectual property is divided into two categories – industrial property and copyright. Strengthening of the foundations of international regulation of intellectual property associated with the adoption of existing international treaties: the Paris Convention of Industrial Property (1883, The Paris Convention)259, the Berne Convention for the Protection of Literary and Artistic Works (1886, The Berne Convention)260 and the Agreement on Trade-Related Aspects of Intellectual


258 Article 27 UDHR, the Universal Declaration of Human Rights, http://www.un.org/Overview/rights.html


Proper Rights (1886, TRIPS Agreement).

The Paris Convention applies to industrial property in the widest sense, including patents, trademarks, industrial designs, utility models (a kind of ‘small-scale patent’ provided for by the laws of some countries), service marks, trade names (designations under which an industrial or commercial activity is carried out), geographical indications (indications of source and appellations of origin) and the repression of unfair competition.

The substantive provisions of the Convention fall into three main categories. Under the provisions on national treatment, the Convention provides that, as regards the protection of industrial property, each Contracting State must grant the same protection to nationals of other Contracting States that it grants to its own nationals. Nationals of non-Contracting States are also entitled to national treatment under the Convention if they are domiciled or have a real and effective industrial or commercial establishment in a Contracting State. The Convention provides for the right of priority in the case of patents (and utility models where they exist), marks and industrial designs. This right means that, on the basis of a regular first application filed in one of the Contracting States, the applicant may, within a certain period of time (12 months for patents and utility models; 6 months for industrial designs and marks), apply for protection in any of the other Contracting States. These subsequent applications will be regarded as if they had been filed on the same day as the first application. In other words, they will have priority (hence the expression ‘right of priority’) over applications filed by others during the said period of time for the same invention, utility model, mark or industrial design. Moreover, these subsequent applications, being based on the first application, will not be affected by any event that takes place in the interval, such as the publication of an invention or the sale of articles bearing a mark or incorporating an industrial design. One of the great practical advantages of this provision is that applicants seeking protection in several countries are not required to present all of their applications at the same time but have 6 or 12 months to decide in which countries they wish to seek protection, and to organise with due care the steps necessary for securing protection.

The Convention lays down a few common rules that all Contracting States must follow. Patents granted in different Contracting States for the same invention are independent of each other: the granting of a patent in one Contracting State does not oblige other Contracting States to grant a patent; a patent cannot be refused, annulled or terminated in any Contracting State on the ground

that it has been refused or annulled or has terminated in any other Contracting State. The inventor has the right to be named as such in the patent. The grant of a patent may not be refused, and a patent may not be invalidated, on the ground that the sale of the patented product, or of a product obtained by means of the patented process, is subject to restrictions or limitations resulting from the domestic law. 263

Each Contracting State that takes legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exclusive rights conferred by a patent may do so only under certain conditions. A compulsory license (a license not granted by the owner of the patent but by a public authority of the State concerned), based on failure to work or insufficient working of the patented invention, may only be granted pursuant to a request filed after three years from the grant of the patent or four years from the filing date of the patent application, and it must be refused if the patentee gives legitimate reasons to justify this inaction. Furthermore, forfeiture of a patent may not be provided for, except in cases where the grant of a compulsory license would not have been sufficient to prevent the abuse. In the latter case, proceedings for forfeiture of a patent may be instituted, but only after the expiration of two years from the grant of the first compulsory license. 264

The Paris Convention does not regulate the conditions for the filing and registration of marks which are determined in each Contracting State by domestic law. Consequently, no application for the registration of a mark filed by a national of a Contracting State may be refused, nor may a registration be invalidated, on the ground that filing, registration or renewal has not been effected in the country of origin. The registration of a mark obtained in one Contracting State is independent of its possible registration in any other country, including the country of origin; consequently, the lapse or annulment of the registration of a mark in one Contracting State will not affect the validity of the registration in other Contracting States. Where a mark has been duly registered in the country of origin, it must, on request, be accepted for filing and protected in its original form in the other Contracting States. Nevertheless, registration may be refused in well-defined cases, such as where the mark would infringe the acquired rights of third parties; where it is devoid of distinctive character; where it is contrary to morality or public order; or where it is of such a nature as to be liable to deceive the public. If, in any Contracting State, the use of a registered mark is compulsory, the registration cannot be canceled for non-use until after a reasonable period, and then only if the owner cannot justify this inaction. Each Contracting State

must refuse registration and prohibit the use of marks that constitute a reproduction, imitation or translation, liable to create confusion, of a mark used for identical and similar goods and considered by the competent authority of that State to be well known in that State and to already belong to a person entitled to the benefits of the Convention. Each Contracting State must likewise refuse registration and prohibit the use of marks that consist of or contain, without authorisation, armorial bearings, State emblems and official signs and hallmarks of Contracting States, provided they have been communicated through the International Bureau of WIPO. The same provisions apply to armorial bearings, flags, other emblems, abbreviations and names of certain intergovernmental organisations. Collective marks must be granted protection.265

Industrial designs must be protected in each Contracting State, and protection may not be forfeited on the ground that articles incorporating the design are not manufactured in that State. Protection must be granted to trade names in each Contracting State without there being an obligation to file or register the names. Measures must be taken by each Contracting State against direct or indirect use of a false indication of the source of goods or the identity of their producer, manufacturer or trader. Each Contracting State must provide for effective protection against unfair competition.266

Since the Berne Convention were adopted or lastly revised more than a quarter century ago, a new types of works, new markets, and new methods of use and dissemination have evolved. The main task of regulation of copyright in the context of the information society is to find a balance between the rights and legitimate interests of creators and freedom of access an unlimited number of users to these works through the public network. Generally, digital copyright is a kind of 'transformative' regulation that aims to reconfigure the major existing international treaties on copyright.267

The WIPO Copyright Treaty (WCT) is a special agreement under the Berne Convention that deals with the protection of works and the rights of their authors in the digital environment. Any Contracting Party (even if it is not bound by the Berne Convention) must comply with the substantive provisions of the 1971 (Paris) Act of the Berne Convention for the Protection of Literary and Artistic Works (1886). Furthermore, the WCT mentions two subject matters to be protected by copyright: computer programs, whatever the mode or form of their expression; and

compilations of data or other material (‘databases’), in any form, which, by reason of the selection or arrangement of their contents, constitute intellectual creations. (Where a database does not constitute such a creation, it is outside the scope of this Treaty.) ²⁶⁸

As to the rights granted to authors, apart from the rights recognised by the Berne Convention, the Treaty also grants: the right of distribution; the right of rental; and a broader right of communication to the public. The right of distribution is the right to authorise the making available to the public of the original and copies of a work through sale or other transfer of ownership. The right of rental is the right to authorise commercial rental to the public of the original and copies of three kinds of works: computer programs (except where the computer program itself is not the essential object of the rental); cinematographic works (but only in cases where commercial rental has led to widespread copying of such works, materially impairing the exclusive right of reproduction); and works embodied in phonograms as determined in the national law of Contracting Parties (except for countries which, since April 15, 1994, have had a system in force for equitable remuneration of such rental). The right of communication to the public is the right to authorise any communication to the public, by wire or wireless means, including ‘the making available to the public of works in a way that the members of the public may access the work from a place and at a time individually chosen by them’. The quoted expression covers, in particular, on-demand, interactive communication through the Internet. ²⁶⁹

As to limitations and exceptions, Article 10 of the WCT incorporates the so-called 'three step' test to determine limitations and exceptions, as provided for in Article 9(2) of the Berne Convention, extending its application to all rights. ²⁷⁰ The Agreed Statement accompanying the WCT provides that such limitations and exceptions, as established in national law in compliance with the Berne Convention, may be extended to the digital environment. Contracting States may devise new exceptions and limitations appropriate to the digital environment. The extension of existing or the creation of new limitations and exceptions is allowed if the conditions of the 'three-step' test are met. As to duration, the term of protection must be at least 50 years for any kind of work. ²⁷¹

The Treaty obliges Contracting Parties to provide legal remedies against the circumvention of technological measures (e.g., encryption) used by authors in connection with the exercise of their

rights, and against the removal or altering of information, such as certain data that identify works or their authors, necessary for the management (e.g., licensing, collecting and distribution of royalties) of their rights ('rights management information').

The Treaty obliges each Contracting Party to adopt, in accordance with its legal system, the measures necessary to ensure the application of the Treaty. In particular, each Contracting Party must ensure that enforcement procedures are available under its law so as to permit effective action against any act of infringement of rights covered by the Treaty. Such action must include expeditious remedies to prevent infringement as well as remedies that constitute a deterrent to further infringement.

The WIPO Performances and Phonograms Treaty (WPPT) deals with the rights of two kinds of beneficiaries, particularly in the digital environment: performers (actors, singers, musicians, etc.); and producers of phonograms (persons or legal entities that take the initiative and have the responsibility for the fixation of sounds). These rights are addressed in the same instrument, because most of the rights granted by the Treaty to performers are rights connected to their fixed, purely aural performances (which are the subject matter of phonograms).

As far as performers are concerned, the Treaty grants performers economic rights in their performances fixed in phonograms (not in audiovisual fixations, such as motion pictures). The right of reproduction is the right to authorise direct or indirect reproduction of the phonogram in any manner or form. The right of distribution is the right to authorise the making available to the public of the original and copies of the phonogram through sale or other transfer of ownership. The right of rental is the right to authorise the commercial rental to the public of the original and copies of the phonogram, as determined in the national law of the Contracting Parties (except for countries that, since April 15, 1994, have had a system in force for equitable remuneration of such rental). The right of making available is the right to authorise the making available to the public, by wire or wireless means, of any performance fixed in a phonogram, in such a way that members of the public may access the fixed performance from a place and at a time individually chosen by them. This right covers, in particular, on-demand, interactive making available through the Internet. As to unfixed (live) performances, the Treaty grants performers: the right of broadcasting (except in the case of rebroadcasting); the right of communication to the public (except where the performance is a broadcast performance); and the right of fixation. The Treaty also grants performers moral rights,
that is, the right to claim to be identified as the performer and the right to object to any distortion, mutilation or other modification that would be prejudicial to the performer's reputation. As far as producers of phonograms are concerned, the Treaty grants them economic rights in their phonograms: the right of reproduction; the right of distribution; the right of rental; and the right of making available. The right of reproduction is the right to authorise direct or indirect reproduction of the phonogram in any manner or form. The right of distribution is the right to authorise the making available to the public of the original and copies of the phonogram through sale or other transfer of ownership. The right of rental is the right to authorise the commercial rental to the public of the original and copies of the phonogram, as determined in the national law of the Contracting Parties (except for countries that, since April 15, 1994, have a system in force for equitable remuneration of such rental). The right of making available is the right to authorise making available to the public, by wire or wireless means, a phonogram in such a way that members of the public may access the phonogram from a place and at a time individually chosen by them.\textsuperscript{275} This right covers, in particular, on-demand, interactive making available through the Internet.

The Treaty provides that performers and producers of phonograms have the right to a single equitable remuneration for the direct or indirect use of phonograms, published for commercial purposes, broadcasting or communication to the public. However, any Contracting Party may restrict or – provided that it makes a reservation to the Treaty – deny this right. In the case and to the extent of a reservation by a Contracting Party, the other Contracting Parties are permitted to deny, vis-à-vis the reserving Contracting Party, national treatment ('reciprocity').\textsuperscript{276}

As to limitations and exceptions, Article 16 of the WPPT incorporates the so-called 'three step' test to determine limitations and exceptions, as provided for in Article 9(2) of the Berne Convention, extending its application to all rights. The accompanying Agreed Statement provides that such limitations and exceptions, as established in national law in compliance with the Berne Convention, may be extended to the digital environment. Contracting States may devise new exceptions and limitations appropriate to the digital environment. The extension of existing or the creation of new limitations and exceptions is allowed if the conditions of the 'three-step' test are met\textsuperscript{277}. The term of protection must be at least 50 years.

The enjoyment and exercise of the rights provided for in the Treaty cannot be subject to any formality. The Treaty obliges Contracting Parties to provide for legal remedies against the

\textsuperscript{275} Articles 5-14 WPPT, http://www.wipo.int/treaties/en/text.jsp?file_id=295578
\textsuperscript{276} Article 15 WPPT, http://www.wipo.int/treaties/en/text.jsp?file_id=295578
circumvention of technological measures (e.g., encryption) used by performers or phonogram producers in connection with the exercise of their rights, and against the removal or altering of information – such as the indication of certain data that identify the performer, performance, producer of the phonogram and the phonogram itself – necessary for the management (e.g., licensing, collecting and distribution of royalties) of the said rights ('rights management information').

The Treaty obliges each Contracting Party to adopt, in accordance with its legal system, the measures necessary to ensure the application of the Treaty. In particular, each Contracting Party must ensure that enforcement procedures are available under its law so as to permit effective action against any act of infringement of rights covered by the Treaty. Such action must include expeditious remedies to prevent infringement as well as remedies that constitute a deterrent to further infringement.

According to theory of intellectual property, copyright and patent laws are premised on providing creators with just enough incentive to create artistic, scientific and technological works of value to society. Creators of copyrightable and patentable works typically attach great significance to both their personhood and labour interests in their work. As the development of technologies bring sometimes confusion to array of legal protection it is necessary to investigate what confusion of intellectual property regulation can be protected under the intangible property model.

4.3 EU Legal Frameworks

The 2001 Copyright Directive come as little surprise. Article 2 EUCD addresses the reproduction right, with the articulation being concise and overarching: 'Member States shall provide for the exclusive right to authorise or prohibit direct or indirect, temporary or permanent reproduction by any means and in any form, in whole or in part.' Article 2 thus does not explain (or harmonise) the term reproduction beyond simply enumerating controversial instances as falling under the concept of reproduction without providing a substantive definition and without reaching the fixation text. Assuming the intention behind the wording of Article 2 was to capture under the

281 See EUCD (2001), Art. 2.
concept of reproduction all forms of digital signals’ placements, the lack of a definition of reproduction appears quite understandable. In addition, the wording 'in whole or in part' seems to have eliminated the possibility of adopting a domestic quantitative limitation clause based on the portion of the work simultaneously residing on the memory component.

The maximalist approach of Article 2 finds expression, inter alia, in the exceptions catalog listed under Article 5 EUCD. To preserve uniformity in the area of exceptions among Member States, Article 5 embodies an exhaustive enumeration of mandatory and elective exceptions. Most relevantly, sub-article (1) provides: Exceptions and limitations; Temporary acts of reproduction referred to in Article 2, which are transient or incidental, which are an integral and essential part of a technological process and whose sole purpose is to enable: (a) a transmission in a network between third parties by an intermediary, or (b) a lawful use of a work or other subject-matter to be made, and which have no independent economic significance, shall be exempted from the reproduction right provided for in Article 2.282

This wording clarifies beyond any doubt that 'temporary' in Article 2 captures all transient, incidental, and instrumental reproductions. The phrase “an integral and essential part of a technological process” remains quite ambivalent, though.283 The structure of this provision implies that some temporary reproductions, which are 'an integral and essential part of a technological process' performed for lawful use, shall be permissible beyond those network transmission reproductions between third parties. This leads to a second difficulty - to decipher the phrase 'lawful use' - in connection with the provision in subsection 5(1)(b) instructing domestic legislatures to provide exceptions to the reproduction right for the sole purpose of enabling 'lawful use.' What renders a use lawful? And if the use is already lawful, why should it be subject to a mandatory exception? Recital 33 attempts to provide some clarifications:

The exclusive right of reproduction should be subject to an exception to allow certain acts of temporary reproduction, which are transient or incidental reproductions, forming an integral and essential part of a technological process and carried out for the sole purpose of enabling either efficient transmission in a network between third parties by an intermediary, or a lawful use of a work or other subject-matter to be made. The acts of reproduction concerned should have no

282 See EUCD (2001), Art. 5(1).
283 Bechtold noted Art. 5(1) applies to 'reproductions that exist due to technical necessities. Internet routers and proxy servers do not exist in order to make reproductions of copyrighted works, but due to network addressing, management and performance issues.' See Bechtold, Directive 2001/29/EC (Information Society Directive), in CONCISE EUROPEAN COPYRIGHT LAW 372 (Thomas Drier & P. Bernt Hugenholtz eds., 2006). But what should 'technical necessity' mean? Strictly speaking, most (if not all) temporary reproductions fulfill a technical task, and the general phrasing “integral and essential part of a technological process” cannot apply exclusively to ISPs cashing, network proxy servers, and the like reproductions, as this seems to be a special case expressly addressed in Art. 5(1)(a)
separate economic value on their own. To the extent that they meet these conditions, this exception should include acts which enable browsing as well as acts of caching to take place, including those which enable transmission systems to function efficiently … A use should be considered lawful where it is authorised by the rightholder or not restricted by law.284

Beyond the fact this Recital does not throw new light on the general meaning of the phrase 'an integral and essential part of a technological process,' it raises the suspicion the phrase 'lawful use' is redundant. If 'lawful' means either a use authorised by rights-holders or one already covered by statutory exceptions, the law would be the same with or without sub-article 1(b). To avoid this interpretation problem, we must assume a third category of instrumental reproductions that are neither authorised nor covered by exceptions but are nonetheless lawful. Even so, the extent to which sub-article 1(b) can liberalise the domestic exceptions apparatus seems rather limited. According to the Directive's maximalist approach, everything is reproduction, and deviations from the general exclusivity principle are possible only via enlisted exceptions, the criteria for which appear in Article 5.

The threshold criterion resembles a general quantitative test, requiring the reproduction to be 'temporary.' This is a generic label denoting all sorts of short-lived digital representations as distinguished from stable storage. Article 5(1) further stipulates a series of cumulative-qualitative factors: namely, reproduction must be (1) transient or incidental and (2) an integral and essential part of a technological process; also its (3) sole purpose is to enable transmission or lawful use. Finally, all exceptions are subject to an economic criterion, which is derived from the phrase 'which have no independent economic significance' from Recital 33, and from Article 5(5) EUCD.

As to mandatory exceptions warranted under Article 5(1), the formulation criteria are highly restrictive. The narrowness of the framework is expressed, inter alia, by the restricting clauses 'for the sole purpose' and 'no independent economic significance.' Furthermore, the structure of the provision reveals a clear hierarchy among the various factors. Most importantly, normative-qualitative considerations are subordinated to economic significance scrutiny. This means even in the rare case a given reproduction passed the rigorous three-factor normative threshold, economic-market considerations might foreclose it - for instance, in a case in which an independent economic significance of the said reproduction can be shown.

284 See EUCD (2001), Recital 33.
4.4 The US

The 1998 E.C. Green Paper distinguished among three types of copying: home copying, 'semi-private' copying (i.e., copying made by institutions such as educational establishments), and 'piracy'. This Green Paper considered Article 9 Berne Convention as providing the international framework norm establishing a broad reproduction right. The report further suggested the Berne three-part test was sufficiently flexible, leaving 'fairly wide room for manoeuvre' for domestic legislatures. In laying out the principles for possible legislative responses to technological developments, the Commission generally adopted the maximalist view while simultaneously supporting legalisation of copying for 'personal use' (provided rights-holders receive monetary compensation). A separate chapter in the 1988 E.C. Green Paper was devoted to computer programs. The report adopted the prevailing view by considering computer programs as protected copyright subject matter, stating the issue should be harmonised in Europe via a special directive. The Commission recommended that copyright should subsist in programs 'fixed in any form' and that their reproductions, adaptations, and translations be considered copyright-restricted acts, thus subject to the exclusive rights. The report further supported broad exclusivity concerning digital reproductions and upheld the requirement to obtain rights-holders' consent for all such acts. For cases in which the normal use of programs by legitimate users required performing restricted acts, the Commission trusted that licensing agreements would allow them to take place. The report stated:

[A] broad use right, either formulated as such or resulting from rights to authorise reproduction, rental, adaptation and translation, seems appropriate given the way software is used in practice … authorisation to use a program must necessarily imply authorisation for all acts inherent in any such use.

Regarding 'private copying' of computer programs, the report recommended 'the [then-prospective software] directive should contain a provision excluding private copying of computer programs in general. At the same time, the production of a backup copy or copies by a legitimate user would explicitly be made permissible.' The picture that emerged was of unyielding coverage of the reproduction right with respect to computer programs with a narrow window left open for legalising “back-up” copies, presumably via appropriately stipulated exceptions.
The Green Paper's strict approach is well-mirrored in the 1991 Software Directive.\textsuperscript{285} Article 4(a) stipulates an all-embracing reproduction rule while Article 4(b) covers additional related operations occurring in the process of operating a computer program such as translation, adaptation, and arrangements. In some special cases, the Directive requires Member States to provide exceptions to the reproduction right, for example, when reproductions 'are necessary for the use of the computer program by the lawful acquirer in accordance with its intended purpose, including for error correction.' The Directive further sets forth a rule allowing a rightful user of a copy of a program 'to observe, study or test the functioning of the program in order to determine the ideas and principles which underlie any element of the program if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do.' Article 6 to the Software Directive provides an elaborate decompilation exception, allowing under certain conditions restricted acts to be performed in order to achieve interoperability with an independently created program without the need to seek rights-holders' authorisation. Domestic exceptions under Article 6 must not 'unreasonably prejudice the right holder's legitimate interests or conflicts with a normal exploitation of the computer program.'

In July 1995, the European Commission published another Green Paper titled “Copyright and Related Rights in the Information Society” (1995 E.C. Green Paper).\textsuperscript{286} With several copyright directives already in place, the 1995 Green Paper investigated further needs and alternatives for a more comprehensive harmonisation. The notions of 'information superhighway and 'information society' repeatedly recur as the report describes the evolving technological environment. The report pointed to the cultural, economic, and social dimensions of electronic networks and digital telecommunication as well as to European and international legal aspects of new technologies. This 1995 Green Paper recommended expanding the reproduction concept adopted by the 1991 Software Directive to all types of works and subject matter protected under copyright. The report stated: '[T]he digitisation of works or other protected matter should generally fall under the reproduction right, as should such things as loading on to the central memory of a computer.' It further recommended a revaluation of existing exceptions that had been promulgated in the past under Article 9(2) Berne Convention, especially in light of the emerging technical ability to monitor private digital copying. The 1996 Follow-Up report to the 1995 E.C. Green Paper framed the issue of digital reproduction more pointedly:

In the Information Society environment, traditional forms of reproduction (making of a

physical copy) coexist with a multitude of new forms of reproducing works and other protected matter, such as scanning of a printed work, or loading and/or storing of digitised material in a computer memory or other electronic system or device. Reproduction may also arise from incidental and ephemeral acts which occur from normal use of an electronic system, for instance, when transmitting material over the nets, such as the Internet. The question has arisen how far such new acts of reproduction are covered by the traditional reproduction right, which still significantly focuses on the traditional understanding of making copies on paper, tape etc. from print works, phonograms or television.  

The brisk solution offered to these subtle and complex issues stands in sharp contrast to their sensitive exposition in the report. The Commission stated any digital representation whatsoever implicated the exclusive reproduction right, yet the scope of actual infringement liability may be fine-tuned via the apparatus of copyright exceptions. The Follow-Up report alluded to the different views held by Member States concerning the question of 'transient or ephemeral acts of reproduction' as 'restricted acts' (i.e., subject to the exclusive rights). Nonetheless, for setting a European-wide harmonisation bar, the 1996 report recommended that all forms of digital embodiment should be subject to the exclusive reproduction right, including 'transient or other ephemeral acts of reproduction.' The 1996 report reiterated that traditional limitations and exceptions in domestic laws must be reassessed in the process of achieving a more harmonised European framework. To the extent harmonisation meant adopting either a stricter or softer approach to the issue of reproduction, the report showed a clear preference for more exclusivity and fewer exemptions:

In more cases than at present rightholders may enjoy, without limitation, an exclusive right to authorise or prohibit acts of reproduction. Such an approach should be taken where certain acts of reproduction would risk unreasonably prejudicing the rightholders legitimate interests or which would conflict with normal exploitation of his intellectual property. In cases where such a risk is less significant or where such an exclusive right is not enforceable for whatever reason, the exclusive right might be replaced by a legal license combined with a right to remuneration. For other cases the envisaged legislation will set out closely defined fair use exceptions/limitations to the exclusive right destined to accommodate the interests of users or the public at large. When defining such a limited number of harmonised exceptions/limitations, the guidance offered by Article 9(2) Berne Convention shall be taken fully into account.  

288 Id. at 11–12.
4.5 Creative Commons

Beginning with the concept that the Internet (networks and technical communication protocols) is based on public standards, and as such functions as a digital commons, beginning with the concept that the Internet (networks and technical communication protocols) is based on public standards, and as such functions as an digital commons, from the intellectual property and information technology point of view digital commons are a shared resource that is not under private control and that anyone can use without permission. The nature of a commons is the opposite of the nature of property in terms of exclusiveness. IP scholarship indicates that the commons is not subject to exclusive private control, whereas exclusivity is one of the most important characteristics of property. The commons, in contrast to the proprietary aspect of IP, refer to intellectual resources, including culture, knowledge and information, which are openly accessible and not under private control. By contrast, one can prevent the transformation of one's intellectual resource into a commons by keeping it secret or by exercising IP rights over it.

Typical example of electronic commons is Free and Open Source Software (FOSS). FOSS is software whose source and object code are distributed and made available to the public, a step that allows for use and modification by anyone. FOSS is distributed under a license that requires source code authors, distributors and users to comply with certain conditions. The commons movement builds on two important premises: the reinforcement of sharing norms, and the licensing terms that enforce such norms. Historically, openness culture of software - sharing were recognised by internet communities, users and customs who asked to see a source code, and could make changes or modifications to the code. Nevertheless, the enforcement of IP rights over software as a tool of property control protection of software commons from enclosure and privatisation results in norms of free code distribution and modification.

According to the Free Software Foundation (FSF)'s definition, four basic parameters qualify software as free: (1) the freedom to run the program; (2) the freedom to study how the program works and adapt it to individual needs (with access to the source code being a precondition for exercising this freedom); (3) the freedom to redistribute copies; and (4) the freedom to improve the

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289 Mansell, R., (2003), 'Employing digital crowdsourced information resources: managing the emerging information commons', International Association for the Study of the Commons (IASC).


program and release improvements to the public for the collective benefit of the whole community, preconditioning access to the source code. These freedoms are secured by a special license, the General Public License (GPL), which is designed to ensure that these freedoms shall run with the software and apply to distribution and adaptations achieved by taking advantage of the GPL terms.

The legal enforcement of IP rights led to recognising the licensing process as a key factor of facilitating the enforcement of FOSS norms and to the clarification of the difference between FOSS and proprietary software. By defining ownership functionally, FOSS license has been designed to protect the norms of sharing and related freedoms. The licensing mechanism constitutes the social structure in the FOSS world and plays a decisive role in facilitating commons production. Creative Commons (CC) has worked to adapt the FOSS movement model to other forms of creative works. Through a wide range of licensing terms, CC offers a web application that enables users to donate their works to the public domain, or to freely license their works for certain uses and to simultaneously retain copyright. Scholars have recognised that CC has initiated a global social movement, advocating for the norms of information sharing and reusing.

CC endeavours to replace the default set of rules by creating more liberal permission platforms based on a special type of licensing, thereby enriching the 'effective' public domain. Creative Commons endeavours to replace the 'all rights reserved' mentality and legal regime with the notion of 'some rights reserved.' The set of default rules formulated in CC licenses challenges the hegemony of formal lawmaking in regulating digital information markets for creative works (in my opinion, as it will be discussed later, it can be used as well for intangible works and goods). A bottom-to-top dynamics of change becomes conceivable as numerous rights-holders voluntarily choose to adopt the alternative default rules simply because these rules better serve their needs and expectations.

293 Gal, M. S., (2012), 'Viral Open Source: Competition vs. Synergy', University of Haifa – Faculty of Law.
295 'Creativity and innovation rely on a rich heritage of prior intellectual endeavor. We stand on the shoulders of giants by revisiting, reusing, and transforming the ideas and works of our peers and predecessors. Digital communications promise a new explosion of this kind of collaborative creative activity. But at the same time, expanding intellectual property protection leaves fewer and fewer creative works in the 'public domain' - the body of creative material unfettered by law and, to quote Supreme Court Justice Louis Brandeis, 'free as the air to common use.' Creative Commons provides free tools that let authors, scientists, artists, and educators easily mark their creative work with the freedoms they want it to carry. You can use CC to change your copyright terms from 'All Rights Reserved' to 'Some Rights Reserved. (available at http://creativecommons.org/about/legal).
296 'The idea here is that we need to build a layer of reasonable copyright law, by showing the world a layer of reasonable copyright law resting on top of the extremes. Take this world that is increasingly a world by default regulating all and change it into a world where once again we can see the mix between all, none, and some, using the technology of the Creative Commons.' - Lessig, L., (2002), 'The Creative Commons', Duke Law Journal, Vol 51, N. 6, pp. 1783-1801.
CC licensing appeals predominantly to authors whose primary interest is providing broad access and who are willing to grant a certain amount of freedom to communicate and reuse their works. Creative Commons provides authors with a set of legal and technological tools from which they can choose their favourite variation to license their works. The licensing platform consists of several core terms that can be combined in a given license, thereby affording a certain level of flexibility corresponding to licensor preferences. The key features common to all variations is the grant of a worldwide, royalty-free, nonexclusive, and perpetual (for the life of copyright protection) permission to perform acts that are usually subject to exclusion rights such as reproduction, public display, public performance, and distribution of works. Attribution is always required, and use of technological protection measures by licensees is strictly foreclosed.

However, some accuse CC of ideological fuzziness. CC presents itself as a social movement striving toward a social change. On the one hand, it celebrates sharing, creative interaction, expansion of the public domain, and enrichment of the pool of free informational resources. On the other, it sends a clear proprietary message that authors should continue to govern their works. It gives non commercially minded individuals both legitimacy and tools to apply more or less restrictive terms premised on their basic proprietary entitlements. For example, unsophisticated CC licensors may easily impose explicit prohibitions on commercial use and/or reuse in a derivative work at near zero costs and without needing the assistance of lawyers. As a result, property might become even more prevalent, and violation of the license would trigger conventional copyright rules.

A second and related critique attacks CC's strategy of relying on property rights as the baseline, then encouraging authors to choose a license and 'disclaim' those rights. To the extent CC seeks to alter the meaning of copyright, or at least to 'subvert' property conceptions as applied to

297 Creative Commons tools come in three layers: (1) the Commons Deed (the 'human-readable code') explaining in simple words the nature of the license; (2) the 'Legal Code' (the 'lawyer-readable code'), which is the full and legally binding license; and (3) the metadata (the 'machine readable code') that is customised to accommodate search engines to identify CC-licensed works. see http://wiki.creativecommons.org/FAQ.

298 Creative Commons currently provides six basic types of licenses that combine the following core terms: Attribution, Non-Commercial, No Derivative Works, and Share Alike. See http://creativecommons.org/about/licenses/meet-the-licenses. It further offers several special arrangements such as Sampling Licenses, Public Domain Dedication, Founders Copyright, licenses concerning music sharing, and Developing Nations licenses. Id.


300 For a relatively restrictive variation, see Attribution-NonCommercial-NoDerivs 3.0 license (available at http://creativecommons.org/licenses/by-nc-nd/3.0/legalcode). For convenience, subsequent references to specific provisions are based on the text of this license (cited as CC Legal Code) unless indicated otherwise.

creative works, it has been argued that relying on copyright itself is misguided. In this respect, some argue CC licensing does not help to undercut the 'property metaphor' applied to informational assets, being the wrong tool for undermining property-like protections enshrined by that metaphor.

Through the production and promotion of licenses, internet communities are enabling creativity to spread more easily and promoting the philosophy underlying the commons movement. Many of these organisations function similarly for their communities. They act on behalf of communities to manage property rights, to transact or communicate with other entities, to provide collective decision making mechanisms, and to protect individual contributors from potential liability. The use of private ordering to build a commons environment and introduce an innovative way of exercising legal rights is bringing about social change.302

The Internet as a platform which provides the public with a depository of and free access to enormous amount of different forms of creative works consists of services that are provided by private parties, each of whom seeks to deal under its own terms.

4.6 Protected works

The broad spectrum of computer-generated works, which may include traditional forms of art, music, literature, audiovisual works, choreography, and others – all of which otherwise qualify for basic copyright protection may require new conceptual legal status as intangible works and goods. The creation of new works by the application or intervention of computers need more study, as well as recommending any changes in copyright law or the procedures necessary to preserve public access to these works or to recognise the right of copyright owners should be explored. What should the intellectual property status of computer-produced creations be?

There are overlaps among terms such as computer-produced, computer-generated, computer-created and computer-assisted works. Although the copyright principles applied to them are the same, the terms connote varying degrees of human involvement. The human intermediation necessarily precedes any computer-based activity. Degree of direct human authorship to the production of works by computers, by computer programs or by computer systems may not be so difficult to identify. The technology has not yet produced a world of copyright without human authors. The crucial question appears to be whether the 'work' is basically one of human authorship, with computer merely being an assisting instrument, or whether the traditional elements of

authorship in the work (literary, artistic or musical expression or elements of selection, arrangement, etc.) were actually conceived and executed not by man but by a machine.³⁰³

In the view, computer programs were more than ‘inert tools of creation,’ and in many cases, the programmed computer was at least a ‘co-creator’ of a work rather than a mere tool. The computer's contribution may be more conspicuous and the human authorship element less so. Computers have been programmed to create genuinely pleasing original works of art. In these context, the work of art, music, or literature appears to have been created by the machine, but in reality the computer simply is following instructions that human programmers and users have given it. If a computer-generated work is copyrightable, who is the author? The difficulty in determining who (for example, as between user and programmer) is the author, or whether multiple creators (for example, both user and programmer) were entitled to share authorship. In most cases, for purposes of the Copyright Act, the author of a work created with a computer's the assistance would be the computer owner.

Historically, the world's two dominant copyright regimes have differed significantly regarding the role of the personality of the individual author in determining questions of copyrightability. This is evidenced by the tension between the moral rights doctrine, which originated in countries following the civil law system, such as continental Europe, and the notion of copyright as an economic right, which dominates the Anglo-American system. Moral rights are designed to protect the author's personality and the integrity of his work, which at first blush appears to be a difficult concept to apply to computer-produced works.

Unlike the Anglo-American system, the civil law tradition commonly views moral rights as independently protectable and separate from economic rights. Economic rights, such as the exclusive right to exploit the copyright work, are not based on a notion that the work is a reflection of the author's personality. Thus, protecting a work created by a nonhuman author does not appear incompatible with the economic aspects of civil law copyright.

In fact, in spite of the difference in focus of the two systems, discussion of the copyrightability of computer-generated works largely have differed in degree rather than in fundamental approach. For example, the Commission of the European Communities has given the matter preliminary consideration and concluded that computer-generated programs should be accorded copyright protection, and that because the programmed computer is essentially a tool,

those who use the computer should be entitled to a copyright in its output.\textsuperscript{304} The approach originally proposed by the European Community presumes that there is ultimately a human author.

The Bern Convention, in contrast, seems neutral on the possibility of nonhuman authorship. Article I states that the Union is created 'for the protection of the rights of authors in their literary and artistic works.'\textsuperscript{305} However, the Convention does not define 'author'. The Berne Convention Guide states that this is because 'national laws diverge widely, some recognising only natural persons as authors. While others treat certain legal entities as copyright owners'.\textsuperscript{306} For example, United States law has permitted an employer, whether a legal entity or natural person, to be an author of works for hire.\textsuperscript{307} The civil law system often has reached a similar result, at least with respect to corporate ownership (if not authorship) of copyrights.

The World Intellectual Property Organisation (WIPO),\textsuperscript{308} discussions of a possible Model of Copyright Law, also has considered the status of 'computer-produced works.'\textsuperscript{309} At its third session devoted to the development of Law, in July 1990, the WIPO Committee of Experts discussed a provision drafted by the organisation's International Bureau that defines a 'computer-produced work' as a work that is produced by means of computers, where the identification of the various creative contributions and the authors thereof is impossible (because of the number or the indirect nature of those contributions; because the contributions of the authors are merged in the totality of the work).

The proposed WIPO Draft provided that the owner of the moral rights\textsuperscript{310} and the original

\begin{footnotesize}
\begin{enumerate}
\item Green Paper on Copyright and the Challenge of Technology-Copyright Issues Requiring Immediate Action, COM (88)172 final 5.6.25-5.6.26, at 196-97, http://ec.europa.eu/greenpapers/pdf/green_paper_copyright_and_challenle_of_technology_com_88_172_final.pdf .The subsequent Commission Proposal for Council Directive on the Legal Protection of Computer Programs, 1989 O.J.(c91)5, would have provided that, for programs generated by the use of a computer program, the natural or legal person who causes the generation of subsequent programs shall be entitled to exercise all rights in the program, unless otherwise provided by contract. See id.Arts.2,5. However, the more recent Common Position Adopted be the Council on 13 December 1990 with View to the Adoption of a Directive on the Legal Protection of Computer Programs, Com (90)10652 final, is silent on the issue.
\item The 1909 United States Copyright Act provided that 'the word 'author' shall include an employer in the case of works made for hire'. An Act to Amend and Consolidate the Acts Respecting Copyright, ch. 320, 35 Stat. 1075,1088 (1909), superseded by The Copyright Act of 1976, Pub. L. N 94-553,90 Stat. 2541 (codified as amended in scattered section of 17 U.S.C.). The current law provides: 'In the case of a work made for hire the employer of the other person for whom the work was prepared is considered the author for purposes of the title...' 17 U.S.C. § 201(b)(1988), http://www.copyright.gov/title17/
\item DaSilva, R. J., (1980), 'Droit Moral and the Amoral Copyright: A comparison of Artists' Rights in France and the United States', 28 Bull. Copyright Soc'y U.S.A. I,12. The concept of moral rights, or 'rights of personality,' id. At 2,
owner of the economic rights in a computer-produced work may be either the person or entity 'by whom or by which the arrangements necessary for the creation of the work are undertaken,' or the person or entity 'at the initiative and under the responsibility of whom or of which the work is created and disclosed.' The draft's authors took the view, however, that to qualify for Bern Convention protection, these works must trace their origin to a human author. When the Committee of Experts considered this proposal, it concluded that further study was needed. WIPO's International Bureau advanced the proposal again in identical form, but the Committee of Experts once more concluded that it was premature.

The Anglo-American tradition seems untroubled by these concerns. With its emphasis on the economic aspects of copyright, it is not preoccupied with metaphysical notions of the relationship of the copyrighted work to its creator's 'personality.' The United Kingdom, for example, has enacted a copyright statute that makes it irrelevant whether a computer-generated work owes its origin to a human author.\textsuperscript{311} The act provides that the author is the person who undertakes the arrangements necessary for the work's creation.\textsuperscript{312} Indeed, the United Kingdom's current copyright law defines a 'computer-generated' work as one 'generated by computer in circumstances such that there is no human author of the work. With respect to these works, the United Kingdom law prescribe: In the case of literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken.\textsuperscript{313}

Apparently uninhibited by any fundamental requirement that a work must have a human author, British copyright law takes the common sense approach that the absence of human author is no impediment to protection. If a work is produced by a computer rather than by a person, the law simply confers the copyright upon the human being who is responsible for the computer creation of the work.

The United States may not have such as clean a slate upon which to write legislation as does the United Kingdom. This country's Constitution permits the federal government to exercise only those powers expressly delegated to it by the instrument. Thus, the national government's copyright


power is circumscribed by the Copyright Clause, one provision of which limits Congress's ability to bestow copyright protection to 'Authors'.

Despite the historical differences in focus of the two copyright systems, the experience both within and without the United States suggests a growing consensus that works generated with computer assistance should be granted copyright protection. Differences begin to appear when the discussion turns to the identification of the owner of copyright and whether there is a requirement of human authorship or simply a question of ascribing authorship to a particular person or legal entity.

Is there debate over whether computer-generated works are entitled to copyright protection? Whether a computer-generated work is indeed a work of authorship and who or what qualifies as an author? The computer merely being an assisting instrument, or whether a machine, and not a person, actually conceived and executed the traditional elements of authorship.

Obvious answer is that the author is one who employs the computer. Often a number of persons are involved in using a computer to prepare a work such as a complex statistical table, and that they perform diverse duties to different degrees. Under the U.S. Law, if collaborators prepare a work for a common employer, the allocation of authorship usually is not a problem, because the work is one for hire and employer is deemed to be the author. Other civil law systems reach a similar result because they consider the product a collective work to be owned by the person or legal entity under the responsibility of whom or of which the work is created and disclosed. If the collaboration does not have a common employer, conventional copyright principles of joint authorship would apply. Thus, the work may be considered joint, with all the collaborators its co-owners.

As intangible works and goods become increasingly sophisticated, however, and the tasks of user become increasingly simple and ministerial, it may be necessary to identify a human author of a computer-generated work other than the person or persons who employ the computer. At minimum, considerable thought will have to be devoted to the task of identifying who it is that qualifies under that standard. According, computer generated works provides opportunities to creates new intangible works and goods with help of their computers and other devices as a tool of complex creative process.

The computer industry can be divided its endeavors into three types: hardware, software,
and algorithms. Hardware is the equipment used in data processing system, such as the mainframe computer, terminals, printers, memory devices, and the link. Software is the coded instructions which control the way data is processed, for example, individual programs. Algorithms are the purely abstract routines for accomplishing certain processing goals. Either software or hardware can express any algorithm. For example, software can express an algorithm in a programming language; hardware can express it in an integrated circuit that, upon activation, would automatically generate the list on its output pins. The most desirable of the idea depends on the cost and requirements of the application.

Legal protection may seek for a product by inventors in several ways. First, they may seek a patent, which protects the functional aspects of an innovation – the inventive idea itself rather than its manner of expression. Historically, patent law has protected only tangible inventions, such as the light bulb. Copyright law, which protects the expressive aspect of an invention, such as its written description, protects intangible inventions such as software. Although copyright protection is less complete because it does not covet the functional aspect of an invention, it offers practical advantages that have led many computer inventors to seek copyright rather than patent protection.

The practical advantages of copyright protection has resulted in radically different manners of treatment hardware, software, and algorithms. Hardware, because tangible, receive its primary protection from the legal standards of patent law, although some copyright-like protection may be provide as well. Software, because intangible, receives its primary protection from copyright law, although patent law provides some protection for software linked to physical manifestations. Algorithms, unless tied to a physical process, receive no protection at all. The physical manifestations of property is the explanation for this different treatment of hardware, software, and algorithms. Despite the inextricable bonds among them, hardware is tangible whereas software and

317 A. Tanenbaum, 'Structured Computer Organisation II', (2d ed. 1984). Hardware and software are logically equivalent. Any operation performed by software can also be built directly into the hardware and any instruction executed by the hardware can also be simulated in software. The decision to put certain functions in hardware and others in software is based on such factors as cost, speed, reliability, and frequency of expected changes.
318 The more limited scope of copyright protection makes it easier to obtain than patent protection. Copyright protection is less expensive, protection of the expressive work begins automatically, and registration is only required to initiate an infringement lawsuit to protect the copyright. See Stren, (1986), 'The Bundle of Rights Suited to New Technology', 47 U. Titt. L. Rev. 1229, 1247. By contrast, a costly and time-consuming patent application process precedes patent protection, and expose inventors to the risk of theft during the wait for approval. In addition, copyright protection requires a much lower level of innovation than does patent. The subject matter of patentable material must meet a strict test of novelty and non-obviousness outlined in 35 U.S.C. §§ 102-103 (1982). In contrast, copyright 'does not include requirements of novelty, ingenuity, or esthetic merit.' Finally, copyright protection lasts longer than patent protection, approximately seventy-five years as opposed to patent's seventeen years.
algorithms are not. Due to this distinction, hardware alone has consistently met the subject-matter requirements for patent protection.

Although copyright law currently extend to many different expressions of an invention, it does not extend to the underlying functionality that often constitutes the true innovation.\textsuperscript{319} Hence copyright law protects the software code itself from direct plagiarism, but does not protect the ideas behind this software, which competitors can legally duplicate as long as they do not imitate the expression of those ideas. In recognition of the benefit of promoting invention in these critical computer areas, the functional aspects of software and algorithms has been left unprotected.

Intangible inventions ca not be protected under Patent law. This view rests upon the belief that because patent law does not protect abstract ideas, it does not protect algorithms, which can be view as the functional equivalent of ideas. An algorithm, however, is not merely an abstract idea, but rather is a method consisting of sequential steps for solving a class of problems. The various algorithms for calculating the square root of a given number are not identities but rather are processing techniques.

Several additional flaws should be made in distinction between the patentability of hardware and the unpatentability of software and algorithms. First, extending patent protection to an idea simply because incorporated it into a physical process exalts from over substance. Second, software and algorithms views as no different from laws of nature (Newton's law of gravity), which exist in nature prior to the discoverer's work. However, not all computer software algorithms are equivalent to unpatentable natural laws. A cash management program for an integrated credit card, mutual fund, and checking account, for instance, is a created, rather than a natural, invention. Finally, while offering protection to new physical inventions, intangible inventions results from overly formalistic reasoning remains unprotected.

New trends in the computer industry have changed the relationships among hardware, software and algorithms. The proliferation of computer aids in all areas of the computer industry means that the final or virtually final expression of most forms of innovation takes place in the language of computer software. New hardware chips, for example, are almost always designed using software and an automatic, final software-to-hardware translation. Given this scenario, the law should not require that this automatic translation take place before patent protection be extended to protect the design. In fact, any legal distinction between hardware and software becomes meaningless; the hardware design is essentially nothing more than a piece of software. The

\textsuperscript{319} Original thinkers can not copyright their ideas since copyright protects only the 'expressions' of ideas.
emergence of computer aids has destroyed any argument that hardware and software differ in kind, and a legal framework that provides patent protection to hardware but not to software has little justification in practice.

A database is a computerised system for storing and manipulating data in order to produce useful information, akin to a traditional book or encyclopedia. Databases are used for a variety of purposes, ranging from education to entertainment to science. Yet while the information contained in a database is often expensive to obtain, unauthorised parties around the world may have the technological ability to extract all or substantially all of the data over the internet, without the consent of the site owner and without payment. International law currently provides only modest protection for databases, which may reduce the incentive to create them.

Copyright law is the principal international regime that bears on the protection of computer databases, as reflected in the Berne Convention, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and other instruments. It is axiomatic that data cannot be copyrighted; copyright law protects the expression of an idea, not the idea itself. Accordingly, TRIPS provides that international copyright protection extends 'to expressions and not to ideas, procedures, methods of operation or mathematical concepts as such.' The WIPO Copyright Treaty contains identical language. However, TRIPS mandates that member states provide protection for 'compilations of data or other material...which by reason of the selection or arrangement of their contents constitute intellectual creations.' The scope of this protection 'shall not extend to the data or material itself.' Thus, international law does not bar a person from extracting the information contained in a database belonging to another and then reusing it or reselling it for a profit. While the structure of a database may be protected, its contents are not.

The most promising model for international protection is the 1996 European Union Database Directive. It creates a *sui generis* right in the maker of a database to 'prevent extraction and/or re-utilisation' of the whole or a substantial part of the 'contents' of that database. To qualify for this right, the maker must establish that there has been a 'substantial investment' in obtaining, verifying, or presenting the contents. The initial duration of the right is 15 years.

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320 Article 9(2) TRIPS, https://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm
324 Article 7(1), 8, 9 Database Directive, http://www.wipo.int/wipolex/en/details.jsp?id=1409. The Database Directive sets forth a series of exceptions to this right, such as the use of 'insubstantial parts' for any purpose or certain extractions used for teaching or scientific research.
However, any 'substantial change' in the database contents, either qualitatively or quantitatively, which would result in the database being considered to be a 'substantially new investment' creates a new 15-year term of protection.\footnote{Article 7(1) Database Directive, http://www.wipo.int/wipolex/en/details.jsp?id=1409} As a later EU report conceded, this provision 'comes close to protecting data as property.'\footnote{DG Internal Market and Services Working Paper: First evaluation of Directive 96/9/EC on the legal protection of databases, (2005), Commission on European Communities, http://ec.europa.eu/internal_market/copyright/docs/databases/evaluation_report_en.pdf} In effect, the directive creates a limited property right in data, which may be 'transferred, assigned or granted to others.'\footnote{Article 7(3) Database Directive, http://www.wipo.int/wipolex/en/details.jsp?id=1409}

The *sui generis* right automatically applies to databases whose makers are nationals of an EU state or who have their habitual residences within the EU.\footnote{Article 11(1) Database Directive, http://www.wipo.int/wipolex/en/details.jsp?id=1409} But it also applies to databases developed by nationals of other countries if those countries 'offer comparable protection to databases' produced by EU nationals or habitual residents. This extends an invitation to any non-EU state to join the framework created by the directive, which has the potential to create a global regime for database protection.

The only serious international effort to regulate cyberspace is the 2001 Convention on Cybercrime, which seeks to prevent damage to computer data and systems. Noting the 'continuing globalisation of computer networks' and the need for 'international co-operation in criminal matters,'\footnote{Convention on Cybercrime, (2001), http://conventions.coe.int/Treaty/en/Treaties/Htm/185.htm} it requires parties to adopt domestic legislation that criminalises certain computer-related conduct. Much of the convention concerns criminal activity originating in one state and conducted over the internet that damages computer data or systems in a second state. For example, prohibited conduct includes: (a) intentionally accessing a computer system without right; (b) intentionally damaging, deleting, altering, or suppressing computer data without right; (c) harming the operation of a computer system by inputting, damaging, or deleting data; and (d) causing a 'loss of property to another person' by the 'input, alteration, deletion or suppression' of computer data with fraudulent intent.\footnote{Article 2, 4, 5, 8 Convention on Cybercrime, (2001), http://conventions.coe.int/Treaty/en/Treaties/Htm/185.htm}

Two other provisions of the convention requires member states to criminalise the possession or distribution of computer programs or passwords that can be used to commit covered crimes.\footnote{Article 6 Convention on Cybercrime, (2001), http://conventions.coe.int/Treaty/en/Treaties/Htm/185.htm} The convention also provides that the possession or distribution of child pornography through a computer system must be a crime.\footnote{Article 9 Convention on Cybercrime, (2001), http://conventions.coe.int/Treaty/en/Treaties/Htm/185.htm} Accordingly, such programs, passwords, and pornography fall
into the category of contraband-like illegal drugs or the proceeds of transnational crime. International law prohibits member states from recognising property rights in these items.

Massive multiplayer online role-playing games (MMORPG), gamers are producing new content for their favourite titles. MMORPGs developed from the text-based multiple user domains (MUDs) in which thousands of users are simultaneously able to log in, create their personal avatar and explore a virtual world together.

Many of the more recently-developed online games, which usually involve sophisticated computer graphics, require subscriptions, are competitive, and have measures of success or failure (gathering property, advancing in rank or level and status, or quests with defined objectives). The rules of the game are defined by the developers, and players can not change them. The players participate because they like to assume a new identity, but also because of the attraction of competition. There are exceptions to these generalisations: some of these environments are not games in the generally understood sense, requiring struggle and contest, but are places to socialise, create and entertain. One wide definition of these new 'places' is 'computer- moderated, persistent environments through and with which multiple individuals may interact simultaneously'.

In order to play a commercial Virtual worlds (VWs) game, a player must first purchase a copy of the game software itself. S/he then installs the software and connects to the Internet. Before playing, one designs an 'avatar' or 'character' - a virtual persona to represent oneself in the virtual world - choosing both physical characteristics and skills and attributes. The player chooses how s/he wants their avatar to look and dress, and what abilities the avatar has. Often this is done by spending 'points' from an overall budget. A player can not excel at everything, but must choose between, for example, being magic creature or human beings. The avatar is then placed in the VW and the player controls its movements and actions. The avatar can interact with other players and with characters and creatures controlled by the game software. The avatar generally starts with little or no money or significant abilities and must invest time (and thus subscription fees) in order to be able to engage in any activities of interest.

Within the game, an avatar can have property in virtual objects, 'with all of the familiar real world features of exclusive ownership, persistence of rights, transfer under conditions of agreement and duress, and a currency system to support trade'. The avatar can sell property within the game to other characters (whether controlled by other players or by software), some of whom are 'merchants' who are programmed to buy and sell. The avatar can also haggle with other avatars. This can be much more difficult, but more profitable, as the merchants are programmed to buy low and sell
high, leaving space for arbitrage. This trading generally takes place in defined and well-known marketplace areas of the VW.

People are now trading real money for 'property' that exists only within a computer game, creating value in a virtual world. This phenomenon has burgeoned over the past few years: initially regarded as a curiosity and an example of the sometimes bizarre and unpredictable nature of the Internet, it has become a substantial market in its own right, creating several fortunes and enabling many individuals to make a living by trading in imaginary goods (intangible property) located in imaginary worlds. It is now clear that trading in online game objects is a new element of the Internet experience that will persist and grow with the technology.

VWs present a laboratory in which to observe humanity operating under different conditions: 'Virtual worlds ... may accidentally provide an environment that lends itself well to the testing of legal rules'. Every legal system develops ideas and notions that assist in reconciling a system of rules, physical realities and people's expectations in a way that enables the entire system to function, sometimes in counter-intuitive ways. In the online world, the physical element is not immediately obvious and the virtual object raises complex issues of intellectual property law. Intellectual property is a particularly good example of this phenomenon: a very convenient and useful notion that there can be 'property', ownable and transferable, in creative works, inventions and marketplace reputation.

The new legal horizons opened by real-world trading of online game objects is relatively straightforward. Trading outside of the VW, for real money, takes three forms. For the first two types of transaction, players strike bargains in third-party websites (such as eBay), most of which use an auction mechanism to decide prices. Money is transferred through credit cards and the electronic payment system (PayPal). When the sale involves game objects, the players arrange for their game avatars to meet in a marketplace area in the game. The goods are then 'handed over' - passed from avatar to avatar. Entire accounts are also sold, with avatars being transferred from one player to another. Here the transaction takes place in the real world, with a username and password changing hands. Finally, some game creators have recognised that there is a market here they should tap into and will directly sell game property for real money, although others actively try to shut down the real world markets for property in their games. The end-user license agreement (EULA) for the VW often prohibits the sale of game property. This has not always been straightforward, particularly when the party selling the property does not play the game and so is not bound by the end-user license agreement.
This aspect of the new legal horizons opened by real-world trading of online game objects is relatively straightforward. VW presents two problems for the legal system. First one, is a longstanding issue in any market: humans are not all honest and once real money is involved there are bound to be transactions that go awry and individuals seeking assistance from the law to resolve disputes. Second, the new problem is that it is not very clear what (from a legal perspective) is being traded or who has rights to it. What is more complicated is determining the nature of the legal property that is changing hands for money in real world trading. It is clear that something is being traded in the real world as part of people's participation in online games. Individuals are prepared to spend large amounts of money on virtual goods. Some can make their living trading in these new spaces and it has formed the basis of the business models of enterprises. The fact that people attach sufficient value to these virtual objects to pay money for them implies that they believe that they are obtaining some form of property. Although many of the vendors dress their sales up as 'service', claiming that buyers are exchanging their money for the time of the seller, purchasers nonetheless feel that they 'own' the item for which they paid.

Virtual goods are online games objects, which are in physical form an arrangement of digital information in the memory of a server and generally operate without sanction from its ultimate creators. These electrical patterns have no value without the technological infrastructure to give expression to the story the game tells - the creators of the game, the programmers who make it function and the interconnection of computer networks that enable the player to participate in the shared story. Nor are they secure. The operators of the game can shut the game down and extinguish this property without explanation or justification. Of course, the fact that these are simply arrangements of data does not mean that they can not be the subject of property claims. There are many other examples of 'virtual' property in practice: URLs, domain names, email addresses and bank accounts. There are some exceptions where the game developers allow and facilitate the exchange of real world currency for in-game currency or the purchase of game items for real money. However, in most games, the EULA will normally preclude the acquisition of rights. Even a game such as Second Life, which has based its success and media profile on granting players what seem to be intellectual property rights in what they create, reserves the right to delete any and all items from its servers. This lack of clear rights does not seem, however, to be limiting the development of the market in any significant way, although it has led to calls for clear legal intervention.

The other particular aspect is that what is traded does not fit neatly into established notions
of copyright. Although players do speak of ownership, it might be that all that is being traded is the right to use the item in the game, and it is not clear who has the legal authority to permit this alienation. It may not be the developers of the games. Real world trading does not involve the direct duplication of the copyrighted elements of the game world. (Vendors may use copyrighted elements, such as images, to describe the items for sale, but even if the courts were to take a strict position on this issue, the sales could continue without detailed descriptions.) When an object changes hands in the game world, no copying takes place, making it difficult for the developer to argue that copyright infringement has occurred. This is probably why game worlds rely on EULAs to ensure that they can act against real world trading.

However, it may not be players either. Although their rights have received little legal consideration, video game players have been held not to provide sufficient creative input to found a claim for authorship rights. Although this ruling was based on a previous generation of games, and modern online games involve considerable contributions from players, even this may not be enough to give players legal rights in their contributions to games. However, it may be that a broader reading of case law that deals with an earlier generation of games is more appropriate, one that sees the player as 'a co-creator of his world'.

As the technology develops, so will the arguments for granting players the right to buy and sell game objects. With digital information and communications technologies becoming more prevalent, the distinction between online and offline will disappear. We will be living 'in the screen' rather than 'on the screen'. (Indeed, in time, the screen may disappear entirely.) In tandem with this development, it is likely that common, open standards will be developed to enable online game avatars to be portable from game to game, much as the development of the open web technologies allowed information to be shared across computer and networking platforms. If we are to protect 'bits in context' (electronic property within the confines of a particular game, then as game interfaces become universal and interchangeable, so will the need for property protections for players. In this new environment of portable avatars, the development of property rights for players in games is inevitable. These might be built on the fundamentals of common law property rights: the right to exclude, the right to transfer, and the right to use and possess.

The traditional understanding copyright law has of the creative process is that of the solitary author, labouring alone and driven by a unique spark of inspiration. The new levels of interaction the networked computer facilitates illustrates how limited that understanding is. Gamers are simultaneously consumers and producers - sometimes labelled 'conducers'. Copyright depends on a
divide between creator and consumer; online games blur this distinction, and the final creative work depends as much on the contribution of the individual players as on the ideas of the creators and programmers. Indeed, many game developers actively encourage the filming of 'machinima' (animations created within games) and the creation of 'mods' (modifications) for their games by players; these may even form the basis of a marketing strategy. In this way, VWs may point towards a commonisation of intellectual property that may help to re-balance the increasing trend toward corporate enclosure of shared culture.

What final shape a new understanding of intellectual property might take is not clear. The commercial context within which the debate is held may limit its parameters too much and the players themselves are not very concerned with grand issues of intellectual property law on a day-to-day basis. However, if and when open standards and cheap technology for shared virtual worlds develop and become a common feature of everyday living, acknowledging the rights of players to their avatars and possession will become inevitable. As these new virtual spaces become integrated into the fabric of every day life, and thus increasingly impossible to avoid, we will certainly see property rights developing in MMORPGs and we may even see property rights being asserted in virtual worlds.

MMORPGs and VWs are developing at a rapid pace, creating new markets and throwing up new legal problems. An examination of the theoretical foundations of property rights also leads to the conclusion that, with time, the interest of players in property rights will outweigh those of game developers. This challenges traditional notions of intellectual property and authorship, although in a somewhat unfocused way. Nonetheless, it is clear that the phenomenon of online games and real world trading in virtual property is an important element in the accelerating pace of change in intellectual property law.

The development of virtual property world gives an excellent opportunity to experiment with the legal relationships, transactions, and obligations that, in the real world, fall within the category of property. The property system have emerged in virtual world because of property interests in virtual world which bleed to the real world. Virtual property are transferred in the real world everyday for real money. It is obvious that from a descriptive perspective the differences between property in the virtual world and real one is little.

The development of virtual worlds has generated controversy about whether law should recognise rights in 'virtual property.' In this context, virtual property may be defined as two or three-dimensional graphic representations of intangible objects that are perceived by humans as existing
in a computer-generated virtual world, such as avatars, buildings, clothing, furniture, and terrain in an online game. Depending on the particular situation, a participant in such a simulated world may be able to see, hear, utilise, and create virtual objects by using raw materials provided by the program. Millions of people around the world are active participants in such virtual worlds.

In addition to serving an entertainment function, virtual property has substantial value in the real world. The sale of currency, land, tools, weapons, and other virtual objects that have been created or otherwise obtained by users generates millions of dollars each year in real world transactions. In addition, the tens of thousands of businesses which entrepreneurs operate in virtual worlds ranging from tattoo parlors to resorts produce income in the real world. The line between the virtual world and the physical world has accordingly begun to blur.

Each virtual world is owned and operated by a commercial entity that requires participants to consent to standardised license terms as a condition of accessing the site. Such terms typically provide that (a) the ownership of virtual objects that a participant may create in the future is vested in the site owner or (b) such objects can not be owned at all. The enforceability of such agreements is usually governed by municipal law. However, in some circumstances, international copyright law may supersede the provisions of such licenses, thus creating derivative property rights in private actors.

The Berne Convention would seem to require that states provide copyright protection for avatars and other virtual objects, at least in some situations, regardless of who holds the copyright. The definition of 'literary and artistic works' that the convention protects is broad, covering 'every production in the literary, scientific and artistic domain, whatever may be the mode or form of expression,' including 'cinematographic works to which are assimilated works created by a process analogous to cinematography.' The audiovisual features of an online video game or a virtual world are encompassed within this definition, which would logically include virtual objects that are sufficiently delineated, such as the visual image of an avatar. In the same manner that domestic laws may extend copyright protection to a literary or audiovisual character regardless of the work in which it appears the personality, abilities, and other characteristics of an avatar or other virtual object might also be protected.

This analysis logically leads to the question of who is entitled to Berne Convention protection the user, the site owner, or both? Although the convention specifies that its purpose is to protect the rights of 'authors,' it does not define who an 'author' is. Rather, the question is largely

333 Berne Convention art 2(1).
334 Berne Convention art 1.
left to domestic law. There is general agreement that the author is the person who has created the particular work. Yet, by definition, the raw materials from which a virtual object is constructed are supplied by the applicable computer program operated by the site owner. Such a program may be sufficiently complex to allow the user to make many, perhaps hundreds, of decisions about how the object should be configured. In this situation, the raw materials might be analogised to a selection of paints used by an artist to create a painting; the user would hold the copyright in the virtual object, just as the artist is entitled to the copyright in the painting. Alternatively, both the Berne Convention and TRIPS provide that copyright protection extends to the selection or arrangement of preexisting materials used to create a compilation.\footnote{Berne Convention art 2(5); TRIPS art 10(2).} Where a user exercises only limited originality in combining raw materials, the resulting virtual object might still qualify for protection as a compilation. Depending on domestic law, a final possibility is that the user and the site owner might be considered to be joint authors of the work, each entitled to copyright protection.

One potential limit on the enforceability of license provisions that restrict a user's ability to assert a copyright claim is the concept in some states that copyright can vest initially only in a natural person, not a legal entity. It has been suggested that the framers of the Berne Convention assumed that only a natural person could be an 'author,\footnote{Ricketson, S. & Ginsberg, J. C., (2006), 'International Copyright and Neighbouring Rights', 2d edn, OUP, 369.} although the text of the convention does not address the question. Under this approach, a user's advance agreement that the copyright in a subsequently created virtual object will belong to the site owner is not enforceable, even though a post-creation assignment would be valid. At a minimum, the domestic law of many states provides that a copyright can vest initially only in a natural person, not a legal entity such as a site owner, which would similarly supersede such license provisions.

The Berne Convention requirement that states respect the moral rights of authors poses another challenge to contractual arrangements. Article 6bis provides that even after the transfer of economic rights in a work, the author still has the right to claim authorship of the work and the right to object to any modification of the work that would be 'prejudicial to his honor or reputation.'\footnote{Berne Convention art 6bis(1).} Although such rights can presumably be waived under domestic law, a standard form that purports to both grant economic rights and waive moral rights might not be consistent with the article. As one authority observes, 'otherwise, the independence of moral and economic rights risks becoming purely formal, reducing in fact or practice to their independent statement in separate catch all clauses of the same contract.'\footnote{Ricketson & Ginsberg, \textit{International Copyright} 599–600.}
The TRIPS provisions governing the protection of trademarks should also apply in virtual worlds. The owner of a virtual business who utilises a distinctive sign, symbol, or name to market goods, for example, would seem to qualify for trademark protection. Nothing in TRIPS restricts its application to the physical world; and the goal of promoting international trade that TRIPS is designed to serve applies equally to commerce in virtual worlds. Accordingly, at a minimum, if a business in a particular virtual world infringed a trademark held by another business in that world, the owner of the second business should be entitled to obtain relief in the physical world.

Even assuming that international law would safeguard a user's copyright, moral rights, and trademark relating to a virtual object or business, the resulting protection falls far short of full ownership. The user who holds a copyright in an avatar can prevent others from reproducing and thus utilising the avatar. The user could also potentially bar others from modifying the avatar. But the user is not entitled to continue using the avatar for its basic purpose as an actor in a particular virtual world unless the site owner consents. The Berne Convention offers even less protection to the user who develops a virtual business. Although others could not infringe the user's copyright by, for example, erecting an identical virtual structure, the site owner could presumably close the business altogether or alter the configuration of the virtual world so that customers could no longer reach it.

Enhanced international protection for property rights in virtual objects may be appropriate in the future, particularly if the boundary between virtual worlds and the real world continues to erode. Given the parameters within which the issue arises cyberspace transactions involving a multitude of participants from many states global measures are necessary for effective protection.

339 TRIPS art 15(1).
340 Berne Convention art 9(1).
341 Berne Convention arts 2(3), 6bis(1).
Chapter 5: Intangible Property Regulation

Intangible property is an abstract property that is capable of shifting from form to form. The adjective 'intangible' is regarded as descriptive of the character of some of the material that this area of law regulates – namely, the intangible products of the human mind. The designation 'property' is said to describe the form of regulation – that is, primarily the grant of individual rights that operate in manner similar to private property rights over tangibles. Certainly, there are those who question whether, whatever the legislators may say, these rights can really be called 'property rights' as opposed to 'monopolies' or 'rights to exclude'. An alternative opinion, that is examined here, is that the development of the intangible world has led to transformation of 'intangible property' from a category of intellectual and economic assets to a category of law or even to a category in law.

There is little agreement on the precise coverage of the term 'intangible property'. Most definitions have the character of lists that include intellectual property as a form of intangible property. But matters become more difficult when the question becomes, for example, whether the protection granted over intellectual property counts as part of 'intangible property'. Indeed, when asked whether intellectual property falls within the term 'intangible property' as a part of a legal concept – that is, for the moment at least, 'intangible property' - in fact it does not possess the power to define the boundaries of the field. Instead, it is more obvious that whenever the term 'intangible property' appears it is perceived as part of the intellectual property legal concept with reference to the specific legislative context.

There are a number of important differences between the various forms of intellectual property. One feature that they share in common is that they establish property protection over intangible things (such as ideas, inventions, sings, and information). As rights over intangibles, intellectual property rights limit what the owners of personal property are able to do with the things that they own. In granting property status to intangibles, the question arose as to how and where the boundary lines of intangible property are to be determined. That is, once it was accepted that the law should grant property rights over intangibles, the question arose: how is the object of the


property to be identified and its limits defined? As result, each area of intellectual property law has developed its own techniques to define the parameters of the intangible property. These include schemes of deposit and registration, techniques of representation (patent specification and claims), statutory rules and legal concepts such as the requirement of sufficiency of disclosure (patent law), and the originality requirement (copyright law).346

While the law has long granted property rights in intangibles, the law did not accept 'intangible property' as a distinct and non-controversial form of property. High technological application emerges brand new system of public relations which appear to new law features and properties of intellectual creation as an object of intangible legal relationship. Difficulties of separating intangible property from the contract that creates those property as well as the application of existing laws arise questions regarding the definition of new concept of intangible property theory as well as contract regulation. It is necessary to use an integrated approach in the scientific search on the problems of intangible property protection on the Internet, and to see the concept of intangible property as complex one at the intersection of different branches of law.

5.1 Intangible property, Common property, Private property and State property

As any given system of property, intangible property is a system of intangible rights of each persons in relation to other persons. This is clearest in the case of modern private property, which is a person's right to exclude another one from something, but it is equally true of any form of common property, which is the right of each individual not to be excluded from something. The definition of intangible property as an enforceable claim of a person to some use or benefit of intangible works and goods is often taken to rule out the idea of common property. But a little analysis will show that it does not.

In legal and political theory the commons concept is a relatively under-theorised.347 For organising access to and use of valuable resources property theory recognise three prototype institutions - private, state and common property.348 Common property, or 'the commons', have been largely overlooked during the political conflicts of the twentieth century. Reduced to its conceptual minimum it entails a situation where no specific individual or entity is recognised under

the law as having a right to exclude others from access to and use of a given resource. Thus when a resource is held in common everyone has an equal privilege to use it and likewise no one is under a duty to anyone else (including the state) regarding how they may take actions or decisions that involve that resource.

The Internet is complex, involving multiple players and activities, with on-going innovations in an open and dynamic digital environment which is a resource for the common use. The state declares that the right to use the Internet is then a property of individuals, in that each member of society has an enforceable claim to use it. It need not be an unlimited claim. The state may, for instance, have to ration the use of Internet, or it may limit the kinds of uses that anyone may make of the web (just as it now limits the uses anyone may make of his private property), but the right to use the common things, however limited, is a right of individuals.

The term 'common property' as employed here refers to a distribution of property rights in the Internet in which a number of owners are co-equal in their rights to use the resource. However, we need to distinguish such rights from the exclusive individual rights which are those of private property, which may easily lead to our thinking that such common rights are not individual rights. But they are. For example, the Internet content can be generated by an individual's tweet on Twitter or photos uploaded on Instagram. They are the property of individuals, not of the state. The state indeed creates and enforces the right which each individual has in the things that the state declares to be for common use. Online services include a wide range of applications accessed by users: social networks, blogging, emailing, web search services, online gaming, etc. But so does the state when it creates and enforces the exclusive rights which are private property. In this case, the state creates the contents that are attached to the users or to the content rights owner on the Internet. In neither case does the fact that the state creates the right makes the right of the property of the state. In both cases what is created is a right of individuals to have access or use. The state creates the right, the individual has the rights. Common property is created by the guarantee to each individual that he will not be excluded from the use or benefit of something; private property is created by the guarantee that an individual can exclude others from the use or benefit of something. Both kinds of property, being guarantees to individual persons, are individual rights.

The right in the case of private property may, of course, be held by an artificial person, that is, by a corporation or an unincorporated grouping created or recognised by the state as having the same (or similar) property rights as a natural individual. The property which such group has is the right to the use and benefit, and the right to exclude non-members from the use and benefit, of the things to which group has legal title. Corporate property is thus an extension of individual private property.

Both the kinds of property are, thus, directly or by extension, individual rights. Both are rights of distinct natural or artificial persons. Another kind of property which appears not to be an individual right at all is state property. It consists of a right which the state has not only created but has kept for itself or has taken over from private individuals or corporations. The right to use airwaves for radio and television communication for instance, may be retained wholly or partially by the states as it is in countries with public owned and operated broadcasting systems. Again, various enterprises, e.g. railways and airlines, are in many countries owned by the state. The rights which the state holds and exercises in respect of these things and the rights which comprise the state's property in these things are akin to private property rights, for they consist of the right to the use and benefit, and the right to exclude others from the use and benefit, of something. In effect, the state itself is taking and exercising the powers of corporation: it is acting as an artificial person.

Today state property does not give the individual citizen a direct right to use, nor a right not to be excluded from, the assets held by the state acting as a corporation. Companies are not freely available to all citizens; a state-owned railway is apt to be as jealous of its property as a privately owned one. State property, then, is not common property; state property is not an individual right not to be excluded. It is a corporate right to exclude. As corporate right to exclude others it fits the definition of (corporate) private property. It may seem paradoxical to call it a kind of private property, for definition it is the property of a state. The paradox disappears when we notice that the state, in modern society, is not the whole body of citizens but a smaller body of persons who have been authorised (whether by the whole body of citizens or not) to command the citizens. The state can have a corporate right to exclude others, including citizens, from the use or benefit of something, in just the same way as it permits a private owner to do. State property, then, is to be classed as corporate property, which is exclusive property, and not as common property, which is non-exclusive property. State property is an exclusive right of an artificial person.\textsuperscript{352}

From this analysis of three kinds of property two points can emerge. One is that all three kinds – common, private and state property – are rights of persons, either natural individual or artificial persons. The other is that common property, rather than being ruled out by the concept of property as rights (enforceable claims) of persons, turns out to be the most unadulterated kind of property. For common property is always a right of the natural individual person, whereas the other two kinds of property are not always so: private property may be a right of either a natural or artificial person, and state property is always a right of artificial person.

Intangible property is a kind of nonmaterial, incorporeal property that only has endurance in time, not necessarily location in space. Intangible property exists only fictitiously, or by 'legal fiction'. Intangible property is a property that completely depends for its existence on human rules and conventions. 'Hay Day' is actually a fictitious farm, indeed one app used in a recent time, but we can understand what it means because we know how it is possible for real existing farm (land, houses) to be identified in such way. Farm, barn, shop, plants, animals are all fictitious. 'Fiction' is a term that should be used to designate objects existing only for imaginative purposes, not objects whose existence depends on actually functioning rules in actual, practical life. It is true of legal property of every kind that the way they are identified as specific and distinct property runs parallel with the way they impinge on specifically human interests and with the way human rules or conventions serve these interests.

In the light of this analysis it appears that intangible property as enforceable claim of persons to some use or benefit of intangible works and goods can not logically be confined to exclusive private property as well as common and state.

5.2 Legal regime of intangible property

Intangible property right is the view of property right whether the central idea is that the balance between technological systems and society interests ought to be highly concerned with individual property rights as well as public interests. To technological enthusiasts, property rights just get in the way of the efficient flow of information through the network and out to the people that it connects. The same goes for those whose interest is in societal transformation through collective creativity. Property rights, associated as they are with individual firms or people, tend

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only to gum up the free sharing of information and the process and creative humility that suffuses the virtual communities behind collective creativity.\textsuperscript{355}

A legal regime of intangible property should include the optimal level of rights and responsibilities regulation, while still motivating the users to exert the optimal effort to creation and development of new works and goods. In this perspective it is necessary to investigate the legal circumstances, together with multidisciplinary functions, which influence the legal regime and status, having both public and private interest.\textsuperscript{356} To understand these dynamics, we begin with the proposition that intangible property operates on several levels at once. On the one level, intangible property serves basic functions that shape individual personality and autonomy. On yet another level, intangible property serves as the connective for communities, defining mutual obligations and setting the boundaries of social relations. At the last level, intangible property serves as a source of incentives for the production of new intangible works and goods.

The main question of the structure of intangible property rights and the limits of regulation is the one of how we can apply a private property rights to the system of open source materials of intangible property.\textsuperscript{357} This parses into two distinct, but related, underlying concerns. In the sense of right to exclusion, individuals will not be secure in the creation and protection of the value that they see as inherent in the stable ownership of assets.\textsuperscript{358} Beyond providing security to incentivise the creation and development of resources, the second primary concern is how to allocate those open and no scarce resources and resolve the inevitable conflicts that private property rights generates. The emergence of private property from the common represents a response to the change in the costs and benefits of exclusion. In the concept of intangible property, property rights will remain in the commons, but where there are gains to be made from internalising costs and benefits, property rights will emerge.\textsuperscript{359}

Prescriptively, private property focused on incentives and their allocation tends to start from a presumption of the advantages of relatively stronger property rights, with infringements on rights to use, exclusion, and disposition. Where the conflict over intangible property arise, a

\textsuperscript{358} Bell, A. & Parchomovsky, G., (2005), 'A theory of property', 90 Cornell J.L. Rev. 531.
corresponding preference is often found for legal rules that facilitate bargaining. Again, with the presumption that clear property rights do just that. If transaction costs stand as a barrier to bargaining, the preferred legal rule is one that lowers transaction costs. If transaction costs entirely preclude bargaining, efficiency suggests that remedies should approximate what a bargained-for resolution would have achieved.

A second major functional discourse shifts from problems of open and no scarcity sources concern centered around the link between intangible property and individual development or identity. By controlling property, an individual links ownership to development on the external world as a necessary step to joining the community of others. Intangible property law might recognise the need to protect the stability around identity connected to the aspect of personhood expressed through intangible goods and works. But in the concept of intangible property rights, the development of individual identity through control over intangible works and goods from the perspective of private property rights depends on the will of owner of intangible property. While open conception requires that others recognise the imposition of ownership, it assumes that individuals will shape the nature of ownership driven by their own interests in the intangible property.

A final important discourse looks at intangible property as a construct – and creator – of social relations. As such, intangible property assists the formation of enduring communities. The concept of intangible property, conceived in such a way, has been developed through various iterations, but generally it has retained the nature of a functional vision of property understood as the realm of deeply embedded relationships and community, with a normative focus on the obligations that arise from these interconnections. Our modern understanding of the role of social relations in property and property rights grows out of particular social conditions, reflecting state

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decisions about the distribution of entitlements. These distributional choices inherently limit the freedom of those against whom property rights – particularly, but not only, exclusionary rights – are asserted, and facilitate a kind of state-backed private coercion involved in market relations. In this view, intangible property is a social construct which carries with it the potential instead to foster mutual obligation. With property rights comes responsibility to society and obligations to the community. Intangible property give rise not just to general common duties, but to specific interpersonal obligations. Intangible works and goods can mediate individual relations, with property rights emerging as reflections of the relationships that intangible property fosters. Intangible property may create community boundaries as much as it creates individual boundaries against the state or community.

The social character of individuals as a descriptive and normative frame views property as necessary to foster the flourishing of virtual communities associated with that social character, which lead us to the conclusion that property serves 'as a means of joining individuals to each other.' From this perspective, intangible property is less about a zone of freedom from state and community control, and more about the ties that bind individuals (users, authors, owners, etc.) and similar relationships mediated through the intangible world. Property rights, in this view, challenges the notion that property begins as a core of fairly stable rights of use, exclusion, and disposition against which the interventions from the state should be understood as derogation. The very definition of intangible property carries with it inherent limitations and mutual obligations. This approach presents itself as a functional vision of how intangible property operates – property as flowing from, and in turn shaping, deeply embedded, context-specific relationships.

Given that this central and increasingly important aspect of intangible property has gone unexamined in contemporary legal scholarship, we can make three contributions to the literature. First, this study adds to legal scholarship a general framework for understanding intangible property status – the communication function. Second, it illustrates how contemporary property theory remains incomplete and, in important respects, misguided in the absence of an appreciation of this aspect of property. Third, the exploration of the role of law in this field adds a new perspective to

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the growing interdisciplinary dialogue on property and status.

5.3 Legal status of intangible property

Early intellectual history of property evinces a long tradition of thinkers recognising a comparative dynamic around material possessions.\textsuperscript{372} Status through material possessions tends to reflect an ever-shifting baseline of necessity and desire.\textsuperscript{373} However, according to the development of intangible property and the new question of digital possessions, the classical understanding of property status should be reinvestigated. A picture of intangible property emerges that is unfamiliar in the contemporary legal literature. This vision status property as an institutions through which a constant process of competition and status concern plays out, with the accumulation and display of property serving as a driving incentive for economic activity, and risk of status loss requiring constant response.

Through interaction with others we can explore and understand the role of various sorts of possessions in communication, which will help us to start to unpack intangible property status. There are a number of micro-hierarchies that reflect a host of status determinants.\textsuperscript{374} Accordingly, an understanding of individual behaviour that reflects how people act in the world flows from social position and group affiliation and internal and external forces.\textsuperscript{375} Property and all that comes along with it remain central to many hierarchies, and increasingly so given the importance of consumption to modern identity.\textsuperscript{376} It is possible to identify some basic axes along which intangible stratification occurs, dividing up stratification into communication, economic and enforcement elements.\textsuperscript{377}

Intangible property plays an important role in making relevant comparisons - status related – that parallel the power of property. Accordingly, possessions are used to signal both access and the ownership rights to digital works and goods. However, possession highlights the nature of economic-driven interests in intangible works and goods, which leads us to the roots and wider

\textsuperscript{373} Smith, A., (1875), 'The Theory of Moral Sentiments', George Bell&Sons.
consequences of consumption.\footnote{Duesenberry, J. S., (1949), 'Income, Saving and the Theory of Consumer Behaviour'. Pigou, C., (1913), 'The Interdependence of Different Sources of Demand and Supply in a Market', 23 Econ. J. 19.} We can say that, as any property, intangible property reflects social-comparison that drives people to make comparisons in evaluating digital goods. In this point of view, consumption and status races around property lied us to a form of the tragedy of the commons. Intangible works and goods as a resource that contribute to relative status would be seen as a practical transaction-cost. Status around intangible works and goods generate observable consequences for behavior connected to intangible property.\footnote{Basmann, R. L., (1988), 'A Note on Measuring Veblen's Theory of Conspicuous Consumption', 70 Rev. Econ. & Stat. 531, 534.} For example, status level of gamer in the online computer game, which gives opportunities and benefits to owner of content as well as creates social-comparison in the community of the online game. Vision of the intangible works and goods of intangible property as social interaction gives meaning to the intangible world, with people constantly sending and receiving information about intangible property. From this sense of comparative process around intangible works and goods, we observe the generation of status that influence many aspects of how people interact with and through intangible property.

Intangible property, in this sense, brings to the fore the role that intangible works and goods play in marking, defining and policing status boundaries. Intangible property provides a particularly powerful symbolic assets for communication, with the status-related aspects of property presenting a communicative structure that is adaptive, culturally sensitive, and generally pervasive. In digital consumer culture, information relating to property is all the more intense because of variety of cultural and market institutions generating and reinforcing that information which consists in intangible works and goods. Everything, from magazines and entire cable channels devoted to the Internet, to the pervasive advertising that saturates so much of our daily lives, revolves around communication through intangible works and goods. From the economic point of view, intangible property is a particularly important assets for comparative communication, which reinforces property in communicating status and then helps to highlight the price which consumers are willing to pay for it.\footnote{Carlsson, F., (2007), 'Do You Enjoy Having More than Others? Survey Evidence of Positional Goods', (2007), 74 Economía 586, 590-96; Radin, M. J., (1993), 'Reinterpreting Property'.}

However, the comparative dynamics that play out through intangible property can be described in a post-materialist phase of our culture where people sort themselves less on socioeconomic ground and more on a variety of cultural grounds.\footnote{Inglehart, R., (1990), 'Culture Shift in Advanced Industrial Society', 66, 103.} There is a significant amount of intangible property that is held in ways that minimise the individual connection to property, such as
ownership by entities or forms of joint ownership. This kind of distant and disaggregated ownership as well as intangible and no scarcity character of intangible works and goods complicates the legal position of both who communicate through property and those individuals who receive that communication.

The transmissions of norm through social comparison has been linked to social networks. Social networks shape individual behavior, where intangible works and goods operate to link individuals with respect to the normative vision of property. Intangible property as an institution to incentivise production and allocate no scarce resources – incorporating an understanding of intangible property status though intangible works and goods has the potential to undermine the welfare enhancements that economists and economically oriented legal scholars conventionally associate with regime of strong property right. Status creates some potentially positive incentives that can not be dismissed lightly, but on the whole risks distorting both the incentive and the allocative function that property (with contract) is said to serve. With respect to the normative vision of property as social obligation, the mutual understanding of shared values can reinforce a collective sense of community reflected though intangible works and goods. A shared sense of position in communities competition can be bond against other communities, as group-identity theory in social comparison suggests. The common bonds of one community, then, can magnify exclusion of others. The interconnectedness of intangible works and goods represents a balance between individual and collective concerns can thus be seen as an engine that unexpectedly has the potential to accelerate the power imbalances.

The emerging availability of intangible worlds fundamentally disrupt our present patterns of consumption. In the intangible culture in which consumption was disassociated from materiality, status that played out through intangible property raises new normative concerns. Acknowledging the tradition and active contemporary scholarship on status through property we can shed important new light on status of intangible property that shape contemporary classification to digital works and goods determining their rights and responsibility.

5.4 Ownership of intangible property

From a theoretical perspective, the nature of intangible property directly influences the question of ownership and rights regulation. As non-rival, non-excludable and non-exhausted the

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382 Guimond, S., (2006), 'Social Comparison and Social Psychology'.

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possession and use of intangible property is not limited to one person at a time. Furthermore, it is difficult to identify a 'separate' and divisible character of intangible property. This led us to the point that intangible property protects intellectual inputs, though rights, and the digital manifestations or instantiations of those inputs in intangible works and goods. The ownership of intellectual inputs in intangible works and goods can effectively give property rights to the owner of intangible work and good.  

Accordingly, in the concept of intangible property there is a different property right that is attached to particular uses. Most users of intangible property works and goods interact with the Internet through web content. They access this content by using the browser software to reach websites and the media player software for having multimedia users communicate with each other. This communication consists of the basic standards which define the nature of the Internet communications (TCP/IP). The Internet relies on the physic layer, which involves the actual wires that are used to access the Internet and the 'backbone' infrastructure that carries intangible works and goods from where they are stored to the user.

Using this explanation of the particular uses of the Internet, it becomes clear why it is necessary to focus on the role that intangible property plays in regulating access to intangible works and goods over the Internet. It is common that for most users, the content of the Internet, along with the physical layer, is the most familiar and understandable part to use. But the communication and content structure, while not appreciated by most users, are as well critically important, because they make possible various uses. Here, we focus on how the intangible property model can influence the future development of the communication and content layer of the Internet by granting intangible property rights to the users of the Internet. The advantage of the intangible property model is in deciding when to allow or prevent use, communication and access to intangible works and goods.

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387 P. J. Weiser, 'Law and Information Platforms', (2002), 1J. Telecomms. & High Tech. L.1, 3-8; B. Frischmann,
Intangible property rights are like any other property rights insofar as they allow to owner of intangible works and goods to benefit from their intellectual inputs or investment in the creation of their own works and goods. Moving beyond theory, the nature of intangible resources also provides a lens through which understanding of the rights in intangible property can be reached. The right to property, in general, belongs to the domain of 'negative rights' which have exclusionary aspects built into the claim. The exclusion strategy protects the rights-holders' interests, who is granted exclusive rights over the use, disposal and transfer of property. However, the protection of individual rights and the promotion of the general welfare modifies our understanding of exclusionary aspects of right in intangible property. We are not talking about physical control of a thing; it is more about control that the nature of the intangible works and goods admits. The protection of the right to exclude may be divided into the right to be put in exclusive control of intangible works and goods and the right to remain in control, i.e., the claim that others should not interfere without permission.

The right to use is the most fundamental attribute of the global right to property. The historic transition from common ownership to private ownership began with the acceptance of the concept that a particular person was entitled to utilise certain resources (a use right somewhat akin to the modern *usufruct*). Today the right to use is inherent in ownership. The acknowledgement of 'the right to own property' in the Universal Declaration of Human Rights (UDHR) is routinely interpreted as including the right to use as a necessary component of ownership. The right to use entitles a natural or legal person to enjoy and utilise movable and immovable things in the manner that he or she deems appropriate.

Access right through the intangible property model aims to regulate property right and strike the right balance between providing incentives to innovate and ensuring access to common resources (such as information). Access right should be general, that is, it should be useful in explaining the relationship between owners and users of content and intangible works and goods. It should be as closely approximate as possible to the actual conditions of the relationship. It should be useful in explaining the process of the relationship as well as the results.


Definition of access commonly describes an action of going or coming to or into something. Other times, access is something that someone has - a power of getting near or into contact with something. According to the property scenario, the act of access to 'something' is typically the property res. Access to physical or digital assets confers material benefits: it enables use and facilitates extraction of value. Private legal entitlements affect the ability to exercise, permit, and proscribe interaction such as entry, touching, using, etc. Generally, enjoyment of resources depends on the ability to perform the interaction that property entitlements secure. In this point of view, unauthorised entries to a privately owned domain (or exceeding the scope of permission granted by the owner) might per se injure possessory interests and trigger legal remedies as well as justify legitimate self-help actions.

The relationships between access to resources and use are intense, often inextricable. Usually, before use can even take place, the resource must be accessible to the user, as actual access happens at the same time with use. The role of access depends on the nature of the asset and of the use sought. For example, access has no value in itself, yet the ability to access preconditions the ability to draw actual benefits. The key to utilising property res as the most salient indication of ownership is access control.

Communication of property is one of the important part of right in the concept of intangible property. The right to communicate is the right to decide how and by whom owned intangible works and goods shall be used. This right depends, legally, on a cluster of powers, chiefly powers of licensing acts which would otherwise be unlawful and powers of contracting: the power to admit others to one's content, to permit others to use one's creation, and to contract effectively in regard to the use and exploitation of the owned works and goods. An owner may not merely use his own intangible assets, works and goods but may validly license others to use it, lend it, impose conditions on the borrower, direct how it is to be used, communicated and accessed, contracted for, and mended in a particular way. The right to communicate is an important element in the notion of ownership.

Consequently, in evaluating alternative frameworks to guide the intangible property model it is necessary to determine which approach works better to facilitate intangible property in the development of the Internet. An alternative model of intangible property perspectives, setting out

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391 Oxford English Dictionary, (2d ed. 1989). As a verb, in the sense of 'to gain access to,' it is often used in the context of data stored in a computer.
the benefits of the intellectual property and contract regulation and explaining how it can be applied to the Internet, would ensure a basic level of openness while allowing for proprietary enhancements, thereby enabling developers to provide rival Internet-based products and services based on technologies that are not open to all. In this perspective, it is necessary to reinvestigate the intellectual property doctrines for developing a clear analytical framework and the contract law for developing new contract regulation.

5.5 Intangible property works and goods

Internet is enabling a remarkable variety of intangible works and goods beyond the reach of traditional intellectual property law. Modern networks creates opportunity to communicate traditional property things with its surrounding environment. As a results of interconnection which today can make intelligent things and serve as a true decision-making tool. It is the case of Internet things which can be defined as 'a network of networks that enables to identify entities and physical objects, directly and without ambiguously, via standardised and unified electronic identification systems and wireless mobile devices, and thus makes it possible to retrieve, store, transfer and process data relating to them, without discontinuity between the physical and virtual worlds'.

Digital painting is one of examples. As the boundaries between technology and art become increasingly blurred, Japanese company teamLab is breaking new ground and setting new trends in digital artistic expression. The company's stunning 40-meter digital mural welcoming visitors to one of the world's tallest structures, the 634-meter high TOKYO SKYTREE®, is testimony to its trailblazing credentials. New high-tech reality - a large, colorful flat-screen display running on teamLab's proprietary software, Face Touch, presents images and details. User of such intelligent thing can select the creation which has been connected to everything concerning it topic beginning with creativity, technology and design.

Since its establishment in March 2001, teamLab has been at the cutting edge of the digital art industry, working with galleries, art festivals and other partners from around the world to create a range of captivating works. In the mid 1990s when Toshiyuki Inoko was studying engineering at the University of Tokyo, he recognised that the future would be digital. While, at the time, the focus

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was on developing the technology itself, Mr. Inoko began thinking about how digital art and technology could be integrated to form new cultural assets. These ideas took concrete form a few years later when, at graduate school, he started bringing his friends together on a regular basis to exchange creative ideas. Although setting up a business was not a primary consideration at that time, these gatherings were the seedbed of what later became teamLab.

The TOKYO SKYTREE project began as a simple request for digital signage but evolved into a striking and colorful digital mural spanning 40 meters – a fitting precursor to the breathtaking views visitors would witness from the tower's viewing platforms. Inspired by traditional Japanese artistic styles, the mural skillfully fuses hand-drawn illustrations with digital media to create a captivating bird's-eye view of Tokyo, past and present, in all its depth and complexity. The work has the scale of Godzilla and the detail of the Sistine Chapel. The mural draws on three traditional Japanese artistic styles: ukiyo-e - a type of wood block painting popular from the 17th to the 20th centuries; rakuchurakugaizu - a genre of screen painting that captures detailed views of life in Japan's former capital, Kyoto; and edozubyoubu - a folding screen depicting scenes of Tokyo, formerly known as Edo.

The influence of ukiyo-e techniques is visible throughout the mural, from the people crowding the streets to the trains, buses, cars and boats making their way through the city. There are historical and contemporary themes woven into the mural. The idea of making modern vision of a ukiyo-e and using digital technologies the way in which we are simply making a modern digital art. To give the mural depth and a sense of space, teamLab's creators layered the various details - people, buildings, vehicles, trees, parks, shrines, temples and so on - using traditional edozubyoubu techniques. Each layer depicts, in impressive detail, Tokyo's major landmarks, from the serenity of Mount Fuji to the dynamism of the fashionable Shibuya district.

By incorporating these traditional themes into the mural using modern technology, teamLab's creators have crafted a detailed, colorful and unique interpretation of Tokyo - at once static and alive. Like many of teamLab's other creations, as an original work of art, the mural is protected under copyright law and regulated by licensing agreements with various companies. Intellectual property is an important aspect of teamLab's business strategy. IP protects much of the company's diverse and eclectic portfolio of digital creations. As the holder of IP rights in its works, teamLab leverages the commercial value of its creativity through licensing deals, which are an important source of income. 'Copyright is a good thing. It makes it possible for us to share our original works and, at the same time, to safeguard the company's commercial success,' explains
Daisuke Sakai, Director and co-founder of teamLab.

Another way of use such digital thing is shopping as a more interactive experience. When clothes are lifted from the rack by a customer, a signal is sent to a nearby screen which displays the various views of the garment. The challenge of such digital things is that such thing is an ongoing thing that people can use to make something else. Another way of use such digital thing is shopping as a more interactive experience. When clothes are lifted from the rack by a customer, a signal is sent to a nearby screen which displays the various views of the garment. The challenge of such digital things is that such thing is an ongoing thing that people can use to make something else.

As a form of judicial recourse, copyright licensing agreements are a key to commercial success, especially when we are operating in an industry based on things that are virtual. TeamLab's IP portfolio extends beyond the copyright it holds in its digital works and proprietary software. The company also holds a number of patents for innovations such as the teamLabBall and equipment to graphically display information from multiple sources at the same time in a single location. It also holds a patent on an imaging device (marketed at the Distance Camera) to digitally measure distance which is the subject of an international application under WIPO's Patent Cooperation Treaty (PCT/JP2011/069316)\(^{396}\). The company also has a number of other pending patent applications, including for the teamLabHanger.

Social and technological development creates new forms of intangible property which does not have any specialised law and contract regulation. There is no practical alternative to current legal owners of such property but to adapt the principles of current intellectual property law and contract. Our current legal framework for contract and new forms of intangible property is inadequate to address issues of respect of ownership, protection of rights and responsibility associated with constant development of networks. One question that needs to be asked, however, is whether new legal dilemmas creates and highlight the need to modernise every branchy of procedural and substantive law or such amount of legally protectable interests in intangible products can be protect under intangible property law.

\(^{396}\) PCT http://www.wipo.int/pct/en/texts/articles/atoe.htm
Chapter 6: Intangible Property and Internet Contract

6.1 Internet Contract

The Internet and its legal frameworks for the establishment and enforcement of contracts continue to develop. It is necessary to undertake an examination of the approaches for the regulation and enforcement of Internet contracts, that is especially attentive to Internet relationship which flow seamlessly across jurisdictional boundaries. Generally, there are two legal approaches to the enforcement of Internet contracts: the United State model (US model) and the European Union model (EU model). From the one hand, legal development of Internet contracts regulation in the US model has been focused on requirements to establish and enforce terms of contract through litigations and freedom of contract. On the other hand, fundamental fairness between parties and protection of consumer have been put as cornerstones in the EU model.

In the United States, both dispute resolution and legal development has relied predominately on litigation. Within this context, the most litigated issues have generally revolved around procedurally oriented contract terms used by Internet companies to limit consumer access to the courts and judicial process - such as terms requiring binding arbitration, limiting forum selection, and waiving class action rights. In contrast, the Council of the European Union Directive on unfair terms in consumer contracts, and its implementation in Member States, has eviscerated some of the terms commonly used in the United States by directing that they not be binding on consumers. For example, the Directive prohibits terms aimed at: Excluding or hindering the consumer's right to take legal action, restricting the evidence available or imposing a burden of proof; irrevocably binding the consumer to terms with which he had no real opportunity of becoming acquainted; unilateral alteration of the terms of the contract; and choice of law provisions that would apply to deny the consumer protections granted by the Directive.

Perhaps more importantly, the Directive requires Member States to ensure that adequate and effective means exist to prevent the continued use of unfair terms and that persons or organisations,

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having a legitimate interest under national law in protecting consumers, may take action before the courts. As such, individual consumers are not necessarily required to file actions or join in a class, but rather, consumer groups can move on their behalf and seek legal remedies “directed separately or jointly against a number of sellers or suppliers from the same economic sector or their associations which use or recommend the use of the same general contractual terms or similar terms. Meanwhile, agencies such as the United Kingdom's Office of Fair Trading can enforce and prosecute, but also provide guidance to businesses on how to comply with consumer protection laws.

6.2 Copyright and digital agreement

The sections of copyright laws referring to software protection have their origins in the contractual practices of software dissemination. The interesting part in this development is that the regulation follows an already established practice that is then further reinforced through the implementation of the relevant legislation. This pattern of regulatory response reemerges in the case of legislative support for the Technical Protection Measures.401

Such legal agreements were primarily manifested in the form of End User license Agreements (EULAs). EULAs or a 'bare' or 'naked' licenses have been the preferred instrument of choice because of their ease of application in mass standardised distribution environments where specific rules governing the use of the product were desired.402 A naked license appears in the form of a permission to use the copyrighted material without requiring [in a series of jurisdictions (mainly the UK and the US where the biggest software markets existed at the time of introduction of such instruments)] consideration and acceptance as would be the case with a contractual agreement. Such strategy was initially adopted in order to override problems of acceptance in cases where (a) the two parties are not physically present and (b) the agreement is addressed to a not predefined number of people.403

The shrink-wrap licenses were the first incarnation of such a means.404 They derive their name from the fact that the user was deemed to have conceded to the terms of the license once tearing the wrap of the software. Such licenses were ‘turn key’ agreements in the sense that the

401 Samuelson, P., & Schultz, J., (2007), 'Should copyright owners have to give notice of their use of technical protection measures', J. on Telecomm. & High Tech. L., 6, 41.
402 Littman, 1997; 1998; Hugenholtz, 1998
403 Littman, 1997
404 Elkin-Koren, 1997; Elkin-Koren, 1998; Gruettmueller, 2003b; Ohlerich, 2003; Reichman, 1999
licensee could either accept them or not. Their terms were not to be negotiated by the parties. In the mid 1990s, in the process of being transposed into a digital networked environment such agreements were transformed to what is referred to as 'click use' or 'click through' licenses: the end-user was now indicating her acceptance of the license terms by clicking through the different screens or pop up windows presenting the relevant terms and conditions.405

The academic literature has expressed its skepticism regarding the legal enforceability of such licenses. The main concerns related to the absence of consideration by the recipient of the license. In the case of shrink wrap licenses the skepticism was rather natural considering that the user first opened the wrap, and was committed to adhere to the terms of the license, and then had the opportunity to actually read them. In the case of the click through licenses the case was slightly better in the sense that the license wizard would not proceed with the installation or the downloading unless the user has clicked the agree button. In some of these licenses the user would not have the opportunity to continue with the installation unless she has actually gone to the end of the license.

Other concerns had to do with the content of some of the terms of EULAs, which were possibly contrary to public law provisions and were as such void. The main type of provision of such kind was related to the waiving of liability of the licensor, third parties obligations, waivers of users' rights, and faults in the product or the delivery of services. Finally, another important category of provisions in the licenses causing substantial issues was related to the applicable jurisdiction, the competent courts and even the language in which the license was written.

License drafting throughout the 1990s and after 2000 has evolved in a substantially degree and has addressed most of these problems.406 Especially in relation to the enforcement of terms that were not part of the already established Copyright law the development of or reliance on other auxiliary legislative frameworks such as commercial codes and contract law has been of particular importance for ensuring the enforceability of the relevant licenses.407 The internationalisation of most of the transactions after the advent of the Internet has also led to the production of multiple versions of the license for the same product in different countries such is the case with Microsoft software; the reliance on licenses that had terms drafted broadly enough to be construed in most of national courts; or finally the definition of the competent courts and relevant jurisdiction in

406 Lloyd, 2004
accordance to the wishes of the licensor.

The use of End User license Agreements was not very common in the case of content other than software precisely because of the nature of the product. Copyright notices appeared on the covers of books or in the introductory screens of DVDs or video tapes but these were more in the form of a notice than of an actual license. This was due to the fact that much of the uses of content in the analogue environment were left unregulated. However, with the introduction of digital technologies, as many commentators indicate, the use of the material increasingly amounts to copying. As a result the owner of the content has the right to define the uses of the content in ways that were not possible in the past. This immense expansion of actual possibilities for the rights holders, while the letter of Copyright law has not changed, is partially responsible for the introduction of EULAs in relation to the use of on-line content as well. Another factor that led to such development has been the excessive infringements by end users. The digital networking technologies gave the opportunity for more infringement but also provided the means for more aggressive and extensive exploitation of the work. This related not merely to the ways in which it could be disseminated and packaged but also in the ways in which its use could be limited.

The WIPO 1995 Internet Treaties are the first regulatory instruments where provisions related to the legal protection of TPM were passed. Analyzing the exact wording of the relevant Treaties provisions is beyond the scope of this thesis, however, the fact that it was in the International rather than the national level that such provisions were firstly introduced is expressive firstly of the acknowledgment of the global dimension of the problem and secondly - and most importantly for the purposes of this thesis - the top down approach that was followed for implementing such provisions. It was not the nation states that made the decision first and international organisations followed but rather the opposite. When nation states or regional blocks like the EU have signed the relevant treaties they were then obliged to implement it in one way or another but were definitely bound to actually implement some sort of technical measures legislation. The introduction of a totally new right on the protection mechanism rather on the actual work provided the right holder with an immense scope for drafting her own version of rights on the content.

Precisely because of the opportunities for radically decentralised mass micro non commercial infringement that the digital networking technologies have introduced the regulatory response has been one of an equally radical nature. It has not been one of providing a definite

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408 Boyle, 2004; Colston, 2002; Gillen and Sutter, 2004; WIPO, 1986
solution to the hands of the rights holders in the sense of providing the actual detailed solution or response. On the contrary, it has provided them with the tools to design their own versions of micro-regulation and then with the legal means of enforcing it when someone attempted to violate it. This is the idea of the Technical Protection Measures (TPM) provisions in the WIPO treaties: an international instrument that leaves no great boundaries of discretion to the signatory countries for implementing a legislation that will then allow the owner of the rights to create their own micro-regulation and protect it with civil and criminal provisions. A really macro-regulatory tool like that of an international convention is combined with the micro regulatory tools of the technical measures of protection for achieving a proactive regulatory result.

This brings us back to the way the combined EULAs and TPM operate in a networked environment. Contrary to other regulatory creatures that are built by the state, the regulatory content of such formations is defined by the owner of the right and relates to a particular work. With reference to their technical part, they are directly enforceable as the user is not able to really argue with the technology that allows her only certain acts. In addition, though they are in the form of a private agreement depending on the popularity of a product or of a class of products that are governed by the same type of license, they may have an effect on millions or tens of millions of users. Finally, despite their extent of application they are individually enforceable and implemented. Unlikely other forms of regulation that their force is only indirectly felt, as is the case with the regulation of contributory infringement or liability clauses, in this case the combination of legislation and the relevant licenses makes them micro enforced.

6.3 Contract balance of rights-holders

The accumulative effect of digital technologies and the respective Copyright changes has caused a serious disturbance in the balance between (a) existing and potentially future rights holders and (b) rights holders and users of the protected subject matter.\(^{409}\) We call this class of effects secondary as they do not emanate directly from technology but rather from the accumulative result of both technology and regulatory changes. The main cause of such disturbance has been twofold: on the one hand the gradual expansion of rights as a result of new technologies or new forms of rights exploitation has led to an unprecedented expansion of the scope and ambit of copyrights; on

\(^{409}\) Astle, 2005; Hugenholtz, 2000b; Kretschmer, 2003; Lieb, 2005; Samuelson, 1999b; Regents Of The University Of California, 2003; Dussollier, 1999; Hugenholtz, 2000a; Koelman, 2000; Lunney, 2001; Samuelson, 2005a; Vinje, 1996; Hugenholtz, 2000b
the other hand, as explained above, the transition from an analogue to a digital environment has rendered a number of uses that were in the past irrelevant for the purposes of Copyright law to be now under its scope. For instance, whereas viewing the content of a book or the number of times of viewing a book would not be relevant for the classic copyright law, in the case of digital environment precisely because such viewing would require reproduction, it would be regulated by Copyright law. The point that needs to be stressed out at this stage is that much of the imbalance occurring in the digital environment is not the direct result of the changes made post 1995, i.e. after the WIPO Internet treaties. The latter have amplified the phenomenon, but its roots may be found in the constant Copyright amendments responding to technological changes that occurred ever since copyright's inception and the fact that a series of uses related to copyrighted material de facto involve copying. 410

The discourse linked to the Copyright imbalances is primarily related to the Public Domain or the Commons discourse. Such discourse refers to the more fundamental problem of the extent to which copyright in its current form provides the necessary incentives for the production of Intellectual and Creative works or constitutes instead an obstacle to creativity and innovation. This debate has evolved originally around the introduction of the publicity right in the United States Copyright jurisprudence that has raised even since the late 1960s and 1970s concerns regarding the viability of the public domain. The discourse has been further complemented with work that examined the erosion of rights as a result of the constant expansion of the Copyright term that makes a series of works (particularly databases in the EU) virtually perpetually protected. The extension of the Copyright term in the United States has been the occasion that brought about the Creative Commons project and caused a more orchestrated effort to protect what was perceived as the Public Domain or the Commons. 411

Another branch of the discussion in relation to the Copyright issues resulting from its overexpansion in conjunction with the digital networks technological developments has to do with the increasing uncertainty and legal friction in the transactions related to copyrighted works. The argument of this stream of the Commons debate relates to the abolishment of any formalities for granting protection of copyrighted works in the 1980s in the United States. The idea is that because of the expansion of the subject matter, the works that are protected under Copyright law are constantly proliferating. In addition, since no formalities are required for the granting of Copyright, it seems that for any work to be used it is necessary to obtain permission from the rights holder in

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410 Lessig, 1999a; 2001b; 2003c; 2004c
Jones, 2004; Schwartz and Treanor, 2003; Stratton, 2005) (Lessig, 2004b; 2004c

411 Lessig, 1999a; 2001b; 2003c; 2004c
Jones, 2004; Schwartz and Treanor, 2003; Stratton, 2005) (Lessig, 2004b; 2004c
advance.

In the digital environment it is not merely the violations that have increased but also the potentials for the emergence of new creators. These new creators use much of the preexisting material and as such require permissions from the respective rights-holders. In the same way that infringement has ceased to be a professional activity, the creation of new works has also been increasingly a non-professional activity. As a result, an increasing amount of permissions needs to be obtained in order for creative activities to be exercised. This is what is often described by the Commons theory as “legal friction” in the production of creative works. The main idea behind the Commons and Public Domain literature is to work in order to devise models that may be employed in order to eliminate or reduce such legal friction deriving from uncertainty risks, risks from finding the original owners of the works and paying the legal fees required to obtain the relevant advice.\textsuperscript{412}

6.4 The obligations

Creative Commons ties with a series of practices, social norms and technologies used by the creators, particularly those that seem to be contradicting the program of action of the classic Copyright project. This is a particularly important aspect for appreciating yet another difference between the CC project and the classic Copyright project.

The Copyright regulatory solution focuses on the enforcement of the licenses and the construction of a pattern of social behavior for the consumption of works that is in accordance to the existing models of creation and dissemination of material. The tying efforts that we see in a series of educational movies since the 1990s all have the same semiotic content explaining why infringing copyright is unethical and illegal and tying it with other illegal and socially unacceptable activities such as theft of tangible goods; in the 1990s the rhetoric was gradually enriched with an equation of private copying and sharing of material with professional piracy (The Software Publishers Association, 1992). Post 2000, a link was made with the funding of organised crime and terrorist activities.

Such form of rhetoric, that a series of popular culture movies found in YouTube such Weird All Yankovic's Do not Download this song (2006) and MC Lars (2006) Download This Song along

\textsuperscript{412} Benkler, 2001; 2002; 2006; Boyle, 1997a; Boyle, 2003a; 2003c; Fisher, 2004; Gupta, 1985; Hugenholtz, 2000b; Lange, 1981; 2003a; Lessig, 2001b; Moglen, 2003; Samuels, 1993; Creative Commons, 2003; Baron, 2002; Bollier, 2001; Boyle, 1992; Reichman and Ulhir, 2003
with a series of other audiovisual material and web-pages have scorned, is addressed to the user of the material. Even if the user may be involved in creative uses of the material in the form of secondary uses in the sense of producing collective or derivative works, for the meaning construction process advocating the existing Copyright model such dimension is not existent: the users are seen as end-users or consumers; always passive and always as targets; never as sources of material. The EULAs are there by the creators and the effort is to make their regulatory content respected. This has been the rationale behind the introduction of DMCA and EUCD like regulation: to convince the authors to put their material over the Internet by providing legal backing to their licensing agreements. However, the focus of the Creative Commons licensing project is entirely different.

Creative Commons is interested in an audience of artists or creators that seem to be sidelined by the existing Copyright system: creators that wish their works to be shared; creators that base their works on other creators' works; creators that are not necessarily professionals. Subsequently, the time or stage at which the licenses are applied precedes the stage the classic Copyright system is interested in: the meaning construction process is at the stage of making each user of material to realise that she is potentially a creator and that she may decide how to divulge her work, in Creative Commons' suggestion to allow others to share and reuse the work.

6.5 Liability perspective

In the field of intangible works and goods it is possible to provides useful contractual agreements to fine-tune the user's rights or their limitations, respectively. The most prominent emanations of this approach are the End User license Agreements as example software downloads. Although certain restrictions may stem from the right to privacy in the digital world the limitations to online control through registration and regular checks by content providers are smaller, and the possibility of sanctioning non-compliance with contractual terms, for example, by deactivating software or other content. Contractual agreements can, in principle, define the user's rights much more precisely than technical protection measures.

Legal limitations to use restrictions by technical protection measures, lack of interoperability, or contractual agreements may stem from various fields of law, including copyright law such as copyright law, contract law and general property law. It should, however, be mentioned that no has to my knowledge adopted specific protection of intangible works and goods until now,
and none of the fields of law provide clear rules for the lawfulness or otherwise of the various types of use restrictions. Therefore, there is an enormous legal uncertainty in intangible property regulation, and the following considerations may merely be regarded as speculations about possible intangible property protection mechanisms.

Under the intangible property model harmonised rules of copyright law as well as for contract law. With regard to contractual obligations, the parties an normally choose the applicable law, and content provider would usually choose either their own law, which they are familiar with, or a legal order that is particularly favourable to the content provider. Severe restrictions to the choice of law apply, however, where the user is a consumer. Under Article 5 of the Rome Convention, which applies in all EC Member States, the choice of law is possible but, in addition to the chosen law, all users protection rules of the Member State in which the user is domiciled, apply as well. The country of origin principle that is enshrined in Article 3 (1) of the E-Commerce Directive 2000/31/EC and that aims at facilitating internet trade by ensuring that the service provider is only bound to the rule of his country of origin does not apply to user contract law or copyright law; see Article 3 (3) with the Annex to the Directive.

The predominant goal of technical protection measures is the prevention of private copying for the purpose of file sharing. Due to the difficulties of controlling the precise purpose for making copies, however, copy prevention often goes much further and excludes all copying, including backup copies and duplication for the purchaser's own use, for example, on different appliances, and technical protection measures may also make reselling or lending the product to third persons impossible. Again, this triggers the question of conformity with the contract. Limitations to making copies can also be contractually agreed upon, and this would normally be done through end user license agreements or other forms of standard terms.
Chapter 7: The Present and Future of Intangible Property

The accuracy and strict control between these intangible property works and goods and the corresponding needed access rights is actually formally requested by standard and norms of Internet content.

With the arising intangible modification of property it is necessary to review processes of legal and contract regulate. IPM aims to frame all the aspects necessary to understand the new issues fostered by the arising intangible opportunities. It is, therefore, different for the classical legal models that focuses on the traditional property rights. However, this corporate legal governance has been absorbed across all the participants of the relationships, so that we have seen the appearance of specific rules and needs for intangible property reality. It is necessary to highlight the need to enhance the regulation of intangible property, such as the control, the risk management, the balance of owners and users relationships, the management of access right and contract regulation. All of this domains are gathered under the IPM.

7.1 Digital Protection Measures (TMP) and Digital Rights Management (DGM)

Technological response to the increased ability to generate, access, and communicate creations triggered by the Internet has provoked rightholders to use TPM including, for instance, DRM. This technological mechanisms are aimed at regulating through code control the copying, distribution, and use of and access to digital works. Activists, in turn, have immediately taken counter-measures and designed tools that enable the hacking of technological protection measures such as copy and access controls. In response, at both the international and national level legal authorities have enacted legal provisions which aimed at banning the act of circumvention of TPM on the one hand and the production and dissemination of circumvention tools on the other hand. The WIPO Internet Treaties (WCT art. 11 and WPPT art. 18), the Digital Millennium Copyright Act (DMCA sec. 1201), the European Copyright Directive (EUCD, art. 6 and art. 8), and the respective implementations of the EUCD into the laws of EU Member States are examples of such legal provision.

Art. 11 WCT and art. 18 WPPT are setting forth obligations concerning technological measures among the key provisions of the treaties and have a long and eventful history as far as preparatory work and consultations and negotiations are concerned. According to Art. 11 of the
WCT, contracting parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorised by the authors concerned or permitted by law. Similarly, Art. 18 WPPT provides: contracting parties shall provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by performers or producers of phonograms in connection with the exercise of their rights under this Treaty and that restrict acts, in respect of their performances or phonograms, which are not authorised by the performers or the producers of phonograms concerned or permitted by law.

Art. 11 WCT raises a set of complex interpretative questions: The meaning of the term 'effective technological measures' and the phrase 'used by authors in connection with the exercise of their rights under this Treaty or the Berne Convention at last 'that restricts acts, in respect of their works, which are not authorised by the authors concerned or permitted by law' and the term 'effective legal remedies.'

'Rapid technological advancements and the need for new adaptations in response to the repeated attempts by 'hackers' and 'crackers' to break the protection and develop means to circumvent it' make it impractical to provide a substantive definition or description of the protective technologies that is why the WIPO Internet Treaties do not define what technological measures are. Not only the term 'technological measures' is undefined; indeed, it also remains unclear what exactly makes such measures 'effective.' Arguably, the criterion suggests two things that may be seen as the opposite ends of a spectrum. On the one hand, the term indicates that not all TPMs need to be protected. On the other hand, it seems clear that it cannot be interpreted such that only those measures are effective that cannot be circumvented. in this respect, TPM that can easily be circumvented should not be legally protected. Also, TPM that can accidentally be circumvented should not be legally protected. Rightholders must put some effort into protecting their works in order to deserve protection. If access can be gained by other means, TPM is not effective, even if it functions properly, i.e., where another 'door' exists that is not technologically locked down. Given this range of possible interpretations, legislators across the world have implemented the 'effectiveness' criterion in several different ways.

The Treaties leave to the authors and other rightsholders to decide whether or not to apply TPM. Furthermore, it makes it clear that the obligations under art. 11 include TPM in connection
with the exercise of any right (moral right or economic right) that is protected under the Treaties, irrespective of the form in which the right is exercised. The 'rights under this Treaty ...' element, however, leads to yet another area of uncertainty since the wording makes it questionable whether an important subset of TPM that regulates access to a work of authorship falls within the scope of the intangible property provisions. Mere access-preventing technologies are excluded from the respective provisions, because neither the WIPO Internet Treaties nor the Berne Convention provide for an exclusive right to control individual access to a work. The only exception applies to cases where the TPM would restrict making a protected work available to the public. Others argue that access control technologies fall within the scope of the WIPO Internet Treaties, because accessing a work in digital form implicates the reproduction right under the Berne Convention given the fact that every apprehension of a digital work involves the making of a temporary copy in the user's RAM. In addition, it is argued that access controls underpin the communication and distribution right, and that therefore Member States are obliged to protect both copy and access controls against circumvention. The implementing national legislations, too, suggest that both copy and access control technologies fall under the WIPO Internet Treaties' provisions on TPM.

The requirement that the technological measure 'restricts acts, in respect of their works, which are not authorised by the authors concerned or permitted by law' is another important element. According to this phrase, not all acts of circumvention are to be prohibited under art. 11 WCT. First, it is obvious that Member States do not have an obligation to prohibit circumventions where users are authorised by the authors or other rightholders to engage in such an act. Second, and less obvious, the wording indicates that no obligation exists under the Internet Treaties to provide adequate legal protection and effective remedies against acts of circumvention which concern acts permitted by law. The most important application of this sentence are exceptions and limitations granted by national laws, which of course must remain within the framework set forth by the relevant provisions of the Berne Convention and incorporating treaty law. Consequently, member states have no obligation to outlaw circumventions of TPM that enable users to gain access to works in the public domain, nor to prohibit acts of circumvention that allow users to engage in non-infringing activities according to the national legislation's limitations of or exceptions to the rights granted under the applicable laws. Commentators have pointed out that the difficulty in implementing art. 11 WCT arises with respect to the prohibition of circumvention devices and services, because such devices and services, on the one hand, are needed to legally circumvent TPM (e.g. in order to gain access to a public domain work that has been protected by TPM), but may also be used for illegal purposes on the other hand. The WIPO Internet Treaties provide no guidance as
to how member states shall resolve this tension, and indeed it remains the 'challenge for national laws ...to determine how to regulate the creation and dissemination of circumvention devices without effectively cutting off the fair uses that at least some devices ... would permit.'

The WIPO Internet Treaties' provisions on TPM require contracting parties to provide effective legal remedies against acts of circumvention, but do not specify in detail what types of remedies must be implemented. It is obvious that, in general, civil remedies are indispensable due to their 'piratical' nature of intangible property that's why it is needed to specific contract regulation. It has also been suggested that the TRIPS provisions on the enforcement of IPR can provide guidance as to the range of remedies that constitute effective relief. However, it is important to note that the relevant provisions of the WCT and WPPT themselves are silent on this issue and, therefore, leave significant discretion to the contracting parties.

Art. 11 WCT and art. 18 WPPT, due to their open wording, allow implementing Member States suitable liberties in transposing them into their national laws as long as the legal protection is 'adequate' and the legal remedies are 'effective.' The lack of definitions of key terms leaves not only leeway, but also causes much strife during the implementation process since different interest groups each seek to have the balance shift their way. As a result, different implementation regimes are evolving across the globe, mostly influenced by the approaches of the U.S. with the Digital Millennium Copyright Act (DMCA) and the European Union with its EU Copyright Directive (EUCD).

The main issues of the European Copyright Directive (Directive 2001/29/EC, EUCD) in respect of this dissertation are: 1) to harmonise the divergent European copyright regimes that were increasingly seen as an obstacle to the EU single market and as not yet ready for the information age, and 2) to transpose the WIPO Internet Treaties. Still pending implementation in some Member States, the EUCD sets the European Community legal framework for copyright by standardising three fundamental exclusive rights, introducing an exhaustive list of copyright exceptions, and stipulating obligations on safeguarding TPM.

Two provisions of the EUCD, with regard to the legal protection of TPM, are particularly important: Art. 6 EUCD obliges EU Member States to provide for anti-circumvention provisions and deals with definitions and exceptions, and art. 8 EUCD embodies sanctions and remedies for the directive as a whole as well as with respect to art. 6 EUCD on TPM. Art. 6.1 EUCD obliges Member States to provide 'adequate legal protection against the circumvention of any effective technological measures.' Thus, art. 6.1 clarifies at the outset that the act of circumvention itself is
illegal. The provision requires that the person engaged in circumvention is doing it with knowledge or reasonable grounds to know that she is pursuing circumvention of a protection measure, and that she does not have the authority to do so. Art. 6.3 defines 'technological measures' as follows: For the purposes of this Directive, the expression 'technological measures' means any technology, device or component that, in the normal course of its operation, is designed to prevent or restrict acts, in respect of works or other subject-matter, which are not authorised by the right holder of any copyright or any right related to copyright as provided for by law or the sui generis right.

'Access control' and 'copy control' does not explicitly separate between each other. At Member State level in the process of transposing the directive the ambiguity of the provision as to the protection of particular types of technological measures has led to a variety of regimes. The second important definition set forth in art. 6.3 EUCD concerns the term 'effective'. According to this provision, technological measures shall be deemed 'effective' where the use of a protected work or other subject-matter is controlled by the rightholders through application of an access control or protection process, such as encryption, scrambling or other transformation of the work or other subject-matter or a copy control mechanism, which achieves the protection objective.

The Member States have interpreted this rather vague concept of 'effectiveness' in different ways - with consequences, of course, for the concrete levels of protection of TPM across EU countries. Contrary to art. 11 WCT, art. 6 of the EUCD clarifies that both acts of circumvention and 'preparatory acts' shall be outlawed by the Member States. Art. 6.2 obliges Member States to provide adequate legal protection against the manufacture, import, distribution, sale, rental, advertisement for sale or rental, or possession for commercial purposes of devices, products or components or the provision of services which (a) are promoted, advertised or marketed for the purpose of circumvention of, or (b) have only a limited commercially significant purpose or use other than to circumvent, or (c) are primarily designed, produced, adapted or performed for the purpose of enabling or facilitating the circumvention of, any effective technological measures.

One of the major controversies with regard to art. 6 was the fear that TPM could create a technically executed monopoly over all uses of copyrighted works, since they can be used by rights holders to block genuinely lawful acts such as copying permitted by exception or copying of works where the term of copyright has expired. Article 6.4 EUCD addresses the problem where beneficiaries of certain copyright exceptions provided for in art. 5 EUCD are precluded from making use of those exceptions due to the technological lock-down of the work. The exceptions set out in art. 6.4 can be divided into two categories: the 'public policy exceptions' on the one hand and
the 'private copying exception' on the other. Art. 6.4.1 states with regard to public policy exceptions - including exceptions in relation to photocopying, the copy and archival purposes of educational facilities, broadcaster's own ephemeral recordings, non-commercial broadcasts, teaching and research, use by disabled individuals, and public safety - that Member States 'shall take appropriate measures to ensure that rightholders make available to the beneficiary of an exception or limitation ... the means of benefiting from that exception or limitation, to the extent necessary to benefit from that exception or limitation and where that beneficiary has legal access to the protected work ... concerned.' While the public policy exceptions are mandatory, recital 51 EUCD clarifies that Member States should take appropriate measures only in absence of 'voluntary measures taken by rightholders, including the conclusion and implementation of agreements between rightholders and other parties'.

As far as the 'private copying exception' is concerned, Member States may to take measures 'unless reproduction for private use has already been made possible by rightholders to the extent necessary to benefit from the exception or limitation concerned ... without preventing rightholders from adopting adequate measures regarding the number of reproductions in accordance with these provisions.'

Finally, it is important to note that both categories of exceptions - public policy and private copying - do not apply to 'on-demand'-services, i.e. works 'made available to the public on agreed contractual terms in such a way that members of the public may access them from a place and at a time individually chosen by them.'

As mentioned above, sanctions and remedies are set out in art. 8 EUCD. Art. 8 EUCD covers liability for the entire directive, but specifically in art. 8.1 obliges Member States with regard to the anti-circumvention provisions to 'provide appropriate sanctions and remedies' and to 'take all the measures necessary to ensure that those sanctions and remedies are applied.' Furthermore, sanctions have to be 'effective, proportionate and dissuasive.' The provision also obliges Member States to create mechanisms for rightholders to seek damages, injunctions and the seizure of infringing material and components referred to in art. 6.2.

In the United States, the WIPO Internet Treaties have been implemented through Title I of the Digital Millennium Copyright Act (DMCA). The background of this controversial piece of legislation as well as the provisions set out by the DMCA have been discussed in a great number of reports and papers. Consequently, the following paragraphs only provide overview of the Act. Specific features of the DMCA will be further discussed where particularly in the context on design
options and alternative approaches taken by IPM.

In essence, the DMCA prohibits three circumvention-related activities:

Sec. 1201(a)(1) DMCA prohibits the acts of circumvention of a technological measure that effectively controls access to a work protected under this title. Notably, the scope of the provision is very broad, because acts of access control circumvention are even outlawed if undertaken for purposes that are entirely lawful (e.g. fair use) and authorised by the Copyright Act. The DMCA significantly exceeds the minimal protection level as set forth by the WIPO Internet Treaties. However, as discussed below, certain exceptions may apply. Note that the DMCA, in contrast to the EUCD, does not prohibit the act of circumvention of copy control technologies. Sec. 1201(a)(2) DMCA prohibits a person from manufacturing, importing, offering to the public, providing or otherwise trafficking 'in any technology, product, service, device, component, or part thereof, that ... is primarily designed or produced for the purpose of circumventing a technological measure that effectively controls access to a work ...; has only limited commercially significant purpose or use other than to circumvent a technological measure that effectively controls access to a work ...; or is marketed by that person ... for use in circumventing a technological protection measure that effectively controls access ....' Thus, the DMCA prohibits tools that can be used for circumvention purposes based on their primary design or production, regardless of whether they can or will be used for non-infringing uses. However, uncertainty remains as to the exact meaning of the criterion 'primarily designed or produced.'

Sec. 1201(b)(1) DMCA, finally, prohibits the trafficking in tools that circumvent technologies that effectively protect a right of a copyright owner in a work or portion thereof. Similarly to circumvention devices intended for cracking access controls, the threshold for violation of the Act is that the device is primarily designed for circumvention purposes, or has only a limited commercially significant purpose apart from circumvention, or is marketed for use in circumventing a relevant technology.

The term 'technological measure' is not defined by the DMCA. However, sec. 1201(a)(3)(B) essentially defines a technological measure that controls access to a work as effective 'if the measure, in the ordinary course of its operation, requires the application of information, or a process or a treatment, with the authority of the copyright owner, to gain access to the work.' Similarly, sec. 1201(b)(2)(B) states that a technology measure 'effectively protects a right of a copyright owner under this title' if the measure, in the ordinary course of its operation, prevents, restricts, or otherwise limits the exercise of a right of a copyright owner under this title.' Since its enactment, a
series of cases have illustrated what qualifies as technological measures, and how the effectiveness criterion and the other terms must be interpreted.

The definition of the term 'circumvention' is broad both in the case of sec. 1201(a) and 1201(b). In the context of access circumvention, for instance, the term means to descramble a scrambled work, to decrypt an encrypted work, or otherwise to avoid, bypass, remove, deactivate, or impair a technological measure, without the authority of the copyright owner.

The first access-right prong assumes two things: (1) claimants can use some measures to prevent inadvertent human-access, and (2) those measures allow them to selectively provide and deny human-access to works on a more-or-less individual basis. In addition, technological means may be used to assist the enforcement of the second access-right prong (namely, the prohibition on unauthorised communication-conducts). This begs a discussion on some technological aspects of access control to digital information. Exercise of supervision and control over conducts covered by the access-rights crucially depends on technological fencing. As the information process unfolds and becomes richer and more sophisticated over time, authors, facilitators, and users increasingly rely on the advantages of digital communication networks, digital media, digital devices, and digital logical tools to encode and decode works. Technological control can be imposed at any one of these junctions and will have various effects on single communication sequences and the process as a whole.

The debate over technological protection measures (TPMs) covers a vast and interdisciplinary cluster of topics concerning complex technological, economic, social, and legal issues. Terminologically, TPMs is a general name describing digital technologies, devices, and systems that can restrict or impede operations involving origination and reception of digital information (works/goods). As such, TPMs can furnish control over access and further use of information in a fashion significantly independent from physical or legal control over physical media and infrastructure. TPMs can enforce predetermined access- and use-restrictions schemes and execute permission platforms; one way to classify TPMs indeed focuses on their principal function. Especially in the context of digital rights management systems, providers of digital content impose TPM-executed restrictions to preserve permission-upon-payment schemes as well as support various business models and content exploitation strategies. TPMs can support various remuneration models and licensing arrangements - which are tailored to fit the nature of content

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offered, the needs of content providers, and consumer expectations. Those systems may greatly help
to take advantage of technology and facilitate circulation of information while simultaneously
allowing an unprecedented level of rights-holders' control.

Digital Rights Management Systems (DRMS) are technologies that support business models
by securing trade in digital content. DRMS is not synonymous with TPMs as the former typically
involves mass distribution, licensing contracts between end users and content providers, and
technology licensing between DRMS developers and manufacturers of devices in which DRMS are
embedded.\footnote{Bechtold, S., (2004), 'Digital rights management in the United States and Europe', The American Journal of
Comparative Law, 323-382.} In addition, many DRMS have 'surveillance' capacities capable of tracing, recording,
and analyzing consumer behavior.\footnote{Kerr, I. R., (2007), 'To observe and protect? how digital rights management systems threaten privacy and what
policy makers should do about it', INTELLECTUAL PROPERTY AND INFORMATION WEALTH: ISSUES AND
PRACTICES IN THE DIGITAL AGE, VOLUME ONE: COPYRIGHT AND RELATED RIGHTS, Peter Yu, ed.,
Praeger Publishers.} By comparison, TPMs are components that actually enforce
access and use limitations, typically in accordance with terms and conditions retrieved from other
DRMS components: though standing alone, TPMs must not necessarily be a part of any exploitation
scheme, business strategy, or support to a certain licensing model.

Another distinction relates to the purpose and intended effect of technology. The term digital
rights management systems spells out the main purpose of such systems: to facilitate secure
distribution platforms of information products (intangible works and goods). DRMS may operate
wholly unnoticed by users, especially when the desired operation is not subject to restriction or
when DRMS merely collect and analyze usage information. The term DRMS shall be used
hereinafter in the particular context of commercial platforms and business strategies, which, in
reality, predominantly serve the commercial interests of digital content providers. Commercially
oriented platforms do not necessarily entail direct or indirect charging for individual access/use.
Free promotion may also be part of a DRMS-supported commercial approach. TPMs more
pointedly underscore the technology's end effect (for instance, enforcing access restriction to
content). TPMs restrict operations unauthorized users are expected to attempt. The term TPMs
emphasizes the actual effect of technology on the behavior of participants in the information
process and their opportunities to access and use information. Accordingly, TPMs, broadly defined,
embrace all types of technologies and components that impose actual access/use restrictions with
respect to digital content.

As a preliminary note, the term digital rights management systems might cause confusion
regarding its right element, suggesting the technology at issue necessarily applies to information in
which content providers have rights. Obviously, DRMS technological restrictions should not be confused with legal intellectual property rights that may concurrently apply to the protected content. It would be a mistake to assume technological restrictions by definition simply prevent violation of property rights. Such technologies do not always enforce recognised intellectual property rights in information, and DRMS do not literally 'manage' legal rights. The term DRMS originates from technical jargon in which the word rights has a different connotation than the legal one. For DRMS engineers, 'rights' refer to permissions allowing certain operations to take place. DRMS execute 'policies,' which are explicit, conditional statements specifying how to handle actions attempted on an information resource by authenticated actors. By contrast, legal rights are generally recognised entitlements concerning an informational resource allocated and controlled inter alia by property and contractual arrangements.

DRMS architecture alone obviously is not the source of legal rights, and legal entitlements do not emanate from the DRMS usage platforms unless reinforced by the law. Legal entitlements are principally independent of the capacity of technological systems to impose actual restrictions on human behavior, and attached licensing terms (when applicable) usually provide the legal framework governing usage rules of DRMS-protected content. The license establishes contractual relations between content providers and consumers while stipulating respective mutual obligations. The content, scope, and enforceability of mutual contractual rights and obligations built upon the layer of proprietary entitlements are determined by the applicable law, not by DRMS policies. This point becomes relevant when technological and legal protections do not overlap.

There are several ways to classify TPMs based on various distinction keys. One classification focuses on the type of legal rights attached to the protected content. For instance, technological measures that protect copyrighted content against infringement are distinguished from systems that protect noncopyrightable data or systems applied to secure online services. Another possibility is to classify them according to the type of activity controlled by the technology. Differentiating is common between access-control TPMs on the one hand and 'use'- or 'copy'-control TPMs on the other. A third distinction targets the type of technology used by content providers (e.g., encryption, copy restriction, watermarking, etc.). We may further distinguish between components that actually prevent something and those that serve broader control schemes (including identification, authentication, integrity of data, and payment).

Such distinctions might assume legal significance when integrated into the regulative scheme, for example, when different legal rules apply to various types of TPMs to achieve certain results based on a variety of policy considerations. In such cases, TPMs taxonomies determine the
applicable legal rule (e.g., when the law distinguished between technological 'access' controls and 'copy' controls). Situations where different laws apply to different technological measures based on the type of content they protect - or based on the measure's purpose or operation - also exemplify the importance of distinctions.

The access-right-related vocabulary and definitions offer an alternative TPMs classification based on the nature of the act they are designed to restrict. Accordingly, we may arrange technological measures in classes of TPMs designed to prevent unauthorised access as distinguished from measures designed to hinder unauthorised communication. Further, the distinction between human-access and technological-access furnishes a basis for categorising measures according to the specific type of 'access' they target.

There is no universal definition of DRMS. They range from simple copy control to management schemes that police and detect every single interaction with digital content. Bechtold generally described DRMS as a set of intertwining technologies that may be used to establish a secure distribution chain of digital content. DRMS are deployed in a verity of digital media and services such as compact discs (CDs), DVD players and discs, Pay-TV decoders, online music and video services, video games, various media players, software, e-books, and mobile devices.

A central feature in many DRMS is the use of encryption technology. Encryption is described as the process of obscuring information to make it unreadable without special knowledge. Digital 'envelopes' or 'containers' protect data when it is stored on local devices, allowing decryption of content only when authorised processes are performed using a unique decryption key. Some technologies such as 'Rights Locker Architectures' enable access to content from various devices in which the authorisation is tied to certain users rather than to certain devices. For example, various copy-control mechanisms based on the exchange of information between digital content and copying media may supervise the number of copies allowed to be made. At a higher level of sophistication, the system may determine what 'authorised' media may play or run content and control transferability of data between consumer devices.

To manage and identify content in complex distribution models, DRMS contain 'identifiers' and 'metadata' that allow machine-readable identification of content, content provider, usage, access rules, and users. Content providers use Rights Expression Languages (REL) in metadata to control permissions for numerous operations against the content. As a result, content providers may restrict access and use for certain time periods, locations, devices, and users as well as influence quality and format. Finally, they can condition all the activities above with users' obedience to

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electronic payment systems.

DRMS are not foolproof in the sense that no system can provide an absolute, hermetic control concerning all types of usage, and all DRMS are vulnerable to attacks and manipulations by hostile actors. Skilled hackers (who 'go around' the technological protection system) and crackers (who 'break' the protection system) have always been capable of defeating DRM protections, and there is an inevitable trade-off between the level of security provided by the system and its costs. Additionally, highly sophisticated systems are more susceptible to interoperability and standardization problems. For these and other reasons, there is currently no reasonably functional DRM technology that ensures a perfectly secure environment. This notwithstanding, it is repeatedly called to mind that the main purpose of those systems is to affect and control the behavior and access opportunities of average, unsophisticated users - the bulk of consumers interested in the content and those who constitute a paying market for informational goods. So long as this large class of persons continues to be bound by DRM-supported usage terms (and so long as consumers are not thereby discouraged from continuing consumption), the system is likely to achieve its goals. In certain markets for copyrighted works such as computer software, video games, on-demand services, e-books, and mobile devices, DRMS have been and are expected to remain commonly used. DRMS can be used as well to protect intangible works and goods.

7.2. Fair use test

Can the fair use doctrine shed a different light on the intangible property and intellectual property legal rights privileges debate? The statutory expression of fair use in Section 107 of the U.S. Copyright Act codifies it as a 'limitation' on exclusive rights. Section 107 is structured in two layers, with its preamble first providing an exemplary list of general purposes for which unauthorised use may be lawful. The list includes use of copyrighted works for criticism, comment, news reporting, education, scholarship, and research. Section 107 then articulates a four-factor test instructing courts concerning the circumstances of fair use and how to evaluate the availability of fair use protections to defendants. These factors include the purpose and character of the use, its commercial nature and implications, the nature of the work, and the amount and substantiality of use.
the portion used in relation to the work as a whole. In codifying the fair use doctrine, the U.S. legislature did not articulate a grant of 'rights' to fair use in the strict sense. The doctrine is constructed as guidelines to courts regarding the factors to be taken into consideration in a fair use analysis.

Fair use cannot be considered a right-claim simply because fair use law does not demarcate any formal, pre-adjudication duties. No person is under an affirmative, general legal obligation ex ante to facilitate, assist, enable, or allow acts supposedly qualified under the fair use doctrine. Properly classified, nonowners' entitlements under the fair use doctrine are more like privileges, or more accurately, conditional privileges, as their capability to neutralise the abstention duty is determined after the fact; whether an unauthorised use is lawful or not is generally clarified ex post. Once a court declares a certain use as 'fair,' the doctrine protects that use in the same way a privilege protects a privilege holder. Courts survey the 'operative facts' surrounding the use at issue, and upon a judicial concluding those facts qualify the act as fair use, the defendant is not liable for copyright infringement. In such case, rights-holders are in a correlative position of 'no-right' to enforce their copyrights. At the same time, rights-holders are neither under a general legal obligation to surrender works for fair use purposes nor a duty to otherwise facilitate fair use.

In some respect, fair use is less vigorous than a statutory privilege because its protection is contingent and to some degree unpredictable. At least as the law has been applied in U.S. courts so far, all fair uses are technically prima facie infringing until and unless the court rules otherwise. Therefore, relying ex ante on the fair use protections is in some way more risky than relying on more specific statutory exceptions, as it is more difficult to predict in advance a future judicial resolution factoring the circumstances of the case under the multifactor test.

421 The four fair use factors read: '(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or value of the copyrighted work.'

422 Hohfeld defined operative facts as 'those which, under the general legal rules that are applicable, suffice to change legal relations, that is, either to create a new relation, or to extinguish an old one, or to perform both of these functions simultaneously.' See Hohfeld, W. N., (1913), 'Some Fundamental Legal Conceptions as Applied in Legal Reasoning', Yale LJ, 23, 16.

423 The operative facts (sometimes called, as Hohfeld noted 'constitutive,' 'causal' or 'dispositive' facts as distinguished from evidential facts) in fair use situations are derived from § 107 and serve to alter the position of the parties once the court has determined the doctrine applies.

424 The point was made by many, including Johnstone, D. R., (2004), 'Debunking Fair Use Rights and Copyduty Under US Copyright Law', J. Copyright Soc'y USA, 52, 345.

425 Cotter, T. F., (2007), 'Fair Use and Copyright Overenforcement', Iowa L. Rev., 93, 1271.(presenting an economic analysis of fair use factoring in the ex ante uncertainty, which arguably deters use that would otherwise be efficient under transaction costs considerations).
7.3. The Normative and Practical Question

The access-right, when fully asserted, strikes one as having an extremely broad mandate, moving certainly beyond the protection secured under the current intellectual property system. This difference is a direct consequence of the transition from traditional exclusive rights in the direction of access-based regulation. Intangible expressions need a different type of protection as they differ fundamentally from nondigital expressions. The difference is not merely technical or formal: digital media radically change virtually all the parameters lawmakers need to take into consideration as they seek to calibrate a balanced regime. Digital technology influences anything from circumstances of reception and meaning of works and goods to efficiency of communication, its costs, objective and subjective value, and utility effects.\textsuperscript{426}

These changes have a profound impact on the intellectual property system as digital technology renders works and goods qualitatively distinguishable from works and goods expressed in nondigital media. The economics of digital information markets runs along different vectors, forming unique analytical perspectives and focal points.\textsuperscript{427} Furthermore, a host of fairly recent phenomena intangible property works and goods do not at all exist outside the digital realm. Digital technology furnishes both logical and logistic media for making various works and goods perceptible, transferable, and comprehensible. The medium determines not only the physical incarnation of the expression but its interpretation and usage as well.

In recent times, many kinds of intangible works and goods have been undergoing a medial transition to 'digital only' or 'digital mostly' formats. Digital formats come to underlie their most basic forms of use and exploitation. As digital formats and business models premised on digital dissemination become more prevalent, the deficiencies of traditional rules become more visible, and from normative and regulative standpoints, more disturbing. The impact of digital technology on both market and non market activities has been so deep that the need to devise new regulation model to replace the one that has been serving society in past centuries is now compelling.

The answer to the normative question is that a law treating digital and nondigital works differently is not implausible on its face - quite the opposite is true. Next, we should consider the implications of a split system from a legal-pragmatic standpoint, namely, whether and how the dualistic system could work in practice. Although the present exposition cannot address all the

details, the question should receive at least an initial response. One of the most important challenges of a dualistic system would be to set criteria determining what works are controlled by which protection regime. In principle, traditional intellectual property rules should continue to apply to works expressed in nondigital formats (including unfixed works) for the reasons explained above. The access-right regime would apply in three prototypical scenarios: it will control works (1) initially produced and distributed digitally,\(^428\) (2) works digitised (and digitally distributed) by, or with the permission of the copyright holder,\(^429\) and (3) works that had been initially digitised without permission, of which the rights-holder subsequently endorsed this unauthorised act by asserting the access-right.

The access-right regime would apply in three prototypical scenarios: it will control works (1) initially produced and distributed digitally,\(^428\) (2) works digitised (and digitally distributed) by, or with the permission of the copyright holder,\(^429\) and (3) works that had been initially digitised without permission, of which the rights-holder subsequently endorsed this unauthorised act by asserting the access-right.

The general rule emerging from the first and second scenarios is that works that are expressed, marketed, and exchanged digitally (and predominantly, works that are made available with permission over computer networks) are controlled exclusively by the access-right regime. The difficult interface question concerns situations where the work had been initially created and distributed with permission only in analog format and was later digitised and further disseminated without permission in a manner that potentially infringes the rights of reproduction, adaptation, distribution, transmission, etc.

To begin with, the model does not dispute the established doctrine that considers digitisation of an analog work and dissemination of the digital representation without permission actionable infringements of incumbent exclusive rights. As the work has never been digitised with the permission of the rights-holder, digitisation itself - and diffusion of the work digitally - would continue to be considered violations of traditional copyright rules. As a matter of policy, legal certainty, and information costs, third parties without knowledge of the illegal digitisation who access the work over computer networks should be able to regard these works as controlled by the access-right. This means, inter alia, that innocent third parties who perform copyright-implicating conducts that are permissible under the access-right regime but prohibited under traditional rules shall not incur infringement liability. Legal certainty and simple rules determining the legal status of the work are important. This requires persons who receive or encounter a work in digital format to be able to assume the access-right regime applies. Rights-holders who see their works leak to digital markets without their consent may wish simply to assert their access-right prongs and enjoy the broad protections afforded thereby. Again, moral rights remain unaffected by the imposition of assertion requirements. For instance, if rights-holders consider unauthorised digitisation also a

\(^{428}\) Such works would fall automatically under the IPM regime.

\(^{429}\) Such digitised versions will be subject to the IPM regime upon digitisation and dissemination with the permission of the rights-holder.
violation of their right of integrity, there is nothing stopping them from vindicating that right before the court with or without having to comply with any assertion prerequisites.

The next question concerns the status of a work that, as a result of conventional infringement, has 'leaked' to the digital space and became available over computer networks without permission. Once the work diffuses to cyberspace as a consequence of such infringement, the rights-holders will face the following choice: either reverting to the legal scheme controlling analog formats or endorsing the option to continue exploitation digitally. In the first case, the rights-holder shall have the legal right to seize, block access to, and withdraw from the market all illicit digital copies and communication sources of the work to the extent eliminating its digital existence is reasonably achievable. n the case a complete reversion to the analog medium is not practically doable, the rights-holder will have to assert the relevant access-right prongs in order to maintain effective exclusory entitlements. This may seem unfair to those rights-holders who never wanted to exploit digitally but were 'forced' into the access-right regime, possibly via an unlawful act. The rationale supporting this apparent injustice is the desire to prevent a greater injustice. Namely, innocent third parties who are exposed to the digital work as a consequence of unauthorised acts of digitisation should be able to rely on the access-right notice mechanisms when considering the lawfulness of their own acts. Alternatively, the rights-holder may elect to assert the access-right prongs, and from that point onwards, the work migrates to cyberspace and is controlled by the access-right regime. But what if the rights-holder declines to pursue one of these options within a reasonable time after becoming aware of the unauthorised digitisation? It would be possible to consider a default to act as an implicit consent to the new digital life the work has acquired, and consequently, the law could consider the work a non-asserted digital work subject to the access-right regime. As we shall see, such works are subject to a non-voluntary license allowing access and communication without exclusivity restrictions.

7.4 IPM

At the Internet level, the management of intellectual property rights (IPRs) and Internet contract (IC) regulation as well as their control with the users activities concerning new kind of property appear of crucial importance. Many mechanisms have been proposed to elaborate adequate model in the field of IPRs and IC implementation. Although, at the technical point of view, many of such IPRs and IC control models exist, approaches and methods to instantiate them considering new kinds of property and users input are still missing. The lack of legal and regulation solution of new
kinds of property is often the origin of provisioning which are not the most accurate nor stringent to the users having accountabilities and responsibilities for their actions. The future analysis in this dissertation will suggest basic subject-matter design principles that should be taken into account by intangible property model (IPM) when drafting and enacting intellectual property and contract laws:

Principle 1: Provide precise, clear, and unambiguous definitions of key concepts and terms such as intangible property, intangible property rights, intangible property works and goods, IPM. It is needed for achieving a certain level of legal certainty and limiting the scope of the laws implementation. The analysis of existing intellectual property (IP) and IC laws in different jurisdictions across continents suggests that according to the development and creation of new forms of creativity it is possible to defining core terms of intangible property protection.

Principle 2: Enforce IP legislation in the context of intangible property provisions. The review of legal regimes under various legal frameworks as well as the overview of legislation in the U.S. and in Europe has suggested that intangible property provisions tend to change the allocation of rights previously embodied in the respective national IP laws. Particularly significant shifts can be observed in areas such as rights of use, access, communication and traditional user privileges such as fair use or the 'right' to make private copies. Thus, it is crucial to carefully design the framework applicable to IPM, provide appropriate mechanisms for the effective enforcement of rights, analyse the interplay of the exception regime with the other core elements of the IP framework.

Principle 3: Enforce IC discretion with regard to principles of contract law and remedies and adhere to the principle of new transaction environment. IC frameworks provide some degrees of flexibility in new method of manifesting contractual intention and analytical process of establishing the contents of a contract. Establishing the obligations of the parties should carefully consider the analytical process of establishing the contents of a contract under applicable framework, thereby following the principle of contractual intention (PCI). Among the usual options to be considered are analytical process of establishing the obligations of the parties, the incorporation of descriptions of the contractual subject matter and assertions as to its quality or performance and liability perspective. In addition, the interplay among the liability provisions and the other elements of the framework, including scope and exceptions, must be equilibrated.

As will be noted in the context of dissertation, legal response to new kinds of IP creations which based on review in practice and theory of various controversies surrounding the implementation and application of IP and IC frameworks regulation suggests, that both the intended
effects on access, use and communication of intangible works and goods as well as the unintended consequences of protection and implementation of IPM emerges one more general principle.

Principle 4: The monitoring and review of the effects of the IPM need to incorporate necessary procedures and tools of intangible property rights protection. It is crucial to establish mechanisms that will correspond to new effects of Internet innovation. Such processes and tools might include technical, legislative and procedure review and might focus, among others things, on the core zones of concern outlined in the context of this dissertation with special attention on the IPM.

IP an IC law might provide a helpful structure for intangible property regulation with these principles in mind. The complex discussion of the various options and approaches will help to determine necessary components and infrastructure of the IPM.

The Following model must be read in the context of the design principles mentioned in Introduction of this dissertation and as the set of options and approaches outline in parts of this dissertation.

IPM gathers traditional access control models for intangible right identification, this control is realised at the server side. The trust management is used for the assignment of authorisations to subjects in the frame of an open environment on the Internet. The DRM assures the access control to intangible works and goods and the access control is realised on the side of owner. Firstly, it applies on the owner (the owner context), it applies on the intangible property – objects (the object context), e.g., the set of object instances necessary to perform the goal of the use. The protection of rights and possibility to assign permissions to users based on objects instances

The IPM is composed of eight main elements: Subjects, Subjects Competence, Rights, Objects, Objects Competence, Authorisation, Obligations and Conditions. All these concepts exist at the application layer and represent concepts from the legal layer.

The subject has a unique identity or not. If it has one, an accounting related to its interventions may exist. Otherwise, the anonymity may be accepted and some attributes such as prepaid credits may be enough to provide rights. Three different subjects are defined: the consumer subject which is for instance the subject that watches a digital art, the provider subject which is for instance the subject owner of the copyright over the content or the subject that provides the content, and the identified subject which is the subject identified by the object (which includes private information over the identified subject), e.g. the signature by a record file.

The subject's attribution provides complementary and mutable information related to a
subject it is link to. These attributes are e.g. a prepaid credit, group name, memberships.

The Object is the entity on which the subjects have rights. An object may be original or derived. Derived, generally, means a copy of an original to create a new object which includes at least a part of the original.

The object's attribute. Object also have attributes which means properties usable for access decision making e.g. security labels and object's classes. Object's attributes may contribute to provider rights related to the use of an object, such as value, permissions based on amount of credits needed to access the objects. A subject's attribute and an object's attribute also permits to include informations such as the access control list.

The rights are privileges needed by the subject to access an object. Such as for the subject, rights are subdivided in three categories: customer right, provider right and identified right. In traditional access control models, the access is provided almost systematically based on a matrix and this matrix permits to define the access rights as soon as they are requested by the subject based on the group it is included in. The model goes a step further while remaining compatible with those traditional access control models. The usage decision is made based on the subject's attributes, on the object's attributes, the authorisations, the obligations, and the conditions as well. The last three elements are the Authorisations, the Obligations and the Conditions.

The authorisation is a functional attribute which must be evaluated for a use decision and that returns if the subject is authorised to perform a rights request on an object, or not. Authorisation evaluates a subject's attributes, an object's attributes, and the requested rights regarding a set of authorisation rules for the usage decision. These authorisations may be pre-authorisation if they are performed before the utilisation of the requested rights or ongoing-authorisation if they are performed during the utilisation of the requested rights. Certain authorisations may request subject's attribute or object's attributes updating. This update may be before, during or after the use.

The obligation is a functional attribute which verifies if the subject satisfies certain conditions before or during the use. The obligation, such as the authorisation, may be pre-obligation or ongoing obligation. Authorisation pre-obligation is for instance the duty of a subject to full fill some personal information before being granted access to a subject. The obligation may or may not use subject's attributes or object's attributes, not for decision making, but to select which obligation to apply. Additionally, it could be necessary for these obligations to update these attributes.
The condition is a decisional factor based on the environment and oriented on the system. As the obligation, subject's attributes and object's attributes may be used to select which conditions are being used. Nevertheless, contrary to the authorisation and the obligation's variables, the condition's variable does not evolve because it is not under the control of the subject. Equally, the evolution of the condition may not update subject's attributes or object's attributes.

The use cases are described using: a title, the actors, the pre–conditions, the descriptions, the exceptions, and the post–conditions. The access rights to specific objects are then derived from the use cases. The authorisation rules may take the: the subject, the object, the type of permitted access, and an optional constraint. The permitted access and the subject represent an access right and an actor which exist at the legal layer. The object is a concept which exists at the application layer. At the application layer, the necessary permitted access types is calculated from the use cases by considering the methods to be invoked by the actor. As a consequence, an actor interacts with objects through methods, then the use cases provide a set of formal authorisation rights: the Actor, the Object and the Method.

IPM is composed of two levels: a meta–level that includes actions, property category, context type, operation and access policy. The definition of actions are a way of defining responsibilities, or perhaps representing a qualification. The property category allows categorising the information to determine the access policy which applies. The context is not formally defined but it is required by some policies in order for them to be resolved. The operation is an operation that may be performed on an property. These conceptual components allow defining access policies considered through the relationship between the action sets, the sets of operations and the property category.

The second level is the Instance level in dash lines and it defines the users, the context instance, the property instance, the action instance and the operation request. The user is an instance of an assigned actions. The operation request aims at modelling the request made by a user wishing to execute an operation. The context instance and the asset instance are respectively instance of the context and the asset.

The term access and its meaning in connection with exclusive rights in intangible works and goods. Accordingly, access are actions performed in order to gain human-access to (i.e., to perceive) the work or good. Access have both objective and subjective dimensions: Objectively, those acts furnish human-access to the user, or bring the user closer to achieving access. Subjectively, the intention or motivation behind the action (mental state) relates to achieving access.
This aspect implies the user is initially aware of the existence of the works and goods, and further, that some affirmative steps need to be taken to actually 'receive' the works and goods.

The first access-right prong is designed to endow rights-holders exclusivity over such conducts under certain circumstances. Under the assumption copyright exclusivity is principally justified, IPMs can play an important role in securing revenues in certain markets and segments of commercial exploitation (e.g., on-demand services). The basic economic reasoning in support of using IPMs for the purpose of improving discriminatory pricing strategies has some important merits. However, private legal rights to control access to intangibles are just a hole in the absence of a facilitative technological infrastructure and self-help.

From the perspective of property law in general, 'access to information' is an evasive abstractum that challenges the application of common legal principles to its peculiar constellation of subject matter and relevant act. The ability to conceptualise this notion and consolidate it with property principles hinges greatly on the actual conditions of communication surrounding the works and goods to be considered as intangible property subject matter. If a communication infrastructure suitable for access control is in place, the first access-right prong predicts a certain degree of fusion between the material-substantive UGC content of the right and self-help measures performed by the rights-holder. This way, self-help achieved via access IPMs receives legal-substantive UGC content that influences the reach and enforceability of copyrights.

The first access-right prong must be asserted by its claimant in order to become enforceable. Generally, attaching to the works and goods a technological measure that affectively controls access would fulfill this requirement. Legal rules alone (without any involvement of claimants) can hardly secure subjective-exclusive, property-like rights that regulate individual access to intangible subject matter. Moreover, rights-holders cannot legitimately expect to enforce such exclusivity when works and goods are widely available in unrestricted digital formats. Assertion via access controls is this context is the only reasonable way to effectuate such right by its own terms, which, at the same time, functions as an essential 'stop sign' for duty holders.

Without attempting here a model definition of 'effective' access controls, the technological protection measures (TPM) concept generally embraces any digital mechanism used by rights-holders to restrict unfettered access to the intangible work. Using such access control TPMs is the

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430 The 'effectiveness' requisite is a relatively modest one. The measure should not be highly vulnerable to trivial circumvention attempts, and its primary objective is to inhibit inadvertent access. The definition of technological measures does not need to be complex or elaborate. An access-control TPM is any technical mechanism used by the rights-holder, which, in blocking access, singles out the intention to control it via the imposition of actual obstacles on the possibility to gain human-access.
essential precondition to legal protection against unauthorised access under the first prong. In turn, a third party who dismantles access restrictions the relevant IPMs seek to achieve would violate the protection secured under the first prong, as thereby the actor gains (or may gain) access to the work rights-holders wished to prevent or condition. The correlative duty imposed on non owners is therefore very simple: they are generally required not to tamper with access-IPMs. The flipside of this principle is also simple: when individual access to works is unrestricted by digital access controls, human-access must be lawful.

The first prong would restore the nexus between the legal (copyright) violation and the act under discussion, while drawing a clearer line between infringement analysis for primary and indirect violations. Providing someone with tools to defeat technological access control might give rise to (secondary) infringement liability under certain conditions and according to the applicable doctrines, but is never a direct violation of copyright.431 This should provide the better framework for dealing with actors who assist or facilitate violations of the first prong432 while establishing a more direct and transparent nexus between principal and secondary 'bad acts.' At the same time, it should be easier to moderate the reach and chilling effects of secondary infringement liability via the judicial application of relatively flexible doctrines, as compared to the current statutorily fixed bans on trafficking or preparatory acts.

Finally, it is possible to improve the signalling function of assertion by requiring rights-holders to supplement IPMs with contract clauses such as jurisdiction, agreement to a policy of use, access and creation (as example copyright authorship). The clauses would clarify for users the intangible nature of access restrictions and possibly warn against unlawful circumvention. This way, users who encounter access obstacles are unambiguously informed about the sort of intangible claims or restrictions concerning that works and goods and are given information on how to contact the respective rights-holders.

431 While attacking objections to the effect of indirect liability as chilling innovation (the 'Chilled Innovation conjecture'), one commentator observed 'the influence of indirect copyright liability upon technological innovation is multi-dimensional. Several countervailing forces such as the relatively low capital requirements associated with the technology at issue, the nature of the many established research environments, the philosophical and cultural orientation of many digital technology researchers, various liability-insulating institutions, the ability of investors and technology companies to manage risk, and the importance of technological advance in fields unaffected by copyright law-suggest that the effects of indirect copyright liability on innovation in replication and distribution technologies will be both less dire and more complex than the Chilled Innovation conjecture suggests. The Chilled Innovation conjecture downplays the beneficial effects of indirect copyright liability on the development of balanced technologies (those that tend to balance incentives to create copyrighted works with advances in information dissemination) while ignoring the adverse effects of broad immunity, which fosters deployment of parasitic technologies that tend to drive out balanced technologies.'See Peter S., (2009), 'Menell, Indirect Copyright Liability and Technological Innovation', UC Berkley Public Law Research Paper N. 1415804.

432 Indirect liability doctrines apply tests such as contributory liability, vicarious liability, or 'inducement.' In the context of the first access-right prong, such doctrines may serve to evaluate the lawfulness of behaviors such as facilitation, encouragement, promotion, or generating revenues from assisting others to circumvent relevant IPMs.
Conventional rights covering communications to the public have a long pedigree in intellectual property law. The core rationales, justifications, and intended effects of granting limited exclusivity in various communications do not need to be reiterated here. The IPM proposal, while drawing on the notion of communication, mindfully expands the substantive scope of exclusivity, an expansion that goes perhaps even beyond the digital communication and making-available right evinced by WIPO’s ‘umbrella solution’ and its avatars in European Community and domestic laws. At the same time, it must be stressed the philosophy behind the second prong is fundamentally different. Recall the umbrella solution was a neoconservative attempt to stretch the coverage of traditional copyrights over various digital transmissions and communication situations by letting domestic laws decide which specific exclusive right(s) shall apply (contract jurisdiction clause).

In sharp contrast to the neoconservative pattern, the IPM cuts off reliance on traditional exclusive rights such as public performance or distribution rights by replacing them with a new ‘access provision right’ in intangible works. The explicit foundation of this right is the notion of communication. In the process of moving away from the catalog of multiple, fragmented and relatively narrow exclusive rights (the ‘bundle’ of copyrights) to a single overarching right, the IPM mindfully eliminates the current distinctions between the various exclusive rights. Among other things, this approach should undercut the possibility of parallel application of multiple rights to the same behavior and its troubling implications on use privileges. A uniform and coherent communication prong would offer a far less complicated and fragmented basis for intangible exclusivity. Separate legal definitions of multiple exclusive rights will no longer nurture complicated classifications and subclassifications that link certain works and goods categories to certain exclusive rights and certain rights to certain exceptions or limitations, which, in turn, selectively apply to some rights but not to others. Contract terms of access and use to intangible works and goods will be selected by owners and will regulate relationships and right with users.

The principle of substitution again underlies the intended operation of the second access-right prong: with such core right in place, all existing economic rights become superfluous. This approach would end (at least for the foreseeable future) the relentless pressure to incrementally expand existing rights and contribute to shifting the focus to carving proper limitations to exclusivity and zones of freedom within it. In this context, it is crucial to understand a solid and

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433 The general clause granting exclusivity in ‘exploitations’ could be paralleled with the second access-right prong granting exclusivity in digital communications in general.

434 Obviously, also under the IPM regime classifications will not disappear completely. The model would provide an opportunity to design necessary classifications more sensibly. For instance, subject matter classifications of intangible works and goods of ‘high’ authorship, works of ‘low’ authorship, neighboring rights, software, sui generis, and so on could provide a basis contract terms or reasonable differentiations in the context of duration.
uniform right based on the concept of communication does not come to serve the interests of one group of stakeholders or the other. Its impetus is to improve the system as a whole by allowing lawmakers to significantly simplify the signals of property, both when a certain use is subject to exclusivity and when it is privileged or located outside copyright in the first place. Terms of open source contract can be used here.

Communication covered by the second prong are affirmative actions performed to communicate or transfer a work containing copyrightable elements. As we have seen, communication is a broad concept, both in the general sense and more specifically in the copyright context. It encapsulates some very basic restrictions on behavior derived from the nature of works as informational artifacts - and it is the essential meeting point between the information process and private property principles. In theory, the digital communication right captures all (public) externalisations or transfer of works (to the public) by means of digital media and computer networks. The notion of communication in the broad sense covers mere facilitation of access via a communication act (the communicator does not alter the content) as well as re-communication of copyrighted materials embodied in a new derivative work.

Among other things, this notion also breaks with the long-standing distinction in copyright law between copy-related and copy-unrelated rights because (also) embodying work signals in tangible media from which the work can be perceived has a potential communicative quality. In other words, to the extent digital reproduction actually facilitates (or can facilitate) relevant (public) communications, making reproductions is a copyright-relevant act. In this light, the second prong principally embraces various reproductions and/or distributions of digital duplicates that operate as a means of communicating the work to the public.

The last point is critical for understanding the scope of the second prong and the structural change it would institute. Current exclusive rights are modeled around the distinction between copy-related and copy-unrelated rights, whether explicitly or implicitly. Under current law, the concepts of 'copy' and 'fixation' still assume enormous theoretical and practical significance for

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435 The communication concept principally engulfs both private and public communications. However, also under the IPM, the law should preserve the private or public distinction, leaving private communications (e.g., person-to-person e-mail, or generally, point-to-point communication procedures) outside the reach of the second prong. While formulating such distinction, it is important to keep in mind its eroding capacity to impose clear and stable limitation contract terms on the scope of the digital communication right. That is to say, in calibrating the intangible property rights balance, the role this distinction can play is limited by virtue of the technology at issue and the difficulty of separating the public from the private in the networked environment.

436 As a practical matter, lawmakers may elect whether to subject to direct or indirect liability mere facilitation of access by operating as a passive conduit (e.g., communication service provides). In either case, the law may preserve the instrument of safe harbors for service providers and other passive conduits that are structured similarly to existing arrangements. Contract general terms can be used in this case.
courts deciding on infringement disputes. However, compelling evidence from the case law repeatedly confirms digital technology has brought legal notions such as fixation to the verge of a conceptual breaking point.

A key rationale for modeling exclusive rights in the image of the second prong is the need to do away with fixation-based classifications in digital network settings. Among other things, the new right should sidestep the vexing problem of temporary digital reproductions in computer components and network operations, as more-or-less stable fixation would no longer play a decisive role in the infringement test and the application of copyright law more generally. As complex works and goods intangible property needs to flexible terms of contract which can be chose by owner or user according to ongoing use. The IPM incorporates a proposal to institute copyright formalities. By its terms, the second access-right prong might become ubiquitous in the digital information environment, thereby aggravating the danger of overprotection.

To mitigate this risk and channel non market works (or works whose authors are not interested in enforcing copyrights) directly to the public domain, a structural barrier (or 'screen') to exclusivity should be built into the system. Such structural limitation on second-prong exclusivity mainly seeks to achieve two things: (1) avoid in rem exclusivity (or 'property rule') when rights-holders have neither an interest in, nor intention to enforce their claims; and (2) reduce net information, search, and tracing costs the property system entails. For the present purpose, 'formalities' are legal requirements imposed on rights-holders who wish to vindicate their exclusivity claims. According to the principle of assertion, such rights-holders must assert exclusivity claims over communication-conducts by means of compliance with a set of statutory formalities and contract terms.

The IPM integrates such requirements into the copyright system as part of a new quid pro quo: rights-holders receive generous exclusive entitlements in digital communications and communication-facilitating acts, but their entitlements cannot vest automatically from the moment a work is expressed digitally. The strong powers the second prong confers simply cannot come into existence unconditionally, because recognising an automatic exclusivity over communications would impose an intolerable burden on the information process. To avoid this stifling effect, the IPM forges the said structural contract condition that generally operate as prerequisites to the enforceability of economic exclusive rights.

The need to comply with basic formalities should encourage rights-holders to participate in drawing boundaries around the intangibles that they call their property. As noted, the design of contract around exclusive rights should be sensitive to information cost and efficiency
considerations, and one of the things formalities rules should result in is an effective reduction in net information costs. Another related effect of formalities would purge exclusivity claims when their possibility serves no defendable purpose. It is true formalities themselves involve expenses, including new ones borne by owners (e.g., filing fees) and administrative costs. Having that in mind, the model is premised on the assumption positive externalities generated by freeing the majority of works and goods from exclusivity restrictions would far outweigh the social costs of having a formalities mechanism in place.

A simple formalities model that sets forth modest compliance requirements can prove both just and efficient as complying rights-holders gain more robust protection in the digital space under the 'new deal' the IPM contract proposal promotes. It is also efficient because the net social gains from alleviating monopoly (and other exclusivity-related) costs precisely where exclusive rights are nothing but a burden on creation are expected to render the property system as a whole less costly and more goal–oriented. Such way of contract term may be used to intangible property which purpose connected with future creation of new and more recent version of works and goods and in which the development of product more important than economic benefits

Registration under the IPM. The purpose of registration is to create a publicly accessible database of intangible works and goods, including the persons or entities who are legally entitled to exercise exclusive rights and grant use permissions. Registration under the IPM system is cardinal in the sense that rights-holders wishing to enforce the second access-right prong are required to register their works with a central registration authority. Recent proposals to introduce a registration requirement draw significantly on enhanced efficiency advantages of new technologies and their potential contribution to simplifying the operation and administration of the mechanism. For example, simple online procedures can facilitate both registration by rights-holders and information retrieval about the status of a given works and goods by users.

It is important to keep the burden on rights-holders modest, and compliance (ideally performed and administrated online) should involve only a low-cost and trivial procedure. For example, rights-holders would be required to provide the name of the author, the title of the works and goods, a short description thereof, year and place of first publication, and contact information (in accordance with reasonable privacy policies). Registration could entail the payment of a modest fee; the money collected should be channeled to cover administrative costs. Copyright registration information should be made freely accessible to the public over the Internet, allowing users to (1) ascertain the copyright status of the work and, when relevant, (2) find rights-holders for purposes of requesting use permissions, negotiating a license or transfer of rights, and so forth.
The theoretical advantages of intangible notice/marking should be translated into practice. Rights-holders may satisfy the notice requirement in many different ways, such as by attaching to the work a symbol (for example such as the well-known © symbol introduced by Art. III of the Universal Copyright Convention) or other visual, audio, or audiovisual emblem, texts, or even tones, depending on the nature of the works and goods and the media used for its dissemination. In the digital networked environment, tags, flags, visual symbols, audio notices, and computer codes may notify human users (and also rendering machines) about the copyright status of that work. The form of notice/marking is immaterial so long as the test guiding the formulation of the legal requirement is functional, namely, whether the measures can reasonably fulfill the purpose of effectively informing users about the copyright status of the intangible works and goods and the legal restrictions involved. In general, a failure to give proper notice might result in a presumption in favour of users.

In principle, a deposit possibility could have important advantages. As the access-right applies only to works and goods in digital form, it should be relatively easy as a technical matter to deposit a digital, IPMs-free version of the work with the registration authority. There are at least two benefits to including a deposit as part of the assertion mechanism. The first is evidential: the deposited version, in combination with registration, serves as evidence that exclusive intangible rights cover the specific content subject to an infringement suit. Second, if a IPM-protected work is subject to an administrative dispute resolution process that results in a grant of access, the adjudicating authority shall have the power to facilitate access to the deposited version according to the contract terms of access it orders. At the same time, a deposit requirement might be less advantageous in cases where online content (e.g., of an Internet Web site) is being frequently distributed.

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437 Cf. EUCD (2001), Recital 55 (‘Technological development will facilitate the distribution of works, notably on networks, and this will entail the need for rightholders to identify better the work or other subject-matter, the author or any other rightholder, and to provide information about the terms and conditions of use of the work or other subject-matter in order to render easier the management of rights attached to them.’). An additional economic advantage of digital marking that has not been discussed above at length is in helping rights-holders to estimate usage intensity and fine-tune their reaction to market demand. See http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32001L0029:EN:HTML

438 In the end, the specific method of giving effective notice or effectively marking the work will likely depend on the type of intangible works and goods, the circumstances in which it becomes perceptible, the communication/network channel through which it travels, and most importantly, the way it ultimately arrives for users.

439 It is crucial to understand the difference between notice-facilitating systems on the one hand and access-control IPMs on the other. The latter (restricting) type of measures does not belong here, whereas the former type merely serves to provide intangibles, not to block use. Copyright Management Information (CMI) systems themselves, including machine-oriented technologies such as digital watermarking, fingerprinting, HASH function identification etc., do not impose technical restrictions on use, though they can help rights-holders to trace usage (both legitimate and infringing). Two important points should be clarified: first, installing rights management systems is not an integral part of any assertion requirement. It is optional, and in light of the principal goal of giving notice to end users, it is secondary in importance. Second, neither prong of the access-right defines manipulation of digital notice-giving systems as a direct violation of copyrights.
modified and updated. Demanding rights-holders to deposit all versions of the work they constantly alter might place a heavy burden and overcomplicate the administration of the formalities system. For that reason, a deposit requirement should be relaxed in instances it proves too cumbersome or remain in some cases optional.\textsuperscript{440}

The structure of IPM exemptions is consistent with the exclusive rights. Exemptions fall under two general categories, and the model maintains the systematic distinction between access right in both the weak and in the strong form. This distinction, in turn, parallels the distinction between the two access-right prongs explained earlier. Access right in the strong form (here, strong AR) mean the beneficiary holds an affirmative right-claim against the opponent: This position is subjective-positive, meaning the opponent is legally obliged to make works under his control accessible to the access rights holder (who, in this case, is not the copyrights holder).\textsuperscript{441} In comparison, rights-of-access in the weak form (here, weak AR) refer to situations in which certain copyright-relevant acts are privileged and the privilege beneficiary is not exposed to copyright infringement liability.\textsuperscript{442} In other words, weak AR recognises the negative freedom of beneficiaries to use and communicate. In the proposed structure, strong AR applies to the first exclusivity prong whereas weak AR applies to the second exclusivity prong. Each exemptions apparatus connects solely to its designated exclusivity prong, and each category of access rights connects to a unique monitoring mechanism.

Exclusivity over access (actions covered by the first access-right prong) is not absolute; an exhaustive catalog of exceptions will enumerate instances in which beneficiaries may also gain lawful access to the asserted work without the rights-holders' consent. The purpose of this instrument is to guard against the emergence of lockout scenarios in connection with rights-holders misusing their legal and technological arsenal to overly throttle access to intangibles and unduly curtail competition. Such exemptions could cover actions performed by libraries and educational institutions for promoting their mission, law enforcement operations, encryption researchers, reverse engineering, software security testing, software maintenance and servicing, and so on. To

\textsuperscript{440} Deposit could make sense in the case of films, music, books, visual works, and even software or computer games which are the part of intangible thing. As noted, in cases where rights-holders constantly change the content of the work (add, edit, improve, revise, modify, combine, etc.) it might be too burdensome to require a separate deposit every time a change or update has taken place. A possible solution would be to make an initial deposit mandatory, which then would cover future modifications of and additions to the same work by the same rights-holder. A similar principle could also apply to the registration of content in the dynamic Internet environment: registration of the initial work and its source (e.g., a Web site operating under a certain unique domain name) could cover its content even as the content is being changed over time.

\textsuperscript{441} The situation, in which the law grants authors the right to access their work placed under the actual control of someone else.

\textsuperscript{442} Recall that, privileged acts are lawful by definition, but other persons (including the proprietors) are under no legal obligation not to interfere with the exercise of the privilege.
the extent the freedom to perform acts covered by those exceptions is curtailed as a result of the use of access-control IPMs, the law should nonetheless find ways to secure access when appropriate.

Of course, the appropriateness of such powerful legal positions held by non owners and their scope are loaded with difficult policy decisions. Beyond stating its necessity and explaining its general pattern of operation, the current proposal does not specify the precise content of entitlements within the strong AR apparatus. Creating the relevant catalog is a task for the lawmaker to tackle, who in any case should stick to the following general guidelines: First, the list remains exhaustive (not exemplary), which means inter alia that courts do not have a charter to expand it as they see fit. The statutory list will narrowly specify situations where compelling public policy considerations necessitate deviation from the exclusivity principle despite satisfaction of the assertion requirement.

Strong AR norms will describe in detail the class of beneficiaries, the nature or purpose of the acts covered, and the circumstances where beneficiaries are entitled to demand access. When applicable, these entitlements will secure to their beneficiaries access to the technologically restricted content despite rights-holders' objections and possibly prevail over contractual provisions (or waivers) to the contrary. The operation and effect of the weak AR apparatus is similar to current copyright exceptions. It provides a list of statutory privileges that legitimise unauthorised uses covered by the second access-right prong. The statutory catalog will identify and define situations in which the general rule of exclusivity over communications in asserted works and goods gives way to privileged uses and users.

Lawmakers may partly premise the privileges mechanism on instances of use privileges available under current copyright laws. For example, many copyright systems contain exemptions concerning libraries, research institutions, teaching, news reporting, criticism, private copying, computer users, persons with disabilities, and so on. The core mission of this mechanism within the IPM structure is not necessarily to reinvent categories of beneficiaries and scenarios where communication-related behaviors should be lawful and respective exceptions are warranted. A long tradition of copyright exceptions already points out the regions of tension where relaxation of proprietary rules is essential for maintaining a reasonable balance of interests. However, there is one crucial difference: the conceptual and normative basis for exemptions under the IPM is the idea of access to intangibles. Applying the model's terminology should assist in reformulating traditional copyright exceptions and furnishing a more flexible, access-oriented framework. Use privileges are no longer limited to the scope of traditional exclusive rights; rather, they may apply to whatever form of communication or communication-related behavior the second prong governs.
implications of this principle on the positive law should not be underestimated. To illustrate, current law contains exceptions for the reproduction or the public performance rights, which are specific forms of communication or communication-related acts.

The law usually does not secure access interests in a more direct fashion that is detached from acts governed by exclusive rights. As a result, copyright regulation is ill-equipped when it comes to effectively correcting actual control that spills beyond the formal coverage of legal exclusivity. This is a significant flaw the IPM endeavors to correct. As the range of activities covered by the second prong largely ignores legal (thus artificial) distinctions between certain forms of communication, exceptions may theoretically assume almost any shape and form. Specifically, they may legitimise various digital communications of copyrighted material and the freedom to receive such communications, directly or indirectly.

Put slightly differently and in the spirit of the access-right approach, the weak AR apparatus will permit the legislature to tailor privileges around the concept of access as such. A series of statutory permissions will allow beneficiaries both to access and provide access to copyrighted works under the terms stipulated therein. The mechanism would promote principles (and effectively secure interests) of free speech, access to knowledge, cultural participation, education and research, and the like. The weak AR apparatus is static in the sense that its privileges are statutorily fixed. To insert the necessary degree of flexibility and delegate a more significant role to the judiciary, the proposal supports the creation of a monitoring mechanism in the form of an 'open' legal standard and contract regulation. This mechanism would encourage courts to exercise discretion, fine-tune the scope of exclusivity, and make corrections on a case-by-case basis. Thus, alongside fixed exceptions, consider the formulation of a general fair use or fair access clause inspired by the framework of the U.S. fair use provision.  

The parallel IPM clause will differ from section 107 of the U.S. Copyright Act in several important respects, however. First, the range and types of behaviors the proposed clause would be able to legitimise is broader than what U.S. fair use permits. Again, in line with the access-right approach, fair use or fair access might extend to cover whatever activity is principally subject to private exclusivity in asserted works. And again, in contrast to current U.S. fair use law (or at least to the way in which courts usually apply it), IPM fair use is not formally limited to defend solely against prima facie violations of traditional exclusive rights. The proposed clause should also provide the basis for developing doctrines of privileged communications beyond the boundaries of

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443 Fair use is distinctively a U.S. concept and legal doctrine, of which international expansion/plausibility has been drawing some academic attention. See, e.g., Chon, M., (2005), 'Copyright and capability for education', Development, 515-516.
'static' exceptions.

The range of conducts it might legitimise (after a careful fair use or fair access analysis according to the applicable legal standard) would spread over anything the second access-right prong can prohibit. Similar to the current U.S. fair use provision, the clause might include preambular language to describe the common situations or circumstances in which fair use or fair access is likely.

7.5 Intangible contract

Copyright is a legal institution that traditionally regulates the activities such as reproduction, modification and distribution of works of authorship. An author, from a traditional copyright's point of view, is an individual who impresses his creative personality onto his work. Ginsburg's definition of 'author' nicely captures the essence of conventional copyright law's understanding of authorship: [...] an author is (or should be) a human creator who, notwithstanding the constraints of her task, succeeds in exercising minimal personal autonomy in her fashioning of the work. Because, and to the extent that, she moulds the work to her vision (be it even a myopic one), she is entitled not only to recognition and payment, but to exert some artistic control over it.444

From the above definition, we see that one of the most important aspects of copyright is to reward an individual author with certain exclusive control over his creation (be it 'recognition and payment' or 'some artistic control over it'). Under Anglo-American copyright law, this exclusive control is mainly interpreted as the protection of authors' economic interests rather than that of their attributional interests. (To put it succinctly, it puts 'payment and recognition' before 'artistic control'.) So intangible works and goods authors have to write copyright licenses to collaterally protect their authorial attribution as if it is of great economic consequence.

Strictly speaking, authors' (owners') right to claim attribution of their creation, also known as the right of paternity, is not a proprietary right. Instead, it belongs to the 'moral right' regime independent from a copyright owner's economic right. Article 6bis of the Berne Convention makes this clear: 'Independently of the author's economic rights, and even after transfer of the said rights, the author shall have the right to claim authorship of the work [...].'

445 The other moral right that is under same clause is known as authors' right of integrity, which is the right to 'object to any distortion, mutilation or other modification of, or other derogatory action in relation to, the said work, which would be prejudicial to his honour or reputation.' Berne Convention the Berne Convention for the Protection of
Unfortunately, the Berne-type attribution right is not directly applicable to software programmers under Anglo-American copyright law. In the US, only visual artists but not computer programmers are entitled to the moral right of attribution. In the UK, computer programmers are expressly excluded from having the right to be identified as author, and this attribution right is only conferred to a few non-programming creators who affirmatively assert their attributional interest. However, the British copyright law traditionally gives authors a right against 'false attribution', which may still be applicable to computer programmers. This British indigenous moral right is not derived from the Berne Convention, but it harks back to the UK Fine Arts Copyright Act 1862, and has its reincarnations in respectively in s.43 of the Copyright Act 1956 and s.84 of CDPA 1988. This right against false attribution is an historical 'anomaly' and it makes little sense for computer programmers to have it without having the right of attribution in the first place. In comparison, US programmers do not readily have a category against false attribution under their copyright law.

Although Anglo-American copyright has largely failed to reproduce a Berne-type attribution regime to protect their programmers, this space may be filled by private licensing schemes made by programmers in their capacity of copyright owners. This means these copyright licenses make attribution ride on the proprietary right owned for example by FOSS developers. For this reason, Anglo-American copyright only protects attribution half-heartedly 'in a collateral fashion', where the attribution requirement needs to be 'contracted in': It might be argued that copyright protects attribution in a collateral fashion. By protecting works of creative authorship as property, copyright enables the contractual protection of attribution. If an author can control the dissemination and reproduction of her work pursuant to copyright law, copyright law will grant her the contractual leverage to protect her attribution interests. So intangible property developers, in order to have

Literary and Artistic Works (1971 revision with 1979 amendments). However, some countries, such as the UK, have not adequately localised Berne's moral rights regime into their national legislation. See Laddie et. al. Modern Law of Copyright and Design. McCartney, S. J., (1990), 'Moral Rights Under the United Kingdom's Copyright, Designs and Patents Act of 1988', Colum.-VLA JL & Arts, 15, 205.

Visual Artists Right Act, 17 U.S.C s.106A

S.79 (2) (a) CDPA

s. 77. However, even for those non-programming creators, s.77(1) ends with a proviso saying that the right of attribution 'is not infringed unless it has been asserted'. This requirement of assertion makes the CDPA out of line with Berne Convention no-formality requirement. Ginsburg believes that the CDPA's text is a mistranslation of 6bis of Berne's Convention, as 'the drafters of the CDPA fashioned an obligation to assert authorship before the right to be recognised can take effect.'see Ginsburg, J. C. The Right to Claim Authorship in US Copyright and Trademarks Law'(2004). Houston Law Review, 41, 263-307.

'If it is important to the author of a computer program not to have his work falsely attributed, it is difficult to see why it is not important for him to be attributed as the author in the first place.' see Lai, S., (2000), 'Copyright Protection of Computer Software in the United Kingdom', Bloomsbury Publishing.

Lastowka, G., (2005), 'Trademark Function of Authorship', The. BUL Rev., 85, 1171. Although I follow
their moral right of attribution enforceable under law, must take on the legal persona first as the copyright owners.

Nonowners are an extremely heterogenic class of stakeholders: the single feature they all seem to share is the lack of exclusive property-like rights in works/goods consider relevant or valuable. One threshold question is whether the right to receive intangible works/goods distinguishes between passive and active recipients. Does the law also secure access interests of persons who are not engaged in access driven by the motivation to obtain intangibles, and if so, how do such legal entitlements with respect to inactive persons in this specific context operate?

The uncertainty concerning the means for protecting intangible work/good (online computer games i.e., as a computer program, audiovisual work or visual work) also affects the number of rights holders that could have rights in a given work/good. In general, and among all the parties involved in the development and commercialisation of a work/good (e.g., authors, online platforms and stores), producers and publishers usually assume the commercial risk of the project and are, therefore, the main stakeholders in the value chain. Consequently, these publishers and producers are the holders of the intellectual property rights to the work/good, although it will ultimately depend on the contractual arrangements between them and the authors or entities that actually develop the game. Ownership of intellectual property rights in a game is not transferred automatically simply because a person or entity (whether employee or contractor) is paid for his, her or its efforts. Even though most publishers or producers insist on owning all intellectual property rights in a game, as new platforms are introduced to distribute and exploit such games, and with more small studios involved in the industry, new contractual arrangements in which authors may maintain a stake in the value chain allow them to keep certain intellectual property rights.

Ownership of contributions can only be transferred in writing. Regarding people involved in online gaming that create new sets, characters or levels with the tools provided by the video game producer, unless an individual transfers the rights to his or her contributions writing, ownership remains with that contributor. A license may be executed in writing or may be implied by conduct. The scope of a written license (e.g., a click-wrap license) is, of course, dictated by the language of the agreement. If there is no written agreement, a license is likely implied, for example, by willingly contributing content without written restrictions; in such a case, the user (player) would be providing an implied, non-exclusive license to the contribution for its intended purpose (e.g., use in

Lastowka to use the term 'collateral' protection of attribution under copyright, my discussion of intangible property shows that licenses (FOSS) are not necessarily 'contractual', but they can be conditional licenses where attribution is made the pre-condition to use copyrighted programs.
the game).
Chapter 8: Conclusion

This study presented a theoretical framework for intangible property regulation in the digital age. The seeking of alternatives to the current law is motivated by two related propositions. The first is that gaining, providing, and controlling access to intangible works becomes the very crux of copyright protection in the digital environment. The second is that restructuring the system of entitlements accordingly appears a more beneficial strategy than adjusting the existing system. The technology-driven transformation in copyright law mirrors a new, challenging reality in which the basic background conditions for the consumption, communication, and commercialisation of works shift and evolve. This transformation is fundamental - and so should be the approach to copyright reform. Rethinking the way in which copyright entitlements can be defined and formulated is not merely an academic exercise performed for the sake of the intellectual challenge involved; it is vital for the constructive development of the law.

Whether intangible property is protected by common law or by statute is, in the main, unimportant. Perhaps the law will evolve first as a function of the common law, and after due reflection, as statute. But in the meantime, we still live in a common law regime, and in the absence of statute, courts must decide disputes. It would be an abdication for a court to refuse to adjudicate a intangible property claim merely because no statute exists. Thus, common-law analysis of these questions is not optional. Cases applying property law to the Internet are an increasing and increasingly important phenomenon. To decide these cases, as applied to what is admittedly a foreign medium, courts should have a clear grounding in what property law will do in virtual spaces. Moreover, as we have discovered, intangible property problems are handled quite nicely by rules that courts are already familiar with. Thus, there is an argument from institutional competence despite the fact that courts often consider themselves intruders in virtual spaces.

There is an even stronger argument for resolving questions of use allocations on the Internet by reference to the common law of property. Contract and property have evolved to balance each other. The law of contract permits parties to realise the value of idiosyncratic and personalised utility in the form of trades. The law of property restricts that ability insofar as it locks high-value property into low-value uses.

In this respect, the intangible property model may be regarded as a thought experiment rather than a full-bodied, mature and ready-to-use model law. Still, at the early stage of developing a new way of thinking about intangible property, the model ventures to demonstrate how the access-
right concept may provide an alternative basis for a workable copyright regime. The argument is that an access-based strategy for regulating digital content is not only thinkable in theory and achievable in practice, it could also be better than the alternatives. One key advantage of this strategy resides in the opportunity to achieve a property system that is simpler to understand and apply. The intangible property model envisions an entitlements structure that is more coherent, consistent, transparent, adaptable, and efficient than the cluster of anachronistic rules could ever hope to become in the digital environment.
Bibliography.


Agreement on Trade-Related Aspects of Intellectual Property Rights (Marrakesh, April 15, 1994, 1869 UNTS 299).


American Convention on Human Rights (San José, November 22, 1969, 1144 UNTS 123).


Bainbridge, D. I., (2007), 'Introduction to information technology law', Pearson Education.


Bainbridge, D. I., (2007), 'Introduction to information technology law', Pearson Education.


Berne Convention for the Protection of Literary and Artistic Works (Berne, September 9, 1886, 828 UNTS 221).


Blumenthal, M. S., & Clark, D. D., (2001), 'Rethinking the design of the Internet: the end-to-end arguments vs. the brave new world', ACM Transactions on Internet Technology (TOIT), 1(1), 70-109.

Berne Convention for the Protection of Literary and Artistic Works (Berne, September 9, 1886, 828 UNTS 221).


Chon, M., (2005), 'Copyright and capability for education', Development, 515-516.


Declaration of the Rights of Man and Citizen (1793) (France) art 16.


Duesenberry, J. S., (1949), 'Income, Saving and the Theory of Consumer Behaviour'.


Dreier, T., (1993, March), 'Copyright digitized: philosophical impacts and practical implications for information exchange in digital networks', In WIPO worldwide symposium on the impact of digital technology on copyright and neighboring rights: Harvard University, Cambridge, Massachusetts, United States of America, March (Vol. 31).


Ernst, T., Montavont, N., Wakikawa, R., Ng, C. W., & Kuladinithi, K., (2008), 'Motivations and scenarios for using multiple interfaces and global addresses'.


Frieden, R., (2008), 'A primer on network neutrality', Intereconomics, 43(1), 4-15.

Sei. 31.


Falletti, E., (2009), 'Internet: la diffusione della cultura non accademica e la formazione dell’opinione pubblica', Ciberspazio e diritto, 10(3/4), 325-339.

Frydman, B., & Rorive, I., (2002), 'Regulating Internet content through intermediaries in Europe and the USA', Zeitschrift für Rechtssoziologie, 23(1), 41-59.


Gadsden, G. The Law of Commons.


Goffman, E., (1959), 'The Presentation of Self in Everyday Life'.


Gal, M. S., (2012), 'Viral Open Source: Competition vs. Synergy', University of Haifa – Faculty of Law.


Guibault, L., (2008), 'Creative Commons: struggling to 'keep it simple".

Ginsburg, J. C., 'A Tale of Two Copyrights: Literary Property in Revolutionary France and


Hegel, G. W. F., (1812), 'Philosophy of Right', T.M. Knox trans., Oxford Univ. Press 1942, 40-57;


Inglehart, R., (1990), 'Culture Shift in Advanced Industrial Society', 66, 103.


Locke, J., (1764), 'Two Treatises of Government', vol 2, ch V, para 33.


Locke, J., (1849), 'An Essay Concerning Human Understanding'.


Mayntz, R. (2003), 'New challenges to governance theory', Governance as social and political communication, 27-40.


Nozick, R., (1974), 'Anarchy, state, and utopia (Vol. 5038)', *Basic books*.


Nedelsky, J., (1990), 'Law, Boundaries and the Bounded Self', *30 Representations 162*.


Pigou, C., (1913), 'The Interdependence of Different Sources of Demand and Supply in a Market', 23 Econ. J. 19.


Pothier, R. J., (1772) 'Traité du Droit de Domaine de Propriété', 6-7.


Radin, M. J., (1993), 'Reinterpreting Property'.


Samuelson, P., & Schultz, J., (2007), 'Should copyright owners have to give notice of their use of technical protection measures', J. on Telecomm. & High Tech. L., 6, 41.


