

Introduction

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We have experienced a growing importance of intellectual capital and intangible assets and an increased tendency for firms and public institutions to privatize, by the use of patents or copyrights, their knowledge assets and creative expressions. Because control over the use of an intellectual property right (IPR) requires ownership or a licence, the growing importance of knowledge-based assets and creative expressions has been accompanied by recognition that patents and copyrights represent strategic assets for those who own and control them. It is therefore not surprising that, in recent years, the pace at which individuals, firms and the public sector are using IPRs to privatize knowledge-based assets and creative expressions has been accelerating. This trend has been enhanced by the view of many in industry, government and international agencies that the privatization of the intellectual capital and knowledge-based assets of individuals and firms provides many advantages (for example, competitive advantage), and we have seen an increased enforcement of IPR regimes worldwide.

At the international DRUID (Danish Research Unit for Industrial Dynamics) conference on *Industrial Dynamics, Innovation and Development*, held at Elsinore, Denmark, 12–14 June 2003, there was a round table discussion regarding the belief systems underpinning IPRs and the increased enforcement of IPR regimes worldwide. The fact that IPR policy has been largely based on the ‘vision’ of policy makers rather than on the findings of solid empirical research was discussed; and within the IPR research community, the social and economic effects of tightening the IPR systems are not considered obvious. Thus, this book, containing contributions presented at the DRUID 2003 summer conference, has emerged because many scholars within the IPR research community believe that there is a need for providing profound insights with respect to understanding the role of IPR regulation in achieving economic performance, growth and sustainable development at the corporate, sectoral and global levels, at the same time as providing a higher quality of life at the level of all groups of civilization in all regions of the world.

Furthermore, by addressing some of the conflicts, contradictions and trade-offs in IPR systems (both in terms of rationales, operation and effects) the contributions to this book challenge the existing mainstream thinking and analytical frameworks dominating the theoretical literature on IPRs within economics, management, politics, law and regulation theory.

This book is cutting edge in addressing current debates affecting businesses, sectors and society today, and in the way it not only focuses on the enabling welfare effects of IPR systems, but also puts special emphasis on some of their possible adverse effects. All contributors to this book share the same fascination, and see the same need, for understanding the dynamic role of IPRs for business and society.

INTELLECTUAL PROPERTY RIGHTS AND THE GLOBAL COMMONS

The global commons are in danger. This is partly due to the role of IPRs in the commodification of three separate areas: science, culture and healthcare. All three areas used to be regarded as important areas of the public domain or for public access. The first three chapters in this book suggest that we need to rethink whether such sectors perform best under the rules of markets and capitalism.

Professor Richard Nelson and Professor Fiona Macmillan have been invited as guest contributors to this book, due to their important contributions in the area of IPRs and the global commons in an era of corporate dominance and privatization of the public domain. Their contributions focus, respectively, on patents and markets for science, and copyrights and markets for creative cultural expressions. Fabienne Orsi, Mamadou Camara and Benjamin Coriat focus on patents and markets for healthcare under the effects of the Trade-Related Aspects of the Intellectual Property Rights Section (TRIPS) of the World Trade Organization (WTO), which came into force in 1994 as a part of the Uruguay Round to enforce intellectual property worldwide. Their contributions will now be described.

In Chapter 1 on *The Market Economy and the Scientific Commons*, Richard Nelson discusses the problem that even though scientific inventions are not in principle allowed to be protected by patents, there is still an increased propensity to patent very fundamental inventions. Thus, in practice, the divide between science and technology is very blurred. Nelson argues that this propensity is partly due to national policies encouraging universities to patent their scientific findings. As an example, he refers to the Bayh-Dole Act of 1980. This is an US Act encouraging universities to patent

their scientific findings and discoveries, and similar types of policies are now adopted worldwide. In particular, he discusses some of the adverse effects of such policies. He basically argues that the increased privatization of scientific inventions or very fundamental knowledge is bad for the advance of both science and technology. The specific natures of science and technology, as well as their co-evolution, are the key to understanding the long-term effects of such policies. It is also important to understand the specific role of universities in this co-evolution. Nelson argues that, even if the Bayh-Dole Act helps certain ends (for example, helps universities and individuals to develop a clear strategy regarding how best to commercialize their ideas), it still has the effect of taking very basic knowledge out of the public domain.

Nelson advocates very strongly that basic scientific findings should be kept in the public domain. Very basic inventions tend to have broader patent scope. If they are patented, prohibiting general use, this can induce a direct welfare loss, as many firms will avoid scientific and technological trajectories where basic knowledge has been made scarce and expensive, or they will be excluded due to exclusive licensing. Nelson argues that it is the openness of basic inventions for multiple exploration paths in the market economy that makes the evolutionary process of technological advance more powerful. Furthermore, he recognizes that many universities today are keen subscribers to the patent system, and that their incentives are more for profit than for technological transfer. However, he argues that it is uncertain whether such policies have facilitated more technological transfer, and even whether they generate profit to universities. Nelson then discusses some strategies relating to the way we can protect the scientific commons. Basically, he rejects the view that universities should, like firms, be driven by profits in markets and therefore join the patent bandwagon which seems to be going on currently in the corporate world. Rather, he suggests a combination of (i) a policy encouraging universities to keep their results open, and letting them co-exist alongside, and compete with, the patented inventions in private firms, and (ii) a policy to roll back the invasion of privatization by discouraging all patenting activities of basic inventions by both public and private organizations. The latter would, however, involve a change in law.

The problem of markets, commons and capitalism continues in Chapter 2 on *Public Interest and the Public Domain in an Era of Corporate Dominance*. Fiona Macmillan maintains that our aim should be to understand the dynamic effects of the exploitation of the general profile of corporate power endorsed by copyrights, and the accountability of that power. She argues that copyright's commodification of creativity has established a structure that enables the domination of cultural output by multinational

media and entertainment corporations. She examines this structure by describing how the current design of copyright regimes facilitates very strong copyrights, and she discusses the conflicting interests of stakeholders, wanting strong copyrights, and the public, needing user rights. She argues that the current structure of strong copyrights and dominance of the media and entertainment corporations over cultural output has had the effect of contracting the public domain, while at the same time undermining some of the rationales for the existence of copyright. In particular, Macmillan discusses the conflict between the economic and moral rationales for copyright. She stresses how it is the focus on, and the dynamic nature of, the economic rationales of copyright law that has caused a corporate dominance over cultural output.

The paper then lays out a strategy to overturn some of these adverse effects of copyright law. Macmillan discusses whether the importance of the economic rationales implemented into the functioning of copyright law can be counterbalanced by the implementation of some of the moral rationales underpinning the philosophy of copyright. Realizing that such a solution may not be sustainable in practice due to the spiralling power of the media and entertainment sectors over cultural products, she argues that we need to think holistically. She considers whether there are other legal approaches, either within the structure of copyright law or external to it, which might be capable of remedying the corporate dominance consequences of copyright's commodification of creativity and thus reclaiming a portion of the public domain. She turns to competition law, corporate law, and, regarding cultural products, media law, and she presents ways that those laws could be implemented to make private power more publicly accountable.

In Chapter 3 on *AIDS, TRIPS and 'TRIPS Plus': The Case for Developing and Less Developed Countries*, Fabienne Orsi, Mamadou Camara and Benjamin Coriat discuss some of the adverse effects of the TRIPS agreement of the WTO, which came into force in 1994 as a part of the Uruguay Round to enforce intellectual property rights worldwide. However, the agreement has been amended over time due to the situation of the less developed and developing countries. Because the latest revised version goes even further than the TRIPS requirements, it is often referred to as 'TRIPS plus'. Orsi, Camara and Coriat examine how TRIPS has provoked a radical change in the healthcare situation of the poorest countries, focusing on the situation created by TRIPS in the French-speaking countries of Sub-Saharan Africa. They argue that in this zone, where AIDS has struck most severely, the application of TRIPS, combined with existing regional IPR agreements (known as the Bangui Agreements), has created a legal situation particularly prejudicial to healthcare. Their paper argues that access to healthcare (in this case, the treatment of AIDS) is determined

by a combination of market forces under particular patent governance structures, institutional capabilities (or lack thereof), strategic interaction, and the bargaining power of individuals, firms and countries. This situation is inherently disadvantageous for less developed and developing countries, which are those with the severest AIDS problems. Thus, if we support the view argued in this chapter that access to healthcare should be a global common good, we need to rethink whether this is a sector that should be ruled by markets and capitalism.

THE RATIONALES FOR INTELLECTUAL PROPERTY RIGHTS

It is important for an IPR regime to have a design which will enable it to achieve its objectives, and consequently an understanding and critical evaluation of the rationales underpinning the IPR system, in terms of policy and corporate goals, is urgently needed. This is important both for assessing the social and economic effects of the IPR systems and when designing policy which will foster a sustainable development of business and society, as discussed by Birgitte Andersen. It is also important for understanding why firms take out patents and why they do not, as researched by Lee Davis. Their contributions will now be described.

In Chapter 4, *'If Intellectual Property Rights' is the Answer, What is the Question? Revisiting the Patent Controversies*, Birgitte Andersen develops a typology of the rationales for IPRs. In this context, she discusses several policy goals or rationales for IPRs: why we have the IPR system, and what the objectives of the system are as well as how it operates. She then examines each of the IPR rationales or policy goals, discussing whether the IPR system really performs in relation to its objectives. In discussing the economic rationales for IPRs (that is, the IPR policy goals), the chapter provides an introduction to belief systems in the mainstream literature of law and economics. It argues that, as IPRs signal prospects for reward, they stimulate incentives to invest in invention and innovation, which in turn stimulate innovation-based competition. Furthermore, it is argued that IPRs facilitate markets for ideas and knowledge as well as creative expressions of ideas, by adjusting for the inherent problems of market failure normally attached to knowledge and intangible expressions of ideas. It is also believed that such commercial exploitation in markets facilitates the spillover of such knowledge-based ideas and creative expressions of ideas, as profit-oriented firms would spread their IPR-protected ideas and expressions as widely as possible for profit purposes. Moreover, as IPRs temporarily protect entrepreneurial talent from imitation (or offer market privileges to them),

or facilitate market entry of products or services embodying their novel ideas and original creative expressions, it is believed that IPRs in this way facilitate sustainable development of firms and industries. Finally, there are also natural rights and a moral rationale attached to the IPR – basically a natural right to claim an intellectual property, and the moral right to compensation and reward if someone else exploits one's idea or expression of an idea.

However, Andersen concludes that belief systems in the mainstream literature of law and economics are inherently flawed, since their analysis assumes that all inventors are autonomous, rational, profit-maximizing agents whose collective behaviour maximizes both their own welfare and that of society in general. The very real effects of technological and creative interdependence, strategic interaction and collaboration in competitive IPR markets are largely ignored. This is problematic because, for example, the specific and rigid nature of productive knowledge applied in technological ideas can affect the efficiency of patent systems. The effectiveness of copyright systems can also be influenced by predominant norms, values and beliefs embedded in cultural expressions of ideas. Power relationships in IPR-related bargaining situations can have important impacts on behaviour and outcomes; and there are substantial opportunity costs associated with using the IPR system as a political instrument. Finally, whereas the current law and economics approach to IPRs equates competition with perfect competition and monopoly with pure monopoly, the actual architecture of the IPR system is a hybrid structure with both competitive and monopolistic dimensions. These 'real-life' forces should be considered when IPR policy is designed and implemented, because the interaction of micro-level units within IPR systems does not necessarily maximize social and economic welfare at the macro level; and IPR regimes (at the macro level) do not guarantee welfare for each (micro-level) participant within the IPR system. Basically, it is a major problem that the existing social contract and political expediency literature examining the objectives, operation and performance of IPR systems bases its analysis on the theoretical logic of mainstream law and economic theory, particularly since this literature has informed the belief systems regarding the social and economic effects and operation of IPR systems which underpin the design of IPR policy.

Chapter 5 moves on to discuss the rationales of the IPR system at a much more micro level. In a study on *Why do Small High-Tech Firms Take out Patents, and Why Not?*, Lee Davis seeks to add to our understanding of the strategic and economic effects of patents for small enterprises. She also illustrates how the rationales of small firms in taking out patents are linked to their broader business and technology strategies. The case study is based upon thirty-four small Danish firms in telecommunications, software and

biotechnology. Studies of this character are extremely important to initiate, since IPR research tends to be on larger firms and major multinationals whose propensity to patent is much higher. However, it is also extremely important to understand the strategic and economic effects of the IPR system for smaller firms when informing IPR policy. Reading this chapter, it becomes clear that the rationales for smaller firms to patent, or not to patent, are very different from the major organizations within their industries. For example, a major reason for small high-tech firms not to patent is the high cost of detecting infringements, whereas large firms do not face the same resource problems in detecting if ideas similar to theirs are used elsewhere and deciding if infringement court cases should be initiated. Also, many small software firms often find patents irrelevant, whereas small telecommunications firms find them important, but in combination with other factors. Again, those results may not correspond to the major or dominating firms within their industries, as their strategies would presumably be driven by IPR incentives. Thus, the stakeholders in IPR systems and their interests depend both on sector and firm size. This also became apparent at the most recent *Conference on Patent Policy Making* regarding computer-implemented inventions. At this hearing the small and medium sized enterprises were very worried about the industry effects of a strong patent policy. The hearing was held in the European Parliament on 1 June 2005 and organized by FFII (the Foundation for a Free Information Infrastructure) and CCIA (the Computer and Communication Industry Association) of the United States.

THE PERFORMANCE OF THE PATENTING PROCESS

The efficiency and effect of IPR systems also depends on the local IPR offices. This is a hugely under-researched institution. Basically, IPR offices tend to be treated as a 'black box', both in theory and within empirical analysis, in the sense that what goes on within them tends to be assumed or given. However, Jesper Lindgaard Christensen and Stuart J.H. Graham have started to open this black box. In their contributions they discuss how IPR offices can make a difference, focusing on the performance of the patenting process between IPR offices and the patentees. Their contributions will now be described.

Focusing on a patent office in a small open economy (the Danish Patent and Trademark Office: DKPTO), Jesper Lindgaard Christensen maintains in Chapter 6 on *Knowledge Spillovers from the Patenting Process* that the success of the patent system is still locally or nationally rooted despite globalization in IPR legislation. His basic contention, based upon a survey

of what firms used the local patent office for, is that the national patent and trademark offices enhance knowledge spillover from the patenting process. In particular, he shows how the interaction between the applicant firms and the patent office adds to the general competence of both parties. In turn, this has positive long-term effects on the ability of the firms to innovate and use IPR systems. It is also shown that well-organized national IPR offices play an important role in supporting and educating local users of international IPR systems, as well as developing a vibrant local IPR community by bringing users of the system and IPR service firms together. These activities bring down the barriers to entering IPR protection. Christensen therefore maintains that national IPR offices should not be abolished in the era of institutional internationalization. Although many firms would be able to do without a national patent office with regard to the granting of patents, there is still a role for national IPR institutions.

However, Stuart Graham examines a very different, and to him unconstructive, aspect of the patenting process within the United States Patent and Trademark Office (USPTO). In Chapter 7 on *The Determinants of Patentees' Use of 'Continuation' Patent Applications in the United States Patent and Trademark Office, 1980–99*, Graham describes and examines the use of the 'continuation' patent application procedure available in the United States, but not generally available elsewhere in the world. This study of a particular process in the USPTO is of general interest for several reasons. This office underpins the largest market in the world, and inventions that are successful in other countries are also most likely to be patented in the USA. Also, the USPTO has always led the way in organizing IPRs, and other countries have subsequently followed its procedures and policies. This 'continuation' scheme allows patent applications to be updated (re-filed) while they are being processed. A rationale of the scheme is to encourage patent application submissions at a very early stage of a discovery. However, Graham demonstrates some of the perverse effects of the scheme. The 'continuation' procedure allows a patent applicant to postpone the issue of a patent, affording inventors several strategic opportunities, among which are delay and secrecy. Graham discusses the effect of the scheme that has resulted in an intricate web of applications and patents that can be traced by reference (if not by invention) back several decades. In all such cases, the early effective filing dates of those original patent applications turn the use of all similar subsequent inventions into infringements. Patents processed in this scheme are therefore often termed 'submarine patents'. The chapter discusses how this scheme also allows patentees to extract extraordinary economic rents. Graham also examines who is likely to use the 'continuation' procedure, and he demonstrates how and why innovators in the semiconductor and

pharmaceutical technologies in particular have employed the ‘continuation’ patent application procedure for strategic gains.

COORDINATING INSTITUTIONS OF INTELLECTUAL PROPERTY RIGHTS GOVERNANCE

Intellectual property right governance is much more than the law setting the rules of the game. Entire IPR systems of coordinating institutions must be in place in order to create and extract as much financial and non-financial value as possible from IPRs. In this context there are different types of coordinating institutions of IPR governance. Eric Brousseau and Christian Bessy identify the complementarities and optimal division of labour between public and private institutions in IPR governance activities relating to IPR protection and diffusion, whereas Stefano Breschi, Lorenzo Cassi and Franco Malerba identify corporate coordinating knowledge networks underpinning IPR governance at the sector level. Finally, Ove Granstrand reviews the interface between various innovation systems (namely, national, sectoral, corporate, university and military systems) and IPR governance at various levels. Their contributions will now be described in turn.

Eric Brousseau and Christian Bessy show in Chapter 8 on *Public and Private Institutions in the Governance of Intellectual Property Rights* that the governance of IPRs is complex. They show how IPR governance, when it comes to identifying the nature of the rights associated with a particular right (patent or copyright) and the enforcement of such rights, happens at many different levels, and that there are complementarities between public (state) and private (firm and sector) institutions in such governance activities. However, the optimal division of labour between public and private institutions in the governance structures of elements surrounding IPRs should not be assumed or given, as this may vary according to a range of variables, including the nature of the IPRs (patents or copyrights) in question, the country in which the governance takes place (their case study was on the US and France), the type of IPR protection and infringement and the diffusion strategy used by the owners of the IPRs. The paper demonstrates that the organization of IPR governance should be taken into account when designing IPR systems in order to solve the protection versus diffusion dilemma often associated with IPRs.

In Chapter 9 on *The Exploration of Knowledge Networks through Patent Citations*, Stefano Breschi, Lorenzo Cassi and Franco Malerba identify coordinating institutions underpinning IPR governance at the sector level. They identify knowledge networks at the level of organizations and firms using patent citation and co-citation data as relational data, and they

identify companies' positions in such networks by developing a taxonomy of four different dimensions: the extent to which organizations and firms are technological leaders, technological followers, brokers of new technologies or isolated organizations. In developing the taxonomy, they also develop a measure of the crowdedness of a company's position in the technological space and a measure of its status. Although this type of research is mainly descriptive, I believe that it provides an important underpinning for understanding how the knowledge and technological landscape of dependence and interdependence amongst organizations and firms looks. This in turn reveals something about how strong a position a firm may hold within IPR systems. Basically, the free ticket granted by the patent system to use organizations' and firms' patented knowledge to develop the research frontier does not necessarily grant a ticket to produce or trade. In other words, even if development rights (the right to use an idea to develop another idea) are not directly protected under the patent system, the production rights (the right to use the patented idea to produce) and trade rights (the right to trade a commodity embodying the idea) are. This is what creates the huge dependency and inter-dependency between firms, as there is no point in developing an idea if it cannot be used for commercial purposes. It could even be argued that the productive efficiency of knowledge networks of citations and co-citations depends on the relationship between (i) the government's granting of open access to improve and develop patented ideas (part of patent law) and (ii) the granting of rights, by individual patent owners, to produce and trade a product embodying patented ideas. If the latter is not granted, the overall efficiency of the knowledge network may decrease, even if some individual firms may improve their relative technological position. This may argue for a compulsory licensing law, but it is still a very controversial question. The relationship between those two rights (that is, the right to improve or develop patented ideas, and the right to produce and trade products embodying such patented ideas) is briefly discussed in Chapter 4 of this book.

The fact that products and processes are increasingly complex, both in their knowledge bases and in the ownership of such, is an important starting point for Ove Granstrand in Chapter 10: *Intellectual Property Rights for Governance in and of Innovation Systems*. This chapter addresses the role of IPRs in different innovation systems (namely, national, sectoral, corporate, university and military systems) from a governance perspective. The focus is on the pro-intellectual property era of the 1980s, which has generally transformed and strengthened various forms of IPR governance in different innovation systems. Granstrand argues that the necessity of more inter-firm technology collaborations and various forms of technology trade have fostered quasi-integrated corporate innovation systems. This is

basically due to the availability of enforceable and valuable IPRs, together with more large-scale research and development (R&D) and the emergence of complex new technologies. However, he also argues that the efficiency or success in using IPR systems as a governance tool for incentivizing and coordinating innovation activities is not self-evident, and that a re-evaluation of various approaches is needed for sustaining efficient and effective innovation systems.

INTELLECTUAL PROPERTY RIGHTS: INNOVATION, GOVERNANCE AND THE INSTITUTIONAL ENVIRONMENT

In conventional literature, as well as this book, the boundary between the institutional IPR environment and the IPRs governing institutions is blurred. In this book therefore, these are taken to include all ways in which individuals, firms, organizations and governments control and manage IPRs. The effect this has for individuals, firms and society is also a special concern addressed in the book.

However, for future research, I believe that clear definitions of the ‘institutional IPR environment’ and the ‘IPRs governing institutions’ are useful. Clear concepts will provide a common platform for communication. This will, for example, enable us to build theories about the productive potential and adverse effects of IPRs. As described below, a clear distinction between the ‘institutional IPR environment’ and ‘IPR governing institutions’ will also help us when designing policy fostering the new economy.

I believe that inspiration regarding clear definitions of the ‘institutional IPR environment’ and the ‘IPRs governing institutions’ can be found in the new institutional economics,¹ although this literature focuses on different areas of enquiry to IPR systems. Within new institutional economics the ‘institutional environment’ is the ‘rules of the game’ and the ‘governing institutions’ or ‘institutions of governance’ are the structures in which the ‘playing of the game’ is carried out.

In this context, this book addresses how IPR systems form a central part of the ‘institutional IPR environment’ in setting the ‘rules of the game’ for the commercial exploitation of scientific and technological inventions (protected by the patent system) as well as inventions in creative expressions of cultural ideas (protected by the copyright system).

The rules of the game set by IPR systems affect the design of IPR law. Design issues include: (i) length of IPR protection obtained, (ii) the type of knowledge or creative expression protected (for example, should basic

procedures to obtain DNA codes, and non-technical business methods, be protected), (iii) scope of knowledge protected (for example, should we allow or encourage patent protection on fundamental inventions in universities with huge technological scope), (iv) inventive step (for example, how significant an inventive step is needed for patent protection and how much originality is needed for copyright protection), (v) licensing law (for example should we allow the opportunity to block competition or should we opt for compulsory licensing), (vi) the costs of and procedures for obtaining and holding a right, and (vii) the type and costs of the remedies available for infringement.

The design of IPR systems, in terms of the law setting rules, depends of course on what we want (that is, the rationales and objectives) from the IPR systems.

Broader discussions of the ‘institutional IPR environment’ as a rule setter which affects the behaviour of firms and individuals is provided in Chapters 4 and 10, while specific fields of inquiry are addressed in Chapters 1, 2, and 3.

The ‘institutional IPR environment’ also includes the rules, norms and routines regarding patenting processes in IPR offices. Such processes also differ across countries, and they affect the behaviour of individuals and firms. For example, the use of a ‘continuation’ scheme in the US affecting the use of ‘submarine’ procedures is not allowed elsewhere, and the active role of IPR offices in enabling learning processes and knowledge spillover is not general, but a particular attribute of a specific successful IPR office. Those issues are discussed in Chapters 6 and 7.

The players in the game of commercial exploitation of scientific and technological inventions as well as inventions in creative expressions of cultural ideas, and where the ‘institutional IPR environment’ sets rules, can be defined as both public and private sector organizations and firms as well as individuals. The nature of the interaction between the players can be termed ‘the playing of the game’. Each interaction is formed within a certain structure of contracts. At the individual or firm level they are usually in the form of different types of licensing agreements (for example, exclusive licensing, cross-licensing, patent pooling) or involve transactions of full IPRs. A central aspect of IPR governance at the level of the state is the original contract between the government and the possessor of a novel idea, with respect to the patent system. A written contract is not needed with respect to the copyright system. All original expressions of ideas are automatically protected. Such structures of contracts can be defined as ‘institutions of governance’ or ‘governing institutions’. Whereas Chapter 5 discusses the incentive for firms to participate in this game, Chapters 8, 9 and 10 discuss some of the coordinating elements of such games, namely

knowledge networks and innovation systems, as well as the complementary roles of state and sector organizations in IPR governance.

An important aspect of the nature of the ‘playing of the game’ is the influence of the ‘rules of the game’ on the quality of relationships among the players and IPR systems stakeholders. Basically, the ‘rules of the game’ influence the ways in which firms and individuals create financial and non-financial value from IPRs, and how this value is distributed. This remains an almost ignored topic in the existing IPR and institutional literature. IPR stakeholders can be defined to include those individuals and groups that have both an interest in how the IPRs are being used and a stake in how the value from IPRs is being distributed. Thus, they include those players who own or hold the rights associated with ownership and control, as well as those who aspire to become users of the ideas and expressions protected by the IPR systems. The identification of stakeholders in the IPR systems, how they interact, and what their interests and roles are, are important matters for direct or indirect inquiry in most chapters within this book. For future research we also need to understand the mechanisms by which stakeholder interests are prioritized, and the influence this might have on the ability to exploit fully the productive potential of the protected IPRs.

As will be clear from reading this book, the ‘institutional IPR environment’ and the ‘IPR governing institutions’, as well as their interaction, have implications for the social and economic effects of IPR systems, at the levels of individuals, firms, sectors, countries and civilizations. The increased enforcement of IPR regimes worldwide has brought up many debates and empirical research priority themes. For example:

1. Current debates surrounding the patent scheme include issues related to:
 - The Trade Related Aspects of the Intellectual Property Section (TRIPS) of the World Trade Organization (WTO).
 - Integration of new areas of protection into the patent system that grant protection even beyond science-based principles (for example, business methods patents and other computer-implemented inventions).
 - Exclusive rights also on fundamental inventions (for example, genetic codes, some mathematics, university patents).
 - Patenting of traditional knowledge and the problem of bio-piracy.
 - Increased privatization of the public domain.
 - Design of patent law and the problem of an increased period of protection historically.
 - Patent offices grant patents on trivial knowledge with very little inventive development.

- ‘Continuation’ and the ‘submarine’ patenting scheme in the US.
2. Current debates surrounding the copyright scheme include issues related to:
 - Corporate power and the problem of fair recognition.
 - Increased privatization of the public domain.
 - Copyright and cultural imperialism (the problem of (low) variety, (low) quality and (high) price).
 - Increased data base protection.
 - Copyrighting traditional cultural expressions that are fundamental elements of our culture.
 - Design of copyright law and an increased period of protection historically.
 3. Current debates surrounding the trademark scheme include issues related to:
 - Brands and trademarks for consumer protection versus consumer exploitation.

There is no way a single book can profoundly address *all* the relevant issues. However, at least this book serves as a beginning. Also, from the contributions to this book we see how the IPR debates engage different problems regarding the operation of IPR systems and the social and economic effects of such systems for business and society. They therefore also engage different sets of theoretical and analytical inquiry.

Finally, we all agree that the role and effect of IPR institutions is important to understand. For this purpose, I will again emphasize that a clear distinction between the ‘institutional IPR environment’ and ‘IPR governing institutions’ is useful. In particular, it helps us to understand how such institutions can be changed when designing policy fostering the new economy. For example, it requires complex collective action by means of government intervention to change the ‘rules of the game’, whereas it requires less complex individual action between the players to change the ‘playing of the game’. However, the nature of the ‘playing of the game’ can of course also be regulated by rules established by government.

NOTE

1. See for example Oliver Williamson (1998): ‘Transaction Cost Economics: How it Works; Where it is Headed’, *De Economist*, 146, 23–58.

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