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# Innovation, competition, standards and intellectual property: policy perspectives from economics and law

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## Abstract

The paper identifies the sources of regulatory complexity that lie behind the management of innovation, intellectual property, competition law and technical standard setting processes. It then introduces the remaining papers in the Special Issue. These papers focus on aspects of regulatory complexity in the Australian and New Zealand context. Taken overall the papers suggest that flexible standards of regulation are key to small and medium sized states being able to manage the integrated regulation of innovation, intellectual property, competition law and standard-setting.

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## 1. The sources of regulatory complexity

Institutions that regulate property rights in information, competition in the marketplace and the setting of technical standards have long histories. The Venetians are generally credited with the first patent statute (1474). Ecclesiastical law and the common law regulated competition in different ways during the medieval period.

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Regulation of competition by statute came later. Prussia passed a law to restrict the power of guilds in 1811 and in 1890 the US Congress passed the Sherman Act.<sup>1</sup> The setting of technical standards began in the last quarter of the 18th century when mass production got underway in the industrializing economies of the West. Similarly, institutions that support innovation have been around for a long time. Patronage is a case in point.

As modern economies have continued to evolve and governments have made innovation a primary economic virtue the goals, interaction and effects of the institutions that relate to innovation, institutions of competition, technical standards and property rights have come under greater policy scrutiny. An example of this is the final report of the Australian Intellectual Property and Competition Review Committee (the Committee).<sup>2</sup> Under its terms of reference the Committee had to report on the various restrictions on competition that were contained in Australian intellectual property legislation and to evaluate those restrictions from the perspective of costs and benefits “to the community as a whole”.<sup>3</sup> This cost-benefit approach to competition policy issues has been entrenched by the Competition Principles Agreement of 1995, an intergovernmental agreement between federal, state and territory governments.<sup>4</sup> This Agreement was itself the product of a nationally co-ordinated approach to competition policy that had been initiated by the Council of Australian Governments in 1991.<sup>5</sup>

The articles in this volume are the fruits of a workshop run at the Australian National University in August, 2002.<sup>6</sup> The workshop used the Committee’s report as a springboard into thinking about the problems and policy implications raised by regulation in four different sectors: intellectual property, competition law, standards and innovation. These problems are not uniquely Australian, but rather problems of developed economies that in the 1990s went through a period of economic growth labeled the ‘new economy’. The label drew attention to the rise in strength of industries based on research and development (most notably in the biotechnology and digital technology sectors), new modes of networked production (for example, the free software movement), and the rise of the services sector that itself was based, at least in part, upon the convergence of technologies such as telecommunications, broadcasting and information technology. Discussions of the new economy also became linked to globalization. Neoliberal accounts of globalization suggested that

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<sup>1</sup> See Braithwaite and Drahos (2000, p. 186).

<sup>2</sup> Review of intellectual property legislation under the Competition Principles Agreement, Final Report by the Intellectual Property and Competition Review Committee, 2000, Commonwealth of Australia. Known as the Ergas Report.

<sup>3</sup> See Review of Intellectual Property Legislation Under the Competition Principles Agreement (2000, p. 217).

<sup>4</sup> Principle 5(1) of the agreement requires that legislation shall not restrict competition unless the benefits outweigh the costs and the objective of the legislation can only be met by the restriction.

<sup>5</sup> See the National Competition Policy Review (the Hilmer Report, 1993). The National Competition Council was established in 1995 to act as a policy advisory body on the implementation of the National Competition Policy. More information can be found at <http://www.ncc.gov.au>.

<sup>6</sup> The paper by Paul Heald was not presented at the workshop. The workshop was run by the Centre for Competition and Consumer Policy.

those states that followed trade liberalization, domestic deregulation, privatization and a strong competition policy would do best in the global new economy.<sup>7</sup>

The reality turned out to be more complex. Neoliberal deregulatory prescriptions were in many cases a form of global advocacy of particular domestic models of deregulation, especially the domestic models of the US and the UK.<sup>8</sup> Deregulation turned out to be a misleading description of the shifts in regulation that were actually occurring.<sup>9</sup> In the US, the Telecommunications Act of 1996, despite making the reduction of regulation one of its objectives, set up an infrastructure that depended for its implementation on the work of the Federal Communications Commission and state commissions. The result has been more regulation, not less.<sup>10</sup> In the UK the deregulation of communications brought with it the creation of a new regulator, the Office of Telecommunications (now the Office of Communications reflecting the convergence of technologies).<sup>11</sup> What was true of telecommunications was also true of other sectors such as water and electricity services, education, policing and financial services. Increasingly, regulation was occurring through agencies that were mandated to catalyse and monitor the operation of markets. Scholars of regulation observing these shifts began to refer to the ‘new regulatory’ state, a state that spent more of its time steering rather than rowing, to adopt Osborne and Gaebler’s metaphor.<sup>12</sup> In other areas of the economy, however, old-fashion command and control regulation was, in fact, what was occurring. Models of intellectual property regulation from the US that included the use of the criminal law for intellectual property infringement were being globalized. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which formed one of the pillars of the World Trade Organization (WTO), contained standards of protection derived from US and European Union law.<sup>13</sup> The Internet became the subject of more and more regulation both internationally (for example, the WIPO ‘Internet treaties’) and domestically.<sup>14</sup> Here the US again provided the lead through its Digital Millennium Copyright Act of 1999.

States in the 1980s and 1990s were faced by a more complex international environment. Restrictions on international capital flows were lessening as a result of the breakdown in the 1970s of the fixed exchange rate system that had been agreed to at Bretton Woods. Flows of foreign direct investment (FDI) continued to rise dramatically. Although the bulk of these flows took place amongst the US, Europe and

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<sup>7</sup> See Quiggin (2001).

<sup>8</sup> See Braithwaite and Drahos (2000).

<sup>9</sup> This was true even for supposed deregulatory governments such as the Reagan and Thatcher governments. See Ayres and Braithwaite (1992, pp. 7–12).

<sup>10</sup> See Kahn et al. (1999, p. 320).

<sup>11</sup> See Communications Bill 2002 (UK).

<sup>12</sup> See Parker (2002, p. 15) and Osborne and Gaebler (1992).

<sup>13</sup> Article 61 of TRIPS obliges Members to provide for criminal penalties in relation to trademark counterfeiting and copyright piracy “sufficient to provide a deterrent”.

<sup>14</sup> The phrase ‘WIPO Internet treaties’ refers to two treaties administered by the World Intellectual Property Organization: WIPO Copyright Treaty (1996) and the WIPO Performances and Phonograms Treaty (1996).

Japan, developing countries in the 1990s were able to increase their share.<sup>15</sup> Trade, aided by successive rounds of the General Agreement on Tariffs and Trade (GATT) and the creation of the WTO in 1994, increased in importance as a source of economic growth. The WTO regimes that came into operation in the 1990s had much deeper effects on the domestic regulatory regimes of states than had been the case under the GATT. Under WTO Agreements like TRIPS, the General Agreement on Trade in Services and the Agreement on the Application of Sanitary and Phytosanitary Measures, states had to incorporate positive regulatory standards into their domestic economies. It was no longer just a question of removing tariff barriers. In short, states found themselves operating in an international environment of greater capital flows, expanded capital markets, the greater availability of FDI and increased export opportunities. In parallel, the regulatory environment was changed with increased international regulation that imposed positive obligations on states to regulate in specified ways.

The ability of states to take economic advantage of this change in the international regulatory environment was dependent on, amongst other things, their domestic regulatory policies. The regulatory endowment, as it were, of states was just as important to the pursuit of wealth as their endowment in the basic factors of production. Under conditions of global capital mobility and the increased supply of skilled labour in most countries (due to increases in mass education) it would be national regulatory institutions and rules that would make the crucial difference to economic performance. This in turn led states into programs of domestic regulatory reform. Some, most notably New Zealand, followed, with mixed success, neoliberal deregulatory prescriptions to the letter. Developing states in order to attract FDI began in the 1990s to liberalize their FDI regimes.<sup>16</sup> Deregulation did not, however, sweep through developing countries. Some countries like Chile, for example, kept control over short-term capital flows, thereby coping better with the Asian financial crisis of 1997–1999.<sup>17</sup> In the US important shifts were also taking place. Intellectual property regulation during the 1980s came to be linked to trade policy, this setting the stage for the globalization of intellectual property standards.<sup>18</sup> Competition regulation, at least so far as intellectual property was concerned, began to adopt a hands-off approach.<sup>19</sup> In many different ways, states during the 1980s and 1990s embarked upon regulatory changes aimed at improving their performance in the international economy.

As we observed earlier, the Committee's review of intellectual property legislation is part of a nationally coordinated approach to the development of competition policy in Australia. The Committee's report is indicative of the greater regulatory complexity that faces national policy makers seeking to refashion the rules and institu-

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<sup>15</sup> Between 1990 and 1998 developing countries increased their share of foreign direct investment sixfold. In 1997 their share was 36 percent. See Thomas et al. (2000, p. 115).

<sup>16</sup> Seid (2002, p. 58).

<sup>17</sup> Thomas et al. (2000, p. 130).

<sup>18</sup> See Braithwaite and Drahos (2000), chapters 7 and 10.

<sup>19</sup> For a description of these changes see Waller and Byrne (1993).

tions of regulation. One source of this complexity is technology. Digital technology, for example, lowers the cost of reproduction and enables new forms of transmission. This poses threats to copyright industries and market structures that have evolved on the basis of older technologies and definitions of property rights linked to those older technologies. The fight between the American Music Industry Association and entities like Napster that make use of peer-to-peer technology to distribute music that is the subject of copyright is one example of many. Another source of complexity lies in increased levels of interest group activity and lobbying. User groups in copyright, for example, in the form of educational institutions, libraries and consumers have become more active on the Australian copyright scene. More generally, the rise of international civil society has meant that regulators everywhere have to deal with much more interest group activity than in the past. A third type of regulatory complexity stems from the globalization of regulatory standards. National intellectual property standards are both constrained and influenced by a range of international agreements such as TRIPS and the treaties administered by WIPO. As a member of TRIPS Australia cannot, for example, choose a patent term of less than 20 years. International competition standards are part of the work programme of the current Doha Round of WTO trade negotiations. A fourth type of complexity is integrative complexity. Intellectual property rights can, as the Committee observed, be used for anti-competitive ends.<sup>20</sup> At a more fundamental level, there is a basic tension between intellectual property rights that are designed to create barriers to entry and competitive markets that aim to reduce barriers to entry. Within developed economies this tension is managed through the design of intellectual property laws and through the interaction of intellectual property law with competition law. Intellectual property rights cannot simply be set and then ignored. The same is true of technical standards. All states face tasks that flow from the need to manage and integrate national regulatory policies and standards.

## **2. The papers**

The papers in this volume all examine aspects of the greater regulatory complexity that face governments as they regulate innovation, competition, intellectual property and standard-setting. The institutional and economic context is primarily Australia and New Zealand. Collectively the papers show what is obvious, but also easily overlooked in processes of globalization and harmonization, namely that institutional and economic context do matter. The US is the world's largest economy while Australia and New Zealand rank 15th and 47th respectively.<sup>21</sup> The US has a clear advantage in areas of radical innovation such as biotechnology, digital technology and telecommunications, that, as Hall and Soskice (2001) argue, is based upon a set of complementary institutional structures that include flexible and skilled labour

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<sup>20</sup> See Review of Intellectual Property Legislation Under the Competition Principles Agreement (2000, p. 27).

<sup>21</sup> See World Bank (2001, pp. 274–275).

markets, deep venture capital markets and forms of corporate organization and law that facilitate the speedy buying and selling of companies (and therefore technologies). High intellectual property standards may well play a crucial part in the regulation of innovation in the US, but it is an open question as to how effective such models are outside of their particular institutional context. Very few countries possess, for example, the kind of aggressive legal culture that plays a part in breaking patents in the US, as much as it does in gaining them. Litigation is one way of regulating the market in patents, but it is costly. By the end of the 1990s the revenues in the US from the litigation and licensing of patents had climbed to more than US\$100 billion per year.<sup>22</sup> In 1999 New Zealand's GNP was a little under US\$53 billion.<sup>23</sup>

The papers in different ways draw attention to how institutional and economic context does or should affect the way in which states manage regulatory complexity. The paper by Aoki and Small keeps in view in its discussion of intellectual property rights, the essential facilities doctrine and compulsory licensing, the fact that in Australia and New Zealand around 90% of granted patents are to non-residents. For Australia and New Zealand the additional incentive effects of their local patents standards in foreign innovation markets is small, perhaps even negligible. It also follows that the disincentive effects of their compulsory licensing schemes are likely to be small. Nevertheless the social welfare gains to smaller economies of retaining the tool of compulsory licensing may in certain cases be highly significant (the pharmaceuticals market being an example). On this line of analysis the current round of free trade agreements that the US has negotiated with smaller countries such as Jordan, Chile and Singapore and which restrict the capacity of those countries to issue compulsory licences must be a basis for concern, especially in the light of current negotiations for a free trade agreement between Australia and the United States.<sup>24</sup>

Sundakov and McKinlay develop a model of intellectual property regulation designed to show the kind of trade-offs that designers of such regulation face. In the abstract there are some well known choices—allocative versus dynamic efficiency and rewarding radical first generation invention versus allowing sequential innovation to flourish. Once economic context is fed into the model the range of choices and trade-offs become clearer. In Australia and New Zealand intellectual property is increasingly becoming less a tool of innovation and more a trade tool. More intellectual property protection may be offered by smaller economies in the hope that it will entice foreign intellectual property owners to export their intellectual-property-related products to those economies or to invest more in those economies. Alternatively, smaller economies may use the offer of higher intellectual property protection as a bargaining chip to secure concessions from intellectual property exporting countries in sectors such as agriculture.

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<sup>22</sup> See Grossman and Hoffman (2000, p. xiii).

<sup>23</sup> See World Bank (2001, p. 275).

<sup>24</sup> For a discussion of how free trade agreements lift intellectual property standards see Drahos (2001).

Using domestic regulation as a bargaining chip in global trade games requires states to have a thorough understanding of regulatory complexity and the complexity of firms that operate in the global economy. Paul Heald's paper makes this point in relation to the connection between intellectual property and foreign investment. His paper examines Edwin Mansfield's work on the link between intellectual property protection and foreign investment, work that has assumed totemic status. Yet, as the Heald paper argues, the simple causal claim that an increase in all intellectual property standards by a developing country will lead to an increase in foreign investment is unlikely to be true in most cases. Firms may choose to distribute more of their products in a developing country as a result of a general increase in standards of intellectual property protection, but that is not the same as gaining the benefits of productive FDI. Heald's message is that countries must link intellectual property regulation to their "unique economic situation".

Sundakov and McKinlay's observation that there are strong arguments for intellectual-property-based price discrimination to be the subject of a public interest test is one example of how smaller economies need to retain regulatory flexibility in order to manage regulatory complexity. The territorial nature of intellectual property rights potentially allows intellectual property owners to control the movement of intellectual property-related goods and services. The extent of the intellectual property owner's power to exert such control depends on doctrines of exhaustion. Roughly, the choice is between national exhaustion, which allows the intellectual property owner to retain power over the movement of goods outside the relevant exhausted market and international exhaustion, which allows for the free movement of goods once they have been put on market anywhere.<sup>25</sup> National exhaustion allows for price discrimination. New Zealand has removed the restriction on parallel importation in the copyright field and Australia has done so for books and sound recordings. The Committee recommended that the remaining restrictions on parallel importation be repealed because the evidence suggested that copyright owners were setting higher prices in the Australian market and there was no real dynamic gain to offset this cost to Australian consumers.<sup>26</sup> Such a recommendation is possible for the time being because TRIPS does not restrict the capacity of states to choose the standard of exhaustion. However, intellectual property owners may in the future secure a change to the TRIPS standard or the US may globalize a standard through various bilateral agreements.<sup>27</sup> It follows then that states will have to deal with excessive pricing of intellectual property products in some other way. One such possibility is through their competition law.

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<sup>25</sup> See Review of Intellectual Property Legislation Under the Competition Principles Agreement (2000, p. 43).

<sup>26</sup> See Review of Intellectual Property Legislation Under the Competition Principles Agreement (2000, pp. 62, 69–71).

<sup>27</sup> The EU has not adopted the principle of international exhaustion either see C-355/96 *Silhouette* [1998] ECR I-4799; C-414/99 *Davidoff* European court of Justice 20 November 2001. The EU is moving towards a position of regional exhaustion. Essentially this would allow for the free movement of goods within the EU, but allow for the possibility of blocking the importation of goods from outside the EU.

In 1994 a special issue of *Information Economics and Policy* explored the role of standards in shaping markets and organizations.<sup>28</sup> Since then regulators have had much more experience with standards, including such complex cases as the Microsoft antitrust litigation in the US. The paper by Lea and Hall takes up the theme of complexity and draws attention to the complex trade-offs that are potentially present in the design of any regulatory framework that attempts to integrate competition, innovation, intellectual property and technical standard-setting processes. It rejects the argument that intellectual property and technical standards are inherently in conflict i.e. the argument that intellectual property rights create exclusivity in information and therefore barriers to entry in a market, while common technical standards facilitate competition by allowing suppliers to compete on the basis of stable, shared technical information. Instead Lea and Hall see relationships of complex contingency. This stems mainly from the fact that in the context of technological systems and standards many technologies are involved and it is unusual for one actor to own it all. On this view Microsoft was a rare, albeit spectacular, example of what happens to competition and innovation when one actor gets a hold of a global standard by means of intellectual property rights. In the more usual case of decentred ownership of technologies intellectual property rights may help to bring about the creation of a standard, because they allow private parties to engage in Pareto-improving trades. Without the intellectual property rights private bargaining would be less likely to occur. The Lea and Hall paper shows how intellectual property rights are but one strategic consideration for firms making decisions about entry into networked products and services.

Where then does complex contingency leave regulators? The answer, which is suggested by the Lea and Hall paper, is that the regulation of intellectual property rights and standards is part of a web of regulation in which regulators are but one strand. There are commercial pressures on private actors to sort out some of these issues and reach a deal. Regulators can facilitate these processes of private ordering by employing standards of regulation that permit, for example, efficiency enhancing patent pools. Private actors can resort to private law actions based on tort or contract to settle their differences. Technical standard setting organizations are developing administrative procedures for handling technology that is the subject of intellectual property. Regulators can intervene in cases of intellectual property ownership using antitrust/competition controls. In short, the problem of complex contingency posed by the integration of competition, intellectual property, standards and innovation is being addressed, at least in larger economies, by means of a complex mix of private ordering and public regulation. For smaller and/or developing economies the trade-offs may be less complex. They are less likely to have firms in their economies that are capable of influencing global or regional standard-setting processes. They are likely to do better on the basis of open standards.<sup>29</sup> For them key policy objectives are likely to remain price competition and access to the standards set elsewhere.

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<sup>28</sup> See Antonelli (1994).

<sup>29</sup> For a discussion of this in the context of computer software see Story (2002, pp. 134–137).

The paper by Charles Lawson explores the themes of technological complexity, integrative regulatory complexity and global regulatory complexity as they relate to biotechnology and patenting in Australia. Biotechnology has opened up new targets for patentability and Australia, like many other countries, has accepted that patenting in this field is fundamental to the development of a biotechnology industry. However, policy decisions rely on their implementation for regulation and in the case of patents this regulation is of a technical and rules-based nature. Lawson's paper shows how the rules-based system for the patenting of genetic materials gives rise to both price competition concerns and difficulties for sequential innovation. His suggested solutions are to raise the standards of patentability and to take advantage of compulsory licensing. He draws attention to the fact that the current international standards for patent protection do not restrict the Australian government from exploring these suggested policy directions and moreover Australia may in terms of its own innovation system do better by tilting the patent system in the direction of sequential innovation. Much like the paper by Sundakov and McKinlay, Lawson's paper suggests that under conditions of regulatory globalization smaller economies may do better by pressing for standards of regulation that give them flexibility.

Frances Hanks explores the interaction between competition law and intellectual property rights on the question of price discrimination and market segmentation. As she points out in her introduction she takes a lawyer's view of those rights. Her setting is the Australian Trade Practices Act, Australian intellectual property legislation and the recommendations of the Committee as they relate to the capacity of an intellectual property owner to restrict parallel importation and engage through a licensing of intellectual property in price discrimination and market segmentation. The extent to which intellectual property owners should be allowed to engage in price discrimination and market segmentation strategies is an issue of global importance. As a matter of economic theory, the allocative efficiency losses of intellectual property rights could be lessened if intellectual property rights owners could price discriminate across different markets and prevent arbitrage between those markets. In the debates over access to patented medicines by poor people in developing countries there is widespread agreement that if western pharmaceutical multinationals export cheaper medicines to developing countries those patented medicines must not find their way back into European, Japanese and US markets where those multinationals aim to recover most of their R&D costs. But it is also worth remembering the historical experience of countries like India with drug prices. India reformed its patent law in the 1970s making it harder to patent pharmaceuticals precisely because foreign pharmaceutical companies were charging high rather than low prices for drugs.<sup>30</sup> States do not necessarily gain in terms of national welfare from intellectual property rights that strengthen the hands of owners of those rights to segment and price discriminate in markets. National welfare, national laws and institutions intersect in complicated ways with global firms and global marketing strategies in the case of intellectual property rights. Some commentators like Abbott

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<sup>30</sup> See Drahos and Braithwaite (2002, pp. 66–67).

(1999) have provided arguments for why developing countries may not benefit from persistent price discrimination.

In the face of strengthening intellectual property regimes developing states that have not adopted competition law regimes perhaps have a greater incentive to do so. Competition law is one possible way that states have to deal with global intellectual property owners who pursue market segmentation strategies that lead to the extraction of monopoly rents in their jurisdictions. One important message of the Hank's paper, however, is that the regulation of intellectual property rights by competition law is a technical matter that might easily lead to efficiency losses. Tracing through the structure of the Trade Practices Act and its interpretation Hanks argues that the Committee's recommendation that the licensing of intellectual property be subject to a competition test may not achieve the Committee's desired goal of efficiency. Under the Australian scheme efficiency is an explicit goal under administrative authorisation processes, but it is not a goal of the competition test that is used in other parts of the Trade Practices Act. This test focuses on the effects of the relevant conduct on market power. The basic danger of the Committee's recommendation is that its competition test will catch efficient licensing practices such as the territorial division of intellectual property rights.

Patents and innovation have more or less parted company. This is the central theme of Stuart Macdonald's paper. Macdonald draws together a large body of literature to show that the scale and scope of patenting has grown dramatically. Companies weave patent webs for a variety of reasons—to signal to Wall street, to block entry by competitors, to better bargain with competitors, to create licensing opportunities and to insure themselves against the possibility of patent litigation by others. Macdonald's paper reveals a world in which companies find themselves engaged in an intellectual property arms race. In this arms race it is the managers and not the scientists that call the shots, because, as the Macdonald paper shows, the race is not about innovation. An arms race in intellectual property is expensive because companies are forever paying the lawyers to escalate to new levels of protection. In an arms race it is hard to get ahead and even harder to stay ahead. There can only be one winner and that is the person with the deepest pockets. There is also a basic paradox. Innovation depends on people communicating with each other. The more that a company places its creative people in intellectual property cells, the more risks it takes with its innovation process. From the perspective of managing regulatory complexity the message of the Macdonald paper is clear—beware of fashions and fads in regulation. Small to medium sized economies that invest heavily in intellectual property regulation may find that they do very little to improve investment in research and development or to raise their rate of innovation.

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