

Paradoxes of Regulating Corporate Capitalism: Property Rights and Hyper-Regulation*

SOL PICCIOTTO*

Abstract

The past 30 years has seen an enormous growth of formalised regulation, which some have characterised as part of a wider phenomenon of 'regulatory capitalism'. This has also been a period of the hegemony of neo-liberal ideologies of free markets. The paradox aptly described by Stephen Vogel as 'freer markets, more rules' has not received an adequate explanation, despite an equally enormous growth of studies and theories of regulation. This paper will argue that insufficient attention has been given to the relationship between the 'naturalization' of property rights, and the growth of regulation. It is generally accepted, particularly by liberal theory, that private property rights are essential to free markets. However, the acceptance as 'natural' of existing forms of private rights to property, in an era when economic activity has become increasingly socialized, generates instabilities, to which a frequent response is regulation, often of a hybrid public-private character. This argument will be developed through two examples. Firstly, the analysis of financial market regulation, which over the past 30 years has been a paradigm of hyper-regulation, but leaving untouched the private property protections that have fuelled 'financialization' and speculation, and generated crises culminating in the crash of 2008-9. Secondly, an account of how struggles over the scope and definition of intellectual property rights have moulded the emergence and development of today's 'knowledge economy', as the historic tension between private rights and the public domain has given way to the creation of various forms of regulated 'commons', allocating rights and remuneration.

Key words

Regulation; finance; patents; copyright; law.

* This paper was presented at a workshop on *Socializing economic relationships – New perspectives and methods for analysing transnational risk regulation* held at the Oñati International Institute for the Sociology of Law 10th-11th June 2010; a substantially similar version was presented at a panel in the meeting of the European Consortium for Political Research in Dublin in June 2010 organised by Colin Scott, to whom I am grateful for the invitation. It was accepted for publication in a special issue of the *Journal of Law & Society*, but not published there, due to the insistence of the publishers, Wiley-Blackwell, on excessive transfers of author's rights. The argument draws on research which resulted in my book *Regulating Global Corporate Capitalism* (Cambridge University Press, 2011), much of which was conducted under a Research Fellowship from the Economic and Social Research Council for a research programme on *Regulatory Networks and Global Governance*, Award RES-000-27-0117, and I am extremely grateful to the Council, and to Lancaster University, for the opportunity for the extended period of research and writing. I am especially grateful to David Campbell for many helpful suggestions and stimulating discussions.

* University of Lancaster, Professor Emeritus, s.picciotto@lancaster.ac.uk.

Table of contents

1. The Public, the Private, and Property Rights.....	3
1.1. Paradoxes of Regulatory Capitalism	3
1.2. Property Rights.....	4
2. Financial Market Regulation Caused the Crisis	5
3. Contested Concepts of Property and Hyper-Regulation	10
3.1. Copyright, the Public Domain and Negotiating Remuneration.....	10
3.2. Conflicts over Patentability: Medicines and Biotechnology	11
3.3. Bioprospecting	12
3.4. Plant Varieties	13
4. Conclusions: Property rights and Regulation	15
Bibliography	16

1. The Public, the Private, and Property Rights

1.1. Paradoxes of Regulatory Capitalism

It is now some twenty years since Majone and others identified the rise of a 'regulatory state', which has more recently been termed 'regulatory capitalism' (Sunstein 1990, Majone 1993, Levi-Faur and Jordana 2005, Braithwaite 2008). Since then, regulation has emerged as an enormous universe of professional practice and of scholarship. A central feature of regulatory bureaucracies is the resolute emphasis on their apolitical character, despite their important role in both the state and the economy. Ironically, as the field of studies of regulation has burgeoned, it seems itself to have become an arena for professionalized academic practice also of a highly technical character, mainly concerned with how to manage and improve regulation, aiming at 'smart regulation'. I suggest that we need to reinject some political analysis, by building on some excellent pioneering work which analyzed the underlying and puzzling features of the emergence of regulation. Indeed, only by restoring a more critical understanding of the political processes underlying regulation could students of regulation make a better contribution to its effective functioning.

First is the paradox that the period of privatization and liberalization since the 1980s has led to an enormous growth of regulation. Stephen Vogel in 1996 pointed to the apparently contradictory process of 'freer markets, more rules'. Michael Moran has charted the rise of the 'hyper-innovative' British regulatory state careering 'from stagnation to fiasco' (Moran 2003). John Braithwaite has scoffed at the 'neoliberal fairytale' and the 'myth of deregulation', and has argued that regulation and mega-corporate capitalism were historically mutually constitutive and are now closely intertwined (Braithwaite 2008). Yet despite these insights, the received wisdom is not only that the dominant trend since the 1980s has been towards free markets, but more seriously that the role of regulation is merely to correct market failures and limit excesses. Thus, the design of regulatory regimes has aimed at 'market-friendly' regulation, as evidenced in two key arenas which must be considered catastrophic regulatory failures. First, financial market regulation has left investment banks entirely free to design exotic financial instruments, causing a worldwide financial crash and economic crisis; and second, the perceived problem of anthropogenic greenhouse gas emissions has been tackled by direct state action to create enormous new markets for 'carbon trading', although they have so far been at best ineffectual for their purported purpose.

Surprisingly, studies of 'smart regulation' rarely consider how markets are actually *constituted*. The key element in enabling markets is of course the creation of property rights. The specific form taken by such rights, and the methods (both legal and other) for enforcing them, are crucial in setting the dynamics of a field of regulation, and should be the starting point for analysing any such field, but this is rarely the case. Instead, rights to property are assumed to be somehow natural, and little attention is paid to their design. This paper will show that it is the inappropriate formulation of the property rights underpinning markets that creates conflicts and crises and spawns hyper-regulation.

Secondly, there has been the 'privatization of regulation'. The role of the state has been increasingly delegated either to autonomous bodies of a public or quasi-public nature, or even to private entities. This includes activities previously regarded as the heart of government. Colin Scott has pointed to the regulatory role of private entities, which may even extend to controlling public as well as private activities (Scott 2002). The financial crisis has finally drawn public attention to one of the most egregious examples, the role of bond rating agencies which assess public as well as private entities. Having done their best with credit default swaps, they went on to tackle Greece and other Euro-zone governments. There has also been

considerable delegation of public functions, especially in developing countries, to civil society or non-governmental organizations (NGOs).

At the same time, we have seen what some commentators have described as a public-ization of the private sphere (Freeman 2003). Indeed, a central feature of regulatory capitalism in the recent period has been the varied and complex forms of public-private interactions. Regulatory regimes cannot easily be distinguished between the public and the private, inevitably they interact, and very often they are hybrid. Public forms of regulation are often implemented through corporate networks, while private regimes are often authorized by formal law, or rely on law for enforcement.

What has been evident also is not only a blurring of lines between public and private, but a confusion of roles. This was most starkly evident in the financial crisis, when it became clear, to the surprise of some, that the effect of the financial regulatory system built over the past 35 years has been to enable banks to privatize profits and pass their losses to the public purse.

Thus, the central paradoxes of current regulatory capitalism have been liberalization leading to hyper-regulation, and the blurring of lines and confusion of roles between the public and the private. I suggest that at the heart of these paradoxes, and the cause of many regulatory failures, has been a mistaken understanding of how to construct 'market-friendly regulation'. The central reason for this is the naturalization of the property rights and institutions devised since the 1880s which created corporatist capitalism. It is inappropriate and inaccurate to treat this as a 'market' system, since the apparently private sphere of economic relations is dominated by large oligopolistic corporations, operating in symbiosis with state or public institutions. The high degree of socialization of economic activity means that its regulation must be underpinned by new political and democratic forms, rather than the managerial autocracies and technocratic bureaucracies now dominating corporatist capitalism.¹

1.2. Property Rights

Basic theory tells us of course that markets require property rights. Beyond that, academic theory has told us surprisingly little useful about property rights. This seems to be largely due to a fixation on the concept of private property, amounting to an identification of property with private property. Philosophical and political theories, going back at least to C. B. Macpherson have focused on the justifications for private property, and have therefore been largely irrelevant to the complexity and malleability of property institutions, as Andrew Reeve pointed out (Macpherson 1962, Reeve 1991, pp. 108-111). Economic theory, not surprisingly, has been focused on a particularly simplistic notion of private property. Thus, Barzel defines property in economic terms as an individual's ability to consume a good, directly or indirectly through exchange (Barzel 1997, p. 3). Sociology has largely neglected the analysis of property (Carruthers and Ariovitch 2004), and when it does consider the matter is concerned mainly with the implications of property rights rather than analysis of the forms they take. Legal scholarship attained a high degree of sophistication based on the positivist-analytical approach of Hohfeld, but on the rare occasions when it ventures beyond this has tended to adopt either a political philosophy perspective (notably Waldron 1988), or that of law and economics.² Economic perspectives, which have been dominant in policy-making during the period of ascendancy of neo-liberal ideologies, have generally emphasised the importance of 'strong' property rights in providing the foundations for capitalism

¹ This is one of the central themes of my book (2011), in which the examples discussed in this paper are treated in greater detail.

² The work of Margaret Radin is interesting in applying political theory to develop a very effective critique of the law and economics perspective in her 'liberal personality theory of property', arguing for the priority of rights in personal over what she describes as 'fungible' property (Radin 1993).

and 'free markets', but rarely consider how the way in which property rights are defined actually *constitutes* markets.

Regulation theory, lacking an underpinning of any sophisticated theory or analysis of property rights, has tended to adopt an institutional approach. In particular, since much of the field is concerned with economic regulation, the focus has been on the corporation as an institution. Thus, Michael Moran's discussion of the British experience of privatization rightly sees its roots in the exhaustion of the traditional public ownership model, and the ensuing spate of regulatory innovation as due to the inadequacy of the form of the private corporation to institutionalize the management of complex infrastructure services and utilities such as railways, electricity and telecommunications. Braithwaite and Drahos point to the enormous impact of what they describe as corporatization and securitization in creating mega-corporate capitalism, but thereafter their discussion seems to take the corporate form largely for granted, at least in relation to financial market regulation.

The basic proposition in this paper is that the key factor defining the dynamics of any regulatory regime is the specification of the property rights involved. Furthermore, inappropriate specification of property rights is generally the cause of both regulatory complexity and regulatory failure. The dominant perspective of 'market-friendly' regulation has generally assumed that what this requires is 'strong' property rights. This is combined with a 'naturalization' of existing property institutions due to the reification generated by the private property paradigm. These factors have too often obscured the vital importance of the initial specification of property rights in designing a regulatory regime.

Interestingly, however, after three decades or more of experimentation, the issue of property rights has come increasingly to the fore. One of the objectives of this paper is to explore how and why this has taken place. The paper aims to do so by examining two examples: financial market regulation, and intellectual property rights (IPRs). The first will use a retrospective analysis of what can be learned from the financial crisis about the failures of financial market regulation. The second will consider how the expansion of private property rights in intellectual property has produced conflicts over rights-claims, mediated both by the reinterpretation of the scope of the rights, as well as by ever more complex international regulatory networks of a public-private character.

2. Financial Market Regulation Caused the Crisis

The great financial crash of 2007-8 was the culmination of over a quarter-century of international financial liberalization and re-regulation, resulting in a form of economic domination which has been described as 'financialization' (Epstein 2005, Krippner 2005, Montgomerie 2008, Ertuk et al. 2008). The cross-border and cross-industry integration promoted by liberalization has involved (i) a shift in corporate funding from relational banking to market-based finance; (ii) a massive expansion of financial systems in relation to the real economy, (iii) an unprecedented growth of financial assets and leverage, (iv) the emergence of highly complex financial instruments and (v) extraordinary levels of financial trading. These factors have generated a far greater potential for financial instability, and an enhanced mobility of financial risks (Schinasi 2006, pp. 5-8). Not surprisingly, the period since 1971 has seen a series of financial and especially banking crises, the crash of 2007-8 being only the latest and greatest, which are unprecedented especially in comparison to the previous era of national monetary management and bank supervision (1937-73), when there were none (Reinhart and Rogoff 2009, pp. 204-8).

Contrary to many conventional accounts, finance has become highly regulated in many countries and internationally, but in forms favouring private or quasi-public self-regulation. Crucially, these forms of regulation took for granted the structural underpinnings of the markets and the factors which led to their meteoric growth.

They focused instead on measures aiming to ensure the soundness of the participants, which in practice gave these actors the support and indeed the stimulus to turn finance into a self-sustaining sphere of circulation and speculation. Many commentators seem still to accept volatility and crisis as an endemic feature of modern finance, and to consider that regulation can at best hope for their management and mitigation rather than prevention. However, since it was the form taken by regulation which helped to create markets which are inherently prone to crisis, paying attention to these causes would surely help improve regulatory design.

The emphasis since the 1970s on liberalization has allowed and encouraged financial firms to develop market-based finance, develop and trade in innovative instruments, and engage in trading both for their own account and for clients. Regulation by public authorities with responsibility for stability and security of the financial system (central banks and sectoral regulators) has concentrated on allocating responsibility for supervision of entities and establishing prudential standards for them, mainly in the form of capital reserve requirements. This has emerged as a process of international re-regulation through interacting regulatory networks, in which the Basel Committee on Banking Supervision (BCBS), formed in 1974, has played a key role. Regulators have generally adopted a hands-off attitude towards financial transactions. Regulation of markets has mainly been done by private industry bodies: exchanges, clearing houses, credit rating agencies (CRAs), and private associations such as the International Swaps and Derivatives Association (ISDA). However, their formally private character is belied by the ways in which they have been empowered by public authorities and backed by law.³

The enormous growth of bilateral or 'over-the-counter' (OTC) financial instruments, including an infinite variety of complex transactions in derivatives and swaps, which quickly grew to account for the vast bulk of the market,⁴ has been governed by the ISDA's standard form contracts. These are backed by its private arbitration procedures, and supported by national legislation and rulings to ensure their enforcement (Partnoy 2002). However, standard form agreements such as the ISDA's have serious limitations as regulatory instruments, as they are based on the existing consensus view of the risks entailed. This discourages parties from considering the specifics of the transaction, and puts all market participants in the same boat, although it may be a leaky one (Hudson 2009, para. 32-14). The private and bilateral nature of OTC contracts has also meant a serious lack of transparency, since neither market participants nor regulators have information about the exposures of counterparties. This was a key factor in the closing down of the interbank markets precipitating the 2007 crisis.

The focus on firms and not transactions has created incentives for regulatory avoidance and arbitrage, by creating pressure on firms to move into markets and jurisdictions with lighter requirements, as well as to devise transactions avoiding such requirements. Financial firms have been stimulated to reduce their cost of capital by using innovative means to circumvent reserve requirements, and to exploit opportunities for international tax avoidance. At the same time, private bodies to which regulation of transactions and markets has been delegated have

³ In the US, since 1975, institutional investors have been required to place their funds in assets which are given a high or investment-grade by a recognized rating agency, and for most of the period since then only three such firms have been recognised (White 2009, p. 392). The Basel II Capital Standards Framework (paras 90-108) gave responsibility to national regulators for approval of 'external credit assessment institutions' (ECAI), based on the criteria which it lays down, and its capital requirements are dependent on the ratings given by recognised ECAIs. For a more detailed account and analysis see Picciotto 2011, ch. 7.

⁴ Since they are generally transferable and relatively standardized they are traded, although privately, not in an open market or exchange. The Bank for International Settlements has estimated that the total amounts of OTC contracts outstanding had grown by an average annual rate of 25% since 1998, but by 33% in the period 2004-2007, reaching an estimated \$516 trillion (BIS 2007).

inevitably developed vested interests in encouraging rather than controlling the growth of markets in those instruments.

The primary form of regulation adopted by the public authorities has been capital reserve requirements, which had the effect of creating a false sense of security (sometimes referred to as 'moral hazard'). Further encouragement for risk-taking was created by the guarantee of lender-of-last-resort (LLR) support in case of bank failure. This was provided both explicitly under deposit insurance schemes, but also through the backing given by central banks, due to the danger of a run on banks, and the systemic risk posed by major bank failures for the whole economy. The scope and extent of this implicit LLR support has been left deliberately vague, despite strong arguments that it should be clearly defined and limited, notably after the Asian financial crisis a decade earlier.

The result was that the new forms of regulation, although increasingly extensive, have tended to encourage rather than control the forces leading to financialization and speculation. The focus on firms rather than markets also exacerbated the difficulties of achieving both international and inter-sectoral coordination between regulators, especially as liberalization broke down barriers between markets and brought different types of firms into competition.

It is therefore hardly surprising that, in a period of rapid liberalization which has created ever wider and more open markets, regulatory failure has been endemic. The response has been to create new regulatory institutions and networks which have grown ever more complex, despite all efforts to improve their coordination. In the face of the best efforts of the regulators, the increasingly globalized financial system has generated new forms of risk and instability with ever-wider effects. Beginning from the wrong premises, a fatal spiral developed of regulation stimulating avoidance, innovation and risk-taking; the resulting dramatic crises spurring new regulation, which further heightened the drive to devise fantastical and risky activities.

2.1. A New Minimalist Approach to Regulating Finance?

The crash dramatically brought home how central the financial system is to the world economy. The realm of finance poses more sharply than any the central dilemmas facing economic regulation today. Financial transactions are considered to be quintessentially private, market relationships, yet a stable financial system is an essential public good. This sharp contradiction has been starkly driven home by the extensive state bailouts; yet governments have shunned the word nationalization, and have done all they can to leave firms in private hands. Although enormous private profits were made in the boom years, the cost of the bailouts fell on the public purse. It is therefore clear that any new approach to the regulation of finance should include a fundamental re-evaluation and rebalancing of the relationship between public authorities and regulators and the finance industry. This does not mean a return to outmoded and failed forms of statism, but new forms of governance in the public interest.

Central to a new approach should be a withdrawal of property protection and state support for financialization, to restore something closer to efficient functioning of financial markets. If the foundations of finance were set more soundly, there could be much less regulation. The liberalization of financial markets since the 1970s resulted in hyper-regulation, which in turn has generated regulatory arbitrage and avoidance, spawning further regulation. The root of the problem has been the state protection and support for financial firms, which created perverse incentives and market distortions. These take three main forms.

First, is the protection of limited liability. This enables the managers of all types of financial vehicles, from investment banks to hedge funds, to engage in speculation without assuming any personal risk. They are nevertheless able to appropriate a

high proportion of the revenues through profit-sharing and bonus schemes. In effect, they are able to use other people's money to make bets from which they cannot lose.

Secondly, the safety net of LLR support has been provided for virtually any type of financial firm. Retail financial firms (deposit-taking institutions), for which this type of support is necessary and intended, have been allowed to invest in all kinds of instruments and vehicles. This has provided enormous leverage for hedge funds and other kinds of arbitrageurs and speculators, and hence further incentives to gamble with no downside risk, while the state provides the safety-net to the lenders who greatly boost the speculators' gigantic pools of finance, or indeed even to the speculators themselves if there is seen to be a systemic danger when they fail (e.g. the rescue of Long Term Credit Management in 1998).

Thirdly, financial firms and transactions have greatly benefited from access to low-cost capital due to exploitation of the opportunities for tax avoidance and evasion provided by the 'offshore' system. This has for long been well-known, but left to be dealt with by experts, who have approached it as a technical issue. The result has been an enormous growth of highly complex tax and financial regulations, loosely coordinated internationally, exemplified by the opaque and detailed rules for so-called Controlled Foreign Corporations enacted in the main capitalist countries. These have been especially ineffective in curbing use of international tax avoidance by financial firms and others willing and able to exploit the indeterminacies of corporate residence and location of financial business resulting from the fictions of corporate personality and monetary transactions (Picciotto 1999). The resulting low or zero taxation of many kinds of international financial transactions has produced enormous economic distortions, and has been one of the main causes of financialization.

Regrettably, the measures taken to reform the financial system so far are continuing essentially and even more quickly along the same road, although many commentators have pointed out that this will inevitably result in further crises, and alternative approaches have been suggested, even at the highest levels. The main emphasis has been put on increasing capital reserve requirements, coordinated internationally through the BCBS. As I have pointed out, this will further increase the pressure on firms to devise artificial forms avoiding the higher capital charge.

Public concern about the enormous rewards for financiers has also increased the pressures for more effective international taxation, focusing on the role of tax havens and offshore finance centres. This has resulted in a drive to negotiate a network of tax information exchange agreements (TIEAs), which however have fundamental flaws. In particular, the main global financial centres, notably London and New York, have been unwilling to collect information on the beneficial ownership of deposits and financial assets held by non-residents, for fear of provoking portfolio capital outflows. Hence, they are in practice unable to provide information to many countries, actively facilitating tax evasion by their residents. They have been equally unwilling to take measures to ensure effective taxation of hedge funds and private equity vehicles which are in practice operated from within their jurisdictions, though nominally routing their transactions through havens such as the Cayman Islands (the largest centre for incorporation of hedge fund entities). The TIEAs negotiated with other key centres such as Switzerland have preserved the much prized banking secrecy, allowing them to continue to facilitate all kinds of avoidance and evasion.⁵

Some central bankers, including Mervyn King, have expressed alarm at the effects of extending LLR support to the whole banking system: 'It is not sensible to allow large banks to combine high street retail banking with risky investment banking or funding strategies, and then provide an implicit state guarantee against failure.

⁵ For further details see Picciotto (2011) note 5 above, chapter seven.

Something must give' (King 2009, p. 7). There has indeed been a hot debate about various proposals for a separation between firms providing standard forms of financial intermediation as kind of a public utility, referred to as 'utility banking' or 'narrow banking', and those involved in more risky and speculative activities. A significant step in this direction was taken in January 2010, when President Obama (under political pressure) announced the principle, originating with Paul Volcker, that banks should 'no longer be allowed to own, invest or sponsor hedge funds, private equity funds or proprietary trading operations for their own profit unrelated to serving their customers'. Proposals to implement the principle were introduced in the comprehensive legislation which became the focus of struggles in Congress. The enactment of the Dodd-Frank Act in July 2010 gave extensive rulemaking and discretionary powers to various regulatory agencies, and opened a new era in the corporatist symbiosis between government and the large financial institutions.

Furthermore, the Act watered down the Volcker Rule, and imposed only a limit on a bank's investment in private equity and hedge funds of 3% of its tier 1 capital, and 3% in any one fund. This does not prevent such banks from engaging in proprietary trading themselves, nor selling participations in their funds to clients; and the move was not internationally coordinated. Instead, the drive in Europe has been towards licensing managers of 'alternative' investment funds, which tackles the problem at the wrong end. Hedge fund investors are supposed to be sophisticated, or at least rich, so they may be left to bear their own losses. Indeed, licensing and regulation of such funds could be counter-productive by inducing a false sense of security in investors.

The greatest regulatory gap revealed by the crisis is in relation to financial instruments, which were left almost entirely to private regulators. Plugging this gap needs more than the introduction of tighter controls on credit rating agencies such as the Code of Conduct put forward by IOSCO in 2008. Public regulators should have a more direct role, and there should be a reversal of the presumption in favour of financial innovation. Financial derivatives should be treated like pharmaceutical drugs. No-one suggests that all new drugs should be released on the market, leaving it to consumers or even doctors to decide how safe they are and for which uses. The financial crisis starkly demonstrated that financial derivatives can be economically toxic, and they should be regulated accordingly, through a system of registration and certification. The approvals process should include determination of the tax treatment, as well as conditions of use: how they should be treated on the balance-sheet and for capital provisioning, and which categories of investor should be allowed to deal in each. Regrettably, although some commentators have proposed such an approach,⁶ regulatory proposals have not emerged.

The most radical, and yet simple, proposal has been Laurence Kotlikoff's scheme for 'limited purpose banking'. This would combine prior approval by a single public regulator of all financial instruments, based on full transparency of the risk evaluation, with a conversion of all banks (i.e. financial firms) into pure intermediaries selling shares in different kinds of mutual funds (Kotlikoff 2010). This would have the great merit of greatly *reducing* the extent of regulation, by targeting the crucial point: approval of the financial instruments which may be marketed, and their restriction to mutual investment funds. It also aims to avoid the need for LLR support, by turning banks into cash mutual funds, and hence with one hundred percent capital reserve; while requiring investors in other kinds of funds to take on their risk, on a mutual basis. This would shift much of the responsibility of managing investment risk onto investors, which is desirable and necessary, but inappropriate for most small savers. Such needs could perhaps be

⁶ It was suggested in the Annual Report of the Bank for International Settlements in 2009 (pp. 126-7), and even the Turner report accepted that direct regulation of both retail and wholesale financial products should be considered (Turner 2009, pp. 106-110).

catered for by suitable broad-based mutual investment funds. However, the main purposes of social savings are for healthcare, social security and pensions, which entail a degree of socialization that must surely entail public provision.

3. Contested Concepts of Property and Hyper-Regulation

My second example is taken from an area of regulation more centrally concerned with the specification of property rights: intellectual property rights (IPRs). IPRs have been a major mechanism for corporate appropriation of scientific and technical knowledge and cultural production for over a century, and thus central to corporate oligopoly and economic dominance. Competitive strategies of appropriation and monopolization have been mediated by contested claims and interpretations of property rights as expressed in the key concepts of IPRs. These conflicts have also spawned various types of regulatory regimes attempting to accommodate these conflicting claims and allocate rights and remuneration.

IPRs have become formulated as private property, which gives the right to exclude others from using an asset, although this is in many ways inappropriate for knowledge-based assets, since they do not deplete when shared (in economic terms, they are non-rival). However, the emergence and development of the modern concepts of IPRs as private rights was counterpointed by the emergence of the concept of the public domain (Rose 2003). This key public-private boundary has been continually contested, through the development and reinterpretation of the key concepts underpinning IPRs.

3.1. Copyright, the Public Domain and Negotiating Remuneration

Replacing state licensing of printing, modern copyright gave a publisher exclusive rights for a limited period, after which others could freely republish. The extent to which emulation of a work protected by copyright could be permitted has depended on interpretive debates about what constitutes copying, most recently in relation to the 'look and feel' of computer programs. The scope of copyright has depended on interpretation and extension of the elastic concept of the right to control 'reproduction', which became increasingly important as new communication technologies emerged. The assertion of exclusive private rights has repeatedly come into conflict with activities popularly considered legitimate, such as playing music in public spaces, whether live in cafés, or through radio broadcasts, or most recently on YouTube. These conflicts have been mediated and managed by the creation of forms of collective licensing, which themselves have been the focus of contending property conceptions. Advocates of private property have accepted collective licensing on sufferance as a necessary evil and stressed its private contractual nature, deploring any compulsion ignoring the compulsion resulting from the initial definition of the property right (Jehoram 2001); while others have described it as entailing a socialization of property rights (Kretschmer 2002).

The most recent challenge to the exclusive private rights paradigm of copyright has been mounted by Google, using its immense power over internet communication. Within five years of launching Google Books in 2004 it had digitized over ten million books, some two million of which are out of copyright, six million in copyright but out of print, and two million in copyright and in print. This project will be central to the future of book publishing in the digital age, and is inevitably the focus of contending claims and complex multi-jurisdictional litigation. An audacious attempt to create a novel form of private regulation to govern it was made in the Google Books Settlement, which in effect would create a gigantic collective rights organization; but this is likely to remain contested (Samuelson 2010; see also Picciotto 2011, ch. 9.3), especially as the proposed settlement was rejected by a New York district court in March 2011. Essentially, these continuing conflicts over the nature and scope of copyright have been competitive contests over the

allocation of rights and remuneration for the enjoyment and exploitation of cultural products.

3.2. *Conflicts over Patentability: Medicines and Biotechnology*

The struggle to control new technologies through patenting has also seen continual conflicts over the assertion of private rights and the scope and nature of the public domain or the commons, and their mediation through new forms of regulatory regime, often private. The expansion of the boundaries of patentability has entailed exploiting the grey areas between a discovery (which is not patentable) and an invention (which is). Interpreting this distinction has been especially crucial for the life-science industries, from organic chemistry to biotechnology (Dutfield 2009), which operate at the interface between humankind and nature. Chemical patenting was always problematic, since it is hard to classify a naturally occurring chemical compound as a new invention, and many pharmaceutical drugs have in any case been based on compounds discovered in nature, notably the twentieth century's wonder drugs, aspirin, and penicillin (Jeffrys 2004, Temin 1979, p. 434). Hence, even in countries which did not exclude patents on medicines, they were not frequent until the second half of the twentieth century. The situation changed in 1948 when Merck obtained a US patent for streptomycin, although it had been identified in soil samples, on the grounds that it had been isolated from nature and purified to enable it to be 'produced, distributed and administered in a practicable way' (Temin 1979, p. 436).

The form of legal protection helped to shape and transform the industries. In the US, the shift to regular patenting of new drugs occurred at the same time that obtaining marketing approval for such drugs became more expensive and drawn-out, as systems for prior approval were established and gradually strengthened, especially after dramatic failures such as thalidomide. So in the US and some other countries, 'big pharma' firms emerged, pouring enormous sums into R&D and testing, aiming to achieve super-profits if they could find a patentable wonder-drug. Hence, while the pharma firms and their defenders consider that patent protection is justified by the high investments and long lead-times due to testing, the effect has been to lock the pharmaceutical industry into a pattern of seeking pills for rich peoples' ailments.

The 'isolation from nature' doctrine again became a focus of contestation with the emergence of biotechnology. The stage was set by the famous decision of the US Supreme Court in *Diamond v. Chakrabarty* (1980 447 US 303) that 'anything under the sun that is made by man' is patentable. This opened the floodgates for patent protection, especially for biotechnology products, most notoriously with the Harvard 'oncomouse', and the method for animal cloning which was used to 'create' Dolly the sheep. The decision chimed in with US policies in the 1980s to foster knowledge-based business, resulting in moves to provide easier and stronger patent protection. The specialist patent Court of Appeal for the Federal Circuit (CAFC) established in 1982 adopted a more accommodating approach to patentability, especially the non-obviousness criterion. This relaxation affected a number of fields, in particular allowing patent protection for software and for business methods, as well as biotechnology.

Biotechnology patenting in particular has become highly contested, on both technical patent law⁷ and ethical grounds, since these technologies involve human interventions in nature (Drahos 1999, Sterckx 2000), and are charged with contributing to the commodification of life-forms by amoral science allied to big business (Bowring 2003). The emergence of the new genetic sciences has sparked off a host of conflicts and debates, and has resulted in many new regulatory

⁷ Such patents can be challenged both on the grounds of lack of novelty (since biotechnology is essentially an automated computerized process), and lack of industrial utility (since the functions of gene sequences are often unknown or unpredictable).

provisions and arenas, interacting in various ways, not least in the realm of ethics. These contests have become mediated through complex and interacting networks of different regimes of regulation (Black 1998, Landfried 1999, Amani and Coombe 2005), intersecting also with trade rules for example on GM foods.

3.3. *Bioprospecting*

Fraught conflicts emerged also over bioprospecting, sometimes more emotively termed biopiracy. Bio-prospectors became active in searching out genetic resources, especially in developing countries which have high biodiversity. These practices also took advantage of traditional knowledge, for example by aiming to identify the specific genes responsible for the beneficial properties of plants long-known to particular communities or groups. Genetic materials are now held by public bodies or private firms in bio-banks or databases, which make them available for analysis to identify cell lines or genes with potentially useful traits, such as disease resistance. Public biobanks tend to lend out samples for a nominal charge, and to leave it to users to negotiate with the original suppliers of the sample if a commercial application results, while the commercial biobanks provide access for research purposes under licences which retain the right to negotiate commercial terms for use in any application which may result (Parry 2004).

Bioprospecting was especially dramatized by the well-known conflicts over patents for formulations based on extracts of oil from the neem tree, claiming various uses as pesticides and fungicides, even though the many beneficent uses of the neem have been known in India reputedly for some 2000 years. Nevertheless, the agribusiness firm W. R. Grace, together with the US Department of Agriculture, was granted several US patents in 1990, despite attempted objections by activists and the government of India (Baglery 2003, p.680, Moyer-Henry 2008). A related patent was also granted by the European Patent Office (EPO) in 1994, but there a successful legal challenge was mounted by 'an international network of patent warriors', including the Indian campaigner Vandana Shiva (Shiva 2007, p. 281), although it took ten years to bring to a final positive conclusion. The different outcome in Europe was due partly to different views of the novelty requirement: the EPO's Board of Opposition accepted evidence of prior public use of neem extracts by Indian farmers as a fungicide, supported also by a document published by Indian scientists in Australia (Dolder 2006). Probably equally important for the outcome was the vociferous public campaign in Europe, where the EPO office in Munich on the day of the hearing was the target of a demonstrators with placards proclaiming 'No Patents for Theft', and handing in a petition signed by over 100,000 Indian citizens (Bullard 2005).

At about the same time, a similar claim to the EPO was made for an appetite suppressant based on the hoodia plant, whose properties were part of the traditional knowledge of the San people of southern Africa. This claim was rejected by the examiner for lack of novelty, but a revised claim was accepted on appeal, although on dubious grounds (Dolder 2006). In this case, however, those representing the San people were persuaded to discontinue their opposition, largely by the offer of payments of \$120,000 for clinical testing and a share in the profits of any eventual product of six percent of the royalties (Moyer-Henry 2008).

Following these conflicts, the interactions became more complex. Interventions by activist groups and developing country governments made patent offices examine more closely claims based on traditional knowledge, such as the use of turmeric powder for wound healing, extracts of the maca plant for sexual dysfunction, or the yellow Mexican 'enola' bean. This led to the rapid development of national and regional systems to regulate Access and Benefit Sharing (ABS). These are now being debated and contested in a variety of international arenas and networks, including the Convention on Biological Diversity (CBD), the World Intellectual Property Organization (WIPO), and the World Trade Organization (WTO).

3.4. Plant Varieties

Another significant battle fought at the interface between collective, common and private property has concerned the protection of plant varieties. For long, new varieties were developed by the time-honoured practices of experimental cross-breeding by farmers and botanists. In the early part of the twentieth century this became systematized and supported by systems of quality certification, and many countries established public collections both of growing plants (*in situ*) and plant matter (*ex situ*). 'Indeed, in the early days the private sector relied heavily on public lines for the development of new plant varieties ... particularly ... for field crops such as corn' (Smolders 2005, p. 7). However, the increasingly large investments in breeding led to pressures for some protection. In 1930, the US created a plant patent, but only for asexually reproducing plants excluding tubers, while in 1938 Germany provided for a *sui generis* plant variety right.

On the initiative of France, an international system was established in 1961 by a Union for the protection of new varieties of plants (UPOV). This provided for a plant breeder's right (PBR), to protect any new variety which could be shown to be distinct, uniform and stable. The PBR covered any type of plant, but it was initially defined quite narrowly, granting proprietorial rights only over commercialization, hence allowing propagation by other breeders. This also meant that growers could save seeds for their own replanting and for exchange, which came to be called the 'farmers' privilege'. However, revisions of UPOV especially in 1991, extended PBRs to production, reproduction and propagation, and extended protection to harvested material including plants and to essentially derived varieties. States are allowed to retain the farmers' privilege, but only for farmers to propagate for themselves; thus, in revised versions of the UPOV exchange between farmers or commercialization of a derivative variety requires permission. In the meantime in the 1980s, following *Diamond v. Chakrabarty*, the USPTO began to grant ordinary utility patents to plants. The European Patent Convention (EPC) excludes patents for plant varieties and for 'essentially biological processes for the production of plants', but the extent of this limitation is subject to interpretation.

This has created a highly complex situation, with a great variety of forms of protection in different countries, each with its own conditions and providing a different scope of protection. The US alone offers utility patents, plant patents, and plant variety protection; other states are parties to different versions of UPOV, and their national laws can vary greatly. The WTO's agreement on Trade Related Intellectual Property Rights (TRIPS) article 27 now requires WTO members to provide some 'effective' form of plant variety protection, and developing countries have been urged to take advantage of the flexibilities offered by UPOV. Indeed, this arena can be seen as a paradigmatic example of the strategic interactions through which conflicting and overlapping regulatory processes create 'regime complexes' (Raustiala and Victor 2004).

At the same time, the intensification of plant breeding, especially through biotechnology, raised issues about the legitimate uses of plant material made available freely in public collections. There was particular concern about the use of material housed in the network of International Agricultural Research Centers (IARCs), loosely coordinated through the Consultative Group on International Agricultural Research (CGIAR), aimed particularly at food crops for developing countries. This had originated with a programme initiated by the Rockefeller Foundation with the Mexican government in 1943, which developed a high-yielding wheat variety, later transferred to India. In response to concern about the food crisis in poor countries, the network of IARCs grew, the Food and Agriculture Organization (FAO) played an increased role, and in 1971 the World Bank agreed to set up and host the CGIAR.⁸

⁸ See <http://www.cgiar.org/who/history/origins.html>.

From this perspective, there was greater concern for safeguarding biodiversity as collective or common property. Hence, the FAO in 1983 adopted a plan of action for a Global System for Conservation and Utilization of Plant Genetic Resources. Its centrepiece was a formally non-binding Undertaking, which firmly stated that it was 'based on the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction'. However, the implications of this principle were contested. Agreed Interpretations adopted in 1989 declared that PBRs, especially as governed by the UPOV, were 'not incompatible' with the Undertaking, and that 'free access does not mean free of charge'. A separate resolution endorsed the general concept of farmers' rights 'vested in the International Community, as trustee for present and future generations of farmers';⁹ a later resolution in 1991 affirmed that the 'common heritage' principle was subject to state sovereignty over plant genetic resources, and this was elaborated in the Convention on Biological Diversity in 1992. However, regulation of the use of germplasm accessed from public collections was left for further discussion in the FAO. During the 1990s controversies arose about patenting of biotechnological innovations derived from matter acquired from IARCs, and licences including a benefit-sharing arrangement were devised in some cases.

Agreement was finally reached in 2001 on an International Treaty on Plant Genetic Resources for Food and Agriculture (IT-PGRFA). It committed the parties to promote sustainable agriculture, within an international framework, and spelled out in more detail the principle of farmers' rights, including the right to seeds, although these depend on state regulation. Its most distinctive and innovative achievement was the establishment of a multilateral system which aims both to provide open source access to seeds and other germplasm for research, breeding and crop development, and to channel income from any commercial development into a global fund to promote conservation and sustainable use of plant genetic resources, particularly by farmers and indigenous communities.

However, the IT-PGRFA still retains some ambiguity as to whether private rights can be claimed on material derived from the resources accessed from the open source system. Its key article 12.3(d) states:

Recipients shall not claim any intellectual property or other rights that limit the facilitated access to plant genetic resources for food and agriculture, or their genetic parts or components, in the form received from the multilateral system.

This was the result of a compromise in the drafting negotiations (Helfer 2004, Mekouar 2002, Cooper 2002), and the implications of the term 'in the form received' are far from clear. Nevertheless, the phrase is repeated in the standard material transfer agreement (SMTA), which has been adopted to provide uniform licensing terms for material accessed under this multilateral system.¹⁰

States party to the IT-PGRFA agreed to place under the multilateral system all plant genetic resources under their control and in the public domain for sixty-four crops listed in Annex 1, and invited others to do the same. The listed items were chosen for their importance for food and agriculture, but did not include important crops such as tomatoes, soybeans, or peanuts. A major extension resulted in 2006 when agreements were signed with eleven of the IARCs, which hold *ex situ* collections of some 650,000 accessions of germplasm, including the world's most important crops. As the IARCs began using the SMTA in 2007, it has become a foundational instrument for managing the use of plant material in breeding and biotechnology.

The SMTA establishes a kind of regulated global commons for material made available within the system. Conditions are laid down on recipients of material, which they in turn must apply if they transfer the material to others. They are that:

⁹ As noted above, this concept was implicit in the UPOV, but it emerged in FAO discussions, see http://www.farmersrights.org/about/fr_history.html.

¹⁰ Available from http://www.planttreaty.org/smta_en.htm.

(i) use of the material is only for 'the purposes of research, breeding and training for food and agriculture' not including 'chemical, pharmaceutical and/or other non-food/feed industrial uses'; (ii) recipients are required to make available all non-confidential information resulting from R&D on the material through the treaty's information-sharing system; and they are encouraged to share with others the non-monetary benefits of the system (transfer of technology and capacity-building to developing countries); (iii) recipients cannot claim IPRs on the material or its genetic components 'in the form received'; (iv) if a recipient commercializes a PGRFA product that incorporates material, a defined royalty must be paid if such product is not available to others without restriction for further research and breeding;¹¹ if there is no such restriction, defined voluntary payments are encouraged; (v) if recipients transfer material to another person, or transfer to another person IPRs on any products derived from the material or its components, such transfers must be subject to the same conditions, including the benefit-sharing obligations.

The emphasis of the system is on ensuring use for the collective good, and sharing the results of research and development. However, it accepts that a commercialized product may result, and in that case expects monetary benefit-sharing, into a Benefit Sharing Fund, to be used to finance projects under the FAO's Global Plan of Action adopted prior to the IT-PGRFA in 1996. It is not yet clear how much income this will produce, and the strategic plan adopted in 2009 envisages that the Fund will mainly depend on other sources. There are obvious similarities with the kind of open-access systems that have been developed for software, as some commentators have pointed out (Srinivas 2006, Hope 2008, Aoki 2009).

At the same time, the debates about, and the introduction of concepts and systems for, benefit-sharing have begun to provide a means for managing the contested interactions between different resource regimes and knowledge domains. As Anil Gupta, founder of the Honey Bee Network, has argued '[a]chieving sustainability in resource use requires the fusion of sacred with secular, formal with informal, and reductionist with holistic views' (Gupta 2005, p. 31). However, as his practical experience has shown, this requires scientists to work closely with local communities, to encourage and support grassroots innovators.¹² The formal top-down systems for benefit-sharing can only at best provide a framework for such bottom-up activity.

4. Conclusions: Property rights and Regulation

As both of these examples show, the main driver for the growth of regulatory regimes has been competitive struggles mediated by claims to private property protection and other forms of public support of private rights. Many of the key property institutions of corporate capitalism have come to be seen as 'natural': notably, the corporate form itself, and patents and other IPRs. In the period of liberalization and privatization since the 1980s, the collapse of state ownership led to a transfer of many activities to corporations, sometimes supplemented by regulation. The preference for 'market-friendly regulation' led to the assumption that this required 'strong' property rights. Even among those who drew attention to the institutional embedding of markets, little attention was paid to the *form* of property rights. Indeed, such was the power of fetishized conceptions of property that the term itself has generally been used to mean private property.

¹¹ The FAO's website provides no guidance on what this means; however, one of the IARCs, the International Rice Research Institute, advises that 'Plant Breeder's Rights under UPOV type Plant Varietal Protection (PVP) laws do not restrict the further use of the variety for research and breeding. Commercialization of a new variety that is protected by this type of Plant Breeder's Rights developed from IRRI germplasm would not trigger mandatory payments under the Treaty' see <http://www.irri.org/grc/requests/SMTAFAQ.htm#c7>.

¹² For more about this work see <http://www.sristi.org>.

Both the examples in this paper also exemplify the growth of hyper-regulation and complex regulatory networks and interactions, both multi-level, and public-private. Generally, the public sphere (the state and intergovernmental organizations) has been dominated by liberal political forms of interest-representation, and has therefore been susceptible to pressures to extend proprietary rights and protection. It has often been left to private forms of regulation to manage the contestations between rights-owners. Not surprisingly, these often take the form of 'regulatory contracts': for example, as discussed above the ISDA's forms for derivatives, or the SMTA which governs transfers of plant genetic material.

Interestingly, also, in some fields the competitive contestations over proprietary rights have led to the emergence of new forms of common property regimes, for example (as discussed in section 3) the plant gene access and benefit-sharing systems. Indeed, in the field of IPRs more generally, the excessive extension of private property protection in state and international law has been counterpointed by the emergence of new IP regimes based on rights to remuneration rather than exclusivity. In the field of copyright this has been achieved by the combination of the revolt of guerrilla-consumers through file-sharing, and the power of new media firms, especially Google.

I suggest that this is a very different picture from those normally painted by studies of regulation dominated by the more usual functionalist paradigm. The focus on property rights and their contestation helps to explain both the central paradoxical features discussed in Section 1: the phenomenon of liberalization leading to 'hyper-regulation', and the new types of public-private interaction. This perspective also suggests that the central adage in designing 'smart regulation' should be: try to define the property rights appropriately.

Bibliography

- Amani, Bitá and Rosemary Coombe, 2005. The Human Genome Diversity Project: The Politics of Patents at the Intersection of Race, Religion, and Research Ethics. *Law and Policy*, 27, 152-188.
- Aoki, Keith, 2009. "Free Seeds, not Free Beer": Participatory Plant Breeding, Open Source Seeds, and Acknowledging User Innovation in Agriculture. *Fordham Law Review*, 77, 2275-2310.
- Bagley, Margo A., 2003. Patently Unconstitutional: The Geographical Limitation on Prior Art in a Small World. *Minnesota Law Review*, 87.
- Barzel, Yoram, 1997. *Economic Analysis of Property Rights*. Cambridge: Cambridge University Press.
- BIS, 2007. *Triannual Central Bank Survey. Foreign Exchange and Derivatives Market Activity in 2007*. Basel: Bank for International Settlements.
- BIS, 2009. *Annual Report*. Basel: Bank for International Settlements.
- Black, Julia, 1998. Regulation as Facilitation: Negotiating the Genetic Revolution. *Modern Law Review*, 61, 621-660.
- Bowring, Finn, 2003. *Science, seeds, and cyborgs: biotechnology and the appropriation of life*. London: Verso.
- Braithwaite, J., 2008. *Regulatory capitalism. How it works, ideas for making it work better*. Cheltenham, UK: Edward Elgar.
- Bullard, Linda, 2005. "Freeing the Free Tree." Research Foundation for Science, Technology and Ecology, New Delhi, India International Federation of Organic Agriculture Movements The Greens/European Free Alliance in the European Parliament.

- Carruthers, Bruce G. and Laura Ariovich, 2004. The Sociology of Property Rights. *Annual Review of Sociology*, 30, 23-46.
- Cooper, George, 2008. *The Origin of Financial Crises*. Petersfield: Harriman House Publishing.
- Dolder, Fritz, 2006. Traditional Knowledge and Patenting: The Experience of the Neemfungicide and the Hoodia Cases. *Biotechnology Law Report*, 26, 583-93.
- Drahos, P., 1999. Biotechnology patents, markets and morality. *European Intellectual Property Reports*, 441-9.
- Dutfield, Gram, 2009. *Intellectual property rights and the life science industries: past, present and future*. 2nd edition. London: World Scientific.
- Epstein, Gerald A., 2005. *Financialization and the World Economy*. Cheltenham: Edward Elgar.
- Erturk, Ismail, Julie Froud, Sukdhev Johal, Adam Leaver, and Karel Williams, 2008. *Financialization at Work. Key Texts and Commentary*. London: Routledge.
- Freeman, J., 2003. Extending public law norms through privatization. *Harvard Law Review*, 116, 1285-1352.
- Gupta, Anil K., 2005. *WIPO-UNEP Study on the Role of Intellectual Property Rights in the Sharing of Benefits arising from the Use of Biological Resources and Associated Traditional Knowledge*. Geneva: World Intellectual Property Organisation.
- Helfer, Laurence R., 2004. *Intellectual property rights in plant varieties International legal regimes and policy options for national governments*. Rome: FAO.
- Hope, Janet, 2008. *Biobazaar: the open source revolution and biotechnology*. Cambridge, Mass. ; London: Harvard University Press.
- Hudson, Alastair, 2009. *The Law of Finance*. London: Sweet & Maxwell.
- Jeffreys, Diarmuid, 2004. *Aspirin. The Remarkable Story of a Wonder Drug*. London: Bloomsbury.
- Jehoram, H.C., 2001. The future of copyright collecting societies. *European Intellectual Property Review*, 23 (3), 134-139.
- King, M., 2009. Speech at the Lord Mayor's banquet. 17 June. London.
- Kotlikoff, L.J., 2010. *Jimmy Stewart is dead: Ending the world's ongoing financial plague with limited purpose banking*. Hoboken NJ: Wiley.
- Kretschmer, M., 2002. Copyright societies do not administer individual property rights: The incoherence of institutional traditions in Germany and the UK. In: Towse, R. ed. *Copyright in the cultural industries*. Cheltenham: Edward Elgar, 140-164.
- Krippner, Greta R., 2005. The Financialization of the American economy. *Socio-Economic Review*, 3, 173-208.
- Landfried, Christine, 1999. The European Regulation of Biotechnology by Polycratic Governance. In: C. Joerges and E. Vos, eds. *EU Committees: Social Regulation, Law and Politics*. Oxford: Hart, 173-194.
- Macpherson, C.B., 1962. *The political theory of possessive individualism: Hobbes to Locke*. Oxford: Oxford University Press.
- Mekouar, Ali, 2002. *A Global Instrument on Agrodiversity: The International Treaty on Plant Genetic Resources for Food and Agriculture*. Rome: Food and Agriculture Organization.

- Montgomerie, Johnna, 2008. Bridging the critical divide: global finance, financialisation and contemporary capitalism. *Contemporary Politics*, 14, 233-252.
- Moyer-Henry, Kari, 2008. Patenting Neem and Hoodia: Conflicting Decisions Issued by the Opposition Board of the European Patent Office. *Biotechnology Law Report*, 27.
- Parry, B., 2004. Bodily transactions: Regulating a new space of flows in "Bio-information". In: Verderey, K. & Humphrey, C. eds. *Property in question. Value transformation in the global economy*. Oxford: Berg, 29-48.
- Partnoy, Frank, 2002. ISDA, NASD, CFMA, and SDNY: The Four Horsemen of Derivatives Regulation? *Brookings-Wharton Papers on Financial Services*.
- Picciotto, S., 1999. Offshore: The state as legal fiction. In: Hampton, M.P. & Abbott, J.P. eds. *Offshore finance centres and tax havens. The rise of global capital*. Basingstoke: Macmillan, 43-79.
- Radin, Margaret Jane, 1993. *Reinterpreting Property*. Chicago: Chicago University Press.
- Raustiala, Kal and David G. Victor, 2004. The Regime Complex for Plant Genetic Resources. *International Organization*, 58, 277.
- Reeve, Andrew, 1991. The Theory of Property. Beyond Private versus Common Property. In: D. Held, ed. *Political Theory Today*. Stanford, Calif.: Stanford University Press, 91-114.
- Reinhart, Carmen M. and Kenneth S. Rogoff, 2008. Banking Crises: An Equal Opportunity Menace. *NBER Working Paper*, 14587.
- Rose, Mark, 2003. Nine-Tenths of the Law: The English Copyright Debates and the Rhetoric of the Public Domain. *Law & Contemporary Problems*, 66, 75-87.
- Samuelson, P., 2010. Google book search and the future of books in cyberspace. *UC Berkeley Public Law Research Paper*, No. 1535067.
- Scott, C., 2002. Private regulation of the public sector: A neglected facet of contemporary governance. *Journal of Law & Society*, 29, 56-76.
- Schinasi, G.J., 2006. *Safeguarding financial stability. Theory and practice*. Washington D.C.: International Monetary Fund.
- Shiva, V., 2007. Biodiversity, intellectual property rights, and globalization. In: Santos, B. de Sousa ed. *Another knowledge is possible. Beyond northern epistemologies*. London: Verso, 272-87.
- Smolders, Walter, 2005. Plant Genetic Resources for Food and Agriculture: Facilitated Access or Utility Patents on Plant Varieties?. *IP Strategy Today*, 1-17.
- Srinivas, Krishna Ravi, 2006. Intellectual property rights and bio commons: open source and beyond. *International Social Science Journal*, 58, 319-334.
- Sterckx, Sigrid, 2000. *Biotechnology, patents and morality*. Aldershot: Ashgate.
- Temin, Peter, 1979. Technology, Regulation and Market Structure in the Modern Pharmaceutical Industry. *Bell Journal of Economics*, 10, 429-446.
- Turner, Adair, 2009. *A Regulatory Response to the Global Banking Crisis*. London: Financial Services Authority.
- Waldron, Jeremy, 1988. *The Right to Private Property*. Oxford: Clarendon Press.
- White, L.J., 2009. The credit-rating agencies and the subprime debacle. *Critical Review: A Journal of Politics and Society*, 21 (2), 389 - 399.