PROPERTY RIGHTS AND REGULATION, PRIVATE AND PUBLIC

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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 David 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 socialised, generates instabilities, to which a frequent response is regulation. 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 ‘commons’, potentially converting the exclusive private property right into a right to remuneration.

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1. THE PUBLIC, THE PRIVATE, AND PROPERTY RIGHTS

1. Paradoxes of Regulatory Capitalism

It is now nearly twenty years since Majone and others identified the rise of a `regulatory state’, which some have even termed `regulatory capitalism’. Since then, regulation has emerged as an enormous field of professional practice and of scholarship. Much of this is concerned with the often technical details of how to manage and improve regulation. I suggest that more attention could be paid to its underlying features, building on some excellent work in the field which has identified and described the central puzzling features of this phenomenon.

First is the paradox that the period of privatization and liberalization since the 1980s has led to an enormous growth of regulation. David 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 (2008) 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. Yet despite these insights, the received wisdom is that the dominant trend since the 1980s has been towards free markets, and that the role of regulation is to correct market failures and limit excesses. Studies of `smart regulation’ rarely consider how markets are actually constituted.

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. In the UK we saw the newly elected Labour government in 1997 giving the Bank of England autonomy in setting interest rates. Now among the first acts of our new LibCon government has been to create an independent Office for Budget Responsibility to prepare a `proper set of national accounts’, which apparently officials and ministers have failed to do. 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 are now taking on 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). Notably, in the mid-1990s, following a decade and more of liberalization, we saw a new movement for adoption by corporations and business associations of codes and standards of social and environmental responsibility. To be sure, this was in response to consumer and public pressure and due to concern to avoid reputational damage, but in effect these market pressures resulted in acceptance by corporations of public responsibilities. Indeed, a central feature of regulatory capitalism in the recent period has been the varied and complex forms of public-private interactions.
What has been evident, however, 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’.

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 (1962) 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 (1991, 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, 3). Sociology has largely neglected the analysis of property (Caruthers 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, when it ventures beyond the positivist-analytical approach, has tended to adopt either a political philosophy perspective (e.g. Waldron 1988), or that of law and economics.¹

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 the 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.

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. Further, 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.

¹ 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).
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) in particular in plant varieties. 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 the form of patent protection produced conflicts over rights-claims, mediated by ever more complex international regulatory networks of a public-private character.

2. Financial Market Regulation Caused the Crisis

Liberalization of currency exchange controls from the 1970s led to a ‘new world order’ of international finance (Underhill 1997), and a form of domination which has been described as ‘financialization’ (Epstein 2005, Krippner 2005, Montgomerie 2008, Erturk 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: 5-8).

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. Also, by focusing on market participants rather than transactions, these forms of regulation in practice gave them the support needed to turn finance into a self-sustaining sphere of circulation and speculation. These activities were legitimized by ideologies of ‘risk management’, underpinned by models of financial markets as efficient allocators based on rational decision-making. The new cultures of finance became increasingly hard to challenge as the structures of financial transactions became more complex and opaque, and these cultures were underpinned by arcane techniques of mathematical modelling based on calculation of relative volatility (MacKenzie 2006).

Although the main driver for financial regulation ostensibly has been to prevent bank crises and failures, it has clearly failed to do so, as shown most spectacularly by the crisis of 2007-8 leading to the economic slump. However, this was only the culmination of a continuing trend of bank crises, contrasting sharply with the experience of the twenty years prior to 1973, during which there was not a single one. Many commentators seem still to accept volatility and crisis as an endemic feature, and consider that regulation can at best hope for their mitigation rather than prevention. On closer examination, however, it can be shown that the form taken by regulation helped to create markets which are inherently prone to crisis.

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2 Surveys by IMF economists in the mid-1990s showed that since 1980 133 out of 181 IMF member states (=73.5%) experienced ‘significant’ problems in the banking sector, either ‘crises’ involving bank failures and government rescues (41 instances in 36 countries) or extensive unsoundness (108 cases); the costs ranged from 3-6% of GDP in richer countries to 10-15% in middle-income countries, and to 25% in developing countries (Caprio and Klingebiel 1996, Lindgren et al. 1996, Goldstein and Turner 1996). This of course was prior to the crises which began in Asia in 1997 and spread to Russia and elsewhere, and the great financial crash of 2007-8. A study by Reinhart and Rogoff confirms that in a longer historical timescale the period since the mid-1980s has seen a significantly higher incidence of banking crises (hitting alike countries at different levels of development), while 1951-1972 saw none (Reinhart and Rogoff 2009: 204-208; see also Reinhart and Rogoff 2008: 8).
The opaque and distorted character of the globalized financial system has also meant that finance has been channelled from poor to rich countries and people. The secrecy and lax regulation provided and promoted by the ‘offshore’ system\(^3\) have provided powerful incentives for ‘capital flight’ from developing countries towards the main financial centres.\(^4\) It has also helped to sustain the position of the dollar as the de facto global reserve currency, enabling the US to finance its external deficit by high levels of borrowing, and creating massive international imbalances by which funds especially from Asia both maintained and became hostage to the strength of the dollar.

The sphere of finance became greatly expanded during the economic boom period of the 1950s and 1960s. An unprecedented proportion of individuals and households especially in richer countries became able to generate savings, but also became reliant on the financial system for deferred expenditures (especially pensions) and consumer credit. While small business continued to be generally reliant on bank loans, large corporations had direct access to capital markets, and to the advantages of low-cost finance through the offshore system. Liberalization of national financial markets tended to result in new exclusionary patterns of financial recycling, as banks and savings institutions were sucked into participating in global financial markets. The poor in all countries have become particularly dependent on extortionate forms of moneylending, unless alternative institutions such as credit unions or micro-finance could be established. High levels of liquidity were also the fuel for a consumer credit boom in richer countries, which generated excessive indebtedness, making large sectors of the population very vulnerable when the financial crisis came.

### 2.1 International Re-regulation of Finance

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. They 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), although acting under powers granted by public authorities or backed by law.

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 inevitably developed vested interests in encouraging rather than controlling the growth of

\(^3\) This system is not confined to offshore finance centres alone, indeed the major financial centres especially London and New York play a key part in it.

\(^4\) Various estimates have been made of the scale of illicit money flows from developing countries, but even the most conservative indicate that they exceed net legal inflows, and amount to some ten times the volume of development aid (Norway 2009: 13, Kar and Cartwright-Smith 2008).
markets in those instruments. The form of regulation adopted by the public authorities (capital reserve requirements) also 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 implicitly, usually 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 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.

Central banks and other financial supervisors have been mainly concerned for the soundness of banks and the stability of the financial system. The dangers of instability were brought home by bank failures in the early 1970s in the UK (the ‘secondary banks’), the US (Franklin National) and especially Germany (Herstatt). In 1974 central bankers, working through the Bank for International Settlements (BIS), and after on the initiative of the Bank of England, established what became known as the Basel Committee on Banking Supervision (BCBS). The BCBS began by attempting to allocate responsibility for the supervision of transnational banks, based on the broad principle of home country responsibility for solvency, and that of the host for liquidity. However, it was clear that this distinction could only be a loose one, and was hard to apply in many cases (e.g. to subsidiaries, especially joint ventures). Hence close cooperation, including exchange of information between supervisors, would be crucial; while it was noted that a problem would be posed by the ‘virtual absence of supervision in some popular “off-shore” banking centres’ (Blunden 1977: 327).

These principles were issued as the Basel Concordat in 1975, which has been continually revised and expanded to try to improve coordination between bank supervisors, and to ensure that banks’ international operations are monitored in an integrated way. However, recurrent crises have revealed the gaps, especially those created by the ‘offshore’ system; and this fatal flaw has continued despite the creation in 1980 of an Offshore Group of Banking Supervisors (OGBS), which has worked in conjunction with the BCBS. First in 1982 came the developing country debt crisis triggered by the Mexican default, and the failure of the Ambrosiano bank due to reckless euromarket operations, concealed through a Luxembourg holding company which escaped supervision (Herring and Litan 1995: 101). This led to a revision of the Concordat in 1983, to strengthen the supervision of bank groups on a consolidated basis.

Even as this was being negotiated, a fresh crisis was brewing which showed its inadequacies, with the final collapse in 1991 of the Bank for Credit and Commerce International (BCCI). BCCI had been ‘carefully structured … to avoid consolidated supervision in all the countries in which it did business’ by using subsidiaries in Luxembourg and the Cayman Islands, though it was run from London and Pakistan (Herring and Litan 1995: 104, Bingham 1992, Alford 1992). A new standard issued in 1992 stressed the need to identify a clear home-
country authority capable of supervising groups on a consolidated basis, with adequate arrangements for obtaining information from others involved. This was further strengthened in 1996 by a report, issued jointly with the OGBS, setting out 29 recommendations relating to obtaining and sharing information, and procedures for on-site inspection in host countries by home country supervisors.

This still left open the question of groups engaged in both banking and financial market operations, which was starkly illustrated by the collapse of Barings Bank in 1995, due to inadequately monitored futures market operations based in Singapore (BBS 1995, Gapper 1996, Singapore 1995, Zhang 1995). The Barings debacle accelerated the attempts at coordination between banking and financial market supervisors, with the formation in 1996 of the Joint Forum, linking the BCBS with the International Organisation of Securities Commissions (IOSCO) and the International Association of Insurance Supervisors (IAIS). This has focused mainly on trying to coordinate substantive standards on capital requirements for all types of financial firms, which the BCBS had been working on for banks since the 1980s.

The substantive standards for capital provisioning developed by the BCBS supplemented the procedures for coordination between supervisors. Actually, the formalization of capital requirements largely resulted from the emergence of internationalized financial markets, prior to which central banks used more direct means of ensuring that banks under their supervision were sound, such as requiring them to hold deposits in the central bank, and controlling their lending. These did not apply to international banking activities, but when the US authorities became concerned at the lack of any reserve requirements for Eurodollar banking by the end of the 1970s, they initially found little support for international convergence of capital requirements (Kapstein 1994: 108). In 1981 they yielded to pressure from large US banks to create an International Banking Facility in New York, but this failed in its intention to pressurise the UK to move towards stronger international coordination, and instead brought New York into the offshore banking system (Hawley 1984). The pressure for convergence grew again after US reserve requirements were reviewed following the failure of Continental Illinois Bank in 1984, and convergence was facilitated by the US adoption of risk-based capital requirements similar to those of the UK and others. This led to a bilateral agreement with the Bank of England, extended to Japan, and paving the way for the adoption by the BCBS of an international standard for bank capital, issued as the Basel Accord of 1988 (Kapstein 1994: 106-119, Murphy 2004: ch.5).

The Accord was eventually combined with the Concordat, following an extensive process of consultation with bank regulators outside the G10, into the Basel Core Principles issued in 1997, which link the minimum procedural requirements for supervision with the substantive capital adequacy standards.

2.2 Public-Private Regulatory Networks

The new forms of regulation of internationalised finance have produced a multiplicity of regulatory bodies, interacting through a veritable maze of networks, national, international, international, international.

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5 This was consolidated by the joint move of the US and the UK in 1984 to bring Eurobond flotations 'onshore' by allowing payment of interest gross provided that the paying agent certifies that the recipient is a non-resident (Picciotto 1992: 168); despite proposals to end this, it still continues.
infranational and supranational. The interactions between these bodies makes it difficult to attain any degree of functional cooperation, and their specialized character creates new tensions between technocracy and political accountability, with considerable problems of legitimacy. Although the regulatory agencies and their networks are fragmented and often competing, they can be said to form a ‘policy community’. However, this is dominated by the needs and perspectives of the financial firms themselves, expressed through the various industry representatives, think-tanks and lobby groups, and reinforced by the revolving doors which allow senior bankers to move between government advisory positions or Ministries to the City or Wall St. Given also the ‘many possibilities for innovative avoidance of regulatory provisions’ this inevitably ‘enhances the dependence of the official agencies on the industry’ (Underhill 1997: 25).

A significant characteristic has been the importance of regulation by private organizations, or quasi-public bodies often given independent powers, although authorized by the state. For example, a major role is played by exchanges and clearing houses in formulating standard contracts and regulating the terms on which they are traded, including margin requirements and settlement arrangements (Lee 1998). They also try to coordinate their regulation of markets internationally through cooperation agreements (usually in the form of MOUs), which include provisions for information exchange and cooperation, for example in monitoring large trades. Whether they are run as mutual organizations by their members or as independent entities, their main aim is to achieve growth in trading volume and membership, so they have little incentive to crack down on activities which may harm outsiders or damage the financial system.

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, are also governed by private associations, notably through the standard form contracts of the International Swaps and Derivatives Association (ISDA). These are backed by its private arbitration procedures, and supported by national legislation and rulings to ensure their enforcement (Partnoy 2002: 217). 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.

A key role has also been played by the credit rating agencies (CRAs) such as Moody’s and Standard & Poor’s, which evaluate financial instruments and the creditworthiness of their issuers, both firms and governments (Sinclair 2005). These agencies, although private and profit-making companies, have in practice been given an official status, since their ratings...
have important regulatory consequences. Hence, they form in effect a state-backed oligopoly. However, their private interest in expanding the market for their services meant that, in the words of Frank Partnoy, they became ‘more like gate openers than gate-keepers’, especially in the development of new forms of structured finance (Partnoy 2006: 60, see also Aguesse 2007). Despite debates in the US following the Enron affair, no significant moves were made to establish tighter controls on the CRAs, and their failures contributed significantly to the bubble in mortgage finance and the crisis of 2007-8 (Davies and Green 2008: 68-71, Mason and Rosner 2008, BIS 2009: 8-9).

Another important issue which has been substantially delegated to a private body has been the development of international accounting standards. The International Accounting Standards Committee (IASC) was formed as a professional body in 1973, following difficulties in reaching political decisions in conflicts over a proposed EU Directive on company accounts. The IASC tried to reconcile different national reporting systems (including the US Generally Accepted Accounting Principles – GAAP) by publishing International Accounting Standards. In the 1980s the IASC skilfully linked up with both international bodies such as the BIS and IOSCO as well as national authorities, aiming mainly to ensure acceptability of its standards to stock exchanges and financial market supervisors (Botzem and Quack 2006). As its work gained importance and visibility, it was reorganized in 2001, to try to balance the involvement of the preparers (large accounting firms) and users (finance and corporate interests) of accounts, by establishing the International Accountancy Standards Board (IASB), operating under a private non-profit Foundation, and aiming to broaden the basis of its funding, and hence accountability. It has also sought to enhance the legitimacy of its standards by using a ‘due process’ of consultation, modelled on that of the US Financial Accounting Standards Board (Botzem and Quack 2006: 283). Audit standards are still solely set by the accountancy industry for itself, through the International Auditing and Assurance Standards Board, a technical committee of the International Federation of Accountants; and some have suggested that the IASC or an analogous body should take over this role (Davies and Green 2008: 220).

Although it is a private body, the IASB has become an important mediator for contests between national and stakeholder interests over issues which are not merely technical but have important economic and political ramifications (Botzem and Quack 2006, Nölke and Perry 2006, De Bellis 2006, Mattli and Büthe 2005). It achieved a notable success when the European Commission decided not to proceed with its own revisions of EU accounting standards, and instead the IASB’s standards have been given formal legal force in the EU under Regulation 1606/2002, establishing a procedure for adoption of those standards and requiring companies listing any security on an EU market to use such adopted standards. The IASB standards have further reinforced the trend to financialization by shifting away from historic cost towards ‘fair value’ accounting, involving bringing intangibles on to the balance sheet and a ‘mark-to-market’ basis for valuing financial assets (Perry and Nölke 2006).

The multiplicity of regulatory bodies creates significant problems of coordination. Indeed, supervision of global financial institutions and markets has been beset by conflicts and ‘turf battles’, both between authorities in different countries and between different kinds of

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9 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 recognised rating agency, and for most of the period since then only three such firms have been recognised (White 2009: 392). The Basel II Capital Standards Framework (paras 90-108) gave responsibility to national regulators for recognising whether an ‘external credit assessment institution’ (ECAI) meets the criteria which it lays down, and its capital requirements are dependent on the ratings given by recognised ECAIs.
supervisors and regulators. This is especially the case in the US, where banking has four distinct federal regulators, as well as regulators at the state level, while financial derivatives are regulated by both the Commodity Futures Trading Commission and the Securities and Exchange Commission (SEC), whose rivalries are legendary (Coffee 1995). In Europe, bank and financial market regulation remains at the national level, although within a coordinated regulatory framework of Directives aiming at market liberalization. Hence, it is based on a stronger version of the BCBS’s home state supervision principle, to provide a ‘single passport’ for firms to enter markets, although host states may regulate their markets, e.g. to provide consumer protection. It is also loosely coordinated through EU ‘comitology’ networks, involving finance ministry officials, central banks and bank supervisors, as well as regulators of other financial services providers.

The problems of international coordination of regulatory networks are well illustrated by the responses to the issue of tax havens and offshore financial centres. Concern about the use of these jurisdictions for money-laundering led to the setting up of the Financial Action Task Force (FATF), which was formed in 1989 as an initiative of the G7, but actually housed at the OECD in Paris. Its work deals with similar issues to that of the OECD-CFA, for instance obstacles to exchange of information such as bank secrecy. Tax authorities would greatly benefit from being able to exchange information with agencies dealing with money-laundering, and this is possible at national level in some countries. Joint action might also be

10 Federally chartered banks are supervised by the Office of the Comptroller of the Currency, bank holding companies by the Federal Reserve, other deposit-taking institutions by the Office of Thrift Supervision, and the Federal Deposit Insurance Corporation has some supervisory authority for the deposit-taking institutions which it insures (US-GAO 2007:11); state regulators supervise state-chartered banks and thrifts (for an overview see Busch 2009: 54).

11 The possibility of a direct role for the European Central Bank in prudential supervision has been largely rejected, although under article 105.6 of the EU Treaty, the EU Council acting unanimously may ‘confer upon the ECB specific tasks concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings’; it has not done so, mainly due to the insistence of German governments that the ECB should remain focused on its primary target of monetary stability. Following the 2008 crisis another ‘high level group’ again examined the system and reported problems of coordination and recommended more consistency. It confirmed the view that the ECB should not become involved in micro-prudential supervision, but recommended an extension of its role to include macro-prudential supervision, to be coordinated with other agencies through another new body (De Larosière 2009). The result was the setting up in September 2009 of a European Systemic Risk Board (ESRB), and a European System of Financial Supervisors (ESFS), composed of national supervisors and three new European Supervisory Authorities for the banking, securities and insurance and occupational pensions sectors.

12 Davies and Green (2008: ch.4) provide a good account and analysis, focusing on the changes following on the financial services action plan launched in 1999 and the Lamfalussy Report of 2002.

13 It is in fact in the main OECD building, whereas the Fiscal Committee is in an Annex. The FATF established an international standard for anti-money-laundering (AML) regulations in its Forty Recommendations, issued in 1990. Although only ‘soft law’ they provided a very effective template for AML regulations which spread rapidly all around the world. They were revised in 1996 and especially 2003, following the 9/11 attack, extending AML to countering the financing of terrorism (CFT). The FATF now has 34 members, but also works in conjunction with related regional bodies, known as FSRBs, which have some overlapping membership with and are associate members or observers of the FATF. The OGBS is an observer in the FATF and evaluates observance by its members of FATF standards. Monitoring of the effectiveness of national AML-CFT regulation is done through regular ‘peer review’ visits and reports.

14 Notably, Australian Taxation Office officials have direct access to the extensive Australian Transaction Reports and Analysis Centre (Austrac) database, which is collected under AML legislation, and is more extensive than in most other countries, in that it includes all foreign exchange transactions of any amount anywhere in the world involving the Australian dollar. This enables systematic analyses of currency flows, to
helpful in putting pressure on jurisdictions which may be reluctant to accept or enforce regulatory standards. Yet cooperation between the FATF and the OECD-CFA has been minimal, probably because AML regulators consider that they would find it even more difficult to obtain information if it were known that tax authorities could have access to it. Practical cooperation between Financial Intelligence Units (FIUs) takes place through an even more informal (but nevertheless quite effective) body, the Egmont Group, formed in 1995. This in turn intersects with networks dealing with narcotic drugs (the UN Office on Drugs and Crime, UNODC) and corruption.

Financial and monetary regulation is the area of global governance in which the mushroom growth of regulatory networks has been probably the most active. Even when better coordination has been attempted, the result has been the creation of new bodies or networks. Thus, the initiative to reform the ‘international financial architecture’, following the financial crisis which started in Asia in 1997, resulted in the creation of the Financial Stability Forum (FSF), once again as a political initiative through the G7. The FSF has attempted to improve the international coordination of the plethora of regulatory standards developed by international bodies related to finance, mainly by identifying a Compendium of financial standards and codes. Compliance with these has been monitored by an enhanced form of peer-review mainly organized through the IMF, producing Reports on Observance of Standards and Codes (ROSCs). In practice, the creation of the FSF added another node in the complex regulatory networks. The FSF also prompted the creation of new international networks, notably the International Association of Deposit Insurers, established in 2002, also based at the BIS in Basel, which however seems to have had limited success so far in improving harmonization and coordination of LLR support (Davies and Green 2008: 52).

Although international networks have facilitated the diffusion of regulatory forms and practices and their coordination, this has been in the context of competition between financial centres and national economies to maintain or develop their own markets. The complex

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15 This grew significantly after the increased concerns about terrorist financing, from 69 members in 2002 to 108 by 2008 (Annual Report 2008, available from www.egmontgroup.org). The links between money laundering and tax evasion are illustrated in some of the ‘sanitized cases’ in a report published by the Egmont Group in 2000 (Egmont 2000).

16 Due to political sensitivities, there is no intergovernmental organization dealing with this, and the NGO Transparency International was set up by former World Bank staff, largely in reaction to constraints felt by the WB about interference in the internal politics of states.

17 The FSF (renamed the Financial Stability Board after the 2008 crisis) brought together regulators responsible for financial stability, led by central bankers, and is housed at the BIS. It reports to the IMF’s International Monetary and Financial Committee, and the actual monitoring of the extent to which jurisdictions comply with the standards and codes was taken on by the IMF and World Bank (WB). Since 1999 IMF and WB staff have conducted regular reviews to produce ROSCs on compliance with the FSF standards. The ROSCs cover the main financial centres, extended in 2000 to all OFCs even if not IMF members. However, they do not include a review of the centres’ cooperation in tax enforcement, which was referred to the OECD-CFA. After 9/11 the ROSCs were extended to cover compliance with AML-CFT standards, monitored by the FATF (or its related regional bodies). However, the IMF strongly opposed the use of public name-and-shame methods such as ‘blacklisting’, and dissuaded the FATF from using them, although there was considerable evidence of their effectiveness, due to the sensitivity of OFCs to reputational damage (Sharman 2006: 101-126, 155-56). This has enabled OFCs to use the ROSCs as a seal of approval of their ‘high’ standards in financial supervision, while continuing to maintain strict fiscal and financial secrecy, thus facilitating regulatory and tax avoidance.
interactions between regulators multiplied rapidly as the shift to market-based finance broke down structural barriers and created competition between different types of intermediary (retail and investment banks, insurance companies, and other financial services providers), and produced concentration into financial conglomerates.

2.3 Financial Innovation and Regulatory Arbitrage

The Basel Accord allowed for some flexibility in capital requirements by assigning weightings to different categories of assets. This enabled it to go beyond credit (counterparty) risks to take account of market risks, which became important as banks became heavily involved in market-based finance. However, the capital adequacy régime itself stimulated the development of new financial techniques, involving the ‘securitization’ of loans, and a shift to disintermediation and market-based finance (Calaby 1989). Following its introduction there was indeed an explosion of innovation in the creation of ever more complex financial instruments, especially techniques for shifting and managing risk.

This in effect created markets in risk. The main methods have been the use of financial derivatives, especially credit derivatives and swaps; and the bundling together of packages of securitized loans, allowing them to be moved off the balance sheet to special purpose vehicles (SPVs) or Special Investment Vehicles and sold off to other investors.

In the early years after the invention of financial derivatives in the 1970s concerns were raised that at least some of these instruments would fuel speculation and lead to ‘casino capitalism’ (Strange 1986: 113-119), and this debate occasionally surfaced again especially during crises. In the days of commodity derivatives, Keynesian economists pointed out the potential for excessive speculation resulting from the shift from simple forwards contracts to systematic trading of standardized futures on organized exchanges. However, derivatives in physical commodities could be justified by the need to manage and finance inventories in the face of uncertainties of crops due to the vagaries of nature (Williams 1986). The lack of any such justification for financial derivatives strongly suggested a need for a much more cautious approach to them, especially as speculation can be greatly magnified by leverage. Nevertheless the blanket justification was accepted that they helped to manage risk and reduce the cost of finance, despite recurrent incidents of major losses attributable to them (Kuprianov 1995).

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18 The initial step for structured credit was the use of securitization to create Asset-Backed Securities, consisting of a package of assets producing a cash flow; these were often loans or bonds, vested in a specially created corporate vehicle and used to back the issuance of notes, and known as Collateralized Debt Obligations (CDOs). This technique was then combined with credit derivatives, by bundling together a package of credit default swaps (CDSs), known as synthetic CDOs, pioneered by investment bank J. P. Morgan in 1997 with its Bistro (Broad Index Secured Trust Offering). This combined the credit risk of a range of corporate bonds, which since they carried varied risks of default, was considered to spread the risk, which could be further ‘sliced and diced’ into senior, mezzanine and junior tranches. The same technique was then applied to residential or commercial mortgages to create Mortgage Backed Securities, the lowest grade of which were termed sub-prime. Although the innovators at JP Morgan decided not to venture into this market, mainly because the lack of historical data on mortgage defaults made it impossible to predict correlation, which was central to the VaR model (Tett 2009: 62-82; MacKenzie 2009), it grew rapidly from 1999 (for UK data see Turner 2009: 14).

19 Campbell and Picciotto 2000; when we delivered this paper at a conference in 1999, the response of a financial economist was that financial derivatives were ‘not different from baked beans’.
Not only that, but derivatives trading was allowed to expand exponentially, away from exchanges, which at least provide some transparency, into totally opaque OTC markets. Regulation focused on dealing with their potential consequences. This gave free rein, indeed encouragement, to the financial rocket-scientists to devise the ever more elaborate instruments, especially synthetic CDOs which, as many only too late realized, became so complex and opaque as to defeat effective valuation. Indeed, socio-economic research suggests that the uncertainty and ambiguity inherent in credit derivatives, whose value depends on the occurrence of a specified event, is the reason that they remained privately traded between a small group of banks, despite the efforts of powerful lobbies and ‘cognitive and political communities’ led by the ISDA and ‘battalions’ of legal experts (Huault 2009).

The ‘originate and distribute’ model using SPVs was thought to reduce risk by spreading it, but since SPVs directly raised their own debt, financial leverage was greatly increased. Also, although creation of an SPV took the debt off the balance sheet of one firm, since a high proportion of the SPVs’ debt was bought by other banks and financial institutions, it was simply being circulated around the system, in effect creating what came to be known as a ‘shadow banking’ system. This generated incentives for lax practices in providing credit, since the individual debts were wrapped in a securitized package and immediately passed on to others. It also placed great reliance on the bond gradings by credit rating agencies, which however depended on information supplied by the issuers, who also paid the fees for the ratings.

The Basel capital standards therefore provided further encouragement for financial techniques motivated by avoidance or ‘regulatory arbitrage’ (US-GAO 2007:15), since many of the innovative financial instruments aimed to reduce the capital reserve requirement, which has a direct impact on the firm’s profitability. This was the main reason for the use of SPVs (Tett 2009: 114), because the originators of the loans retained only a contingent liability (dependent on the occurrence of specified ‘credit events’). It was also a major driver in the development of credit derivatives such as credit default swaps (CDSs), and credit insurance. By these means, capital requirements were greatly reduced or eliminated, enabling banks and other institutions to ramp up of the volume of lending sometimes to an enormous extent. This meant that counterparty credit risk had been converted to market risk. Amendments of the Basel standard were therefore proposed in 1994-5 to deal with off-balance sheet items and market risks resulting from trading activities. This began the shift towards allowing banks to use their own internal models to determine capital requirements, based on calculating ‘value at risk’ (VaR).

In parallel with this, the blurring or breaking of barriers between commercial banks and other financial firms also created concerns about competitive equality. Although a BCBS study

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20 The BIS has attempted to quantify OTC derivatives market activity since 1998 by surveys of market participants, on a 6-monthly basis; the most recent triannual report of December 2007 estimated that the total amounts 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).

21 Although the Basel II standards for approval of an ECAI included independence from political or economic pressures which may influence the rating, nothing was said at that time about the standard practice that the issuer paid the fee, and the competition between the oligopolistic rating agencies inevitably created pressures to give favourable ratings.

22 Ample evidence is provided in Gillian Tett’s detailed account, for example of how the CDS concept was regarded as having ‘pulled off a dance around the Basel rules’ (Tett 2009: 74). See also Huault 2009: 562.
argued that many factors other than regulatory differences affected competition (Jackson et al 1999), it must be accepted that regulatory requirements create incentives for regulatory arbitrage unless they apply equally to economically equivalent transactions (Kuritzkes et al. 2003: 148-150). Coordination between regulators of banks, financial markets, and insurance was taken up through the Joint Forum, where the ’building block’ approach of the BCBS created substantial disagreements (Steil 1994). The ’market risks’ amendments finally adopted in 1996 therefore offered two options, a standardized method (Basel I) and the internal models approach. The latter emerged fully-fledged as Basel II, entailing a shift from capital standards defined by supervisors to establishing criteria for the approval of risk-management systems of firms themselves. Indeed, approval of the risk model and capital provisioning was only one of the three pillars of Basel II, which also specified supervisory procedures, and market disciplines facilitated by transparency requirements.

The consultation process for the Basel II proposals was further extended by the need to improve and refine the standards to cope with the explosive growth of trading of increasingly complex financial derivatives. Although this was mainly driven by non-banks such as hedge funds, these created risks for the banking system by boosting their own funds with loans from investment banks and further leveraging this capital by using it as margin to take positions in derivatives involving enormous exposures. The dangers involved were brought home with the failure in September 1998 of Long Term Credit Management (LTCM), a hedge fund run by Wall Street’s top financial rocket-scientists,23 which triggered a rescue facilitated by the New York Reserve Bank. This showed that central banks might be obliged to provide lender-of-last resort (LLR) support to non-banks, due to the systemic risk created by banks’ involvement in their activities.

Basel II aimed to resolve the problems of rigidity of formal requirements, which are unresponsive to innovation or indeed tend to encourage regulatory avoidance, by harnessing regulatory standards to the firms’ own risk management tools. This more ’reflexive’ approach has some advantages, for example allowing the inclusion of a wider range of risks, not only market but also ’operational’ risks (resulting from system or managerial failures such as ’rogue traders’).

However, Basel II carries its own dangers, since it involves a reversion to self-regulation. In encouraging firms to adopt sophisticated risk modelling, regulators `struggled to balance incentives (in the form of permissible capital reductions) for banks that adopt the advanced risk measurement approaches with the objective of broadly maintaining the aggregate level of minimum required capital’ (US-GAO 2007: 22). Indeed, the introduction of Basel II in the US

23 Led by Wall Street veteran John Meriwether, LTCM’s partners included Robert Merton, the Nobel-prizewinning economist who devised the Black-Scholes model for valuing financial derivatives. Following its collapse, a document leaked from the Swiss bank UBS showed that it had estimated that LTCM was leveraged at least 250 times - 27.2 times on balance sheet but an undisclosed amount off balance sheet; nevertheless, UBS had ignored its own lending guidelines, resulting in a loss of SwFr 950m (Treanor and Tran 1998). The BCBS report following the affair estimated the size of LTCM’s total assets at $125bn, but its notional off-balance-sheet positions at well over $1tr.; while its leverage ratio was 25:1 in early 1998, without taking account of derivatives. While LTCM’s size, leverage, and secretiveness ‘may have made it a unique case’, competition had led financial institutions to ’compromise important aspects of the risk-management process’, especially by offering generous terms on margins for OTC derivatives (BCBS 1999: 10). Although this extremely high leverage was the source of the problem, the direct causes were more complex: Donald MacKenzie’s detailed analysis suggests that the decisive factor was that emulation of LTCM’s trading model by others created a ‘superportfolio’, and that as Russia’s default on ruble-denominated bonds caused traders to sell other assets, it created a self-fulfilling spiral which dried up even LTCM’s immense resources of liquidity (MacKenzie 2006: 218-241).
was delayed by studies which showed that it would result in substantial reductions in minimum capital requirements (ibid.: 26). This does indeed seem to have been the result in the UK, which was an early adopter, as shown by the case of Northern Rock.

The use of risk models also runs the danger of creating self-reinforcing practices among firms and practitioners, and their effectiveness greatly depends on the validity of the models used and the mathematical and statistical techniques on which they are based, in particular the reliance on probabilities based on historical data and systems of backtesting. The establishment of detailed parameters for backtesting took international regulators into even more difficult and arcane regions, and indeed some specialists suggested that the risk modelling should be left to the banks (Rochet 2008: 31).

A fundamental objection is that VaR combined two formalist theories in a way that compounds the errors of both. On the one hand it accepts the assumptions of efficient market theory put forward by financial economists (originated by Eugene Fama of Chicago): that prices of traded assets efficiently reflect all relevant information. Although held with fervour by many financial practitioners, it is a justification for financial markets rather than a description of their actual workings. These assumptions were combined with mathematical techniques using historical data to estimate correlation probabilities (e.g. of default) based on Gaussian statistical modelling which assumes random distributions.

The assumptions of both of these theories have been strongly criticized. Micro-sociological and anthropological studies of financial markets show that traders react to conventional signals or even rumour and panic, since their main aim is to anticipate market movements. Such observations are consonant with the perceptions of behaviouralist economists and others about market volatility due to herd behaviour, or ‘self-reinforcing positive feedback processes’. Statistical techniques based on assumptions of random distributions have been

24 The so-called Value at Risk (VAR) models became publicised in October 1994 when investment JP Morgan made available over the internet its RiskMetrics system and the data needed to apply it. Although financial economists argued that they are consonant with portfolio theory (Dowd 1998), they were strongly criticized, notably by Naseem Taleb, for ignoring the effects of low-probability high-impact events, so-called ‘black swans’.

25 In practice, as Donald MacKenzie points out ‘Probably a majority of the finance theorists … have had some involvement in practical activity that would make no sense if the efficient-market hypothesis were taken to be an entirely accurate model of markets’. This is true also of other basic building blocks of derivatives, the Capital Asset Pricing Model (CAPM) and the Black-Scholes option pricing model; indeed Black himself ‘delighted in pointing out “the holes in Black-Scholes” ’ (MacKenzie 2006:248). MacKenzie examines in detail how these techniques helped to construct financial markets, based on a ‘performativity’ theory, which he suggests flows from ‘the cognitive limitations of human beings’, so that ‘economic action involves distributed cognition’ (ibid.: 265). A study based on similar methodology by Huault and Rainelli-Le Montagner (2009) of credit derivatives argues that the efforts of a powerful ‘cognitive and political community’ failed to produce an open market in these instruments due to their inherent uncertainty, suggesting that there is a limit to the financial theory of risk, and to the ability of technical specialists to create practices through ‘performance’.

26 Traders on a wide variety of financial markets focus on the release of US non-farm payroll employment data, which is self-reinforcingly assumed to be an indicator of likely market movements.

27 The noted practitioner, George Soros, argues that participants seek both to understand and to influence markets on the basis of their perceptions (which he terms ‘reflexivity’); hence markets operate with a prevailing bias which is self-validating but eventually self-defeating, causing booms and busts (Soros 1987/2003). The ways in which perceptions and the general cultural climate contributed to the ‘irrational exuberance’ that fed the bubble were also pointed out by Robert Shiller (2000).
challenged by Benoit Mandelbrot, who has shown that real-world events are not random but tend to cluster, and in particular that financial market movements have a higher probability of reflecting recent behaviour, hence they move in cycles. Thus, VaR risk management models based on a combination of the efficient market hypothesis and random distribution probability theory will be poor predictors of cyclical market movements. 28

2.4 The Crash and its Lessons

The crash took place just as the Basel II standard was beginning to be implemented. The immediate response of regulators was to affirm that this ‘market turmoil’ underlined the importance of Basel II, while accepting that it required further amendments (Wellink 2008). In effect, by the end of 2009 the BCBS had put forward a programme to strengthen the regulatory capital framework, involving counter-cyclical capital standards (to promote the build-up of capital buffers during boom periods that can be drawn down in periods of stress); increased capital requirements for banks’ trading books; and to introduce a leverage ratio as a backstop to Basel II. 29

From the viewpoint of the regulatory authorities, it is understandable and perhaps justifiable to seek to learn the lessons of the crash by pressing on with Basel II, with further improvements. As pointed out above, Basel I created significant incentives for regulatory avoidance in ways which contributed substantially to the eventual crisis, especially the various devices for moving CDOs off-balance-sheet. 30 These initial responses nevertheless ducked serious questions about the Basel II and the existing approach to regulation. It was significant that the UK, which had led the way in introducing the Basel internal models approach, nevertheless experienced its first bank run for 130 years in 2007. Indeed, the bank in question, Northern Rock, despite being considered a ‘high impact firm’, was given a Basel II waiver at the end of June 2007, allowing it greater reliance on its internal risk model, on the grounds that it had been extensively stress-tested. On 25 July Northern Rock declared a 30% increase in its interim dividend because the waiver and other asset realizations meant that it had an ‘anticipated regulatory capital surplus over the next 3 to 4 years’. Unfortunately, the scenarios used in the stress tests did not include what was in fact actually happening even as the waiver was granted. Within a couple of weeks Northern Rock faced a collapse of the mortgage-backed securities market and an extended drying up of liquidity in interbank...

28 See Cooper 2008: 143-151. These views have gained increased salience in some official reports following the crisis, see e.g. Turner 2009: 39-42, 44-5; BIS 2009: 9-10.

29 BCBS 2009. Some of the measures required coordination with other standards: notably, the counter-cyclical capital standards would run counter to the mark-to-market approach of the IASB, so the BCBS urged the adoption of an Expected Loss approach to debt provisioning to ‘address the deficiencies of the incurred loss approach without introducing an expansion of fair value accounting’ (Press Release of Group of Central Bank Governors and Heads of Supervision, the governing body of the BCBS, 11 Jan. 2010, http://www.bis.org/press/p100111.htm).

30 Those who have recognised potential problems with risk-based capital requirements, especially due to the additional risk introduced by the risk models themselves, have suggested that they be supplemented, for example by a simple leverage ratio requirement; however, a leverage ratio would be pro-cyclical, and would encourage the use of off-balance-sheet devices (Hildebrand 2008). The US authorities had in any case intended to retain a simple leverage ratio requirement as a complement to the Basel ratios (US-GAO 2007). They also propose to allow banks the option of a ‘standardized’ version of Basel II, which essentially means sticking with Basel I; it is likely that the vast majority (all but a dozen or less) would do so, both because of the complexity and costs of introducing internal risk models, but also because the capital requirement seems likely to be lower, due largely to a different method of quantifying operational risk (Rubin 2008).
lending, and in mid-August was forced to approach the Bank of England for support. The announcement of a rescue on 13 September started a panic which eventually resulted in the nationalization of the bank (UK Treasury Committee 2008).

There were clearly many aspects and contributory factors to the crisis, and there are many lessons to be learned. These include economic, political, social, and moral issues, which go well beyond those of legal regulation. The focus here is specifically on international regulatory coordination and standards.

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 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 immense losses will fall 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.

2.5 A New Approach to Financial Regulation?

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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. As the analysis and account in this paper have shown, liberalization of financial markets since the 1970s has 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 very generously rewarded through profit-sharing and bonus schemes if they are successful. In effect, they are able to make bets from which they cannot lose, which is inevitably a strong incentive for gambling. 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 due to the systemic danger when they fail (e.g. LTCM, discussed above). 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. The measures taken to reform the financial system, which will take some time to unfold and become embedded, should be judged in terms of whether these perverse incentives are removed.

A strong case can be made for movement towards new forms of social ownership and accountability for financial institutions. These could build on historic forms such as mutual and cooperative ownership (Kotlikoff 2010). This would ensure some check on money managers, and more active monitoring should be possible even by shareholders, such as the large institutional investors, especially pension funds (Blackburn 2002: 487-90). This type of structural change would go a long way to putting finance on a new footing, although it should be supplemented by regulation. Such regulation can establish a framework of social objectives, within which managers should be free to take investment decisions based on criteria of efficient resource allocation (ibid.: 490). Central to such social objectives should be financial stability; but as the financial crisis has shown, several factors contributed to excessive risk-taking. The central consideration should be to define property rights and state support in ways which create incentives for caution rather than risk-taking.

A new approach should therefore go beyond proposals for specific regulatory reform to consider the interactions of the various aspects of regulation and their systemic implications. This is especially challenging because finance has become both interconnected and complex. The rescue of failing firms has created fewer and larger financial conglomerates, and even smaller firms are highly interconnected. Hence, the mega-firms may be too large and complex to be able to manage their own risk adequately, yet too big to be allowed to fail, while the smaller ones may be too interconnected with the system as a whole to let fail (BIS 2009: 120). Integrated finance may have advantages in helping to spread risk, but as the crisis has shown only too starkly, it can also act as a transmission mechanism for risk. This raised the question of whether the future financial system should have a clearer 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, and if such provisions are enacted they will undoubtedly create a new terrain of contestation.

Regulators who mainly focus on prudential supervision of firms inevitably emphasize reform of capital requirements. This attempts to learn the lessons of the crisis in particular to introduce counter-cyclicality and to tighten up the provisioning for market risk and the trading book, which will result in much higher minimum capital ratios. However, as was pointed out in the Turner Report, there needs to be a more fundamental evaluation of how the levels of capital provisioning are determined, based on principles rather than pragmatism (Turner 2009: 53-58). National regulators need not wait for international agreement through the BCBS, and should in any case remember that the Basel standards are supposed to be minimum standards, and should learn from the success of countries such as India and Spain, which avoided the worse of the financial crash due to having adopted higher requirements. Capital standards are
only one of the three pillars of Basel, and should be supplemented by rigorous supervisory reviews of firms (the second pillar). The third pillar of Basel, 'market discipline' needs more radical reform, since it is now clear that much more needs to be done to introduce transparency. This relates to the other two aspects of regulation, of markets and instruments.

Ensuring safety of markets centres on a fundamental reform of OTC trading, to introduce transparency in place of the totally opaque and private system which was allowed to mushroom. In principle, this should involve central counterparties and trading on a public platform, although not necessarily a full-blown exchange, which would generate its own momentum and vested interests. Not surprisingly, proposals requiring this especially in the USA quickly ran into determined opposition. Even if such legislation is enacted, it is likely to exclude some types of bespoke instruments from the transparency obligations, which would open up a new area of regulatory contestation. Nevertheless, transparency is clearly the only way to prevent contagion leading to liquidity crises due to lack of knowledge about exposures. It has also been proposed that the risks arising from interconnected and common exposures should be safeguarded against by introducing a systemic capital charge (BIS 2009: 129).

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 (Bell and Quiggin 2006: 646). 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 suggested such an approach, regulatory proposals have not emerged.

The greatest concern is inevitably about the enormous scale and cost of the bailouts. This has led to two main proposals. One is for a bank tax or levy, to finance a contingency fund which could pay for any eventual rescue. However, national Treasuries are unwilling to have such a potentially large fund sit idle, especially at a time of increasing fiscal crisis. Yet to use the proceeds of a bank tax to help alleviate current fiscal stringency would leave open the question of financing future bailouts. A second proposal is that financial firms should be required to draw up a 'living will', in the form of a 'plan for an orderly wind down of their activities', suggested amongst others by the Governor of the Bank of England (King 2009: 7). A similar proposal for 'resolution authority' was included in US legislative proposals in May 2010. However, unless such a requirement is linked to some clear reimbursement mechanism, it would still leave taxpayers bearing the ultimate cost of bailouts. Both the bank levy and the living will requirement have the major failing that they imply that a future crisis is inevitable, and do little to avert it.

31 This was proposed by the BIS (BIS 2009: 126-7), and even the Turner report accepted that direct regulation of both retail and wholesale financial products should be considered (Turner 2009: 106-110).
Perhaps the most important aspect of regulation has however remained little discussed: the circumstances in which state support should be provided for failing firms, and the terms for such support. The authorities should now explicitly identify the firms for which they accept ultimate responsibility, and finally abandon the long-discredited policy of ‘calculated ambiguity’ about their lender-of-last-resort function. Indeed, LLR support could become a keystone linking together the regulation of firms, markets and instruments. This should be done by making any guarantees of public support for financial firms which are deemed systemically important conditional on strict conditions on the type of financial intermediation in which they may engage. The aim should be to insulate the social financial intermediation system from financial speculation. Since licensed financial entities would only be permitted to deal in approved instruments, there could be no danger of primary financial markets moving ‘offshore’.

A similar approach should be adopted to other forms of speculation, such as hedge funds. Thus, financial firms backed by the public guarantee of LLR support should be prohibited from lending to hedge funds. By greatly contributing to the leverage of hedge funds, such loans facilitate market manipulation and further fuel financial volatility and instability, as well as creating systemic risk in the case of a hedge fund failure such as that of LTCM. There should also be a crack-down on the various methods of tax avoidance and evasion, to which a blind eye has been turned by national finance ministries for fear of losing out in the competition among financial centres. Without the benefit of the significant reduction in the cost of capital due to the public subsidies resulting from these two factors, hedge fund activity would sharply diminish or perhaps even die out. Current proposals for regulation such as those in the EU, based on licensing managers of ‘alternative’ investment funds, tackle 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. However, an excellent case can be made for devising an incentive structure which would make hedge fund and other money managers bear risks from their trading, rather than the present arrangements which generally allow them to benefit enormously from the upside, and lose nothing from the downside. This could be done by introducing legal liabilities which would ensure that they face personal responsibility for losses and failure, instead of being insulated by corporate limited liability (Hudson 2009: 854).

3. APPROPRIATION FROM NATURE: PHARMACEUTICALS, AGRIBUSINESS AND BIODIVERSITY

My second example is taken from an area of regulation more centrally concerned with the specification of property rights: intellectual property rights (IPRs). IPRs are a very peculiar institution. They are a grant by the state of exclusive rights over creations and inventions of the human mind, providing a monopoly to exploit intangible assets. The artificial scarcity created by state-enforced IPRs is in many ways inappropriate for knowledge-based assets,
since they do not deplete when shared. Yet IPRs have become formulated as private property, which give the right to exclude others from using an asset. As applied to ‘real’ property, this is commonly justified by the scarcity of natural resources. It is supported by a fetishized conception, based on the ‘natural’ characteristics of physical objects of property, which considers property as a thing, rather than a bundle of rights and obligations between people. However, property is better understood as a social institution, in particular because the right to exclude, which creates scarcity and hence rivalry, requires state action and support. This is especially so for IPRs, since they concern intangible objects; nevertheless, the fetishized conception carries over, reinforced by romantic notions of authorship (Boyle 1996).

Despite the weakness of the largely ideological grounds for justification of IPRs, the scope and term of protection has generally expanded since the late 19th century, when a multilateral framework for their protection was established, through the Paris and Berne Unions. The expansion of IP protection has taken place through a combination of lobbying and pressures by corporate interests, and creative interpretation and development of the legal principles by lawyers and technical specialists. This has been a central feature especially in the field which is the focus of this section, the extension of patent rights to appropriations from nature.

The key architects of the patent system have been the professional patent experts, who have usually combined specialist legal and technical expertise, and developed the fine skills of drafting patent specifications, so that they conceal more than they reveal while staking out as wide a claim as permissible (Dutton 1984, ch.5; Drahos and Braithwaite 2002). They have also played an important part in mediating between corporations, for example by devising and propounding mechanisms such as cross-licensing and patent pools (Verbeure 2009), as well as between commercial interests on the one hand and scientists and engineers on the other. Perhaps their key role has been as ‘creative ideologists’, expounding and proselytizing the virtues of the patent system, and exploring and developing its potential by interpreting and adapting its concepts.

3.1 Extending Appropriation: Isolation from Nature

This role has been most important in the expansion of the boundaries of patentability, especially by 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 20th century’s wonder drugs, aspirin, and penicillin (Temin 1979, 434). Hence, even in countries which did not exclude patents on medicines, they were not frequent until the second half of the 20th 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

35 In economists’ terms, they are non-rival.

36 It is sometimes said that patents were accepted quite early even for living organisms, citing the patents obtained by Louis Pasteur in the US in 1873, then in France and the UK; however, these were process patents, for a superior method of manufacturing yeast (Federico 1937).

37 The German firm Bayer could not obtain a patent for aspirin in Germany, which only allowed process patents; a UK application in 1898 was granted, but it was invalidated in an infringement suit in 1905, on the grounds that the claim showed ‘no element of invention or discovery beyond what was common knowledge’ (Jeffreys 2004, 88).
had been isolated from nature and purified to enable it to be ‘produced, distributed and administered in a practicable way’.38

The form of legal protection helped to shape and transform the industries. In the US from the 1950s the pharmaceutical firms began to make substantial investments in research for new drugs, which could obtain patent protection as products and thus generate economic rents, competing for market share through advertising prescription drugs to doctors, rather than on price (Temin 1979). At the same time 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. Other countries did not permit patents for pharmaceuticals, for example Italy,39 or they provided patent protection only for processes and not products. This encouraged manufacturers which produced low-cost ‘generic’ drugs based on traditional or familiar knowledge, or imitating others’ inventions. Such firms became especially important in some middle-income developing countries, such as India, Thailand and Brazil.

The ‘isolation’ principle was later used, initially in Germany, to justify the patentability of a micro-organism, rejecting arguments that natural and living matter could not be patented (Winter 1992). This was most famously decided by the US Supreme Court when it overturned a US patent office (USPTO) policy decision and granted protection to a genetically modified micro-organism able to absorb marine oil pollution in Diamond v. Chakrabarty (1980; see Daus 1981). The court’s decision was backed by the sweeping statement 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. It was reinforced by other measures, including the Bayh-Dole Act of 1980, which enabled and encouraged recipients of public research funds such as universities to patent and exploit innovations commercially (Coriat and Orsini 2002).

Biotechnology patenting in particular has become highly contested, on both technical patent law and ethical grounds, since these technologies involve human interventions in nature (Drahos 1999b, Sterckx 2000). Criticism of biotechnology patenting resulting from genetic engineering charged it with contributing to the commodification of life-forms and the ‘appropriation of life’, driven 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, rooted in concerns about scientists interfering with nature, evoking Frankenstein. These have resulted in many new regulatory provisions and arenas, interacting in various ways, not least in the

38 Temin 1979, 436. In fact this built on earlier case-law, notably the decision in Kuehmsted v. Farbenfabriken of Elberfeld Co (1910) upholding the US patent for aspirin (Drahos and Braithwaite 2002b, 463).

39 A successful challenge was brought by pharmaceutical companies in the constitutional court, on the grounds that the exclusion of medicines from patent protection was unfairly discriminatory (Grubb 1999, 67); the consequence seems to have been an increased propensity to use patents but not an increase in R&D (Scherer 1995).
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.

A particular area of contestation has been the impact of products containing genetically modified organisms (GMOs) on the environment and biodiversity, and on traditional farming practices. The owner of a patent on a transgenic plant or animal may be able to claim rights in the progeny of that organism, if it contains the patented gene; and use of the plant, seed, or animal can be governed by a licence rather than outright sale. A stark example of the power this provides is the way that agribusiness giant Monsanto aimed to dominate farming especially in North America, even after the patent for its Roundup herbicide expired in 2000, by developing ‘Roundup Ready’ seeds for herbicide-resistant crops such as cotton, corn, and soybeans. Farmers had to acquire these seeds under ‘technology user agreements’, requiring them to use Roundup herbicide, forbidding the re-planting of seeds from the plants, and giving Monsanto rights to inspect the farmer’s fields to monitor compliance (Bowring 2003, 69-70).

Attempting to maintain such control involves enormous legal resources: by 2005 Monsanto had investigated thousands of farmers, filed 90 lawsuits involving 147 farmers and 39 small businesses or farm companies, and had a staff of 75 engaged on this task (Centre for Food Safety 2005). A celebrated conflict with Canadian farmer Percy Schmeiser resulted in a majority decision in the Supreme Court of Canada, upholding Monsanto’s claim for patent infringement due to the presence of ‘Roundup Ready’ canola on Schmeiser’s land. Although Schmeiser had never bought the seeds, and claimed that they must have blown on to his land from nearby farms, a majority of the judges found that he knew or ought to have known that he had saved and planted seed containing the patented gene, and that in any case he sold the resulting crop also containing the patented gene. However, the court rejected Monsanto’s claim that he must pay their licence fee of $15 per acre, and awarded no damages, since his crop made no additional profit due to the presence of the gene. Schmeiser countered with a lawsuit against Monsanto for contaminating his land with unwanted plants, which was settled in 2008, with Monsanto agreeing to pay the costs of clearing his land.

TRIPS art. 27(2) allows states to exclude from patentability ‘inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect ordre public or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law’. This permission is based on the EPC art. 53(a) (with the addition of the word ‘commercial’), and is very tightly drawn, aiming as far as possible to insulate the issue of patentability from ethical or other concerns, so that they should be dealt with by separate regulatory regimes. However, given the commercial incentive which the patent system aims to provide, it is hard to detach ethical concerns, particular in relation to biotechnology. There were considerable contests over the EU’s Biotechnology Directive of 1998 (98/44/EC). In addition to a provision similar to TRIPS 27(2), it excluded ‘(a) processes for cloning human beings; (b) processes for modifying the germ line genetic identity of human beings; (c) uses of human embryos for industrial or commercial purposes; (d) processes for modifying the genetic identity of animals which are likely to cause them suffering without any substantial medical benefit to man or animal, and also animals resulting from such processes’. It also excluded ‘[t]he human body, at the various stages of its formation and development, and the simple discovery of one of its elements, including the sequence or partial sequence of a gene’, but permitted patenting of an ‘element isolated from the human body or otherwise produced by means of a technical process, including the sequence or partial sequence of a gene … even if the structure of that element is identical to that of a natural element’. It also established a European Group on Ethics in Science and New Technologies to evaluate ethical issues. See Romeo Casabona 1999 for a comparative survey of the regulation of the ethical issues.

Monsanto v. Schmeiser 2004. The interpretation that ownership of the gene also entitled Monsanto to any plant containing it was described as an ‘expansive doctrine’ by Prof. Vaver (ibid., para 80), and rejected in the dissenting judgment by Arbour, J.

3.2 Biotechnology Battles

The issue of biotechnology patenting came to a head with the controversy over patent applications for partially encoded gene sequences, known as expressed sequence tags (ESTs), resulting from the human genome project (HGP) funded by the National Institutes of Health (NIH), filed in the names of J. Craig Venter and others in 1991 and 1992. This produced opposition, most strongly expressed by Jim Watson, one of the pioneers of microbiology who was by then the NIH’s head of genome research, who described the applications as ‘sheer lunacy’. The view of Watson and many other scientists was that the identification of specific gene sequences involved no genuine novelty, since it had been done by an automated, computerized process; and no industrial utility could be shown, since the functions of the sequences were unknown; furthermore, patenting could damage international scientific collaboration (Sulston and Ferry 2002, 104-6). The applications also met with objections from the USPTO, and were withdrawn in 1994. The controversy continued, as Venter resigned from the NIH to pursue genomics research with private funding, and by 1998 he headed the privately-funded Celera Genomics, using an industrialized process for sequencing to compete with the HGP. The scientists urging that the HGP should remain a public project received support from Merck and other large pharmaceutical companies, funding from the Wellcome Trust, and high-profile political support from President Clinton and Prime Minister Blair. Nevertheless, Celera continued on its competing commercial track, claiming rights in its data.43

However, biotechnological knowledge posed significant problems for patentability, also because it has increasingly taken the form of information about nature, which would seem to come within the categories excluded from patentable subject matter: laws of nature, natural phenomena, and abstract ideas. An attempt to establish an internationally agreed standard for patentability of biotechnology inventions was made through the Trilateral Offices. They were wary of engaging in any substantive harmonization of standards, and in 1990 suspended work on biotechnology during the negotiations at WIPO and the WTO (discussed above). This was resumed after 1995, when each of the three offices was wrestling with the problem of ESTs, and in 1998-9 they conducted a joint ‘technical study’ on the patentability of DNA fragments.44

This Trilateral study helped the USPTO, also following a domestic consultation process, to issue a revised standard for the industrial utility requirement of patentability, which required applications to show ‘a specific and substantial utility that is credible’.45 Subject to this somewhat stricter criterion, the USPTO began granting patents for ESTs, and the patent offices in Europe and Japan have also done so, but even more cautiously. Nevertheless, many thousands of gene patents have been granted, although their validity remains contested, as is the case with the equally contested patents for business methods. In the US an important counterweight to the USPTO has been the CAFC, which has continued to relax patentability standards, in particular overturning the USPTO’s attempts to maintain or strengthen the novelty and utility requirements, justifying itself by the need to make the patent system ‘responsive to the needs of the modern world’.46 An opportunity for clarification by the US Supreme Court was turned down, when a majority of the Court declined to consider a case

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44 This account is based on Davies 2002, especially 156-161.

45 The EPO issued clarification of its regulation at about the same time (Davies 2002, 160).

about patentability of a diagnostic method (Lab. Corp of Am. v Metabolite 2006). The continuing uncertainty created even greater problems for science (Huys et al. 2009, 908-9), though perhaps not for lawyers.

These debates about patentability have reflected and mediated the tensions generated by the corporate competition to control commercialization of biotechnology, as well as affecting scientific interaction. For the biotechnology industry, patents became an important signal for financial market valuations of company share prices; but contests over patent grants and validity led to considerably volatility in these prices (Coriat and Orsi 2002, 1501). At the same time, some researchers argued that proliferation of patents (‘patent thickets’) was leading to an ‘anti-commons’, as owners of proprietary rights over upstream research tools could hinder, block or control downstream research and product development (Heller and Eisenberg 1998, OECD 2002).

Various means have been explored to overcome this problem. A major result has been a process of corporate concentration, notably in plant biotechnology, mainly by the acquisition of research-intensive start-ups by large chemicals firms such as Dow and DuPont (Hope 2008, 64). A radical alternative, termed the ‘biobazaar’ by Janet Hope (2008), is to use the ‘open source’ approach developed in the context of copyright for software (see below), aiming to take advantage of the virtues of peer-production or ‘democratized’ innovation (von Hippel 2005). A more limited solution is to provide an exception, for example for research or experimental use, which is done in many patent systems, although the scope for such exceptions can be unclear, and is narrow under the TRIPS agreement.

The middle ground, which builds on the existing patent system while significantly transforming it, entails moving from exclusivity of rights to compensation systems, using complex contracting or licensing (van Overwalle et al. 2006, van Overwalle 2009). This involves techniques such as patent pools, technology clearing houses, and collective or compulsory licensing systems. In effect, such techniques allow use without the need for seeking prior permission and agreement on the price and terms. Each of the mechanisms within this approach has its own advantages and difficulties. Some only postpone the problem of valuation, but royalty rates should be easier to agree once a commercial use has been developed than beforehand. Some forms of licensing overlap with open source, if they permit free use for non-commercial, research, or humanitarian purposes, or in developing countries.

3.3 Contesting Commodification, Property Rights and Access

Thus, the biotechnology revolution has sparked conflicts and debates, going well beyond the realm of patents, but also intersecting with it. The advances in biotechnology that accelerated rapidly from the 1970s enabled the isolation of genetic fragments, their cryogenic storage, and new forms of genetic manipulation. This has transformed the capacity to produce and reproduce plant, animal and human life-forms, notably the ability to transfer traits between

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47 Van Overwalle et al. 2006, 143. The conditions in TRIPS article 30 are referred to as the ‘3-step test’: exceptions must be limited, must ‘not unreasonably conflict with a normal exploitation of the patent’, and ‘not unreasonably prejudice the legitimate interests of the patent owner’. A WTO Panel upheld as consistent with TRIPS a Canadian provision allowing use for ‘purposes reasonably related to the submission of information required’ for regulatory purposes,; but it found inconsistent the exception permitting manufacture of articles intended for sale after the expiry of the patent (stockpiling): Canada – Pharmaceuticals 2000.

48 Notably, a medicines patent pool has been set up by UNITAID, set up in 2006 by Brazil, Chile, France, Norway and the UK, to finance purchases of drugs especially for HIV/AIDS, malaria and tuberculosis, financed by a tax on airline tickets, which has also received funding from the Gates Foundation.

49 For a proposed open licensing approach to university innovations to help solve the problems of access to medicines and the R&D gap with poor countries see Kapczynski et al 2005.
very different species. The drive of the bio-sciences firms to dominate the exploitation of these new possibilities has created complex new interactions between the appropriation and diffusion of knowledge, mediated by various regulatory arrangements and proposals.

3.3.1 Bioprospecting and Biopiracy

A particular international concern has been the controversial practice of ‘bio-prospecting’. Bio-prospectors have become active in searching out genetic resources, especially of developing countries which have high biodiversity. These practices also take 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. This is in many ways a further stage in the longer history of scientific and cultural imperialism. The collection of exotic species has long been one of the aims of imperial expeditions, and as botany became a more formal science in the 18th century, exploitation of the rich biodiversity of the countries of the South by the collection of botanical specimens, and the appropriation of traditional knowledge especially of medicine, became a central feature of colonial enterprise, led by respected figures such as Sir Joseph Banks (Schiebinger 2004).

There is a qualitative shift with the new biosciences, which involve novel methods for collecting and using plant, animal and human tissue samples, dissociated from the whole organism. Such genetic materials can now be made available in bio-banks or databases, for analysis to identify cell lines or genes with potentially useful traits, such as disease resistance. Such collections may be held by public bodies or private firms:

The US National Cancer Institute (NCI), for example, instituted collecting programmes in over 40 countries in the years from 1985-95, amassing a collection of 50,000 tissue samples and in excess of 114,000 different biochemical extracts. This collection is now housed in a dedicated repository in Frederick, Maryland, in 28 double-decker walk-in cryogenic storage freezers. Other similar-sized libraries of tissue samples and extracts are held by large corporations, such as Merck, Smith Kline Beecham, Bristol Myers Squibb, and Pfizer, and by smaller pharmaceutical companies. (Parry 2004a, 34; see also Parry 2004b).

As Parry explains, the NCI’s policy is to lend out its 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. However, 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.

New types of public-private interaction have clearly emerged, as well as controversial concepts of property rights and ownership, perhaps most starkly when the tissue samples come from a human person’s body. This was dramatized in the US case of Moore (1990), concerning patent rights to cell lines deriving from the spleen taken from a leukaemia patient without consent. The Supreme Court of California held that, while the non-consensual removal was a breach of the patient’s rights, he did not own either the body-parts or tissue which had been removed from him, or the genetic information derived from it; paradoxically, however, it confirmed the proprietary rights of the scientists, or rather of their university employer (Boyle 1996: 21-4, Gibson 2008: 95ff).

The claim to an exclusive private property right in such tissue samples obtained from nature rests, as we have seen, on the principle of ‘isolation’, as well as needing to satisfy the criteria for patentability discussed above: novelty, inventive step and industrial utility. Considerable
conflicts have emerged in relation to claims to inventions deriving from traditional knowledge, such as the medicinal or agricultural properties of plants, denounced as ‘biopiracy’. These were especially dramatized by 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 (Bagley 2003, Moyer-Henry 2008). A related patent was also granted by the 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, 281), although it took ten years to bring to a final positive conclusion (Bullard 2005). The greater success in Europe was due partly to different views of the novelty requirement: the EPO’s Board of Opposition accepted that evidence of the use of neem extracts by Indian farmers as a fungicide constituted prior public use. In contrast, US law’s public use test requires either written publication or open use within the USA; this effectively excludes knowledge based on oral traditions outside the USA. 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).

Significantly, however, the Opposition Board did not accept the argument that the neem patent would be contrary to ‘ordre public and morality’ since it would deprive the Indian people of their cultural heritage and natural resources (Dolder 2006, 586). Furthermore, the rejection by the EPO did not invalidate patents granted by national offices either in the EU or other countries, and one researcher found ‘360 published and/or granted patents based on neem’ (Moyer-Henry 2008, 5). However, some 20% of these listed at least one Indian claimant, including India’s Council for Scientific and Industrial Research, indicating an attempt by the Indian state to pre-empt claims by others (ibid., 6).

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 6% of the royalties (Moyer-Henry 2008).

Such cases revealed that there is no clear separation or opposition between the public domain and private property rights (Boyle 1996, 27-8). Firms in fields such as pharmaceuticals and agribusiness are very adept at managing the interactions between these spheres, to take advantage of knowledge which is available free in the public domain (and which may indeed have resulted from considerable public expenditure), and extract from it something which they can claim as private property. However, following conflicts such as those over the neem patents, the interactions became more complex. Interventions by activist groups and

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50 However, this did include a printed document published by Indian scientists in Australia, and the lawyer on behalf of the opponents to the patents has stressed that the EPO’s evidence requirement for prior public use is strict (Dolder 2006, 588).

51 See Bagley 2003, who argues that this is contrary to the US Constitution’s IP clause.
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 disfunction, or the yellow Mexican ‘enola’ bean.52

3.3.2 Controlling Access and Benefit Sharing

These different claims have also generated complex contestations over the nature and forms of property rights. The denunciation of biopiracy as a new extension of colonial plunder (Shiva 1997, Aoki 1998) resulted in moves to develop regimes for ‘benefit sharing’, especially by developing country governments. This principle was articulated in the Convention on Biological Diversity (CBD), agreed at the 1992 Rio Conference, with the stated purposes of:

the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

The CBD places states, and hence governments, firmly at the centre in managing these complex issues of fairness, rights, appropriate access, and compensation. Indeed, it has been criticized as ‘redrawing the commons in the shape of nation states’ (Hayden 2004, 120). Traditional peoples and communities may have concerns quite different from those of governments, for example to preserve the secrets of sacred knowledge, rather than benefit economically from its commercialization.

Developing country states have been quick to develop regimes for access and benefit sharing (ABS).53 Such systems include the Andean Community’s regional Common System on Access to Genetic Resources of 1996, which vested in the states the rights to all non-human genetic resources within the territory, making access dependent on permission and a benefit sharing agreement with the government. The Organization for African Unity adopted a model law in 2000; a Framework Agreement drafted by ASEAN at that time did not enter into force, but ASEAN members adopted their own national regulations, and a Centre for Biodiversity was set up in 1999. Legislation passed by India in 2002 requires foreigners to obtain prior approval from India's National Biodiversity Authority, while access by Indian resident citizens and corporations is governed by state biodiversity boards; the NBA is required to seek benefit-sharing, which may include benefits to individuals, groups or organizations from whom the material is obtained.

Attempts to use benefit-sharing arrangements to deal with potential conflicts between the commercialization of bioscience and traditional knowledge have not always been successful. For example, an early bioprospecting agreement in the Maya highlands of Chiapas in Mexico in 1998, one of a number developed under funding from the U.S. government's International Cooperative Biodiversity Groups, invested considerable resources into negotiating benefit-sharing with local communities, but was abandoned after strong opposition from a coalition of activist groups (Hayden 2003, Safrin 2004, 655-6). This and other conflicts demonstrated the difficulties of the idea of paying compensation to identifiable communities or groups in exchange for the grant of commercial rights. Indeed, the national ABS regimes have been

52 See e.g. Dutfield 2003, 31-2, and the website of the activist ETC Group http://www.etcgrooup.org/
criticized as disregarding the concerns and interests of communities, especially indigenous people, and exacerbating the problem of the ‘anti-commons’ for biotechnological innovations, while being in practice unenforceable (Safrin 2005). Bioprospectors frustrated by access restrictions can simply resort to other ‘public’ spaces (Hayden 2004).

The issue has been debated in a number of international arenas and networks. Developing countries have favoured the CBD (which has been ratified by 193 states, though not the USA), since it firmly recognizes benefit sharing, expects states to encourage conservation and sustainable use of biodiversity components, and specifies that there should be transfer of technology, including IPRs, to states which are providers of genetic resources, on mutually agreed terms. The CBD parties in 2002 agreed the non-binding Bonn Guidelines 2002, and embarked on negotiations for a Nagoya Protocol, which however have been fraught with conflicts. These concern especially whether benefit sharing should apply to resources acquired before the proposed treaty enters into force, and requirements for patent offices to verify the origins of genetic material in patent claims and monitor their use (IISD 2010).

WIPO conducted a ‘fact-finding mission’ in 1998-9, with a report published in 2001, and then set up an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. Looking at the issue from an IPR perspective, this Committee produced proposals dealing separately with ‘traditional cultural expressions (folklore)’ and ‘traditional knowledge’, and after a lengthy period of comment and discussion, began to work on a possible treaty, which might combine the two. Its work on traditional cultural expressions engages with fraught issues, including works of particular cultural or spiritual value or significance, involving various procedures and modes of protection, including both registration to protect from misappropriation, and secrecy. This perspective raises some fundamental questions about the relationship of modern concepts of IP to traditional cultural forms, especially of indigenous people; made even more intriguing by the radical impact of the new digital environment (see e.g. von Lewinsky 2008, Graber and Burri-Nenova 2008). WIPO’s work on traditional knowledge opened the opportunity for developing countries to propose methods by which patent law could both prevent appropriation of traditional knowledge and promote benefit sharing. In view of the overlap with TRIPS, these have mainly been pursued through the WTO.

Thus, the Doha negotiating mandate in 2001 asked the WTO’s Council for TRIPS to consider its relationship to the CBD, as part of the required review of TRIPS article 27. A proposal was promptly tabled by a developing country group proposing

that an applicant for a patent relating to biological materials or to traditional knowledge shall provide, as a condition to acquiring patent rights: (i) disclosure of the source and country of origin of the biological resource and of the traditional knowledge used in the invention; (ii) evidence of prior informed consent through approval of authorities under the relevant national regimes; and (iii) evidence of fair and equitable benefit sharing under the national regime of the country of origin. (Cited in Dutfield 2003, 22).

Not surprisingly, this led to protracted discussions and negotiations, and developed countries have remained opposed to linking patent rules to an ABS regime, which would also greatly strengthen enforcement of such a regime through the WTO dispute settlement process. Agreement has been difficult to reach even in the CBD, and although linking the issue to trade negotiations in the WTO offers the possibility of ‘bargain-linkage’, there seems to be no appetite for such a deal, even in the Doha Development Round.
However, some defensive measures are possible without formal international agreement. Some developing countries have established systems for registration and formal publication of traditional knowledge. Notably India has established a Traditional Knowledge Digital Library, a database of some 1,200 formulations based on 308 plants for treatments of 214 diseases, translated from ancient texts; and a Traditional Chinese Medicine Patent Database was set up by the Chinese Patent Office, containing over 22,000 records of patent literature with over 40,000 formulas. As the EPO announced in 2009, access to these databases will facilitate the task of examiners, and avoid expensive and lengthy opposition procedures such as those over the neem. Nevertheless, this does not prevent patent applications derived from such traditional knowledge, if they can claim an inventive step, and in particular if they are based on biotechnological isolation of the active genetic material or purification of active ingredients.

3.4 The Public Domain, Commons and Private Property

As we have seen, the extensions of private proprietary rights have entailed significant appropriations from the public domain, sometimes denounced as a new enclosure of the commons (Boyle 2003). However, as the processes we have examined have shown, both the nature of the public domain and its interaction with private property claims are fluid and contested. Indeed, the modern concept of the public domain, as a sphere of free circulation and debate of ideas and knowledge, developed together and in interaction with that of IPRs (Mark Rose 2003). However, its nature and even existence become contested if private rights can be appropriated on knowledge abstracted from the public domain. Hence, its recent weakening has led some commentators to call for a reconstitution or reimagining of the public domain (Arthurs 2001, Lange 2003).

First, however, it is important to clarify the nature of the public domain, and its relationship with systems of common or collective property. Although sometimes thought of as allowing unlimited access to all and use for any purpose, in fact unlike terra nullius commons have generally been subject to their own norms of access and use and protected from private appropriation. Roman law had several categories of public, common and collective property (Carol M. Rose 2003), and various traditional systems of common property may confine access to persons with a special status, such as shamans or healers, or for specific purposes, such as pasturing animals. Carol Rose has pointed out that in the old Anglo-American common law doctrines of trust, prescription and custom safeguarded various categories of public use of resources that, although capable of private appropriation, were thought to be of greater economic benefit if more generally available. Waldron has distinguished between regimes of collective property, in which use is governed by considerations of the collective social interest, and common property, to which all have access, but which require some method of allocation of use, though there is an overlap between these ideal types (Waldron 1988, 40-1). Collective property has since the 19th century generally involved state ownership, which has generally disintegrated in the past few decades. This has put great pressure on other forms of public property such as commons, but instead of strengthening them they have been weakened. For example, as we have seen many of the problems caused by bioprospecting

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57 Rose 1988; her detailed analysis shows how the fluid principles distinguished between rights of a general public in e.g. a road, and those of a more limited group or community, protected by prescriptive or common rights.
resulted from a ready acceptance of the principle of isolation from nature, and a weak
application of that of prior art. Indeed, there has been a paucity of debate on different ways of
shaping property rights, and the term property itself is commonly used as if it were
synonymous with private property.

Hence, the regulation of the commons, and especially of its interface with private property are
crucial and delicate. Natural resources, which were treated as common access because they
were considered inexhaustible or incapable of private appropriation, have been allowed to be
considered terra nullius rather than commons. As they became subject to intensification of
competition for differing uses, ecological concerns grew. There have also been increased
intrusions on resources governed by informal or traditional norms, such as those of
indigenous peoples. Concerns about such pressures were articulated by Garrett Hardin’s
article ‘The Tragedy of the Commons’ (1968), which had strong resonance. The article
focused especially on the impact of population growth on the planet’s finite resources, and it
has often mistakenly been used as an argument for stronger private property rights. Ironically,
however, Hardin’s call was for stronger public regulation even if it intrudes on private
freedoms.  58 However, out of the conflicts over private appropriation from the public domain,
new concepts of public property and the commons have begun to emerge.

3.5 Plant Breeders, Farmers and Biodiversity

A 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 20th 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, 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 (Winter 1992).

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, covering only
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, these exceptions have been narrowed by revisions of
UPOV especially in 1991, which extended PBRs to production, reproduction and propagation,
and extended protection to harvested material including plants and to essentially derived
varieties. 59 States are allowed to retain the farmers’ privilege, but only for farmers to
propagate for themselves; thus, exchange between farmers or commercialization of a
derivative variety require permission. In the meantime in the 1980s, following Diamond v.

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58 The article advocated ‘the necessity of abandoning the commons in breeding’, which of course has been
effectively, if drastically, carried out only by the Peoples’ Republic of China (Hardin 1968, 1248; see also
Hardin 1998).

59 Article 15 of the 1991 UPOV Act limits the exception to acts done for private and non-commercial purposes,
experimental purposes, and for breeding other varieties; and it permits a limited exception for farmers to
propagate only for themselves. Thus, exchange between farmers or commercialization of a derivative variety
require permission.
Chakrabarty, the USPTO began to grant ordinary utility patents to plants, and this was approved by a majority decision of the Supreme Court (*JEM Ag Supply v. Pioneer Hi-Bred* 2001). The 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 (Sterckx 2010).

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 (Ghijsen 2009). 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 (Helfer 2004). 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 or germplasm 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.

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’.

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60 Smolders 2005; Cullet (2001) evaluates the African model statute and the Indian legislation, shows the disadvantages of monopoly rights, and suggests an alternative which is TRIPS-compatible.

61 See [http://www.cgiar.org/who/history/origins.html](http://www.cgiar.org/who/history/origins.html). Its somewhat uncertain status was articulated in 2009 in a grand Joint Declaration, which states that it consists of the Consortium of 15 IARCs ‘with its funders, working with partners to implement an agreed strategy and results framework consistent with this Joint Declaration [which] is a non-binding statement of aspiration and intent’.

62 The term ‘common heritage of mankind’ is used in international law to denote areas regarded as beyond national sovereignty, in particular the moon, the resources of the deep seabed, and Antartica (Baslar 1998). However, the treaties governing these areas established regimes to govern them, whereas the 1983 Undertaking referred only to ‘international cooperation’ and ‘arrangements’ which should be developed. Safrin (2004, 645) argues that the lack of a regime indicates that the term was misused, and what was intended was to establish ‘international common property’; however, in view of the provisional nature of the Undertaking, it seems likely that it was hoped to establish a regime, and it is not clear that international law distinguishes between collective and common property. Indeed, the character of the deep seabed regime is far from clear, it has been the target of bioprospectors, and several hundred patents have been issued on organisms originating there (Prows 2006).

63 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](http://www.farmersrights.org/about/fr_history.html) accessed 2/05/2010.
and a later resolution in 1991 affirmed that the ‘common heritage’ principle was subject to state sovereignty over plant genetic resources. As we have seen, this was elaborated in the CBD 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. In one case, a disease-resistant gene was sequenced, cloned and patented in California, though derived from a wild rice variety from Mali, and identified by scientists in India and the Philippines; the California scientists consulted IP specialist John Barton, who devised a benefit-sharing arrangement for licensing the gene, to fund scholarships for students from Mali, though no income resulted (Gupta 2005, 81-102).

Following extensive negotiations, agreement was finally reached in 2001 on an International Treaty on Plant Genetic Resources for Food and Agriculture (IT-PGRFA), which entered into force in 2004. 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 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 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, 89, 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.

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 64 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 11 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

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64 An influential background role seems to have been played by an informal group known as the Keystone Dialogue, initiated by William Brown, then chair of the US National Board for Plant Genetic Resources, which issued a Final Consensus Report in 1991: see [http://www.farmersrights.org/about/fr_history_part3.html](http://www.farmersrights.org/about/fr_history_part3.html) (accessed 2/5/2010) and Prieto-Acosta 2006, 64.

65 Mekouar 2002, see [http://www.planttreaty.org/](http://www.planttreaty.org/); it now has 127 parties, not including China, Japan or the US (which was a signatory), but including the EU and its member states, as well as most developing countries.

apply if they transfer the material to others. They are that: (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;\(^67\) 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; this is compulsory if the product restricts further research and breeding. The basic royalty is specified as 1.1% less 30% of gross sales (in effect 0.68%). This income will flow into a Benefit Sharing Fund, to be used to finance projects under a Global Plan of Action adopted 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 (to be discussed in section 3), as some commentators have pointed out (Hope 2008, 306; Aoki 2009; Srinivas 2006).

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 ‘achieving sustainability in resource use requires the fusion of sacred with secular, formal with informal, and reductionist with holistic views’ (Gupta 2005, 31). He has proposed various ways to provide incentives and non-monetary benefits, as well as monetary remuneration, emphasizing that [i]ncentives for creating a sufficiently strong desire for experimentation will become embedded when modern institutions recognize, respect and reward the experiments done in the past’ (Gupta 2005, 29). However, as his practical experience has shown, this requires scientists to work closely with local communities, to encourage and support grassroots innovators.\(^68\) 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

\(^67\) 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/SMTFAQ.htm#c7](http://www.irri.org/grc/requests/SMTFAQ.htm#c7).

\(^68\) For more about this work see [www.sristi.org](http://www.sristi.org).
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.

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) patent pools, and the plant gene access and benefit-sharing system. 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 a new IP regime 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 dominant 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.

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