



Law, Social Justice & Global Development
(An Electronic Law Journal)

**Free Culture, Global Commons and Social Justice in
Information Technology Diffusion**

Abdul Paliwala,
Professor of Law,
School of Law,
University of Warwick

A.Paliwala@warwick.ac.uk

This is a **refereed article** published on: 6 December 2007

Citation: Paliwala, A, 'Free Culture, Global Commons and Social Justice in Information Technology Diffusion', 2007 (1) Law, Social Justice & Global Development Journal (LGD).
<http://www.go.warwick.ac.uk/elj/lgd/2007_1/paliwala>

Abstract

This paper examines the critical role of the global expansion of IP rights in the construction and maintenance of digital inequalities and suggests that the irresolution of the World Summit on Information Society (WSIS) as well as the struggles for a Development Agenda mark a crucial dimension in the global politics of digital inequalities. It suggests that a pathway to understanding these politics is a critical analysis of the nature of intellectual property rights in the context of a changing societal environment. Relations of production and hence human interaction are being transformed in ways which question the nature of property rights. It also suggests that arguments on this issue in developed countries take a different tenor in the Global South and require rethinking of issues such as sanctity of property, piracy and digital social justice.

Keywords: Information Technology, Digital Divide, Right to Development, Social Justice, World Summit on Information Society, WIPO Development Agenda, Intellectual Property, Piracy, Network Society, Network Modes of Production

.

Editor's Note

This paper is a slightly revised version of the paper with the same title in the [Journal of Information Law and Technology \(JILT\)](#) It is republished here with the kind permission of the JILT Editors.

1. Introduction

The World Summit on Information Society (WSIS, 2003, 2005) has suggested many solutions to the uneven global distribution of digital information and technology. Yet one area in which the deliberations were remarkably muted was on the issue of the role of intellectual property rights. In theory, these issues are being considered by the World Intellectual Property Organisation (WIPO) under its Development Agenda (Ermert 2005, New 2006, Endeshaw 2006), but there is more than a suspicion that they have been pushed under the carpet.

This paper examines the role of digital intellectual property rights in the global digital divide between developed, newly industrialising and developing countries from the perspective of developing countries of the Global South. It suggests that these issues need to be understood in the context of a critical analysis of intellectual property rights in a changing societal environment. The paper commences with a brief exploration of intellectual property rights in information technology at WSIS and WIPO. The next section addresses the question of the nature of change in production relations that has taken place in the Age of Information and the significance of Free and Open Source Software and Content (FOSS-C) movements. It then briefly considers the nature of digital inequalities in developing and newly industrialising countries. The final section considers the potential for digital social justice resulting from three different dimensions. The first is the application of arguments based on changed production and property relations in the South, the second explores the way in which people in developing countries are affecting their own solutions to digital divides through subversive strategies which involve porous relationships with legality and challenges to notions of sanctity of property and piracy. The final dimension is that of reformist arguments based on the Right to Development whether, the milder version proposed at WSIS or the more radical Development Agenda being proposed by the Group of 14 at WIPO.

2. TRIPS, WSIS and WIPO

The term Global Commons has become part of common parlance and intellectual property rights in information, bio- and nano-technologies are at the Centre of the argument about an 'invasion' of the commons (Austin 2005, Frischmann 2005, Faber 2005, Yu, 2005, Lessig, 2003). For developing countries, it is the TRIPS (Trade, Related Intellectual Property Rights) Agreement of the WTO which is responsible for the extension and globalisation of intellectual property rights (Correa, 2000). Of course in strict terms TRIPS allows each country to have its own property regime. Nevertheless, the requirement that the regimes must adopt certain principles is tantamount to the development of a global IP regime in its essentials. The globalisation has been on terms which have been largely dictated by developed countries, and effectively has overseen the imposition of US intellectual property principles on the rest of the world. Santos (2002, p165) uses the term 'globalised localism' to describe this process under which what is being developed is not a genuine global meeting of the minds, but the imposition of a particular local culture on the rest of the globe. Such an attempt was bound to face difficulties once the quid pro quo offered to countries of the Global South for accession to TRIPS did not materialise (especially appropriate agreements on agriculture). Once South countries

and NGOs supporting the South cause found the cost of TRIPS to be too high, agitation for fundamental reforms was bound to ensue. In this respect, the Doha Declaration of the WTO (2001) under which it was understood that the Public Health and emergency exceptions under Articles 8 and 31 of TRIPS would be interpreted liberally, was only one aspect of a more general concern with TRIPS. In the context of information technology, the issue is that the systems of regulation of trade and intellectual property rights are responsible for exacerbating digital divides between countries of the North and South.

The recent Tunis session of the *World Summit on Information Society* (WSIS, 2005) reaffirmed the *Declaration of Principles and Plan of Action* of the Geneva Session (WSIS, 2003) and proposed a wide range of measures on the bridging of global digital divides. For the purposes of this paper, a key principle of the Geneva Declaration was universal access to the infrastructure and services of the Information Society. This was to be struck through a balance between fair competition, private investment and universal access obligations. The key vehicles for this balance were to be promotion of public domain information and awareness of the possibilities offered by different software models, including proprietary, open-source and free software.

Thus the Geneva Declaration (WSIS, 2003) Suggested:

27. Access to information and knowledge can be promoted by increasing awareness among all stakeholders of the possibilities offered by different software models, including proprietary, open-source and free software, in order to increase competition, access by users, diversity of choice, and to enable all users to develop solutions which best meet their requirements. Affordable access to software should be considered as an important component of a truly inclusive Information Society.

29. Our conviction is that governments, the private sector, civil society, the scientific and academic community, and users can utilise various technologies and licensing models, including those developed under proprietary schemes and those developed under open-source and free modalities, in accordance with their interests and with the need to have reliable services and implement effective programmes for their people. Taking into account the importance of proprietary software in the markets of the countries, we reiterate the need to encourage and foster collaborative development, inter-operative platforms and free and open source software, in ways that reflect the possibilities of different software models, notably for education, science and digital inclusion programmes.

Nevertheless, if respectable mentions of universal access, public domain, open source and free software and information models gave rise to a sense of optimism, the Tunis Summit, while reaffirming the Geneva Declaration and Plan of Action, managed to sideline the issues involved. Consideration of the IP issue was largely dealt with at fringe meetings organised by civil society groups. Civil society groups were disappointed by the actual lack of any considered attention to key issues. Even Geneva Summit documents are replete with the importance of the need to protect intellectual property in order to promote innovation and creativity:

42. Intellectual Property protection is important to encourage innovation and creativity in the Information Society; similarly, the wide dissemination, diffusion, and sharing of knowledge is important to encourage innovation and creativity. Facilitating meaningful participation by all in intellectual property issues and knowledge sharing through full awareness and capacity building is a fundamental part of an inclusive Information Society.

And Para C3 10 (d) of the Plan of Action similarly suggested that any broadening of access had to take place within the confines of respect for IPRs¹ However, somehow it was hoped that the inclusive wording of the Geneva Plan of Action C3 10e:

Encourage research and promote awareness among all stakeholders of the possibilities offered by different software models, and the means of their creation, including proprietary, open-source and free software, in order to increase competition, freedom of choice and affordability, and to enable all stakeholders to evaluate which solution best meets their requirements.

It was hoped that this would lead to a greater emphasis at Tunis on the issue of the coexistence of different software models. However, the Tunis WSIS made no further progress on these issues. While the Geneva Principles and Plan of Action were reaffirmed, the actual statement emerging out of Tunis was in very similar terms if slightly more guarded suggesting support for a variety of software models. (WSIS, 2005, para 49).

The main disappointment for NGOs was that very little consideration was given in the Summit and Fringe sessions to further development of issues relating to intellectual property. A number of organizations including the International Federation of Libraries Association, (IFLA), the Free Software Foundation Europe (FSFE), Intellectual Property Justice and the Consumer Project on Technology were all supportive of a proposal introduced at the WIPO General Assembly in 2004 for fundamental review of WIPO treaties including a Treaty on Access to Public Information to take account of access to knowledge in developing countries. They were seeking some reinforcement of this position at WSIS and further detailed discussion of the issues involved. However, while a three minute statement was permitted on the issue of software by the Director of IP Justice, other meetings in which the issue was raised were largely NGO fringe meetings. A significant reason cited by Ermert (2005) is the strong presence of Microsoft and other software organizations at the Summit. It would seem that Microsoft which had only had a small presence at the Geneva Summit decided to have a more muscular approach at Tunis with a 70 strong delegation and a speech at the main Summit urging a strong defence of Intellectual Property Rights (Ermert, 2005).

In the meantime attention has shifted to WIPO in which some progress has been made, against strong resistance of the US, by the 'Friends of Development Group of Countries'² The suggested WIPO Inter-Sessional meeting (Ermert, 2005, New, 2006). Proposed by Argentina, Brazil and 14 'Friends of Development' countries as part of the development agenda under discussion at WIPO resulted in the

establishment of a Provisional Committee for the enablement of a Development Agenda. This Committee is due to meet in February and will consider proposals made by the Friends of Development Group and by others on Intellectual Property Rights³. The underlying principles of the proposed Development Agenda are:

The role of intellectual property and its impact on development must be carefully assessed on a case-by-case basis. IP protection is a policy instrument the operation of which may, in actual practice, produce benefits as well as costs, which may vary in accordance with a country's level of development. Action is therefore needed to ensure, in all countries, that the costs do not outweigh the benefits of IP protection.

Development concerns should be fully incorporated into all WIPO activities. WIPO's role, therefore, is not to be limited to the promotion of intellectual property protection (WIPO, 2004).

Already key issues proposed before the Committee include the promotion of free public information in a proposal made by Chile (New, 2006).

Thus while the issue was marginalised at WSIS, the question of the formation of a development agenda has moved on to WIPO. There is every possibility that the same issues that prevented progress in WSIS and, in relation to TRIPS at the WTO, will continue to do so at WIPO. The governance of intellectual property rights is firmly dedicated to a principle of strong private rights, subject to limited exceptions where there is sufficient protest as in the case of HIV/AIDS and other serious diseases. While WSIS constituted significant progress in giving cognisance to Free and Open Source software, this is seen very much as a marginal activity living under the constraints of a rights-based intellectual property regime. The idea of a WIPO Development Agenda is undoubtedly a significant new political development, but its success depends on global power politics.

In the next section, we consider the possibility that in a new network information age, relations of production and hence human interaction are being transformed in ways which question the nature of property rights with implications not just for developed countries but also for countries of the Global South.

3. Do we live in a changed universe of information?

The idea that we live in a changed universe of information and changed relations of production as a consequence of the information technology revolution has been with us for some time now with a variety of approaches ranging from Daniel Bell's 'Post-Industrial Society' to Castells 'Network Society'. The underlying idea of Castells Network Society or Network Informational Society is that networks replace hierarchised and circumscribed relationships (Castells 2000). The nature of work is transformed by the interactive networks as opposed to hierarchised production processes involved in production and exchange. Networks and thus processes of production and exchange have a tendency to extend spatially and be globalised. In the area of intellectual property, this creates a situation in which previously accepted notions such as the nature of authorship are fundamentally transformed because

authorship is created by co-operative endeavour of people working in networks and not individuals (Coombe, 1998, Lury, 1993). Yet, a contradiction is created because the engagement between global business and law results in new forms of appropriation of networked production. The failure of law to give effective recognition to the changed relations of production means that old property concepts are applied and extended in ways which dramatically expand the property rights of specific types of business interest. (Bowery, 2005, p 146).

This has generally been through the application and further extension of old property forms to provide protection for business in a way which fails to recognise the changed universe of information. Only occasionally is there a realisation of the Networked mode, and this may prove to be very fragile, as has been the case with the *Grokster case* in the US.⁴ The *Napster*⁵ and *Grokster Cases* involve decisions about the copyright implications for the providers of the systems of Person to Person (P2P) file sharing on the internet. Briefly, in the *Napster Case* it was decided that such file sharing, based as it was on sharing via a the defendant's file server, was in breach of copyright. In the *Grokster Case* in the District Court, it was decided that there was no breach as the system involved distribution of software which could be used by various file sharers and not a single file serving facility. The US Supreme Court in *Grokster* decided following the *Sony Betamax Case*⁶ that the distribution of software by itself does not constitute an infringement if there were also non-infringing uses. However, they went on to suggest that there may nevertheless be a breach if an intent to foster infringement could be found.

Thus there is a clear technical difference between the *Napster*⁷ and *Grokster* District Court decisions. Nevertheless, the explanation for the difference may go beyond the technical differences involved and more significantly into decisions about two different conceptions of information society. In *Napster* Justice Patel was keener to acknowledge the need to protect the 'investment' of the traditional property owner, the record company, while ignoring the extent of investment made by *Napster*. As Bowery indicates:

Law is a conservative force not only because of its ties with established power, but also because legal power contests change. Law redefines contemporary developments in 'its' own terms. And here the judicial view is that copyright law should serve a particular culture of expectation: protecting the established industry's structure and plans for development of the market. Interference with these private 'plans' is piracy (Bowery, 2005, p 152).

On the other hand, in *Grokster* in the District Court, as affirmed by the 9th Circuit, Justice Thomas was willing to seize on the new 'networked' mode of operation of information technology and used language such as:

It is the users of the software who, by connecting to each other over the internet, create the network and provide the access and emphasising the network dimension of the software such as in: reducing the distribution costs of public domain and permissively shared art and speech, as well as reducing the centralised control of that distribution.⁸

In *Grokster* at the District Court, law is showing its non-conservative face, its historic tendency to adapt ultimately to changed social circumstances; an adaptability which Fitpatrick (2001) relying on Derrida considers to be the creative force for law's own survival. In my opinion, the conservatism of Patel in *Napster* and the adaptability of Thomas in *Grokster* are both part of the creative tension of the law. Such creative tensions produce make advances fragile in proportion to the strength of the continuing alliance between legal institutions and copyright owners. The conservative approach of the Supreme Court in its hearing of *Grokster*⁹ on appeal provides a graphic indication of this fragility. The Supreme Court decided on the basis of an 'inducement' doctrine that:

[o]ne who distributes a device with the object of promoting its use to infringe copyright, as shown by the clear expression or other affirmative steps taken to foster infringement, is liable for the resulting acts of infringement by third parties.

There was no actual finding of inducement and there was a difference between the different concurring judgments with Justice Ginsberg using *Napster* type language and Justice Breyer using language similar to Justice Thomas in the District Court in *Grokster*. While this leaves the law in a state of uncertainty, the practical result was that the *Grokster* site stopped operating in November 2005.

There can be various explanations for the differences. In simple terms it may be seen as a conflict between old and new modes of production and property. For Castells networking is a new way of operating which is as empowering of global business and global regulatory structures as it is of alternative social and other groups. As Braithwaite and Drahos (2000) suggest, networking has enabled global businesses and groups of national and international regulators to work together to create new regulatory environments in areas such as telecommunications and trade. At the same time, the changing culture provides potential for consumer and other groups to resist globalising tendencies. In this respect Castells logic is neutral but chilling for those who do not form part of networks:

In the information age, the critical organisational form is networking. The most critical distinction in this organisational logic is to be or not to be – in the network. Be in the network, and you can share and, over time, increase your chances. Be out of the network, or become switched off, and your chances vanish since everything that counts is organised around a world wide web of interacting networks (Castells, 1998).

The much used term *information society* has been given a nuanced interpretation by Yochai Benkler who suggests that in fact there have been two information societies. He suggests that the early industrial information economy is being replaced by a radically different networked information economy (Benkler, 2003). The industrial information economy was an information technology economy centred on information (financial services, accounting, software, science) and cultural (films, music) production, and the manipulation of symbols (ie brands eg Nike). The new, the

networked information economy is new paradigm based on a communications environment built on cheap processors interconnected in a pervasively networked environment—typified by the internet. The first shift to the *industrial information economy* promoted the dominance of the mega-corporation, and with the assistance of media advertising and IP laws created passive workers who had no control over what they produced or consumed; the new *networked information economy* allows non-market production to play an increasing role in the information and cultural production sector, organized in a radically more decentralized pattern than was true of this sector in the twentieth century. Benkler suggests that this has the potential for profound effects on the relations of production.

This new economy promotes a culture of sharing – leading to the open content and open software movements. At the level of the cultural consumer, the consumer can build their own windows on the world – weblogs or blogs as opposed to the domination of Berlusconi and News Corps; and become active users (for example medically or legally informed patients). Software development provides an example of how previously passive workers can become active partners in work projects. Thus the development of the GNU/LINUX software environment on a non-market collaborative basis is not seen as utopian or exceptional, but a development of iconic significance where non-market relations of production are profoundly superior in their particular context.

For Benkler the new networked information society is not a peripheral development. It goes to the core of metropolitan production relations (Benkler, 2002, 2003, 2004). Those who have developed Linux and other successful applications have been leading edge developers giving their time to something they believe in. They do not start from a position of financial poverty; they are precisely people who have surplus resources of time, money, equipment and skills. However, they contest the legal economic frameworks, particularly in relation to intellectual property, which restrict their capacity for innovative development. It is because they can work more satisfactorily in the non-market environment, thus avoiding the drudgery of neo-taylorist production processes, that the systems they create are successful. What we are seeing is a new mode of non-market production which has echoes in family and gift-exchange modes of production.

Rationalisation from another dimension for a new production system comes from Hardt and Negri's work on *Multitudes* (2004). In *Empire* (2001), Hardt and Negri argue that in the era of globalisation, 'sovereignty has taken a new form, composed of a series of national and supranational organisms united under a single logic of rule' – of Empire. While many may fear the new globalism for the domination of multinational corporations armed with new forms of property in knowledge whether information or biotechnological; for Hardt and Negri, there is a potential for fundamental leftist democratic development in Empire. Crucial to this is the idea of *immaterial labour* and the *multitude* as a key political constituent of such labour. Critics of the Hardt and Negri book *Empire* criticised the vagueness of the concept of *multitude* as the post-structuralist inheritors of Marxist class. The rise of Free and Open Software has provided Hardt and Negri in their new work *Multitude* with a concrete example of contemporary multitudinous relations of production and they make strong use of it. For Hardt and Negri the optimum methods of production of

immaterial labour such as those working in software, internet content or biotechnology development are very different from mass industrial production:

The information and knowledge is produced by human labor, experience and ingenuity, but in neither case can that labor be isolated to an individual. Such knowledge is always produced in collaboration and communication, by working in common in expansive and indefinite social networks (Hardt and Negri 2005, p187)

In this collaborative communicative form of work, the workers of the multitude find the potential to free themselves from the shackles of corporate control and enclosure of the global commons in intellectual property. Thus in the same manner as Benkler (surprisingly there is no mutual citation) they suggest that the new ideas in intellectual property such as the creative commons, free and open source movements (and I would add free and open content, wikipeidias and blogging) provide signs of the rising power of the multitude.

Whether *Empire* and *Multitude* shine their way to a new utopia is best left as a new millennial question. However, there are a number of significant features in the works of Benkler and of Hardt and Negri which provide indications of the potential shaping of intellectual property issues in relation to the wider political economic questions.

Benkler's idea of change in the nature of the economy from industrial to networked is also redolent of French *Regulation Theory*¹⁰. Regulation theory suggests that modes of regulation shift with shifts in modes of production. In the contemporary period we are shifting from Fordism/Keynseianism (in Benkler's terms industrial) to a Networked mode of production. Therefore regulatory modes will shift in conjunction with these. The significance of all the arguments is that economic and social organisation is being transformed by fundamental changes in the global technological infrastructure. Such transformations will have profound effects on the way in which intellectual property relationships will be organised. Hardt and Negri as well as Benkler have a promotional perspective. It is this which sees in *creative commons* and *free and open software* and content movements the potential for radical social change.

There are obvious criticisms from the left and right of the concept of multitude, and such criticisms will also be directed to Benkler's notion of a fundamental new non-market leaning network mode of production (Benkler, 2003, 2004). The most important thing about the open and free software and content movements is that they co-exist with the capitalist economy. There is an analogy with the historically complementary relationship between work in the market economy and work in the family economy in which the market has been parasitic of the family. Benkler is unclear on the exact relationship between the two modes of production. His larger claim is that the new network information mode of production is in a state of struggle with the old/new industrial information in which 'none of the industrial giants of yore are going to take this redistribution lying down'. (Benkler, 2003, p,1249) That is, the promise of the Benkler analysis is very fragile, it is subject to dominant powerful forces.

His more circumspect claim is that there will not necessarily be a complete substitution of market by non-market, but of the profound significance of new forces and factors. It is not clear from his reasoning whether we are in a transitional phase in which there is a co-existence of different forms, which will be replaced by a new phase or whether the new phase will be is a state of perpetual transition in which the new economy has both the old form and the new form suspended in it:

None of this is to say that nonmarket and decentralized production will completely displace firms and markets. That is not the point. The point is that the networked information economy makes it possible for nonmarket and decentralized models of production to increase their presence alongside the more traditional models, causing some displacement, but increasing the diversity of ways of organizing production rather than replacing one with the other (Benkler, 2003, p 1249).

As with all networks, the powerful have historically found ways to dominate networks and to undermine alternative ones. For example, IBM makes more money from services it provides towards the effective management of Linux systems than from any other single source. An explanation for the apparent contradiction may be provided by Castells (2000) who suggests that networking is as empowering of global business and global regulatory structures as it is of alternative social and other groups. So, while some aspects of the old economy will remain, the new economy will have new forms of global business and regulatory structures coexisting with new forms of nonmarket production. Thus a relationship between IBM and Linux is entirely compatible with the new economy as is Google's shift away from libertarianism.

4. Empire's capture of the Global Commons and the Commons Fight Back

If we follow Benkler's approach, the first shift to an industrial information economy can be termed the invasion of the Global Commons. The idea of the contemporary information environment as invaded commons has been popularised by Boyle (eg 2004) and Lessig (2001, 2003, 2004) among others. There are obvious complications in the common analogy, but where it works is in the context of the attempt to 'enclose' the commons and exclude others through a radical redefinition of intellectual property rights. Intellectual property laws including copyright, patent, trademarks and other brand name rights saw their most pervasive advances in the second half of the 20th Century. New rights and claims were established which gave strong rights of ownership over IP where none had existed before. Typical of this is the *Sonny Bono Copyright Act* in the US which extended the term of the copyright. In *Eldred v Ashcroft*¹¹ this Act was challenged on the ground that the copyright provision in the US Constitution Art I 8.8 provided that copyright was to be for 'Limited times' only and its extension undermined this provision. The Supreme Court rejected the argument.

The WTO TRIPS Agreement's peculiar contribution was to globalise the US approach to intellectual property. Information became a commodity, perhaps the most important commodity and information technology, especially software, as the gateway to the control of information, became the crucial arena for the advancement of

corporate power over the global commons. Most recently it has culminated in copyright breach suits against those who download music files.

This capture of the commons has been opposed by a wide range of movements both activist and academic. The *Eldred Case* was part of this attempt to challenge copyright extension by Lessig and others (Lessig, 2001, 2003, 2004; Boyle, 2004). We have already observed in the *Napster/Grokster* litigation the potential for judicial adaptation from one economic mode to another. The Creative Commons, Free Law and Open and Free Software movements are activist approaches to change.

Yet, much of the argument has taken place within Lockean US Constitutional idea of property and innovation. This is the marked difference between Benkler and Lessig. For Lessig (2001, 2003, 2004) intellectual property rights are key to innovative development. The question is merely to establish the legitimate margins of these property rights. The margin he suggests lies in rules which promote innovation. It was on this basis that an argument was mounted in the *Eldred v. Ashcroft* case, where the *Sonny Bono Act* which extended the term of copyright by 20 years was challenged on the ground that the copyright provision in the US Constitution Art I 8.8 provided that copyright was to be for 'Limited times' only and was thus beyond the power of Congress. Perhaps inevitably that argument was lost in a Supreme Court which has been at the forefront of the redefinition of property rights in favour of the IT corporations. Lessig has subsequently refused to accept that his defeat was a political defeat at the hands of a right wing Court which would consistently put property rights above all other constitutional rights (Hunter, 2004).

It is this dependency on constitutional argument which encourages Lessig to make a distinction between P2P filesharing and piracy. For him P2P filesharing does not remove the property of the distributor – no CDs are removed. He acknowledges that there may be a loss to the copyright holder, but this loss is a very small percentage (6-10%) in comparison with the exponential growth in information flows enabled by copying on a P2P basis. Lessig admits that persuasive arguments can be made for commercial piracy – for example that the consumers of pirated products are those who would otherwise not have bought them, that buying a pirated product may promote the commercial product – if you are used to pirated microsoft – when you have the money, you will buy microsoft rather than linux or other commercial products. For him and others, this might be an argument for differential pricing.

However, he says 'We don't give the alcoholic a defense when he steals his first beer, merely because it makes it more likely that he will buy the next three' – it is upto the copyright holders to either give away free promotional copies or to provide differential pricing to promote their product. A property right means giving the property owner the right to say who gets access to what, and if the law properly balances the rights of copy-right owners with the rights of access, then violating the law is still wrong.

The ideas have become very influential at the global level as an alternative position to the spread of corporate copyright culture. However, in their distinctive USness, they are not so much aggressive unilateralism as what Santos (2002, p 165) terms globalised localism; in this case the worldwide adoption of both alternative visions of

US software copyright laws). Peoples of the South need to consider whether their pathways necessarily coincide with these two versions of USness.

5. Breaching digital divides with free flowing information

The issue of the global commons and the free flow of information is of crucial importance to countries developing and newly industrialising countries (Norris, 2001, Warschauer, 2002, 2002a, Paliwala, 2005, Mutula, 2004, OECD, 2001, 2001a). The global digital divide has been described by Kofi Annan and James Wolfensohn among others as one of the greatest impediments to harmonious global development:

The swift emergence of a global ‘information society’ is changing the way people live, learn, work and relate. An explosion in the free flow of information and ideas has brought knowledge and its myriad applications to many millions of people, creating new choices and opportunities in some of the most vital realms of human endeavour.

Yet too many of the world's people remain untouched by this revolution. A ‘digital divide’ threatens to exacerbate already-wide gaps between rich and poor, within and among countries. The stakes are high indeed. Timely access to news and information can promote trade, education, employment, health and wealth. One of the hallmarks of the information society – openness -- is a crucial ingredient of democracy and good governance. Information and knowledge are also at the heart of efforts to strengthen tolerance, mutual understanding and respect for diversity (Annan, 2003).

There is of course another view ‘the Mercedes Benz view’ on the digital divide, represented by Michael Powell chairman of the US Federal Communications Commission (Powell, 2001).

I don't have a Mercedes Benz and I want one, but I cannot afford it.

That is, access to information technology is not a serious issue; it should be left to market forces, just like who has a right to a Mercedes Benz.

The digital divide affects the newly industrialising countries of South and East Asia in different ways from the very poor countries for example of Africa. Asian countries have been at the forefront of use of information technology. Some countries such as Taiwan and Singapore are leading producers of information technology products for export. There are confident predictions that Asian countries will soon overtake Europe and even the US in the use of IT for e-commerce (Yook, 2004, 2004a). Thailand and Indonesia may be in a somewhat different position from countries such as Singapore, nevertheless all countries appear to be aware of Castell's (1998) insistence on the necessity of being part of the Network (Yook, 2004). Control through TRIPS and WIPO of intellectual property rights is part of the competitive struggle between the developed and newly industrialising countries. Yet newly industrialising countries as they mature technically may also feel the need to protect their own relative IP rights against newcomers.

Yet, there are three crucial areas where the US continues to dominate (Norris, 2001, Warschauer, 2002, 2002a). The US is the dominant website host. Secondly, the continued domination of English as the language of the internet continues to discriminate in qualitative terms against those peoples for whom English is not an easy language for reading and writing. In spite of the recent rise of Chinese websites, and the rise in English use among Chinese speakers, this phenomenon will continue to remain a problem at a global level. Thirdly, there is the US and Western domination of information technology patents including the more recent and controversial rise of business methods patents in e-commerce. A key consequence of these intellectual property developments is to restrain creativity and innovation in technology and e-business development for the developing and newly industrialising countries.

Therefore the crucial issue for developing and newly industrialising societies is not so much that they do not have access to technology, but they have to become dependent 'passive' users of technology rather than equal participants in the development of technology in accordance with their needs.

As Elizabeth Daley suggests:

The most important digital divide is not access to a box. It's the ability to be empowered with the language that the box works in. Otherwise only a very few people can write with this language, and all the rest of us are reduced to being read-only. (Elizabeth Daley cited by Lessig, 2004, p 37).

6. The Liberation Potential of FOSS-C, Piracy and the Development Agenda: Towards an Analysis

But how can people of the South achieve the required creative empowerment? The protected IP route requires considerable investment in software licensing. Even with availability of licenses, the creative developer is likely to be hemmed in by the restrictive practices of large software houses. Three options present themselves in this context. Each is relevant to countries of the global South, but none is without its own ambiguities.

One exciting potential answer is provided by the Free and Open Source Software and Content movements (FOSS-C), the other by piracy and the third by a global political reconstruction of intellectual property.

The FOSS-C movements seem to legitimately by-pass the barrier created by intellectual property rights without challenging these rights. The critical advantage of FOSS is that it enables easy and free adaptation to the needs of particular countries and peoples. The software code is not locked in. Some of the biggest users of FOSS are government agencies, often in developed countries such as Germany. Lawyers all over the world, whether from small firms or large, have benefited from the provision of free law on the internet¹². However, FOSS-C movements have dual political dimensions. One dimension is that of subordination to the power of TRIPS and WIPO sanctioned Intellectual Property rights. For example, the Creative Commons movement (Lessig, 2003) is clearly premised on legitimation of Intellectual Property

regimes and provides the legitimate face of this tension against the invasion of the global commons. This subordinate and hopefully peripheral legitimacy fits in well with the proposals of the OECD led DOT (*Digital Opportunity Task Force* 2001) and the *World Summit on Information Society* (WSIS, 2003, 2005, 2005a) have provided limited support for the FOSS-C.

There is evidence of inroads by Linux into China and other countries such as Indonesia (Yook 2004). FOSS-C movements may be interesting for the South because they are not defined by an exceptional provision for developing countries as promoted by the various international instruments but as a positive globalisation measure flowing from a real reorientation in production relations. More specifically, software developers in the South do not need to accept software developed according to Western needs without any real opportunity for local adaptation. Instead they can either make their own free contribution to the pool of resources or modify existing software or develop content freely to meet their own needs.

Nevertheless, there are a number of obstacles to the effect of FOSS-C movement in countries of the South. Implementing Linux, for example, is not merely about the software itself, but a whole paraphernalia of systems knowledge and engineering, attitudes, and the system of consultancies and international aid and finance through which such systems are introduced in South contexts. That is, it requires considerably more knowledge, organisation, initiative and willpower to overcome the pro-Microsoft tendencies. There are similar obstacles in the way of promoting free and open content systems such as the World Legal Information Institute.

The underlying issue with FOSS-C movement is not its undoubted value, but its political relationship with dominant social forces. If the movement is allowed too easily to become part of the subordinate periphery, then it will have a utility but its potential for radical global transformation will be neutred. The significance of Benkler's (2003, 2004), though not unambiguous, suggestion of the Network Information Economy and of Hardt and Negri's Multitude is precisely of a wider subversive potential for the Network Information Economy or Society. Such a paradigm change, if realised as part of a global cosmopolitan societal development, can provide a strong basis for transcending global digital divides.

The second option, and one which has made an enormous real contribution to IT development in the countries of the South and Transitional economies, is 'piracy'. The term piracy is frequently used by industry sources to stigmatise even non-commercial abuses of intellectual property rights. Piracy is the unwelcome 'other' of the invasion of the commons. Those who label 'piracy' take the rightness of the right to new forms of intellectual property for granted whether these are business methods patents or patents of life forms and genes. However, piracy takes on a different colour when examined in the context of the ever extending boundaries of what constitutes intellectual property. The claim by Benkler (2003), Boyle (2004), Lessig (2004) that this extension has amounted to an invasion of the global commons can be alternatively described as a form of primitive accumulation, a colonisation of property rights, taking place in a way which excludes the have-nots and the new entrants to the technology world from proper engagement. In particular, the development of US laws has encouraged the capture of global commons in information by corporations in a

way which has made pirates out of innovators. This capture has been sanctified by international agreements such as TRIPS.

Lessig (2004) attempts to distinguish 'good' pirates from 'bad' pirates. The good pirates are those like student music file sharers who are part of a new culture of creativity. Their intention is not to cheat the record or software companies. In fact research suggests that music filesharers are also good buyers through official sources. They are creative participants in the internet as it should be used, as a sharing caring medium of the Network Society or the Network Information Economy (Benkler, 2003). For Lessig (2004), the 'bad' pirates are those who produce and sell for personal profit and who may or may not be part of organised crime. The underlying issue for Lessig appears to be protection and promotion of innovation. Mafia type piracy does not seem to do this, whereas P2P internet culture merely bypasses the constraints of the invasion of the global commons.

Lawrence Liang (2004, 2004a) in a study of open source movement has pointed out that the fine distinctions between filesharing which is dependent on networks and filesharing which is dependent on some form of commercial production of tapes or CDs might be contestable in developed countries, but is completely problematic in societies where there are no broadband networks which allow music sharing. That is, from the perspective of the global South, the challenge is to the general principle under which property rights are claimed and established over the commons. Just as the 18th century enclosures drove out the peasantry from the land into towns in the United Kingdom, the new enclosure digitally divides the world through its property fences. These fences are both legal and built into the *code*. There is another analogy of the use of barbed wire as a means of enclosure in the US Wild West (Razac, 2000). Property rights in the US were not built on the basis of traditional legitimacy. As Hernando de Soto (2001) has pointed out the growth of US capitalism was built on a redefinition of property rights which emerged as a result of the pressures mounted by squatters and others on historically recognised forms of property at the frontier. Such redefinitions of property and merging of legalities and illegalities resulted in the dynamism of US economic development. Hardt and Negri (2000) suggest that these moments of rebellion were themselves incorporated into a new constitutional settlement which became the foundation of contemporary US capitalism and by its extension the new acephalous Empire.

The deconstruction of claims to intellectual property rights results in new uncertainties about the nature of legality – on the one hand of property rights claims and on the other of the 'other' of 'piratical' conduct. Liang (2004) uses the term 'porous legality' to index the whole complex of creative networks (in Lessig's terms illegal, semi-legal and legal) which are producing a vital information society in developing countries such as India. Far from the 'legal' 'semi-legal' and 'illegal' occupying separate spheres, they may be involved in complex relationships with one another. For example 'legal' record companies may do deals with 'illegals' because it suits their interests (Liang, 2004). These complex relationships do not fit easily into any schema but are part of the subversive but vital soup of Castell's Network Informational Society or Benkler's Network Information Economy. Such complexities in frameworks of legality are not uncommon historically. The different analyses of de Soto (2001) and of Hardt and Negri (2002, 2004) suggest that they were part of the new US frontier in the 18th and early 19th Centuries before they

became undermined by subsequent US Constitutional compromises. The porous legal vitality in the development of Global South based information society requires both recognition of new forms of power and understanding similar to that accorded to the powerful US historical phenomena. The vitality constitutes a counterpoint to the attempted capture of global commons. The potential development from below may be both innovative and promote global social justice. Yet, porous legalities do not fit easily into the language of human rights which is imbued with artificial boundaries derived from expansive interpretation of Lockean ideas of property nor of global hegemonic state and corporate power. It is more significant to locate them in wider concerns of global social justice.

The vitality also sits messily with notions of 'rights' based subaltern approaches. In recent years considerable attention has been given to subaltern struggles for social justice commencing with the historical analysis of the Subaltern Studies movement as portrayed in the journal *Subaltern Studies*. The work of Santos (2002) Santos and Rodriguez-Garavito (2005) and Rajagopal (2003) consider subaltern movements as alternatives to top down reformism. Such subaltern movements do not necessarily have to operate within the law, in fact they arise from the tradition of civil disobedience. Nevertheless, they do not countenance the complexities of software piracy. Nor has there been any articulation of struggles against digital divides as subaltern struggles.

The third approach, the rights-based approach is that of the Development Agenda of the WIPO Group of Fourteen. We have seen that the Development Agenda constitutes a critique of the mainstream WSIS type of approach but promotes a substantial reform of the international norms. Both are based on the Right to Development in International Law (Cordonier-Segger & Khalfan, 2004). However, the WSIS approach favours a conception of right which is subject to the supremacy of property rights. On the other hand, the WIPO Group of Fourteen (WIPO 2004) are attempting to modify intellectual property laws and property rights for peoples of developing countries in ways which promote social justice. The protracted history of TRIPS indicates that while there are possibilities of amelioration, fundamental progress may be very difficult to achieve. What change has been achieved, as has been the case with the HIV/AIDS and other medicines, has only come about as a result of global struggles involving the peoples of the South and the North. This does not mean that political struggles around the right to digital social justice as an aspect of the right to development are irrelevant.

Baxi in *The Future of Human Rights* (2006, p 264) puts the debates about the emancipatory potential of new technologies within the context of 'the technoscientific mode of production and the accompanying organic ideology (in the Gramscian sense) that presents itself as redemptive of human suffering.' That is, we should be suspicious of millennial ideologies which accompany new modes of production, because they are likely to disguise new modes of domination. Such modes are represented in human rights languages by what he terms 'market-friendly human rights'. However, critical analysis of international normative activities such as the construction of 'market-friendly human rights' does not mean a rejectionist approach to activities such as normative reform of international human rights or development laws. Rather, he would give primacy to the necessity for subversive and subaltern 'social struggles'. This is because ultimately such social struggles are involved in the

construction of national and global norms. I would agree with Baxi (2006) in his suggestion that international norms frequently represent hard-won if imperfect compromises resulting from social struggles. In the case of digital social justice, what we can say is that such 'social struggles' are embedded in the complex realities of 'porous legalities' and paradigm change.

Endnotes

¹ C3 10 d) 'Governments, and other stakeholders, should establish sustainable multi-purpose community public access points, providing affordable or free-of-charge access for their citizens to the various communication resources, notably the Internet. These access points should, to the extent possible, have sufficient capacity to provide assistance to users, in libraries, educational institutions, public administrations, post offices or other public places, with special emphasis on rural and underserved areas, while respecting intellectual property rights (IPRs) and encouraging the use of information and sharing of knowledge.'

² The Group of Friends of Development consists of Argentina, Brazil, Bolivia, Cuba, Dominican Republic, Ecuador, Egypt, Iran, Kenya, Peru, Sierra Leone, South Africa, Tanzania and Venezuela.

³ Matters have moved on since this article was first published. On June 11, 2007 The Provisional Committee on Proposals Related to a Development Agenda (PCDA) which made a set of proposals to the WIPO General Assembly including the following:

45. To approach intellectual property enforcement in the context of broader societal interests and especially development oriented concerns, with a view that "the protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations", in accordance with Article 7 of the TRIPS Agreement.

<http://www.wipo.int/ip-development/en/agenda/pcda07_session4.html> 1 Dec 2007. This was further approved by the WIPO General Assembly on 28 September 2007 with the establishment of a Development Agenda. <http://www.wipo.int/pressroom/en/articles/2007/article_0071.html> 1 Dec 2007.

⁴ MGM Studios Inc et al v Grokster Ltd et al 259 F. Supp. 2d 1029 (C.D. Cal., April 2003) pp 11740-41 (2003).

MGM Studios Inc et al v Grokster Ltd et al Supreme Court (04-0480), 545 U. S., 125 S. Ct. 2764 (2005).

⁵ A & M Records Inc & Ors v Napster Inc 114 F Supp 2d 896 (ND Cal 2000)

⁶ Sony Corporation of America v. Universal City Studios Inc. 464 US 417 (1984)

⁷ A & M Records Above.

⁸ MGM Studios Inc et al v Grokster Ltd et al 259 F. Supp. 2d 1029 (C.D. Cal., April 2003) at 11740-41 (2003). See Bowery (2005, p 154).

⁹ MGM Studios Inc et al v Grokster Ltd et al Supreme Court (04-0480), 545 U. S., 125 S. Ct. 2764 (2005).

¹⁰ See the journal 'Issues in Regulation Theory' for the literature on the subject. <http://web.upmf-grenoble.fr/lepii/regulation/Issue_Regulation_theory/> See also the Recherche & Régulation website <<http://www.theorie-regulation.org>>

¹¹ (2003) 123 S Ct 769.

¹² For example AustLII (www.austlii.com.au), WorldLII <<http://www.worldlii.org>>, ComLII <<http://www.comlii.org>>, CornellLII <<http://www.lii.cornell.edu>> 1 December 2006.

References

Annan, K (2003) 'Secretary-General's Message to the Net World Order: Bridging the Global Digital Divide' [delivered by Amir Dossal, Executive Director, UN Fund for International Partnerships] Conference hosted by the Business Council for the UN, New York, 18 June 2003.

Austin G (2005) 'Keynote Address: Symposium: Metamorphosis of Artists' Rights in the Digital Age', *Columbia Journal of Law & Arts* 28, p 387.

Baxi, U (2006) *The Future of Human Rights* (Oxford UP, New Delhi).

- Benkler, Y (2002) 'Coase's Penguin, or, Linux and the Nature of the Firm' *Yale Law Journal* 112, pp 369-446.
- Benkler, Y (2003) 'Freedom in the Commons: Towards a Political Economy of Information' *Duke Law Journal* 52, pp 1245-1276.
- Benkler, Y (2004) 'Sharing Nicely: On Shareable Goods and the Emergence of Sharing as a Modality of Economic Production' *Yale Law Journal* 114, pp 273-358.
- Boyle, J (2004) 'A Manifesto on WIPO and the Future of Intellectual Property' *Duke Law and Technology Review* 9, pp 1-11.
- Bowery, K (2005) *Law & Internet Cultures* (Cambridge, Cambridge University Press).
- Braithwaite, J and Drahos, P (2000) *Global Business Regulation* (Cambridge: Cambridge University Press).
- Castells, M (1998) 'Information Technology, Globalisation and Social Development', Conference on Information Technology and Development (Geneva, UNISRD)
<<http://www.unrisd.org/infotech/conferen/castelp1.htm>> 5 December 2007.
- Castells, M (2000) *The Information Age: Economy Society, Culture. Vol 1 The Rise of the Network Society* (Oxford, Blackwell).
- Coombe, R (1998) *The Cultural Life of Intellectual Properties: Authorship, Appropriation and the Law* (Durham and London: Duke University Press).
- Cordonier, S M & Khalfan A (2004) *Sustainable Development Law* (Oxford Oxford University Press).
- Correa, C (2000) *Intellectual Property Rights, the WTO and Developing Countries: The Trips Agreement and Policy Options* (London and New York: Zed Books).
- de Soto, H (2001) *The Mystery of Capital* (London: Black Swan).
- DOT Report (2001) 'Digital Opportunities for All: Meeting the Challenge', Report of the Digital Opportunity Task Force (DOT Force) including a proposal for a Genoa Plan of Action 11 May 2001.
<<http://www.dotforce.org/reports/>> 6 November 2003.
- Ermert, M (2005) 'Intellectual Property Issues Kept off the WSIS Agenda' <<http://www.ip-watch.org/weblog/index.php?p=158>> 5 December 2007.
- Fitzpatrick, P (2001) *Modernism and the Grounds of Law* (Cambridge: Cambridge University Press).
- Frischmann, B (2005) 'An Economic Theory of Infrastructure and Commons Management' *Minnesota Law Review* 89, pp 917-1030.
- Hardt, M and Negri, A (2001) *Empire* (Cambridge MA and London: Harvard University Press).
- Hardt, M and Negri, A (2004) *Multitude: War and Democracy in the Age of Empire* (London: Penguin).
- Hunter, D (2004) 'Culture War', *Law, Social Justice and Global Development Journal (LGD)* 2004(2)
<http://www.go.warwick.ac.uk/elj/lgd/2004_2/hunter>
- IP Justice (2005) IP Justice Speech at the 2005 World Summit of the Information Society (WSIS) General Plenary (7th Session) 18 November 2005
<http://www.ipjustice.org/WSIS/IPJ_WSIS_speech_2005.shtml> 12 December 2006.

James, J (1999) *Globalization, Information Technology and Development* (Basingstoke and London: Macmillan).

Ke Hui Xin 2004. 'China' in Yoon, C S (ed) (2004) 'Digital Review of Asia Pacific' <<http://Asia-Pacific Development Information Programme of the United Nations Development Programme>>, <<http://Pan Asia Networking Programme of the International Development Research Centre>>, <<http://Orbicom>>, <<http://Southbound>>, <<http://www.digital-review.org/bhp01.htm>> 1 June 2006.

Lessig, L (2001) *The Future of Ideas: The Fate of the Commons in a Connected World* (New York, Vintage Books).

Lessig, L (2003) 'The Creative Commons', *Florida Law Review* 55, pp 763-777.

Lessig, L (2004) *Free Culture: How Big Media uses Technology and the Law to Lock Down Culture and Control Creativity* (London and New York: Penguin Press).

Liang, L (2004) 'Porous Legality: An Argument for Media Piracy', Seminar presented at the University of Warwick, May 2004.

Liang, L (2004a) *A Guide to Open Content Licensing* (Amsterdam: Piet Zwart Institute).

Liu, C (2004) 'Taiwan' in Yoon, C S (ed) (2004) 'Digital Review of Asia Pacific' <<http://Asia-Pacific Development Information Programme of the United Nations Development Programme>>, <<http://Pan Asia Networking Programme of the International Development Research Centre>>, <<http://Orbicom>>, <<http://Southbound>>, <<http://www.digital-review.org/bhp01.htm>> 1 June 2006.

Lury, C (1993) *Cultural Rights. Technology, Legality and Personality* (London: Routledge).

Mutula S (2004) 'Critical Perspectives of Peculiarities of the 'African Digital Divide'', Paper Presented at the CSGR Conference Panel on Global Digital Divide, University of Warwick, UK, July 2004.

New, W (2006) 'Chile Urges WIPO To Act To Protect Public Domain' *Intellectual Property Watch* <<http://www.ip-watch.org/weblog/index.php?p=191&res=1024&print=0>> 1 October 2006.

Norris, P (2001) *Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide* (Cambridge: Cambridge University Press).

Organisation of Economic Co-operation and Development (OECD) (2001) *Bridging the Digital Divide: Issues and Policies in OECD Countries* (Paris: OECD).

Organisation of Economic Co-operation and Development (OECD) (2001a) *Information and Communication Technologies and Rural Development* (Paris: OECD).

Paliwala, A (2004) 'Legal Regulation and Uneven Global Digital Diffusion' *UTS Law Review* 6, p 26.

Powell, M (2001) 'Testimony on Telecommunication and the Internet' Hearing before House Energy and Commerce, 108th Congress, 2001.

Santos, B (2002) *Towards a New Legal Common Sense: Law, Globalization and Emancipation* (London: Butterworths).

Santos, B & Rodriguez-Garavito, A (2005) *Law and Globalization from Below* (Cambridge, Cambridge University Press).

Warschauer, M (2002) 'Reconceptualising the Digital Divide' <http://firstmonday.org/issues/issue7_7/warschauer/index.html> 1 October 2006.

Warschauer, M (2002a) *Technology and Social Inclusion: Rethinking the Digital Divide* (Cambridge, MA, MIT Press).

World Intellectual Property Organisation (WIPO) (2004) *Proposal by Argentina and Brazil for the Establishment of a Development Agenda for WIPO* (Geneva WIPO)

World Summit on Information Society (WSIS) (2003) 'World Summit on Information Society: Declaration of Principles, Building the Information Society: a Global Challenge in the New Millennium', WSIS-03/GENEVA/DOC/4-E 12.12.2003.

World Summit on Information Society (WSIS) (2004) 'Report of the Geneva Phase of the World Summit on the Information Society', WSIS-03/GENEVA/9(Rev.1)-E 18.2.2004

World Summit on Information Society (WSIS) (2005) 'Tunis Agenda for the Information Society', WSIS-05/TUNIS/DOC/6 (Rev. 1)-E 18.11.2005

World Summit on Information Society (WSIS) (2005a) 'Tunis Commitment', WSIS-05/TUNIS/DOC/7-E 18.11.2005.

World Trade Organisation (WTO) (2001) 'Doha WTO Ministerial 2001: Ministerial Declaration', WT/MIN(01)/DEC/1 20.11.01

<http://www.wto.org/English/thewto_e/minist_e/min01_e/mindecl_e.htm> 1 December 2006.

World Trade Organisation (WTO) (2002) 'Technical Note: Intellectual Property: Trips and Pharmaceuticals' <<http://www.wto.org>> 1 June 2006.

Yoon, C S (ed) (2004) 'Digital Review of Asia Pacific' <<http://Asia-Pacific Development Information Programme of the United Nations Development Programme>>, <<http://Pan Asia Networking Programme of the International Development Research Centre>>, <<http://Orbicom>>, <<http://Southbound>>, <<http://www.digital-review.org/bhp01.htm>> 1 June 2006.

Yoon, C S (2004a) 'Asia-Pacific ICTs: An Overview of Diversity' in Yoon C S (ed) 'Digital Review of Asia Pacific' <<http://Asia-Pacific Development Information Programme of the United Nations Development Programme>>, <<http://Pan Asia Networking Programme of the International Development Research Centre>>, <<http://Orbicom>>, <<http://Southbound>>, <<http://www.digital-review.org/bhp01.htm>> 1 June 2006.

Yu, P (2005) 'Intellectual Property and the Information Eco-System', *Michigan State Law Review* 1, pp 1-20.