Controlling the New Media: Hybrid Responses to New Forms of Power

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Introduction

The emergence and identification of the new media, premised upon the development and application of digital technologies, has created new sources and locations of power, many not fully documented or understood. Those new configurations of power which have been identified have stimulated distinctive literatures about the most appropriate mechanisms of control. With much of the literature classical or 'command and control' regulation is held either to be undesirable or unfeasible in the face of the new policy challenges. For one school of thought the changing market structures associated with the new media indicate a reduced role for classical regulation and its virtually total displacement by competition law.[1] For another school the emergence of the Internet presents insuperable problems for classical regulation and alternative mechanisms of control based on self-regulation and architecture are more likely to be effective.

In this article we draw together some of the regulatory problems presented by the new media and apply a developed and modified version of Lawrence Lessig's 'modalities of regulation'[2] analysis to thinking about the range of mechanisms which have been developed to address these problems. Accordingly we first provide a description of some of the key problems identified with controlling the new media. Our modified version of Lessig's analysis claims that there are four bases of regulation – hierarchy, competition, community and design. We set the analysis to work demonstrating that these four bases of regulation are observable as means of addressing the range of regulatory problems of the new media. The tendency to privilege one basis for regulation over others appears to us to be consistent neither with empirical observation nor with the normative considerations of institutional design for good regulation. What we observe is the prevalence of hybrid forms of control which, when better understood, could provide the basis for a better informed policy debate about the control of the new media.

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[1] The Chicago School of Law and Economics supports market control where markets are competitive. If the market is uncompetitive, competition law provides an adequate remedy. This premise has been attacked in relation to layered communications networks. See L. Lessig *The Future of Ideas: The Fate of the Commons in a Connected Worlds* (New York, Random House, 2001), 110; C. Salop & R.C. Romaine 'Preserving Monopoly: Economic Analysis, Legal Standards and Microsoft' (1999) 7 *George Mason Law Review* 617.

[2] L. Lessig *Code and Other Laws of Cyberspace* (New York, Basic Books, 1999), 88.

Differences in approach may partly be explained by reference to the cultures and preoccupations within different jurisdictions. The UK, and many European Union states, have a strong tradition of self-regulation in the media generally and the legitimacy of this form of governance is widely accepted.[3] Private governance forms are generally less well recognised and accepted in the United States and have been the subject matter of fierce debate over their legitimacy.[4] A related bias in the US literature is the very high value placed on the constitutional ideal of freedom of speech which feeds into a strong libertarian underpinning to much discussion of regulation of new media.[5] Though freedom of speech may have some constitutional protection in EU states, the extent to which such a right is qualified by other collective considerations is quite pronounced. Thirdly American scholarship on new media issues is dominated by the 'legal centralist' perspective of law and economics which accords less recognition to the potential for pluralism in the generation of norms than is true of some European scholarship.[6]

Whatever the effects of intellectual biases we suggest that research and thinking on control of new media sectors has generated novel insights on regulation which are of wider application. In particular the current debate on the how forces of control may be used to shape the future development of networks is of wider interest to researchers in the fields of law, economics and social policy. The debate is centred upon the role of the commons in the fledgling third generation Internet. Sunstein's claim that 'there is no avoiding "regulation" of the communications market'[7] has been met by an equally forceful counterclaim by Lessig that '[t]he issue for us will not be which system of exclusive control – the government or the market – should govern a given resource. The question for us comes before: not whether the

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[3] J. Black 'Constitutionalising Self-Regulation' (1996) *Modern Law Review* 24.

[4] The suspicion of private governance institutions in American legal scholarship is forcefully represented by Michael Froomkin's critique of the Internet Corporation for Assigned Names and Numbers (ICANN): M. Froomkin 'Wrong Turn in Cyberspace: Using ICANN to Route Around the APA and the Constitution' (2000) 50 Duke L.J. 17; Compare the (European) views of W. Kleinwächter 'The Silent Subversive: ICANN and the New Global Governance' (2001) 3 *Info* 259 which are largely approving of the innovation in governance created by ICANN.

[5] M. Castells *The Internet Galaxy* (Oxford, Oxford University Press, 2001), 33. S. Venturelli 'Inventing E-Regulation in the US, EU and East Asia: Conflicting Social Visions of the Internet and the Information Society' paper presented to 29th Research Conference on Communication, Information and Internet Policy, October 2001, Alexandria, Virginia available at http://www.arxiv.org/ftp/cs/papers/0110/0110002.pdf (visited 19 December 2001).

[6] The analysis is succinctly made by R. Ellickson 'The Aim of Order Without Law' (1994) 150 *Journal of Institutional and Theoretical Economics* 97, which provides a summary of the fuller treatment in R. Ellickson *Order Without Law* (Cambridge, Mass, Harvard University Press, 1991). See also R. Cooter 'Against Legal Centrism' (1993) 81 *California Law Review* 417; L. Lessig 'The Regulation of Social Meaning' (1995) *University of Chicago Law Review* 943.

[7] C. Sunstein *Republic.Com* (Princeton, Princeton University Press, 2001), 128.

market or the state but, for any given resource, whether that resource should be controlled or free.'[8] Lessig's call for a debate on this issue provides a powerful rallying call to those lobbying for the deregulation of, in the sense of making free, all layers of the Internet infrastructure. The debate called for by Lessig is not new. The open source movement led by Richard Stallman and the Free Software Foundation has lobbied for deregulation of the code level since the mid 1980s.[9] Deregulation at the content level was built into the original Internet infrastructure by network designers such as Paul Baran, Jerome Saltzer, David Clark and David Reed.[10] This has since been substantially eroded by the development of intelligent networks such as Resource Reservation Protocol (RSVP).[11] There is no doubt many in the new media sector will respond to Lessig's analysis and over the next five years the wider dialogue of the role of regulation within political science, media and economics will be strongly influenced by this currently narrow legal debate. Thus, while we make extensive use of examples drawn from new media, we suggest that the developed models of control which we discuss are of interest to policy makers and researchers with interests in governance and regulation generally.

New Media and the Problems of Effective Control

Processes of digitalisation associated with the development of new media have brought about important reconfigurations of power. The Internet, for example, provides widespread access to technology based on a network of networks and addressing systems which connect computers globally.[12] It is said to create a space where users can engage in a variety of activities with a substantial autonomy from state power which does not exist in non-digital media.[13] Digitalisation of broadcasting and mobile telecommunications create niches for new forms of service provider, shifting power away both from those who own the physical infrastructure of networks and from those who own content. We identify in this section three general problems of new media (that is problems which apply generally or to more than one

[8] Lessig, n 1 above, 12.
[9] *Ibid*, 52-61.
[10] *Ibid*, 34-44; J. Saltzer, D. Reed & D.Clark 'End-to-End Arguments in System Design' (1984) 2 *ACM Transactions in Computer Systems* 277. Online version at http://web.mit.edu/Saltzer/www/publications/endtoend/endtoend.pdf (visited 4 January 2002).
[11] Discussed below pp 000-000.
[12] B. Leiner *et al* 'A Brief History of the Internet' *Internet Society* available at http://www.isoc.org/internet/history/brief.shtml (visited 7 January 2002); M. Castells n 5, chapter 1.
[13] S. Sassen 'Digital Networks and the State: Some Governance Questions' (2000) 17 *Theory, Culture and Society* 19, 20. According to Lawrence Lessig much of this autonomy is hard-wired into the network by its end-to-end architecture, Lessig n 1 above, 26-41.

medium) which arise from shifts in power. None of these problems is exclusive of the new media, though each emerges with interesting new features in this context. They are the problems of regulatory arbitrage, anonymity and scarcity of resources. In each case once prevalent governance forms based on public ownership are no longer fashionable (and for some no longer feasible) enhancing the urgency of investigating other forms of control. We should be clear that these are not the only problems associated with the new media. Among the other pressing policy problems are the issues relating to accessibility of digital broadcasting and communications services to less advantaged consumers (which can be defined both in economic and social terms)[14] and the extent to which content of digital broadcasting should be controlled (in the manner that both negative and positive content controls apply to analogue broadcasting).[15] Discussion of these issues is precluded for reasons of space and in the belief that the theoretical frame developed is sufficiently addressed by the policy problems which we do discuss.

The Regulatory Arbitrage Problem

The problem of regulatory arbitrage emerges wherever subjects of regulation have sufficient mobility in their operations or activities that they can choose to be regulated by one regime rather than another. The effect is to create a form of market for regulation within which dissatisfied subjects can 'exit' one regime in favour of another. Regulatory arbitrage, seen as a problem for authorities attempting to capture activities within their web, can also be seen as a solution to problems of excessive or inappropriate regulation as it limits the capacities of authorities.[16] The problem has an interesting double-edged character in the new media, since options to relocate to avoid particular regulatory regimes may be available both to service providers and consumers. Thus broadcasters can relocate their operations to different jurisdictions to evade national regulation (and this predates digitalisation) while listeners and viewers can relocate from the more controllable forms of delivery to satellite and Internet. One of the problems raised by regulatory arbitrage is the risk that competing standards for the

[14] M. Lemley and D. McGowan 'Legal Implications of Network Economic Effects' (1998) 86 *California Law Review* 479; P. David 'The Evolving Accidental Information Super-Highway' (2001) 17 *Oxford Review of Economic Policy* 159; M. Cave and R. Mason 'The Economics of the Internet: Infrastructure and Regulation' (2001) 17 *Oxford Review of Economic Policy* 188.

[15] See. C. Sunstein 'Television and the Public Interest' (2000) 88 *California Law Review* 499; D. Goldberg, T. Prosser and S. Verhulst *Regulating the Changing Media: A Comparative Study* (Oxford, Oxford University Press, 1998).

[16] See W. Bratton, J. McCahery, S. Picciotto and C. Scott (eds) *International Regulatory Competition and Coordination* (Oxford, Oxford University Press, 1996).

new digital broadcasting transmission services might develop. This is squarely addressed with harmonised rules requiring all member states to legislate for common standards in the EU, notably in respect of consumer equipment for conditional access to services.[17] Under the terms of European Union legislation the EU rules on broadcasting regulation apply only to broadcasters established in a state to which the applicable directive applies.[18] The directive's requirements that member states apply their domestic broadcasting rules to all broadcasters established within the state has been interpreted so as to require member states to apply their rules as intensely to broadcasters directing their programming at other member states.[19] This interpretation is intended to preclude countries like the UK establishing themselves as attractive locations for establishment of overseas broadcasters through the application of a more liberal regime than would apply to domestic broadcasters.[20] This is a particular issue with broadcasters seeking to evade what they regard as overly restrictive domestic rules, for example on advertising to children or transmission of pornography.

Regulatory arbitrage in Cyberspace (that is applying to the Internet) is a focal point for two opposing schools of thought, the Cyberlibertarians and the Cyber-paternalists. The primary argument of the Cyberlibertarians is that Cyberspace is unregulable due to its design. Cyberspace is a unique jurisdiction as it has no physicality or real-world existence. It is possible to conceive of Internet users simultaneously in Cyberspace and in a grounded, real-world jurisdiction.[21] It is this duality and the non-physicality of Cyberspace which allows for regulatory arbitrage. In the physical world sovereignty is exercised by governments over defined physical territories. A user who wishes to be regulated by a different regulatory structure may take steps to relocate either themselves or their activities. In Cyberspace users may transcend physical borders with ease and may choose to take on any guise or form desired (see below 'The Anonymity Problem'). Users who prefer a regulated environment where there are structured discussions on carefully selected topics, and where content is closely monitored and censored may choose to join a regulated and monitored cybercommunity such as America Online (AOL). Users seeking uncensored discussion and complete freedom of speech may make use of a virtual chat room on the USENET system or

[17] Directive 95/47/EC OJ 1995 L281, 23.11.95 p 51, art 4; Broadcasting Act 1996.
[18] Council Directive 89/552/EEC OJ 1989, L298 p 23 as amended by Directive 97/36/EC, OJ 1997 L202 p 60, Art 2(1); B. Drijber 'The Revised Television Without Frontiers Directive: Is it Fit for the Next Century' (1999) 36 *Common Market Law Review* 87, 92.
[19] *Commission* v *United Kingdom* Case C-222/94, [1996] ECR I-4025.
[20] Broadcasting Act 1990, s 43.
[21] Lessig n 2 above, 190.

may use an Internet Service Provider (ISP) to enter unmonitored discussion boards on the Web. These freedoms allow users to choose freely the regulatory structure they wish to follow while in Cyberspace. Thus a citizen of Germany can enter a USENET discussion group on the Holocaust and post denial messages, something he or she would be unable to do freely in their home state. Similarly a UK citizen may post information which is in breach of the Official Secrets Acts. Although strictly speaking these citizens are still committing offences within their physical jurisdiction, they can do so without fear of prosecution as in Cyberspace they have taken on a different personality and thus are unlikely to be traced and prosecuted.[22] These citizens have effectively removed themselves from the regulatory control of their sovereign government and have chosen to be regulated by another set of regulatory values and norms. This is because, as dramatically put by David Post, 'Cyberspace…does not merely weaken the significance of physical location it destroys it….they do not cross geographical boundaries (in the way that say environmental pollution crosses geographical boundaries), they ignore the existence of boundaries altogether.'[23]

The Anonymity Problem

The non-physicality of Cyberspace allows Internet users to choose to adopt a different persona from their real-world personality (pseudonymity) or to hide all details of their personality (anonymity). Pseudonymity and anonymity provide a further set of problems for regulators. As well as facilitating regulatory arbitrage by allowing citizens to conceal their identity, thereby inhibiting the application of civil, administrative and criminal regimes while in Cyberspace, pseudonymity and anonymity also allow Netizens to carry out transactions in an unregulated manner.[24] Two examples which may be given are the distribution of hate or defamatory speech, and access to regulated content.

To begin with the latter, there are certain areas in our physical societies where we regulate access to certain persons. Children are not permitted access to public bars or licensed sex shops. In addition there are activities that are restricted to certain persons. Only those with driving licenses may legally drive and only those who are members of the appropriate

[22] With a degree of computer literacy they can ensure that it would be almost impossible for law enforcement agencies in the physical world to track them down and prosecute. This is discussed further below at 000-000.
[23] D. Post 'Governing Cyberspace' (1997) 43 *Wayne Law Review* 155. Online version at http://www.temple.edu/lawschool/dpost/Governing.html (visited 4 January 2002).
[24] Netizen is the universally accepted term for a 'citizen of the Internet'.

professional society may practice as a lawyer. A lack of physical persona makes the regulation of such simple activities much more complex in Cyberspace. A child may take on an adult personality and gain access to pornographic content.[25] In the physical world a child entering a licensed sex shop would be removed by the manager, whereas in Cyberspace the elements of physicality are lost and the ability to regulate is impaired. This is not to say the anonymity problem renders regulation of access impossible. Community-based control structures, supported by design-based elements have met with a high degree of success.[26] More worryingly, the access control problem allows for the potentially more harmful conduct of adults passing themselves off as children. In the same way children are prevented from accessing certain adult areas of the physical world there are areas where unauthorised adults are kept out to protect children.[27] Children nowadays are educated to keep away from strangers and to be wary of any unusual adult contact. Again the lack of physicality in Cyberspace raises problems. Users cannot discern the age of others in the chatroom intended for children. As it is at the user's discretion how much information he wishes to reveal about himself there is no practical methodology to ensure adults do not pose as minors for as long as Cyberspace supports an anonymous culture. And given that any attempt to remove the currently available culture of pseudonymity/anonymity would probably lead to a high level of regulatory arbitrage there is no apparent means to deal with such problems.

Further, the easy availability of anonymous messaging allows individuals to take part in activities without being required to meet usual societal norms. Individuals may make antisocial comments without fear of being ostracised by society at large. The technology of anonymous remailers when coupled with encryption technology can ensure an untraceable message source.[28] This may be used to distribute comments about an individual or organisation without fear of prosecution or social exclusion.[29] Anonymity in Cyberspace creates a unique culture where expression free from the normal constraints of legal and social control is common. Even the United States with its particular emphasis on the right to free

[25] Lessig n 2 above, 174.
[26] See below 'Other Forms of Control'.
[27] Examples would be schools, children's playgrounds, nurseries and other controlled environments.
[28] The technology is described in some detail by Michael Froomkin in 'The Internet as a Source of Regulatory Arbitrage', in B. Kahin & C. Nesson (eds) *Borders in Cyberspace* (Massachusetts, MIT Press, 1997). Online version available at http://www.law.miami.edu/~froomkin/articles/arbitr.htm (visited 4 January 2002)
[29] Following the enactment of the Communications Decency Act 1996 a US-based ISP has no third party liability for any libellous messages carried on their system (s 230). In the UK and the European Union ISPs may have third party liability if they fail to act once the nature of a libellous message is drawn to their attention. See *Godfrey* v *Demon Internet* [1999] 4 All ER 342 and the E-Commerce Directive (Directive2000/31/EC OJ L 178 , 17/07/2000 pp. 1-16) Art.12.

speech cannot allow completely unfettered or unrestricted freedom of expression.[30] Cyberspace uniquely offers a forum for unfettered free expression.[31] Although it may be argued that ISPs or other moderators of discussion groups may remove offending messages, they may be reposted somewhere else in Cyberspace almost immediately. Also Netizens may directly address others via e-mail. Again although this practice, known as spamming is regulated in Europe by the Distance Selling and E-commerce Directives[32] and by other enactments worldwide, the availability of anonymous communications renders such enactments impotent within Cyberspace. He who cannot be caught cannot be punished. Anonymity therefore allows for perfect freedom of expression, which in the physical world has been tempered by even the most liberal of regimes.

The Scarce Resources Problem

Regulators in the new media are called upon to oversee systems of allocation of scarce resources. All new media sectors draw heavily on limited resources, whether these be natural resources such as spectrum for the telecommunications or broadcasting sectors or man-made resources such as domain names in relation to Cyberspace. Digital developments do, in some respects reduce existing scarcity problems. Thus digital broadcasting uses spectrum more efficiently and thus enhances capacity.[33] This may in turn create a problem for regulators seeking to maintain controls designed to ensure pluralism in the broadcasting sector.[34]

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[30] Sunstein, n 7 above, 151-153. For a fuller account of the philosophical foundations upon which restrictions on the first amendment are justified see F. Schauer 'The Aim and Target in Free Speech Methodology' (1989) 83 *Northwestern University Law Review* 562; R.K. Greenawalt 'Free Speech Justification' (1989) 89 Col. L.R. 119.

[31] Several commentators cited the success of the complainers in *UEJF* (*L'Association Union des Etudiats Juifs de France) et Licra (La Ligue Contre le Racisme et l'Antisémitisme)* v *Yahoo! Inc*., L'ordonnance du Tribunal de Grande Instance, 20 November 2000 as evidence of the ability of courts to regulate expression in Cyberspace. This confidence has been substantially eroded following the finding of Judge Fogel in *Yahoo! Inc.* v *Licra* ND Cal Filed 7 November 2001, that the French order is not enforceable in the United States as '[it] chills Yahoo's First Amendment Rights…and that the threat to its constitutional rights is real and immediate.' (at 23) Decision available at http://www.cand.uscourts.gov/cand/tentrule.nsf/4f9d4c4a03b0cf70882567980073b2e4/daaf80f58b9fb3e188256b060081288f/$FILE/yahoo%20sj%20%5Bconst%5D.PDF (visited 20 December 2001),

[32] Distance Selling Directive, Directive 97/7/EC OJ L 144 , 04/06/1997 pp19-27; E-Commerce Directive, Directive 2000/31/EC, OJ L 178 , 17/07/2000 pp. 1-16 . The Distance Selling Directive was implemented in the UK through the Consumer Protection (Distance Selling) Regulations 2000 SI 2334. At the date of writing the E-Commerce Directive awaits implementation.

[33] R. Collins 'Back to the Future: Digital Television and Convergence in the United Kingdom' (1998) 22 *Telecommunications Policy*, 383, 384-385.

[34] M. Cave 'Regulating Digital Television in a Convergent World' (1997) 21 *Telecommunications Policy* 575, 590.

The spectrum scarcity problem is exemplified by the emergent market for third generation (3G) mobile communications.[35] 3G mobile will make multimedia services available to mobile phone users anywhere in the world, combining satellite and terrestrial digital capacities. This development has the potential both substantially to displace a number of current communications technologies, notably second generation mobile and fixed link telephony, and to grow new markets in mobile communications. Most EU Member States have concluded that spectrum scarcity permits them to licence between 4 and 6 network operators for 3G mobile.[36] The objectives of the licence allocation processes have been to promote the development of competitive markets, to allocate the spectrum to those best placed to use it, and in many cases to secure windfall fee-income to the finance ministry. Further policy making will be necessary to determine the terms on which service providers who do not have network operators licences can have access to the networks for the provision of services.

Scarce resources are also a problem in Cyberspace. The Internet is often seen as a network without resource constraints. If more resources are needed more computers can be added to the network. This though only increases the available processing power of the net, there are other key areas where resources remain scarce. One area is bandwidth.[37] Modern telecommunications networks rely on the ability to transmit data from one source to another and in this respect the Internet is no different from mobile telecommunications networks. Network content is increasingly sophisticated. Consumers are demanding faster and more stable access to the network, to allow them to listen to real time audio transmissions and the view streaming video transmission. These additional network demands are putting the current network protocols under strain and commercial providers of such services are calling for the current protocols to be substantially overhauled to provide for the flow of such services free from the current problems of latency (delays in transmission) and jitter (variations in delays).[38] These problems are caused by the current network protocol, Internet Protocol

[35] Sometimes known as Universal Mobile Telecommunications System (UMTS)
[36] P.Curwen 'Next Generation Mobile: 2.5G or 3G?' (2000) 2 *Info* 455, 461.
[37] See J. Glasner 'Move Over, Pork Bellies' *Wired News* May 20 1999 (available at http://www.wired.com/news/business/0,1367,19796,00.html (visited 4 January 2002); Lessig n 1 above, 47.
[38] See for example C. Huitema (Microsoft Corporation) 'How Will IPv6 Change the World?' paper presented to IPv6 2000, October 19-20, 2000 Washington DC available at http://www.ipv6forum.com/navbar/events/xiwt00/presentations/html/huitema/ (visited 20 December 2001); Y. Pouffary (Compaq) 'The IPv6 Advantage' paper presented to IPv6 2000, October 19-20, 2000 Washington DC available at http://www.ipv6forum.com/navbar/events/xiwt00/presentations/html/pouffary/ (visited 20 December 2001).

version 4 (IPv4) which employs a 'best effort' quality of service.[39] The best effort service is simply an onward transmission service which routes packets of information based upon information on congestion given to the sender from the next point or node in the network. This means packets of information relating to a single transmission can become separated and can arrive with delay variation causing jitter. Simple Internet applications such as e-mail or web browsing can tolerate these delays and differentials, but streaming audio and video cannot: Internet telephony for example cannot tolerate a delay of more than 250 milliseconds.[40] To deal with these problems network designers have suggested the creation of an intelligent network which would allow for quality of service (QoS) solutions.[41] The implementation of QoS systems involve either the implementation of a complex virtual overlay network (VON) which would allow traffic from a single network flow to pass through routers without competing with traffic from other network flows[42] or as seems more likely the implementation of a new network protocol, Internet Protocol version 6 (IPv6).[43] IPv6 offers many advances over IPv4. It allows for better homogeneity of transmission. In the event of network queuing it allows for streaming transmissions to be packaged together. This means time critical transmissions such as streaming audio and video may be prioritised over less time sensitive transmissions such as e-mails. Also it crucially supports the Resource Reservation Protocol (RSVP) developed by Cisco Systems and MCI WorldCom which allows service providers to sell bandwidth to users allowing them to prioritise their transmissions over other traffic using the same routers.[44] This functionality comes at a cost. These developments will almost certainly lead to the development of fragmented proprietary networks within the wider network structure and an end to the current end-to-end infrastructure of the Internet.[45]

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[39] David n 14 above, 173.
[40] Lessig n 1 above, 46.
[41] Lessig n 1 above, 46-47. Generally Lessig is wary of such solutions as adding intelligence to the network allows for control in the content layer.
[42] David n 14 above, 173; Computer Science and Telecommunications Board, National Research Council *The Internet's Coming of Age*, Washington DC, National Academy Press, 2001), 102-103. Available at http://bob.nap.edu/html/coming_of_age/ (visited 20 December 2001)
[43] IPv6 also solved the problem of a scarcity of Internet Protocol (IP) addresses. Currently there are just under 4 billion available Ipv4 addresses. Although this seems a healthy figure large organisations such as AT&T and MIT hold up to 16 million addresses each. Currently if you use dial-up access you will be allocated a temporary IP address while connected. This allows several users to share the same IP address. With new networked tools some analysts suggested the total fund of IP addresses would be exhausted by 2004. IPv6 allows for 10^{38} IP addresses more than enough for the foreseeable future.
[44] 'Traffic to Take the High Road – for a Price' *Wired News* March 27 1997. Available at http://search.hotwired.com/search97/s97.vts?Action=FilterSearch&Filter=docs_filter.hts&ResultTemplate=news.hts&Collection=news&QueryMode=Internet&Query=IPv6 (visited 20 December 2001).
[45] David n 14 above, 174-178. A. Odlyzko *The Economics of the Internet: Utility, Utilization, Pricing, and Quality of Service* AT&T Labs-Research 1998, 27-28. Available at

Although bandwidth scarcity is not unique to Cyberspace the scarcity of domain names is.[46] It may seem bizarre to claim domain names are a scarce resource. The permutation of domain names seem almost limitless. They may be made up of a string of up to 61 characters[47] in any permutation and a top level domain of which there are more than 250.[48] Despite this there is a scarcity of usable domain names. Usable domain names reside almost exclusively in the .com top level domain and are made up of recognisable terms in major languages.[49] There is a paucity of such names as usable domain names are of a one mark one owner architecture whereas previous trade mark systems had been of a one mark many owners architecture.[50] Competing demands for usable domain names quickly arose and the bodies charged with overseeing the domain name system (initially the Internet Assigned Numbers Authority (IANA) and Network Solutions Inc., and more latterly the Internet Corporation for Assigned Names and Numbers (ICANN))[51] were required to develop a policy to deal with these competing claims. This policy, the Uniform Domain-Name Dispute-Resolution Policy, attempts to balance the rights of trade mark holders against the first-user policy previously applied. It is an extremely controversial policy and will be examined in depth below when we analyse the effectiveness of control mechanisms in the new media.

Extending the 'Modalities of Regulation' Analysis

Lawrence Lessig's *Code and Other Laws of Cyberspace* is widely regarded as one of the most complete analytical attempts to capture the variety of forms which regulation of new

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http://www.dtc.umn.edu/~odlyzko/doc/internet.economics.pdf (visited 20 December 2001)

[46] M. Mueller 'Competing DNS Roots: Creative Destruction or Just Plain Destruction?' Paper presented to 29th Research Conference on Communication, Information and the Internet, October 2001, Alexandria, Virginia, available at http://www.arxiv.org/ftp/cs/papers/0109/0109021.pdf (visited 19th December 2001).

[47] The total length of a domain name (excluding root) may be up to 63 characters. As the shortest top level domains are the two letter country code domains, this means the longest lower level domain possible is 61 characters. See M. Galperin & I. Gordin 'The Domain Name System.' (available at http://www.rad.com/networks/1995/dns/dns.htm (visited 4 January 2002).

[48] Currently there are 239 Country Code top level domains (ccTLDs) detailed in ISO-3166, 12 generic top level domains (gTLDs) and two US Federal TLDs (.gov & .mil).

[49] The latest Network Wizards Domain Name Survey (July 2001) records 37,502,747 .com domains. By comparison the Oxford English Dictionary only contains 'over half a million words'. (Source: 'About the *Oxford English Dictionary*' http://www.oed.com/public/inside/ (visited 4 January 2002)

[50] See for example A. Brunel and M. Laing 'Trademark Troubles with Internet Domain Names and Commercial Online Service Screen Names' [1997] 5 *International Journal of Law and Information Technology* 1; A. Murray 'Internet Domain Names: The Trade Mark Challenge' [1998] 6 *International Journal of Law and Information Technology* 285.

[51] IANA and ICANN are non-governmental not for profit agencies. Network Solutions Inc. is a subsidiary of Verisign Inc. a for-profit publicly listed company.

media does or may take.[52] Lessig contends that there are four distinct modalities of regulation. He attaches to these the labels law, markets, norms and architecture. He thinks of these in terms of constraints on action.[53] Thus law constrains through the threat of punishment, social norms constrain through the application of societal sanctions such as criticism or ostracism, the market constrains through price and price-related signals, and architecture physically constrains (examples include the locked door and the concrete parking bollard).

Lessig's work is of great value for reminding us of the importance of architecture as a basis for regulation. The potential for controls to be built into architecture have long been recognised, as exemplified by Jeremy Bentham's design for a prison in the form of a panopticon (within which the architecture permitted the guards to monitor all the prisoners) and the more recent observations of the way in which visitors to Disney World are controlled by an architecture in which nearly every aspect of the design has a disciplinary function.[54] Lessig observed the various constraints that are built into software by their designers. Such architectural constraints in software code are chiefly used for commercial purposes (such as restricting the user's use to what they have paid for or segmenting the market so as to charge higher prices in some segments without the risk of arbitrage) but may also be used for other regulatory purposes (as with the controls placed on users by Filterware).[55] Lessig suggests that as a means of regulation architecture is self-executing and thus different at least from norms and law. [56] This claims appears correct up to a point. However the analysis which

[52] n 2 above. cf the five way analysis of controllers in ordering society put forward by Ellickson *The Aim of Order Without Law* n 6 above, 131. Ellickson sees order as a product of first party (or self-control) second party (or contractual) control, third party control (based on social forces and norms), organisation (with associated institutional apparatus) and, lastly (significantly) government with the laws 501.There is a substantial political science literature on alternative instruments of governance see J. Kooiman (ed) *Modern Governance* (London, Sage, 1993) and C. Hood *The Tools of Government* (London, Macmillan, 1983).

[53] Lessig n 2 above, 235-239.

[54] M. Foucault's research on the history of the prison has been responsible for generating new interest in surveillance generally and Bentham's panopticon in particular. *Discipline and Punish: The Birth of the Prison* (Harmondsworth, Penguin, 1977, trans A. Sheridan), chapter 3. C. Shearing and P. Stenning 'From the Panopticon to Disney World: The Development of Discipline' in A. Doob and E. Greenspan (eds) *Perspectives in Criminal Law* (Aurora, Canada Law Book Co, 1984). Crime control through design is exemplified by A. Lester *Crime Reduction through Product Design* (Australian Institute of Criminology, Trends and Issues in Criminal Justice no 206, 2001); N. Kumar 'Architecture as Crime Control' (2002) 111 *Yale Law Journal* (forthcoming).

[55] Filterware is discussed further below. See 'Other Forms of Control'.

[56] Lessig n 2 above, 236-237. Lessig claims that markets have in common with norms and law the fact that they require human agency and are not self-executing. This claim is contentious (though Lessig does not recognise this) as the control exerted by a market does not operate at the level of the individual seller and buyer, but rather in an aggregate. In the perfectly competitive market model the decisions of no individual buyer or seller can affect the operation of the market.

separates the functions of a control system shows that the standard-setting element of architecture is not self-executing but is, by definition, designed by human hands. Some architecture-based regimes may be self executing as to monitoring and behaviour modification. A parking bollard, for example, requires no further agency on the part of a regulator to control parking. Other architectural controls do rely on actions by the controller. For example, Betham's panopticon requires that prison guards actively monitor prisoners and intervene to control deviance. The panopticon can thus be seen as a hybrid of hierarchy and architecture.

The importance of Lessig's analysis is to draw attention to the variety of bases for control which can be deployed in the face of anxiety that technological change (such as the Internet) and economic change (such as globalisation) tends to make a variety of different forms of conduct unregulatable. The argument that variety in forms of activity requires an equal or greater variety of bases for control if regulation is to be effective has found formal expression in the cybernetics 'law of requisite variety'. It is expressed in other terms as the principle that 'only variety can destroy variety'.[57] The sceptical position which Lessig challenges is premised in part upon a myth that social and economic activity has traditionally been highly amenable to regulation, conventionally defined. Recent scholarship on the limits to control has emphasised the problems of trying to regulate social and economic activity.[58] This work has emphasised the importance of developing regulatory regimes which seek to steer or stimulate activities within the target system indirectly as an alternative to external command and control.[59] Lessig's work has the potential to support efforts to reconceive regulation in a sense that is both more modest in its claims and ambitions and more useful in providing mechanisms not only, or perhaps mainly, of direct control but also of indirect control. A key method of this new approach, which we deploy in this article, is to identify effective regulation in whatever form it takes and to seek to support it, develop it or extend it by analogy to other domains in which there are problems of regulation.

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[57] S. Beer *Decision and Control* (London, Wiley, 1966): 279-280.

[58] P. Grabosky, R. Smith and G. Dempsey *Electronic Theft: Unlawful Acquisition in Cyberspace* (Cambridge, Cambridge University Press, 2001) 5-11; P. Nonet and P. Selznick, *Law and Society in Transition* (1978); I. Ayres and J. Braithwaite *Responsive Regulation: Transcending the Deregulation Debate* (1992); N. Gunningham and P. Grabosky *Smart Regulation: Designing Environmental Policy* (Oxford, Oxford University Press, 1998).

[59] This prescription has its origins in systems theory: Beer n 61; and is found in both the political science literature: A. Dunsire, 'Tipping the Balance: Autopoiesis and Governance' (1996) 28 *Administration and Society* 299, and legal literature: G.Teubner, 'Juridification: Concepts, Aspects, Limits, Solutions' in G.Teubner (ed.) *Juridification of Social Spheres* (1987).

The concept of regulation deployed in Lessig's analysis is a broad one, extending beyond the narrowly defined 'systematic oversight by reference to rules' to encompass four 'modalities of regulation' which have the object or effect of holding behaviour within one state among the all the possible states which the behaviour might take. Lessig refers to the '"net regulation" of any particular policy…' domain as the 'sum of the regulatory effects of the four modalities together.'[60] Regulation in this expansive sense is conceptually closer to the usage of biologists and sociologists than to that of lawyers.[61] It refers to any control system. To be viable, within the terms of control theory, a control system must have some standard-setting element, some means by which information about the operation of the system can be gathered, and some provision for modifying behaviour to bring it back within the acceptable limits of the system's standards.[62] With regulation information gathering is usually achieved through monitoring by an agency, department or self-regulatory body and deviations addressed by application of formal and informal sanctions (See Figure 1 below).

When locating Lessig's description within the stricter analysis of control theory some problems emerge both with the labels and the concepts which they describe. Put simply the conceptual schema, drawn from Lessig's work in law and economics, needs enriching if it is to capture the institutional variety in control. Our earlier discussion of control theory suggests that the appropriate schema involves not only a four way division between different bases of control, but also a further fine grained analysis of the three different elements necessary to generate a control system (standard-setting, information gathering and behaviour modification). This development of the analysis provides a clearer descriptive framework for understanding how control is or can be achieved and opens up the possibility for identifying the wide range of control systems which appear as hybrids of two or more modalities of regulation. To develop this analysis we draw not only on Lessig's work, but also on attempts to deploy cultural theory to identify variety in control systems.[63] This analytical frame has recently been put to work in analysing variety in risk regulation regimes.[64] The term 'regime'

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[60] L. Lessig 'The Law of the Horse: What Cyberlaw Might Teach' (1999) 113 Harv. L Rev. 501, 508.
[61] R. Baldwin, C. Scott and C. Hood (eds) 'Introduction' in *Socio-Legal Reader on Regulation* (Oxford, Oxford University Press, 1998); M. Clarke *Regulation* (London, Macmillan 2000).
[62] C. Hood, H. Rothstein, and R. Baldwin *The Government of Risk: Understanding Risk Regulation Regimes* (Oxford, Oxford University Press, 2001), 21-27.
[63] C. Hood 'Control Over Bureaucracy: Cultural Theory and Institutional Variety' (1996) 15 *Journal of Public Policy* 207
[64] Hood, Rothstein and Baldwin, n 62 above, 9-14.

is apt to capture variety not only in standards and standard-setting (which represents the bias in Lessig's analysis) but also in the institutional dimensions of information gathering and behaviour modification. The regime analysis makes it transparent that the various functions which contribute to viable control systems can be widely dispersed among state and non-state actors, even within a single regime, and can be assembled in mixed or hybrid forms.

Lessig's conceptualisation of 'law as command'[65] suffers from a weakness in that it fails to capture all of the control systems which are within the set of command based or, as we label it, hierarchical control. Law, in this conception, refers only to state law (whether made by judges, or, more commonly in this context, legislatures)[66] and neglects the plurality of forms which hierarchical control structures may take. The richer conception of hierarchy looks to the form of control rather than its source. Thus the regime for developing Internet domain names has important elements which are non-state in character and yet which are distinctly hierarchical (and are discussed further below). The term law also suffers from the difficulty that it is often deployed in a way which infers only standards and not the institutional elements of a control system (viz information gathering and behaviour modification). Law in Lessig's terms is merely the constraint placed upon the individual. Accordingly hierarchical control provides both a better label and a substantively enriched conception of this modality of regulation.

The concept of norms as it is deployed in Lessig's analysis follows a usage developed in the social psychological literature – referring to shared patterns of behaviour – but which is unconventional and unhelpful in the study of law. Even in its psychological usage the term norm does not describe the institutional dimensions of a control system, but rather a set of standards which exist between a particular social group for the time being . We argue that the preferred meaning of the word norm is as the generic term for standards, guidelines and legal and non-legal rules.[67] The control form which involves societal or group standards, peer-based information gathering and behaviour modification based on social sanctions such as ostracisation or disapproval, we refer to as community-based control. This category includes not only the social norms which exist generally or between particular groups, but also some elements of more formalised regimes, as where self-regulatory standards are socially

[65] Lessig n 2 above, 235.
[66] Lessig n 60 above, 507.
[67] P. Drahos and J. Braithwaite *Global Business Regulation* (Oxford, Oxford University Press, 2000), 20.

generated and written down and then combined in a hybrid form with hierarchical elements to created a self-regulatory control system which is a hybrid between community and hierarchical bases.

The concepts of markets and architecture as they are deployed by Lessig are each under-inclusive. Rivalry and competition provide a form of control in environments where there is no identifiable market. Indeed recent public sector reforms have made widespread use of what we will call competition-based controls in non-market situations.[68] Additionally there is a marked element of regulatory competition applying to the development of regulatory standards in some domains both in the US and the EU.[69] Where the conditions for such regulatory competition exist (a topic of hot debate), and states are permitted to develop their own rules, competition for client businesses is said to create a check on any tendency to 'over-regulate.'[70]

The concept of architecture, referring in Lessig's terms to the whole built environment with and without intended effects,[71] does not capture the whole set of control mechanisms which are premised upon design as an basis of control. Thus there are social and administrative systems which have design features which create control in a way in which the regulatee cannot affect. A key example is the deployment of 'contrived randomness' in the oversight of taxpayers or employees so as to reduce the scope of these groups to exploit a wholly predictable system of opportunities and pay-offs.[72] Accordingly we re-label this fourth modality of regulation as design.[73] The different elements of each of the four types of regulation are illustrated in Figure 1.

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[68] P. Self *Government by the Market* (London, Macmillan, 1993).
[69] D. Esty and D. Gerardin (eds) *Regulatory Competition and Economic Integration* (Oxford, Oxford University Press, 2001).
[70] W. Bratton, J. McCahery, S. Picciotto and C. Scott 'Introduction: Regulatory Competition and Institutional Evolution' in Bratton, McCahery, Picciotto and Scott (eds) *International Regulatory Competition and Coordination* (Oxford, Oxford University Press, 1996).
[71] Lessig n 60 above, 507-508.
[72]Hood n63 above, 211-214.
[73] This concept of design has a loose affinity with the deployment of the term 'technologies' in the Foucauldian literature on governmentality. It is possible that the term technologies 'linking together forms of judgement, modes of perception, practices of calculation, types of authority, architectural forms, machinery and all manner of technical devices with the aspiration of producing certain outcomes in terms of the conduct of the governed' (N. Rose 'Government and Control' (2000) 40 *British Journal of Criminology* 321, 323) infers a rather wider range of instrumentalities than are inferred by the concept of design in this article. For deployment of the concept of technologies in regulatory theory see J. Black 'Decentring Regulation: Understanding the Role of Regulation and Self-Regulation in a 'Post-Regulatory' World' (2001) 54 *Current Legal Problems*, forthcoming.

Element of a Control System	Hierarchical Control	Community-Based Control	Competition-Based Control	Design-Based Control
Standard Setting	Law or Other Formalised Rules	Social Norms	Price/Quality Ratio (and equivalents with non-market decisions)	Inbuilt design features and social and administrative systems
Information Gathering	Monitoring (by agencies or third parties)	Social Interaction	Monitoring by dispersed buyers, clients, etc	Interaction of design features with environment
Behaviour Modification	Enforcement	Social Sanctions (eg ostracism, disapproval)	Aggregate of decisions by buyers, clients, etc on purchase, take-up, location etc	As for information gathering (self-executing)

Figure 1: Elements of Control Systems.

It is part of Lessig's argument that there is scope for the use of hybrid forms of regulation which link two or more of the 'pure' modalities of regulation noted above.[74] In particular he suggests there is scope to link what are in his terms law and architecture, for example by mandating software designers to build certain elements into software code in pursuit of public regulatory objectives.[75] However we think he underplays the extent to which contemporary control is already based on hybrid regulatory forms and the extent to which a wide variety of regulatory hybrids may be useful in developing regulatory control. Indeed, underlying Lessig's argument is a claim that there is considerable novelty to the nature of law in Cyberspace, a view seemingly accepted by those Cyberlibertarians who contest the normative dimension to Lessig's work.[76] Nowhere in the work of Lessig or his critics is this claim substantiated. As Lessig himself recognises, features which we might call design or architecture have long been fundamental to the way we are governed, whether by features of the built environment (such as the Parisian boulevard system) or the Byzantine systems of an obscure public bureaucracy or of commercial actors such as banks and insurance companies. It is not clear that design of software is fundamentally different from design in other aspects

[74] Lessig n 60 above, 511-514.
[75] *Ibid* 514-522.
[76] Lessig n 2 above, 5-6; D. Post 'What Larry Doesn't Get: Code, Law and Liberty in Cyberspace' (2000) 52 Stan L. R. 1439, 1443.

of social and economic activity. Wherever it is deployed it has controlling effects and a potential for those controlling effects to be turned towards different or modified effects.

If each of the four pure bases of regulation is theoretically capable of being deployed on its own and with each of the other three bases (giving four single bases, six pairings, four threesomes and one foursome) then there are fifteen forms of regulation in total. There is no empty set since all domains are subject to some form of regulation (or else, by definition, they could not be a domain since they would not hold a recognisable shape). Even regimes which apparently exhibit a pure basis of regulation may have the dominant form tempered by another. For example much hierarchical regulatory enforcement is tempered by more co-operative relationships more characteristic of community, and where there is a proliferation of hierarchical regulators in a particular domain (telecommunications and competition authorities in the communications domain for example)[77] then hierarchy may be tempered by a form of institutional competition as regulators jockey for position and custom.

Among the widely observed hybrid forms are competition law and co-regulation and enforced self-regulation. Though competition law is often equated with competition in its control dimensions competition law exemplifies hierarchical control, with elements of competition possible where third party actions are widely deployed. Co-regulation and enforced self-regulation each link some of the strengths of community-based control (notably within self-regulatory regimes) with the use of hierarchy, for example by state approval of standards set by industry groups (co-regulation) or mandating firms to establish and sometimes enforce their own standards (enforced-self regulation). Other less prevalent forms are observable but do not have widely accepted labels. Thus mandatory design features (for example in product design) are hierarchy/design hybrids which we could refer to as 'enforced design'. The form taken by some self-regulatory efforts to inhibit access to undesirable websites is a community/design hybrid.

One further set of remarks is necessary concerning the bases of control. Different forms of control work differently in different contexts. Markets, hierarchies, communities and design

[77] C. Scott 'Institutional Competition and Coordination in the Process of Telecommunications Liberalization' J. McCahery, B. Bratton, S. Picciotto and C. Scott (eds) *International Regulatory Competition and Coordination* (Oxford, Oxford University Press, 1996).

are each embedded in wider social practices.[78] Key social networks may be a factor in explaining relations of interdependence and thus how power is played out in particular social settings.[79] Similarly the effects of controls may vary depending on how they are perceived in the cognition of those whom they affect. Thus some individuals or societies may respond with resistance to controls which are met with compliance by others or at other times. Thus an analysis of modalities of regulation does not, by itself, provide a toolkit for decisions on the design of controls, but rather a more limited analytical understanding of controls which have been observed and might be deployed in certain environments and which might be expected to be effective under appropriate conditions.[80]

Putting Controls to Work

The importance of the reconfiguring and development of the modalities of regulation argument further extends to institutional choices for seeking to use controls for public policy objectives. Whereas Lessig places greater emphasis on top-down institutional approaches, of which regulatory agency forms represent the leading example, we contend that an emphasis on hybrid forms of control will tend to lead to the deployment of hierarchical controls as instruments to steer organic or bottom up developments, whether in the form of competition, community or design-based control. In some instances successful regimes have combined three or even all four of the bases for regulation.

Hierarchy/Community

Hierarchy and community-based controls are often combined either to ensure that industries effectively collaborate on controlling their sector or to give sectoral self-regulation greater authority. The hierarchy/community hybrid bases of regulation are exemplified by the structures established to address scarcity in domain names. By regulating the domain name system ICANN plays a key role in the regulation of Cyberspace.[81] ICANN and its

[78] J. Rogers Hollingsworth and R. Boyer (eds) *Contemporary Capitalism: The Embeddedness of Institutions* (Cambridge, Cambridge University Press, 1997).
[79] R. Rhodes *Understanding Governance* (Buckingham, Open University Press, 1997), especially chapter 3. See also P. Drahos and J. Braitwaite *Global Business Regulation* (Oxford, Oxford University Press, 2000) (discussion of 'regulatory webs', chapter 23); C. Scott 'Analysing Regulatory Space: Fragmented Resources and Institutional Design' [2001] *Public Law* 329.
[80] We are grateful to Julia Black for this point.
[81] As discussed above ICANN controls the allocation of a scarce resource and therefore plays an important regulatory role.

predecessors, IANA and Network Solutions Inc., have long provided regulatory control over the domain name system but have done so not as a function of hierarchical control, but rather to assist in the development of the domain name system as required by the community and to ensure the system design remained intact.

A simple example of the deployment of hierarchical controls to assist in the development of community based controls may be seen in the promulgation by both Network Solutions and ICANN of Domain-Name Dispute-Resolution Policies[82]. These procedures are used to counteract the primary problem of misappropriation of scarce resources. The procedure appears to have been extremely successful in countering the problem of 'cybersquatting'. The practice of cybersquatting was recognised at an early stage of development of the Web. In its simplest form it is the ability of unscrupulous individuals to register valuable domains such as Disney.com and then to offer them on at a profit to the rightful holder of the trade mark in question. Individuals who entered into such practices were quickly dubbed 'cybersquatters' by the Web community, a reflection of their standing within the community as equivalent to persons who unlawfully misappropriate physical property in the real world. Community opinion was brought to bear. These people were acting antisocially but social sanctions failed to affect their actions; being ostracised in Cyberspace did not affect their everyday lives. Their actions were, though more than socially unacceptable, they were also a threat to the developing architecture of the domain name system. By controlling domain names which reflected well known identifiers from the real world they posed a threat to the system. How could people navigate the Web if they couldn't rely on the knowledge they had developed in the physical world?[83] Although courts could intervene in cases where cybersquatters had misappropriated another's trade mark[84] regulatory arbitrage meant enforcement of orders could sometimes prove problematic.

What was required was a regulatory regime which would apply to all registrations and could be applied whatever the jurisdiction of the parties. This led directly to the first Network Solutions Inc Domain-Name Dispute-Resolution Policy, a policy which has now been adopted and refined by ICANN. The policy has proven successful as it treats the domain

[82] Kleinwächter n 4 above, 271-272.
[83] For example. If cybersquatters controlled domains such as disney.com, mcdonalds.com and microsoft.com how would users navigate their way to the sites of these well known companies?
[84] See e.g. *Panavision* v *Toeppen* 945 F.Supp. 1296 (1996); *British Telecommunications plc and others* v *One in a Million Ltd*. [1999] RPC 1.

name space as a separate jurisdiction, thus preventing regulatory arbitrage. Anyone who resides in the ICANN domain name space must contractually agree to be bound by the policy, and must agree to the arbitration procedure contained therein. Thus the values of the cybercommunity may be upheld by ICANN through the arbitration process. Secondly, the ICANN policy of using low-cost online arbitration at the expense of court proceedings meets the needs of the community. One of the key problems with usable domain names was they were unusually an inexpensive scarce commodity. Scarce commodities often carry a proportionately high price tag, as demonstrated by the UK and German 3G mobile spectrum licence auctions.[85] This is a simple application of the economic model of demand, supply and equilibrium pricing. Domain names though do not fit the economic model particularly well as the market as a whole is oversupplied while a small percentage of that market is undersupplied or scarce. As registrars cannot differentiate useful (and therefore scarce) domain names from the majority it means market-based controls may be circumvented and a scarce and therefore valuable domain name may be had for as little as $25. This allows for a high degree of speculation in domain names.

The previous Network Solutions Domain-Name Dispute-Resolution Policy required the complainer to obtain a court order. This meant it was in many cases cheaper to buy the disputed domain name from the defender than to pursue an action to recover the name, especially if the dispute had an international element. The present ICANN Uniform Domain-Name Dispute-Resolution Policy, through its use of inexpensive arbitration procedures provides a regulatory process which takes account of market conditions. This is not to say that the policy is not without its critics. There is strong criticism of the ICANN policy on the grounds that it now favours trade mark holders over domain name holders who fail, for whatever reason to comply with US trademark law.[86] This has led to a practice known as 'Reverse Domain Name Hijacking' occurring.[87] This is a potential flaw in the ICANN policy. As discussed the policy was originally introduced to deal with cybersquatters who were perceived as a socially unacceptable and a potential threat to continued utility of the

[85] The UK raised US$35.4 bn by auctioning 5 UMTS spectrum licences, while Germany raised $46.1bn by auctioning twelve spectrum blocks. In both cases the number of interested bidders exceeded the number of licences available creating a scarcity of resources. This may be contrasted with the position in the Netherlands where the auctioning of five licences was met with five serious bidders and raised only $2.5 bn or in Italy where a similar situation to the Netherlands saw the Italian Government raise only $10 bn.

[86] See e.g. Froomkin, n 4 above, 96-101; Perry, 'Trademarks as Commodities: The Famous Roadblock to Applying Trademark Dilution Law in Cyberspace' (2000) 32 Conn.L.Rev. 1127, 1155-1157.

[87] Examples involving American Express and QVC may be found at http://www.ejacking.com/ (visited 4 January 2002)

architecture of the domain name system. The policy now needs to develop to provide more balanced approach between the competing interests of parties. Fortunately there is evidence that the arbiters under the policy may be developing such a mature and balanced approach. There were some initial claims that the policy was being used to restrict free speech.[88] Recently though, decisions of the arbitration panels have shown the policy has a degree of flexibility which may allow them to develop the policy to meet the demands of the community at large.[89] Clearly the regulatory authority was implementing a hierarchical control system to support the development of community-based and design-based controls.

Hierarchy/Competition

The combination of hierarchical with competition based controls is well established in the media and communications sectors. Thus regimes which apply economic or content controls more intensely to some firms than to others effectively create a continuum within which firms exerting dominance are often located closer to the hierarchy end while smaller and/or less powerful firms are located towards the market end. Within the 'responsive regulation' theory this approach is labelled 'partial industry regulation'.[90] The logic of the approach is that the benefits sought for regulation may be secured less intrusively by applying regulation only to a proportion of the firms, whilst creating space for other firms to be controlled more by market elements. Typical patterns of more intense regulation of broadcast over print media are said to have reduced risks of censorship and promoted pluralism.[91] In the telecommunications sector 'asymmetric regulation' has been deployed to provide tighter controls over dominant incumbents both to maintain service levels and to promote access to the market by new entrants.[92] With the new media other forms of control which mix hierarchy and competition have been developed.

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[88] These claims are based in the so-called 'sucks' cases. Domains such as directlinesucks.com (D2000-0583) and freeservesucks.com (D2000-0585) were transferred to the trade marks holders following arbitration. Claims followed that decisions such as these were restricting free speech.

[89] Three recent decisions wallmartcanadasucks.com (D2000-1104), lockheedmartinsucks.com (D2000-1015) and michaelbloombergsucks.com (FA0097077) have all found in favour of the respondent. These cases may signal a new approach in relation to such free speech cases.

[90] I. Ayres and J. Braithwaite *Responsive Regulation* (Oxford, Oxford University Press, 1992), chapter 5.

[91] L. Bollinger 'Freedom of the Press and Public Access: Towards a Theory of Partial Regulation of the Mass Media' (1976) 75 *Michigan Law Review* 1.

[92] A. Perucci and M Cimatoribus 'Competition, Convergence and Asymmetry in Telecommunications Regulation' (1997) 21 *Telecommunications Policy* 493. Partial industry regulation in telecommunications is exemplified by US rules which apply greater restrictions to the commercial packaging of digital subscriber lines (DSL) provided by telecommunications companies than apply to functionally equivalent cable modems

With the scarcity issue related to spectrum, conventional hierarchical controls have been displaced by a hierarchy/competition hybrid in some domains. With 3G mobile governments have attempted to use spectrum allocation mechanisms to promote competitive markets, to promote efficient allocation of resources and in some cases to secure fee-income windfalls for finance ministries. Attempting to set policies that were friendly to the development of advanced infrastructure the European Commission initially recommended that Member States should allocate licences to 3G mobile operators free of charge.[93] Only Finland and Sweden, among the first movers on Universal Mobile Telecommunications System (UMTS) licensing, followed this policy course. All the other Member States decided to charge for the licences. Cynical accounts claim that the decision to charge was premised upon the greed of finance ministries. But there is a more principled explanation for the policy which is posited as a solution to one of the key problems of scarcity – that governments may fail to allocate scarce resources to those who are best able to exploit them to the general benefit.

The conventional instrument for the allocation of scarce spectrum is the exercise of government's hierarchical authority to examine potential applicants and make a decision along the lines of a 'beauty contest'.[94] This method was used in eight of the Member States.[95] The weakness of this method is said to lie in its dependence on the knowledge and judgement of the applicable state bureaucracy both to guess the appropriate fee to charge successful applicants and which applicants are best placed to exploit the spectrum. This 'limited knowledge' problem is perhaps more acute in the 3G mobile sector where there is little consensus on the commercial prospects for services which are made possible in the digital environment but which have not yet been tested in the market place.

The alternative method for allocating spectrum used in the remainder of the member states was to auction the licences, combining hierarchy with competition as the basis of control. Deviating from the sealed bid method used in previous spectrum auctions, the UK government and others decided to use a transparent (ie no sealed bids) simultaneous multi-

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provided by cable communications (formerly tv) companies: M. Lemley and L. Lessig 'The End of End-to-End: Preserving the Architecture of the Internet in the Broadband Era' (2001) 48 UCLA Law Review 925.

[93] European Commission *Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions: Strategy and Policy Orientations with Regard to the Further Development of Mobile and Wireless Communications (UMTS)* COM (97) 513 Final.

[94] The theoretical basis of the shift towards auctions , which lies in game theoretic approaches is described in D. Salant 'Auctions and Regulation: Reengineering of Regulatory Mechanisms' (2000) 17 *Journal of Regulatory Economics* 195.

[95] Curwen n 36 above, 461.

round ascending auction under which bidders' offers would be revealed at the end of each round and whoever held the highest bid when the number of bidders was reduced to equal the number of licences would win the particular licence. In this way the price mechanism is used to determine which firms should have access to the scare resource controlled by government. The outcome of the UK auction was that payments for licences totalling 22 billion pounds were much higher than was expected by commentators and government.[96] Details of auction rules and incentives resulted in less successful outcomes in some other member states.[97] The UK experience initially suggested the auction had been successful in revealing a true value of the licences well above government estimates. Commentators still do not agree on whether the high cost of licences, particularly in the UK and Germany, will stifle the market as operators struggle to repay the cost.[98] The German regulator has already indicated that it may allow the operators to share infrastructure costs and the same thing may happen in the UK.[99] This divergence between the actual operating conditions (and reduction in costs) over those projected at the time of the auctions suggests that the injection of competition in the licence allocation process has generally been less than successful.

With the problem of regulatory arbitrage the solutions are often put in terms of regulatory competition or coordination. In other words arbitrage may be overcome by providing coordinated or harmonised rules across jurisdictions or arbitrage itself may seen as a solution to the problem of excessive regulation. Regulatory harmonisation was for a long time the favoured way of providing a level playing field for competition in the internal market of the EU. However, this exercise of hierarchical authority raises practical difficulties in terms of the scale of resource necessary to achieve it, and is said to risk stultifying the very markets which are to be liberalised. A partial response to the practical problems of harmonisation was the decision of the European Court of Justice in the *Cassis de Dijon* case which gave judicial authority to a principle of mutual recognition.[100] Regulatory competition is said to provide the flexibility for jurisdictions to develop standards to match the local requirements (whether technical or political), the capacity to innovate in regulation while encouraging states to adopt

[96] M. Cave and T. Valletti 'Are Spectrum Auctions Ruining Our Grandchildren's Future?' (2000) 2 *Info* 347.
[97] Curwen n 36 above, 474-475.
[98] M. Cave and T. Valletti n 96 above; J Bauer 'Spectrum Auctions, Pricing and Network Expansion in Wireless Telecommunications' paper presented to 29th Research Conference on Communication, Information and Internet Policy, October 2001, Alexandria, Virginia available at http://www.arxiv.org/ftp/cs/papers/0109/0109108.pdf (visited 19 December 2001)
[99] 'MMO2 und T-Mobile schliesen UMTS-Kooperationsvertrag' Frankfurter Allgemeine Zeitung, 22/09/01.
[100] *Rewe-Zentral AG* v *Bundemonopolverwaltung für Branntwein* [1979] ECR 649

rules of minimum necessary burden on business or others (because of the threat that such regulatory clients might shift their business elsewhere). A recent analysis suggests that the choice between competition and coordination is a false one both in practice and normatively and that what we are likely to see is elements of competition (for example between institutions) emerging in domains that are notionally coordinated and vice-versa. Thus it is better to talk of 'regulatory co-opetition', a hierarchy/community hybrid form of control, both as description of the phenomena and as normative aspiration.[101]

Regulatory arbitrage is a well recognised phenomenon of Cyberspace, though commentators reach different conclusions as to its significance.[102] Cyberlibertarians argue that regulatory arbitrage prevents hierarchical regulation of Cyberspace. This is most clearly and famously put in David Johnson and David Post's seminal article, *Law and Borders - The Rise of Law in Cyberspace*.[103] For Johnson and Post the practical effect of regulatory arbitrage is that hierarchical controls are rendered impotent. Netizens may choose to reject hierarchical controls they find unpalatable by moving to another part of Cyberspace. As previously outlined Netizens may choose *how* they wish to be regulated much more freely than citizens of physical jurisdictions. The only effective regulatory system according to Cyberlibertarian theory is therefore one which is acceptable to all (or the vast majority of) Netizens. Johnson and Post therefore suggest a bottom-up or organic regulatory model. They envisage a self-regulatory governance system along similar lines to that developed to regulate the domain name system. Lessig disagrees with their conclusion. He agrees that Cyberspace is a separate space and can be seen as a distinct jurisdiction. He disagrees though with the conclusion that it is a jurisdiction which requires the organic development of regulatory regimes. For Lessig, once you isolate Cyberspace as a distinct space you may use its unique architecture to establish a hierarchical regulatory structure. The argument of the Cyber-paternalists is

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[101] D. Esty and D. Geradin 'Regulatory Co-Opetition' in Esty and Geradin (eds) *Regulatory Competition and Economic Integration* (Oxford, Oxford University Press, 2001)

[102] See for example, M. Froomkin 'The Internet as a Source of Regulatory Arbitrage' n 28 above; D. Johnson and D. Post 'Law and Borders – The Rise of Law in Cyberspace' (1996) 48 Stan. L Rev. 1367; L. Lessig 'Zones in Cyberspace' (1996) 48 Stan. L Rev. 1403; P. Samuelson 'Five Challenges for Regulating the Global Information Society' in C. Marsden (ed) *Regulating the Global Information Society* (London, Routledge, 2001). An interesting side effect of regulatory arbitrage is a regression to the least interventionist standard in a given area. The can most clearly be seen in relation to freedom of speech following the decision of the US Supreme Court in *ACLU* v *Reno* 177 S. Ct. 2329 (1997) where an online movement towards the US free speech standard may be detected. For further discussion on this see D. Vick 'Exporting the First Amendment to Cyberspace: The Internet and State Sovereignty' in N. Morris and S. Waisbord (eds) *Media and Globalisation: Why the State Matters* (Lanham, Rowman & Littlefield, 2001).

[103] *Ibid*. Online version available at http://www.temple.edu/lawschool/dpost/Borders.html (visited 4 January 2002).

therefore that once a recognised regulator emerges in any given activity they may impose regulatory regimes on Netizens through the unique man-made architecture of the Web, its code.[104]

To the extent that regulatory arbitrage is a problem with new media generally, and usage of the Internet in particular, it remains an open question to what extent the balance between competition and coordination might be deployed to resolve issues. For many commentators the nature of Internet technology makes regulatory arbitrage inevitable and difficult to forestall, whatever may be desirable from a policy point of view. It is the high mobility both of providers and users within Cyberspace which makes it difficult to envisage coordinative solutions. For some this is a strength militating against excessive control of Cyberspace. It was argued that regulatory arbitrage acted as a (limited) check on stringent UK legislation governing state monitoring of electronic communications generally in the Regulation of Investigatory Powers Act 2000.[105] Arguably any solutions here are likely to be a product of cooperation and community-based controls involving both governments and businesses rather than of co-ordination between governments, as through the EU or the World Trade Organisation (WTO).

Hierarchy, Competition and Design

In addition to the use of hierarchical/community controls discussed earlier, ICANN is also applying a design/competition-based hybrid in an attempt to alleviate the pressure on the domain name system. As domain names are a man made rather than natural phenomenon they do not have to be rationed in the manner of natural resources such as bandwidth. Whereas governments cannot simply create additional bandwidth to meet the demand of mobile phone operators,[106] ICANN hopes to solve the domain name problem by creating additional resources. To this end on 16 November 2000 ICANN announced seven new top

[104] Lessig, n 2 above, *passim*. See also L. Eko 'Many Spiders, One Worldwide Web: Towards a Typology of Internet Regulation' (2001) 6 *Communications Law and Policy* 445.
[105] The House of Lords debated this possibility at some length at the Report Stage of the Bill (HL Deb vol 615 cols 381-388; cols 400-452 13 July 2000). See in particular the debate on Amendment No.64 at col 408-418.
[106] Lessig offers an alternative solution to the problem of undersupply of bandwidth. Although acknowledging supply of radiocommunications bandwidth is naturally limited he suggests we are extremely wasteful of the resource available. He rejects the use of beauty contests or auctions to propertise bandwidth as outlined above and suggests instead a design solution allowing a more efficient use of bandwidth as a free or common resource. Lessig, n 1 above, chapter 12.

level domains.[107] It is the hope of ICANN that by creating competition in new, more specialised domains, demand will be lowered in the oversubscribed .com domain and a solution will be found to the scarcity problem. There has been profound disquiet about allegedly anti-competitive outcomes from ICANN's allocation of new top-level domain (TLD) names. Thus the allocation of some of these new resources (notably .pro and .info) has been made to organisations already controlling other key TLDs such as .com, .net and .org. The refusal to create other new top-level domain names (for example .xxx for pornography) has been criticised for inhibiting design-based controls over access or exploitation of particular sites. The solution to these problems posited by one key critique is to open the domain name market to greater competition between assignment organisations and use competition as a key form of control.[108] It may, though, already be too late for any competition-based approach to work in relation to domain names. The scarcity of resource problem in relation to domain names appears to be restricted to the .com TLD. As discussed previously there are already a large number of alternative top-level domains available.

Attempts previously to turn country code TLDs into generic TLDs have not released useful domain names. The most concerted effort has been in relation to the .ws (Western Samoa) domain, which is being promoted as a 'World Site' domain. In many instances holders of current generic TLDs simply replicated their registration in the new domain. There is little evidence that the creation of manufactured additional resources deals with this particular scarce resources problem. The availability of these alternatives has not encouraged sufficient competition to effect the base of the .com domain. The relevant market, appears therefore not to be the market in TLDs as a whole, or even generic TLDs, but is restricted to the .com TLD. The .com TLD is, it appears, too well established to be affected by the creation of alternative domains. The creation of such alternatives does not appear to introduce competition within the relevant market it merely creates alternative markets in which mere replication of registration occurs.

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[107] They are .aero, .biz, .coop, .info, .museum, .name and .pro. For further details on these names including who may apply for a name within these new domains see http://www.icann.org/tlds/.

[108] M. Mueller 'Domains Without Frontiers' (2001) *Info* 97, 99. See also M. Froomkin 'Is ICANN's New Generation of Internet Domain Name Selection Process Thwarting Competition?' Presentation to US House of Representatives Committee on Energy & Commerce, Subcommittee on Telecommunications, February 8, 2001. Available online at http://personal.law.miami.edu/~froomkin/articles/commerce8Jan2001.htm (visited 4 January 2002).

The only possible methodology which would appear to provide for a functioning competition-based solution to the .com problem would be to increase the marketability of competing TLDs. The current ICANN policy is for the creation of alternative TLDs which they expect will increase in marketability through the efforts of the registrars who deal in such names. They are relying upon a free market rhetoric which states that those with saleable assets will work to increase the marketability of their asset through advertising and marketing. ICANN believes that the domain name system is thus a free market in which demand may be created in new products through advertising and marketing. Unfortunately the free market rhetoric does not apply to domain names in this manner. They are more than simply saleable assets. Firstly valuable domain names are, in many cases, a reflection of currently held trade marks. As has been previously alluded to, the creation of alternative TLDs fails to release alternative resources due to replication of registrations by current holders of trade marks and valuable .com domain names to prevent any risk of cybersquatting. Secondly all domain names are a method of indexing information and navigation. Thus they are streetnames not just marketable assets. And as with all other communities the Web has its desirable areas and its undesirable areas. In this virtual community .com is the business and financial district. It is the Web's equivalent to the City of London, Wall Street or Rodeo Drive. And just as businesses in the real world will pay a premium for such addresses so the focal point for competition in relation to domain names will remain in the .com domain. Due to these problems the scarcity issue in relation to domain names may be as ingrained as the bandwidth problem in relation to telecommunications and a more radical solution may be required in the future.

Other Forms of Control

The emphasis of current thinking on alternatives to hierarchical control is largely focused on linking hierarchy to competition or to community-based methods of control. This focus largely excludes two major classes of forms of control, one defined in terms of excluding hierarchy and the other defined in terms of including design.

Design-Based Regulation

A key example which is located in both sets (employing design and excluding hierarchy) is the use of regional management codes by DVD producers and equipment manufacturers. Producers and equipment manufacturers have collaborated in a regional coding system which allows for market segmentation within the DVD industry. Regional coding was developed to permit studios to control the home release of movies within different geographical regions allowing the staggering of cinematic releases.[109] The studios required that DVD software codes included a simple code that could be used to prevent playback of certain discs in certain geographical regions. The equipment manufacturers assisted by producing region specific DVD players, each player being given a code for the region in which it is sold. The player will refuse to play discs that are not encoded for that region. This means that discs bought in one country may not play on players bought in another country. The addition of regional management codes are entirely optional for the maker of a disc, discs without codes will play on any player in any country. These codes should not be confused with the DVD Content Scramble System, discussed below, which acts as a copy-control measure. Regional management codes are not an encryption system, they are merely one byte of information on the disc, which denotes one of eight different DVD regions.[110] Thus an encoded DVD bought in the US will not be viewable on a European DVD player. There is no hierarchical element to this. Customers are not prevented by contract or any other laws from buying DVDs in other countries. The control is effected by features of the diverse product standards which make a DVD useless when paired with a player with a different coding.

Including Design

A related example is the use of a hierarchy/design hybrid in an attempt to manage the high levels of digital piracy which occur on the Web. Copy-control devices have been employed by almost all copyright holders who trade in digital media. These controls have met with varied degrees of success, but are supported by not only industry groups such as the Motion

[109] The coding also allows studios to sell exclusive distribution rights to a variety of foreign distributors. See D. Marks and B. Turnbull 'Technical Protection Measures: The Intersection of Technology, Law and Commercial Licences' paper presented to World Intellectual Property Organisation Workshop on Implementation Issues of the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT), December 6-7 1999, Geneva available at http://www.wipo.org/eng/meetings/1999/wct_wppt/pdf/imp99_3.pdf (visited 7 January 2002). The European Commission is currently investigating whether DVD producers are using the technology to illegally partition the market. See *Financial Times* 11 June 2001.

[110] These are as follows: Region 1 USA and Canada; Region 2 Japan, Europe and Middle East; Region 3 Southeast and East Asia; Region 4 Australasia, Central and South America and Caribbean; Region 5 Eastern Europe, India and Africa; Region 6 China ; Region 7 Reserved and currently unused; Region 8 Special Venues (Planes, Cruise Ships etc.)

Picture Association of America (MPAA) and the Recording Industry Association of America (RIAA), but also have been given the force of law through the actions of the World Intellectual Property Organisation (WIPO)[111] as enacted within the European Union by the Directive on Certain Aspects of Copyright and Related Rights in the Information Society,[112] and in the United States through the Digital Millennium Copyright Act 1998.[113] With the legal support offered by these enactments several copy-control systems have been developed and implemented by bodies representing copyright holders mostly against the wishes of the community at large. One such standard developed by the MPAA for use on DVD releases is the Content Scramble System (CSS). CSS was developed by two hardware companies, Matsushita Electric and Toshiba, for the motion picture industry and was adopted as industry standard in 1996. The system involves a dual key encryption system which encrypts all sound and graphic files contained on a DVD release. The files may be decrypted by the appropriate decryption algorithm which is made up of a series of keys stored on both the DVD and the DVD player. This means that only players and discs containing the appropriate keys may decrypt the necessary files and play the movies stored on the DVDs.[114] The CSS system did not directly prevent direct copying of DVD discs, the contents of a DVD (while encrypted) could be copied directly from one DVD to another. CSS did though prevent the uploading of the contents of a DVD on to hard disc or a web server. The concern of some users was that CSS systems were only licensed for use on Macintosh and Windows based operating systems (and for dedicated DVD players). Users of open source operating systems such as GNU/Linux could not play a CSS encoded DVD on their system. This led to a campaign of civil disobedience leading to the development of a decryption code for CSS which would allow the playing of CSS encrypted DVDs on any platform. The CSS code was a quite weak 40 bit encryption system and in September 1999 it was successfully hacked independently by an anonymous German hacker and a member of the 'Drink or Die' cracking community.[115]

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[111] Article 11 of the WIPO Copyright Treaty requires contracting parties to, 'provide adequate legal protection and effective legal remedies against the circumvention of effective technological measures that are used by authors in connection with their exercise of rights under this Treaty or the Berne Convention and that restrict acts, in respect of their works, which are not authorised by the authors concerned or permitted by law.'

[112] Directive 2001/29/EC, Art. 6.

[113] §§ 1201(a)(1) and 1201 (a)(2).

[114] For more detail on CSS see the opinion of Judge Kaplan in *Universal Studios Inc.* v *Reimerdes et al* 111 F.Supp 2d 294 (2000). Affirmed *Universal Studios Inc.* v *Corley et al* 28 November 2001, Second Circuit Court of Appeals Docket No. 00-9185 Available at http://eon.law.harvard.edu/openlaw/DVD/NY/appeals/opinion.pdf (visited 4 January 2002).

[115] The media wrongly attributed the development of DeCSS to a fifteen year old Norwegian Jon Johansen. Although Mr. Johansen was a member of the 'Masters of Reverse Engineering' community which released DeCSS he was not the author of the program. This is made clear in a text file which accompanied the release of the program. The text file is available at http://www.lemuria.org/DeCSS/dvdtruth.txt (visited 4 January 2002).

This development meant that CSS encrypted DVDs could now be used on unlicensed DVD players and that DVD material could be placed directly onto the Web. Such a development was an obvious threat to the continued use of CSS by DVD producers. Action was taken immediately in Norway where Jon Johansen who had been erroneously identified as the author of DeCSS was prosecuted and in the United States where Universal Studios successfully obtained injunctions under the Digital Millennium Copyright Act against several individuals who were distributing the DeCSS code from US-based websites.[116] The decision in this case has been extensively criticised by many commentators, including Lessig who argues that 'DeCSS didn't increase the likelihood of piracy. All DeCSS did was (1) reveal how bad an existing encryption system was; and (2) enable disks presumptively legally purchased to be played on Linux (and other) computers.'[117] Lessig is extremely critical of the use of law to support these design controls arguing that they create an 'imbalance where traditional rights are lost in the name of perfect control by content holders.'[118]

This view taken by Lessig in his new book *The Future of Ideas* may though prove to be unduly pessimistic. There is as yet no evidence of content holders attaining the perfect control he fears in Cyberspace. Indeed the victory of Universal Studios and the MPAA has proved to date to be pyrrhic. As is often the case in Cyberspace when hierarchical/design controls are used to regulate the community at large the community will rally in an attempt to defeat the regulatory control mechanisms. The DeCSS code may currently be obtained from any one of hundreds of websites which remain out of the reach of the US authorities.[119] Currently the producers of DVD titles and the hacking community are involved in a war of code. The motion picture industry has updated the CSS code which means the DeCSS code no longer decrypts the latest DVD releases. This has simply encouraged hackers to produce new, more powerful, second generation decryption codes such as DVD-Decrypter. Both parties continue to battle for the control of DVD encryption/decryption codes. The producers

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[116] *Universal Studios Inc.* v *Reimerdes et al* n 114 above.
[117] Lessig, n 1 above, 189. See further 187-190.
[118] *Ibid*, 200.
[119] The website operated by Shawn Reimerdes (one of the defendants in the MPAA action) contains the following advice:
'A Federal Judge removes this link by court order! We are fighting for the right to put this link back up for you! I am not allowed to have this decryption information anymore, so I will just tell you the obvious: Go to your favorite search engine and enter 'DeCSS'. You will find one of thousands of websites that has decided to post this information.' Doing so will allow you to locate sites such as the DeCSS mirror site at http://heavymusic.8m.com/ (visited 20 December 2001); Download.com http://www.download.cnet.com/ (visited 4 January 2002) and http://www.lemuria.org (visited 4 January 2002) all of whom currently have the DeCSS program available for downloading.

of DVD titles and the community at large are both using design tools to attempt to protect their position. The producers presently have the advantage, due primarily to a weakness of current technology. At the moment the lack of widely available broadband technology prevents distribution of decrypted movie data over the Web: The producers hold the upper hand. As distribution technology improves the movie industry may find that their design solutions cannot effectively function without either the support of the community at large or far greater reliance upon the hierarchical control elements introduced by the Digital Millennium Copyright Act and the Directive on Copyright and Related Rights in the Information Society. Producers of DVDs will need to decide within the next few years whether they wish to rely on a hierarchy/design hybrid or a community/design hybrid.[120]

Excluding Hierarchy

A successful example of a community using design tools to effect a regulatory scheme is the community-based approach to protecting children in Cyberspace. As discussed above the anonymity problem raises two distinct dangers for minors in Cyberspace. One is that they gain access to materials which are unsuitable for minors and the other is that adults take advantage of anonymity to forge improper relationships with minors. Hierarchical controls fail to remedy these problems but a community-based solution has proved extremely successful, especially when linked with design-based solutions. Within organised cybercommunities children may be supervised by the community. Communities such as AOL encourage family membership where parents register the details of the family as a whole and each individual member has their own password. Unless the child were to compromise an adult password, their status can therefore be made known to the community and the community can supervise and protect the child while he is online. Children cannot be watched all the time and the community cannot take over all parenting responsibilities. To assist, additional design based tools may be used. In addition to the community supervision, parents may employ software solutions such as CYBERsitter and Net Nanny. These products allow parents to set acceptable parameters for their children when in Cyberspace.[121]

[120] See further Lessig, n 1 above, chapter 11.

[121] Such software programs are called alternatively Filterware or Censorware (depending very much upon your political viewpoint). Many programs such as the ones listed use stand-alone value judgements to categorise Web sites based on their content. The software provider will review sites and will put them on either an 'allowed' or a 'not allowed' list. Other programs rely upon the Platform for Internet Content Selection (PICS) a standardised industry system which allows content to be rated in various categories including: topics such as 'sexual content', 'race', and 'privacy', under the control of the user.

Combined, the role of the community and the security provided by these products appear to provide a relatively successful solution to the access problem.

Conclusions

New and unpredictable configurations of power are among the hallmarks of the new media. It is not surprising that the problem of control has attracted such a high degree of interest among scholars. Not only are there interesting problems of designing regimes to provide appropriate constraints on undesirable activities, there are also challenges in securing the maximum benefit to the community of new technologies such as the Internet and 3G mobile (each of which is said to be subject to 'network effects' such that the more users there the greater the benefit to the community generally). The new media phenomena present scholars with at least two temptations. One is to overstate the novelty of the problems presented, with a consequent tendency to reject 'old' forms of control.[122] The second is to overstate the extent to which the media themselves 'hardwire' or constrain the possible means to addressing the problems. Both tendencies are prevalent in analyses of the control problem as it applies to the Internet.

The alternative, which we have argued for, is to locate problems of controlling the new media squarely within well established analyses of problems of regulatory control. Such analysis encourages us to look at the mechanisms of control which already subsist within the target system and to find ways to stimulate or steer those indigenous mechanisms towards meeting the public interest objectives of regulation. Thus a central role for hierarchy is to steer systems which involve other forms of control based in community, market or design (or combination thereof). This does not exclude the possibility that effective control may occur through competition, design or community, together or separately, without hierarchical involvement.

A key challenge presented by such novel governance mechanisms is how to deploy them in such a way that are perceived as legitimate. The legitimacy of democratic government is linked to processes of representation and open decision making. Though other governance

[122] A useful early consideration of the 'newness' issue in Cyberspace is I. Trotter Hardy 'The Proper Legal Regime for "Cyberspace"' (1994) 55 *University of Pittsburgh Law Review* 993. More recently see M. Price 'The Newness of New Technology' (2001) 22 *Cardozo Law Review* 1885.

mechanisms may be legitmated in similar ways, in many cases it will either be alternative process elements and/or outcomes which are more important in generating legitimacy. Judgements on the appropriate balance between democratic and other forms of legitimation are likely to differ within different political cultures. This is evidenced in markedly different responses in Europe and the United States to the creation of ICANN. For some it represents an unacceptable delegation of government authority to a private body.[123] For others it is an efficient technical solution to a pressing problem, even if its decision making is not wholly technical. A key challenge in deploying ideas about the mixture of control forms advanced in this article is to balance these twin concerns about efficiency and legitimacy. The conditions for achieving an acceptable balance are likely to vary in different places and different times.

[123] Froomkin 'Wrong Turn in Cyberspace' n 4 above; J. Wienberg 'Geeks and Greeks' (2001) 3 *Info* 313; cf R. Marlin Bennett 'Icann and Democracy: Contradictions and Possibilities' (2001) 3 *Info* 299.