Symbiotic Regulation

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Abstract:

In this paper the author examines the development and design of regulatory structures in Cyberspace. The paper considers and models how all forms of control – including design and market controls, as well as traditional command and control regulation are to be applied within the complex and flexible environment of Cyberspace. Drawing on the work of Cyber-regulatory theorists such as Yochai Benkler, Joel Reidenberg and Lawrence Lessig and matching it with an examination of social ordering from the English Peasant's Revolt to the more modern theories of Jurgen Habermas and Nicklaus Luhmann this paper suggests a model of Cyber-regulation which acknowledges its true complexity. It further suggests how this model may be utilized by both regulators and regulatory theorists in our attempts to design a more comprehensive regulatory strategy for Cyberspace.

Symbiotic Regulation

Andrew Murray*

Complexity seems to be at the heart of much of the work of academia today. Whether one defines oneself as a sociologist,[1] a medical researcher,[2] a computer scientist[3] or a legal researcher,[4] the role of the academic researcher may be defined as studying and modeling complexity in an effort to make it accessible to a wider audience. This paper attempts to build upon some of this literature by modeling the complexity found in regulatory relationships within communications networks and in particular the internet. It begins by modeling the complexity of the regulatory environment and in so doing builds upon Professor Black's analysis of decentred regulation. Following this it will explain how regulators may harness the power of the network to achieve effective regulatory settlements by harnessing what I term symbiotic regulation. It will conclude by explaining how symbiotic regulation may achieve a greater degree of effectiveness when compared with traditional regulatory models when dealing with modern communications-enhanced networks of individuals.

Networks and Complexity

The internet is often thought of as the archetypal modern communications network, yet the internet we know today grew from relatively humble roots. Its progenitor is the Arpanet project of the US Department of Defense Advanced Projects Research Agency was designed in the 1960s as a closed communications network which allowed US-based computer researchers to share the processing power of their (at that time stand-alone) mainframe computers.[5] It was designed to be scalable, robust and (relatively) inexpensive, but it was not built upon open architecture meaning those who wished to use Arpanet had first to obtain a minicomputer known as an Interface Message Processor (IMP). These IMPs, which were leased from Bolt, Beranek and Newman who designed and built them, cost almost $4000 per month to rent,[6] a cost which put connection to Arpanet in the preserve of institutional subscribers. The difficulty of accessing the Arpanet network led others to design simpler cheaper

* Law Department, London School of Economics. Elements of this paper are taken from Andrew D. Murray, *The Regulation of Cyberspace: Control in the Online Environment*, Oxford, Routledge (2006).

[1] Michael Crozier and Jean-Claude Thoenig, 'The Regulation of Complex Organized Systems' (1976) 21 *Administrative Science Quarterly* 574.

[2] W.R. Gilks, D.G. Clayton, D.J. Spiegelhalter, N.G. Best, A.J. MacNeil, L.D. Sharples and A.J. Kirby, 'Modelling Complexity: Applications of Gibbs Sampling in Medicine' (1993) *Journal of the Royal Statistical Society* 39.

[3] Vincent D. Blondel and John N. Tsitsiklis, 'A survey of computational complexity results in systems and control' (2000) 36 *Automatica* 1249.

[4] Louis Kaplow, 'A Model of the Optimal Complexity of Legal Rules' (1995) 11 *Journal of Law, Economics and Organization* 150.

[5] For a detailed history of the internet see Katie Hafner and Matthew Lyon, *Where Wizards Stay up Late: the Origins of the Internet*, New York, Touchstone (1996).

[6] Frank Heart, *Estimate of Integrated Monthly Cost for IMPS*, Bolt Beranek & Newman (1970). Available from: http://www.archive.org/details/EstimateOfIntegratedMonthlyCostForImps (visited 5 April 2007).

alternatives leading to an explosion of interest in network design in the early 1970s. Professor Norm Abramson of the University of Hawaii developed a wireless network named Alohanet which used low-cost ham radio systems to create a wide area network linking the remote campuses of the University. Simultaneously, in the United Kingdom Donald Davies, co-creator of the concept of packet switching,[7] built a packet switched local area network called the Mark I to serve the National Physical Laboratory in Teddington, while in France Louis Pouzin designed a network known as Cyclades for the Institut de Recherché d'lnformatique et d'Automatique.[8] As the number of available computer networks grew, the desire to network the networks became stronger. A project was begun to inter-network these variety of networks under the direction of Robert Khan and Vint Cerf. The solution they designed was Transmission Control Protocol/Internet Protocol (TCP/IP). TCP/IP is an extremely simple software design that allows any computer network to be connected to any other via the TCP/IP carrier. TCP/IP is though more than simply a piece of software that allows for internetworking, an understanding of the key principles of TCP/IP, and what it allows for, helps the regulator understand the regulatory environment more clearly, which in turn allows for better regulatory design.

At the heart of TCP/IP are two key concepts: open architecture connectivity and end-to-end connectivity. The first allowed any network to connect to the TCP/IP carrier network allowing not only for connections between extant networks such as Alohanet, Mark I and Cyclades, but also allowing for other protocols and software suites to 'piggy back' on the TCP/IP protocol suite to reach the wider audience of anyone with a TCP/IP enabled network. This led to a variety of internetworking applications such as File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP), Real-time Transport Protocol (RTP) and most famously Hypertext Transport Protocol (HTTP). This feature of TCP/IP ensures that the internet may be used as a foundation for any variety of new network initiatives from simple file transfers (as were allowed by Arpanet) to complex modern network initiatives such as Video on Demand, Hyperlinking and Voice over IP (VoIP) without the need for permission or without changes in the TCP/IP architecture being required. The second defines the network as a neutral network. The concept on net neutrality is highly prized by many internet pioneers. It means that all communications on the network are treated equally whatever they are carrying (be it a simple e-mail or a complex VoIP conversation) with the network intelligence being found at the ends of the network in the 'hosts'. This prized concept is currently under review, some may even say challenge, as advances in network architecture now allow for intelligent design, and with some modern network tools such as streaming video and VoIP being more sensitive to lag than others such as file transfers or simple web browsing, the call has gone out from many quarters for a review

[7] D. W. Davies, K. A. Bartlett, R. A. Scantlebury and P. T. Wilkinson, 'A digital communications network for computers giving rapid response at remote terminals' *ACM Symposium on Operating Systems Principles*, October 1967.
[8] Cyclades was the first network to use datagrams and matching end-to-end protocols, essential components of the modern internet. See Louis Pouzin, 'CIGALE, the packet switching machine of the CYCLADES computer network' (1974) *Proceedings of the International Federation for Information Processing* 155.

of this principle.[9] The effect of these two concepts is that the internet functions somewhat like a mail carrier. It will carry anything from anyone to anyone else as long as it is properly labeled and packaged. A typical communication between two parties across any of the networks which use the TCP/IP protocol and may therefore properly be described as an internet communication, sees the original message split into smaller components then sent through the network in parts before being recombined at the recipient's computer. It looks somewhat like figure one.

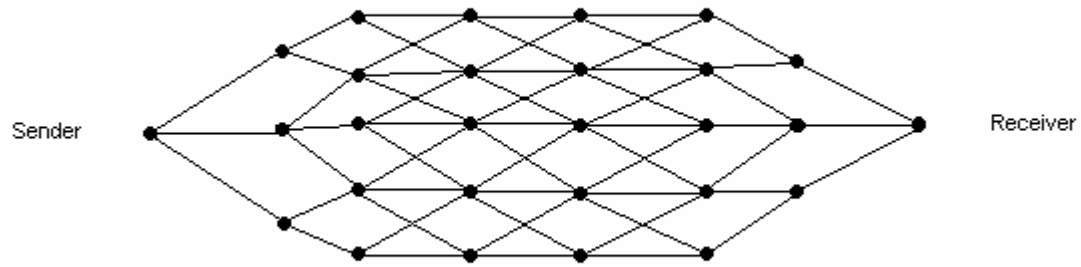

Figure One: Internet Communications Traffic

This design is actually rather atypical among communications networks, and it soon becomes clear that the internet, far from being an archetypal modern communications network, is actually rather unique in its structure. If we imagine the variety of digital communications networks available to us such as telephony, fixed and mobile, or broadcast, visual or audio, we find these communications pass through a central transmission point, or a series of related transmitters, as can be seen in figures two and three.

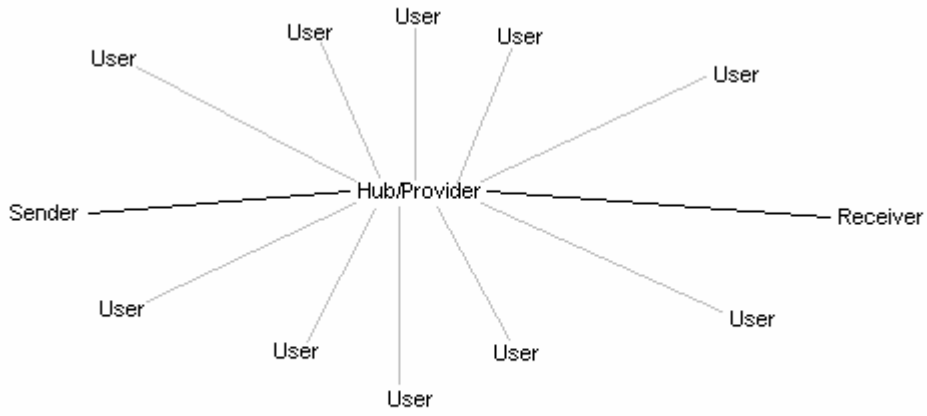

Figure 2 - Telephony Network

[9] High Tech Broadband Coalition, *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities* (CC Docket No. 96-45 (2002)); High Tech Broadband Coalition, *Appropriate Regulatory Treatment for Broadband Access to the Internet over Cable Facilities* (CC Docket No. 96-45 (2002)). For an excellent discussion of the issues see Barbara van Schewick, 'Towards an Economic Framework for Network Neutrality Regulation', Paper presented at The 33rd Research Conference on Communication, Information and Internet Policy, The National Center for Technology and Law, George Mason University School of Law Arlington, Virginia, USA (2005). Available from: http://www.democraticmedia.org/PDFs/Schewick.pdf (visited 5 May 2007).

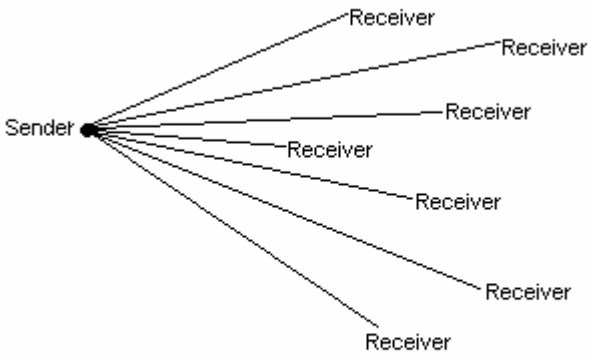

Figure 3 - Broadcast Network

Even the most cursory examination of these figures allows the reader an insight into the difficulty of regulating the internet. Whereas traditional broadcast media have a single point of control, the head of the beast so to speak, which may be utilised by regulators as a point of control,[10] the internet has no equivalent. To attempt to regulate activities or content in cyberspace is exponentially more complex than with traditional narrowcasting and broadcasting communications networks. And as there are an almost infinite number of communications nodes available on the internet, the usual media-regulatory model of regulating the carrier or enabler approaches the impossible. It is this complexity in the regulatory matrix which led cyberlibertarians such as David Post and David Johnson[11] and John Perry Barlow[12] to develop their theory of cyber-liberalism. Noting that 'control' in traditional media regulation emanated at the level of individual networks, they proposed that although forms of hierarchical control might be exerted over specific networks, the aggregate range of such rule sets was unlikely to lead to any form of centralised control of cyberspace. Accordingly, the 'Law of Cyberspace' would largely be determined by a free market in regulation in which network users would be able to chose those rule sets they found most congenial. Johnson and Post maintained that the various dimensions of inter-networking could be governed by 'decentralised, emergent law' wherein customary and privately produced laws, or rules, would be produced by decentralised collective action leading to the emergence of common standards for mutual co-ordination.[13] In other words, they believed that the decentralised and incorporeal nature of cyberspace

[10] See for example the Ofcom Broadcasting Code (Available from http://www.ofcom.org.uk/tv/ifi/codes/bcode/ofcom-broadcasting-code.pdf (visited 8 May 2007). The code regulates radio and television broadcasters to protect children and to ensure broadcast media meets taste and decency standards.
[11] David Post and David Johnson, 'Law and Borders - The Rise of Law in Cyberspace' 48 *Stanford Law Review* 1367 (1996).
[12] John Perry Barlow, *A Declaration of Independence for Cyberspace*. Available at: http://homes.eff.org/~barlow/Declaration-Final.html (visited 8 May 2007).
[13] This notion parallels the concept of polycentric or non-statist law. See Tom Bell (1991/92) 'Polycentric Law' 7(1) *Humane Studies Review* 4; Tom Bell (1998) 'Polycentric Law in the New Millennium.' Paper presented at The Mont Pelerin Society: 1998 Golden Anniversary Meeting, at Alexandria Virginia. Available at: http://www.tomwbell.com/writings/FAH.html (visited 8 May 2007)

meant that the only possible regulatory system was one which developed organically with the consent of the majority of the citizens of cyberspace.[14]

This view was, of course, immediately challenged by the emergent cyberpaternalist school led by Joel Reidenberg,[15] Jack Goldsmith[16] and Lawrence Lessig.[17] According to this view, internet related conflicts and controversies reflect a state of flux in which the decisions of network designers and established legal regimes intersect.[18] The cyberpaternalist school believed that dependence on design choices, the attributes of public oversight associated with regulatory regimes, could be maintained by shifting the focus of government actions away from direct regulation of cyberspace, toward influencing changes to its architecture. This approach reached its apex in Lawrence Lessig's monograph *Code and Other Laws of Cyberspace.*[19] In this Lessig identified four 'modalities of regulation': (1) law (2) market, (3) architecture and (4) norms which may be used individually or collectively either directly or indirectly by regulators. To explain his concept Lessig uses a simple example to demonstrate how his four modalities may be used by regulators. In seeking to regulate your decision whether to smoke or not, a regulatory body may promulgate laws to constrain the supply of cigarettes, such as age restrictions, or to regulate your ability to consume cigarettes in certain environments, as with the recent outright ban against smoking in enclosed public places and workplaces in England.[20] Alternatively regulators may encourage the development of a certain standard of norms such as media campaigns which demonstrate the dangers of passive smoking, or those designed to paint smokers as generally anti-social. These are designed to encourage a strong, and negative, societal response to smoking, particularly smoking in public places. Equally a market solution may be used, such as in the United Kingdom where a robust policy of elevated tobacco duties is used to discourage smoking. Finally architectural solutions may be used: cigarettes with filters may encourage more smoking as they are perceived as being less dangerous while nicotine enhanced cigarettes will prove to be more addictive. Each modality thus has a role to play in regulating your decision.[21] Lessig suggests that the true regulatory picture is one in which all four modalities are considered together. Regulators will design hybrid regulatory models choosing the best mix of the four to achieve the desired outcome.[22]

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[14] Johnson & Post above n 11. See also David Johnson and David Post 'The New 'Civic Virtue' of the Internet: A Complex Systems Model for the Governance of Cyberspace' in Firestone (ed) *The Emerging Internet* (1998 Annual Review of the Institute for Information Studies).

[15] Joel Reidenberg 'Governing Networks and Rule-Making in Cyberspace' 45 *Emory Law Journal* 911 (1996); Joel Reidenberg 'Lex Informatica: The Formation of Information Policy Rules Through Technology' 76 *Texas Law Review* 553 (1998).

[16] Jack Goldsmith, 'Regulation of the Internet: Three Persistent Fallacies' 73 *Chicago-Kent Law Review* 1119 (1998).

[17] Lawrence Lessig, 'The Law of the Horse: What Cyberlaw Might Teach' 113 *Harvard Law Review* 501 (1999).

[18] A state defined by Reidenberg as *Lex Informatica.*

[19] New York, Basic Books, 1999. Note: *Code and Other Laws of Cyberspace version 2.0* was published in 2006 by Basic Books. References to the text in this paper refer to the original where the *Code* thesis was first developed.

[20] Health Act 2006, Chapter 1.

[21] Lessig, above n 19 at p 87.

[22] *Ibid* at pp 87-8.

The problem of the cyberpaternalist, or Lessigian, model of regulation is that it makes an error in fact similar to the cyberlibertarian model. Whereas the cyberlibertarians erroneously believed that the complexity in the regulatory matrix would naturally defend liberties in cyberspace from external regulatory interventions, the cyberpaternalists believe the lifeblood of the network, its software code, may effect control over network users. In fact the true position is complicated by the extant design of the network; the principles of open architecture connectivity and end-to-end connectivity protect the individual network user from external regulatory interventions. These principles removed from the network at the beginning the concept of a directing or controlling mind. There is no network operator as there is with traditional telecommunications or broadcast networks. Of course the network may be redesigned. There is no requirement that the network retain these characteristics, and as we have already seen an extensive discourse on the future of network neutrality is in progress, a discourse which may affect the principle of end-to-end connectivity. But, to migrate the community from the current network to a network based on a new set of principles requires the agreement and consent of the community, a community that through their use of the network comes close to achieving in practice Jürgen Habermas's model of the public sphere.[23] Thus to truly understand how regulation functions on the internet we need first to examine the network of internet users.

Dots, Networks and Communities

A return to the cyberpaternalist approach allows us our first insight into the true model of cyber-regulation. In *Code and Other Laws of Cyberspace,*[24] Lawrence Lessig demonstrates the application of his modalities of regulation thesis by applying regulation to an imaginary subject he entitles his 'pathetic dot'. At page 86 he introduces the dot in a section entitled 'A Dot's Life' with the following words:

> 'There are many ways to think about "regulation." I want to think about it from the perspective of someone who is regulated, or, what is different, constrained. That someone regulated is represented by this (pathetic) dot – a creature (you or me) subject to different regulations that might have the effect of constraining (or as we'll see, enabling) the dot's behavior.'

In the passage of analysis which follows Professor Lessig sets out his now famous constraints on behaviour analysis which places the pathetic dot at the centre of a network of constraining modalities (the modalities of Law, Norms, Markets and Architecture discussed above) which exert their force upon the dot to either constrain the activities or actions of the dot (negative or red-light regulation) or to incentivise the dot into

[23] The public sphere is defined by Habermas as 'a network for communicating information and points of view which eventually transforms them into a public opinion'. See Jürgen Habermas, *The Structural Transformation of the Public Sphere: Inquiry into a Category of Bourgeois Society*, Cambridge, Polity (1992).
[24] Above, n 19.

action (positive or green-light regulation).[25] Throughout the analysis which follows Professor Lessig's dot remains a passive observer of the regulatory matrix which surrounds him. Thus when governments decide that they wish to achieve a policy objective such as reducing the level of thefts of car stereos, Professor Lessig describes the activities governments may choose to adopt, from increasing the penalty for car radio theft to life in prison to mandating a change the radio's architecture to design radios that work only with a single car by encoding a security code that electronically locks the radio to the car, so that if the radio is removed it will no longer function.[26] But at each point in this discourse the dot remains simply observant of the changes surrounding it. What happens if we change the dot's role from passive receiver to active transmitter? Thus, now when government mandates a change in the regulatory environment of the manner described by Lessig the dot responds. Lessig predicts that the dot will respond in a predictable and directed fashion. If you threaten car stereo thieves with life imprisonment they will modify their behaviour by no longer stealing car stereos. But another possible response is that the thief, now mindful of the consequences of being caught, carries with him a gun or a knife with the intent to use it against anyone who attempts to apprehend him to ensure his escape. This is an example of an occurrence which is all too common in the real world and which goes by many names. In economics, and more widely in the social sciences, it is often entitled 'the law of unintended consequences'[27] in regulatory theory it may sometimes be called 'regulatory failure'.[28] In either case the terminology is instructive. Both suggest a settled environment where the only variable is the activity of the regulator (look at the use of the words 'unintended' and 'failure'). Where an unintended consequence arises such as the one suggested above, or wherein a digital rights management scheme such as Content Scramble System is reverse engineered by a Norwegian teenager,[29] then it must be as a result of a weakness in the regulatory design. What neither explicitly allows for is a response from the regulatee which is at variance with the desired regulatory outcome. This is not a failure of the regulation, despite the name given to it, it is a failure of the model to account for the reactions of the not-so-pathetic dot. This brings us to our next series of questions. Was the dot ever pathetic? When

[25] For a discussion of green-light and red-light theories in Administrative Law see Carol Harlow and Richard Rawlings, *Law and Administration 2ed*, London, Butterworths (1997).
[26] Above, n 19 at p.90.
[27] Rob Norton, 'Unintended Consequences' in David Henderson (ed) *The Concise Encyclopedia of Economics* (1993). Available in full from: http://www.econlib.org/library/Enc/UnintendedConsequences.html (visited 14 May 2007). See also Deepak Lal, *Unintended Consequences: The Impact of Factor Endowments, Culture, and Politics on Long-Run Economic Performance*, Cambridge, MA: MIT Press (1998); Richard Posner, 'Values and Consequences: An Introduction to Economic Analysis of Law', *University of Chicago Law School, Law & Economics Working Paper, 2d series* No 53 (1998).
[28] Paul Joskow, 'Regulatory Failure, Regulatory Reform, and Structural Change in the Electric Power Industry', (1989) *Brookings Papers on Economic Activity: Special Issue* 125; James Barth, Susanne Trimbath & Glenn Yago (Eds) *The Savings and Loan Crisis: Lessons from a Regulatory Failure*, New York, Springer-Verlag (2004); A.S.G. Lubulwa, *The Implications of Regulatory Failure for Rail and Road Industries*, London, Avebury Press (1990).
[29] Kristin Eschenfelder and Anuj Desai, 'Software as protest: the unexpected resiliency of US based DeCSS posting and linking', 20(2) *The Information Society* 101 (2004); Kristin Eschenfelder, Anuj Desai, Ian Alderman, Joanna Sin & Shen Yi, 'The limits of DeCSS posting: A comparison of internet posting of DVD circumvention devices in the European Union and China' 31(4) *Journal of Information Science* 317(2005).

did it cease to act in a purely pathetic manner? What caused this evolution? And finally what can regulators do about the not-so-pathetic dot?

The first of these questions is in many respects the most difficult to answer. It is not the purpose of this paper to analyse the nature of identity, individuality, collectivism and control. What can be said within the confines of the analysis herein is that the adage 'divide and conquer' stems from the weaknesses we can observe in individuals when they are separated from the community. Thus in days past when communications were less efficient and effective than they are now it was easier to effect direct control of the type described by Lessig. Thus in medieval England it was relatively easy for the King to rule directly as the King was the font of all power (and controlled the organs of state). Thus the nobles would follow the King and apply his rule to their tenants. The tenants would not often commune in large groups except in Church where the message they received cemented the concept of the Divine Right of the King.[30] Thus the King ruled as the populous tended to receive their information from sources loyal to the King. The lack of a cohesive horizontal communications network among the majority of the population meant it was difficult for the populous to form a popular opinion apart from that of the King and State. We cannot say though that the populous was without power. Despite being mostly passive receivers of regulatory demands, on occasion the populous acted as a transmitter. The most famous (failed) example of this was the Peasants' Revolt of 1381. The revolt began in Essex when locals in Brentwood reacted adversely to an over-zealous tax collector. From Brentwood, resistance to tax collectors spread to neighbouring villages, while across counties such as Kent, Suffolk, Hertfordshire and Norfolk, armed bands of villagers and townsmen also rose up and attacked manors and religious houses. The revolt eventually reached London where the Savoy Palace was razed by the revolutionaries, but then almost as soon as it had begun the revolt was over. The young King Richard II met the Essex peasants and the peasants pledged their allegiance to the King.[31] What happened? We cannot be certain as to all the social, economic and political factors which took hold at that meeting between the King and the Essex peasants, and several eminent authors have spent time analysing the background to the revolt and the meeting with differing views as to the causes and effects.[32] Analysing just a few of the fine details of the revolt, though, gives us some insight into the way people communicate, both with each other and with those who regulate them. At the outset the revolt started from a single point and then quickly spread through the surrounding area as word of the events in Brentwood spread. The speed with which others in Kent, Suffolk, Hertfordshire and Norfolk took up in support of the revolt shows there had been an underlying resentment among the members of the community, but that feeling

[30] See Fritz Kern, *Kingship and Law in the Middle Ages*, Oxford, Greenwood Press (1985).
[31] Alastair Dunn, *The Peasants' Revolt: England's Failed Revolution of 1381*, Stroud, NPI Media Group (2004).
[32] For some of these see R.B. Dobson, *The Peasants' Revolt of 1381*, London ,MacMillan (1983); Christopher Dyer, 'The Social and Economic Background to the Rural Revolt of 1381' in Rodney Hilton and Trevor Ashton (eds) *The English Rising of 1381*, Cambridge, Cambridge University Press (1984); Anthony Tuck, 'Nobles, Commons and the Great Revolt of 1381' in Rodney Hilton and Trevor Ashton (eds) *The English Rising of 1381*, Cambridge, Cambridge University Press (1984), Sir Charles Oman, *The Great Revolt of 1381*, London, Greenhill Press (1989 reprint of 1906 edition).

isolated and in fear of their overlords, they chose to act as passive receivers. Once one group decided the act as transmitters of this resentment the information spread quickly and an isolated local event became one of national concern. The revolt ended when the King met the leaders of the revolt. The reason for the swift resolution may equally easily be mapped in terms of regulatory settlement. The revolt was not against the King directly who was believed to be the appointment of God by the revolutionaries. To have attacked the King would have required a step change in the aims of the revolt. By meeting the peasants personally the King defused the situation. All these men had been taught since the day they were born was to follow the word of God and the King (in that order) and they were not about to commit Treason by attacking the King. Again language, communication and culture is important. By meeting them personally the King could use the weight of authority invested in him personally by the apparatus of the state. The King was Divine. The peasant leaders knew this and knew if they attacked the King their support would fade. This knowledge signalled the end of the revolt.

What do we learn from the tale of the Peasants' Revolt? If you are thinking that reviewing the actions of a group of peasants from 628 years ago is of no value in a paper examining the regulation of the internet, then you should remember that 'those who don't know history are destined to repeat it.'[33] Although the exact facts of the Peasants' Revolt are unlikely to re-occur today in the United Kingdom we learn much from studying their early development and conclusion. It gives a indication of an answer to our initial question, 'was the dot ever pathetic?' The answer is no, the dot was always empowered. What was missing before the age of media and communications, or even before modern community was the ability for dots to exert their will on other dots. A single dot may feel a sense of unfairness or injustice but without the support of its community it would feel powerless to act against the weight of regulation pressing down on it. Also we learn from the Peasants' Revolt, the value of programmed information and reinforcement. The peasants were angry with the regime of their King, yet when faced with the King in person they pledged allegiance. The conditioning to follow the King was extreme in these men, it was programmed into the very heart of what it meant to be an Englishman, and reinforced by the teachings of Church and State. These lessons still hold true today.

Today's world is obviously very different from the world of Wat Tyler.[34] We can probably trace the development of the modern networked or 'community' dot to the development of collectivism. Collectivism stresses human interdependence and the importance of the collective, rather than the importance of separate individuals, and is usually traced to the social contract theorists Thomas Hobbes, John Locke and Jean-Jacques Rousseau who lived and worked in Europe between 1588 and 1778. Specific significance may be found in the work of Rousseau who developed two distinct social contract theories.

[33] Quote attributed to Edmund Burke, Statesman and Philosopher (1729-1797).
[34] Wat Tyler was the leader of the Peasants' Revolt of 1381.

The first was an account of the moral and political evolution of humans from a state of nature to modern society. This is usually termed his naturalised account of the social contract, an account which troubled Rousseau and which was developed in his essay, *Discourse on Inequality*,[35] commonly referred to as the Second Discourse. Rousseau wrote the Second Discourse in response to an essay contest sponsored by the Academy of Dijon. In it he described the historical process by which man began in a state of nature and over time progressed into civil society. According to Rousseau, the state of nature was a peaceful and idealistic time. People lived solitary, uncomplicated lives. Their few needs were easily satisfied by nature. Because of the abundance of nature and the small size of the population, competition was non-existent, and persons rarely even saw one another, much less had reason for conflict or fear. Furthermore, these simple, morally pure persons were naturally endowed with the capacity for pity and therefore were not inclined to bring harm to one another. As time passed, though, humanity faced certain changes. As the overall population increased, the means by which people could satisfy their individual needs changed. People slowly began to live together in small families, and then in small communities. Divisions of labour were introduced, both within and between families, and discoveries and inventions made life easier, giving rise to leisure time. Leisure time inevitably led people to make comparisons between themselves and others, resulting in public values, leading to shame and envy, pride and contempt. Most importantly however, according to Rousseau, was the invention of private property which constituted the pivotal moment in humanity's evolution out of a simple, pure state into one characterised by greed, competition, vanity, inequality, and vice. For Rousseau the invention of property constitutes humanity's fall from the state of nature.[36] Having introduced private property, initial conditions of inequality became more pronounced. Some have property, while others are forced to work for them, and the development of social classes begins. Eventually, those who have property notice that it would be in their interests to create a government that would protect private property from those who do not have it but who can see that they might be able to acquire it by force. So, governments are established, through a contract, which purports to guarantee equality and protection for all, even though its true purpose is to fossilise the very inequalities that private property has produced. In other words, the contract, which claims to be in the interests of everyone equally, is really in the interests of the few who have become stronger and richer as a result of the developments of private property. This is the naturalised social contract, which Rousseau viewed as responsible for the conflict and competition from which modern society suffers.

The second theory is his normative, or idealised, theory of the social contract, and is meant to provide the means by which to alleviate the problems that modern society has created for us. The normative social contract, argued for by Rousseau in *The Social Contract*,[37] was meant to respond to this

[35] First published 1754. Oxford World Classics ed. (trans. F. Philip), Oxford, OUP, 1999.
[36] Rousseau notes: 'This was the epoch of a first revolution, which established and distinguished families, and introduced a kind of property, in itself the source of a thousand quarrels and conflicts.' *Ibid* Part II.
[37] First published 1762, Penguin Books Great Ideas (trans Maurice Cranston) 2004, London, Penguin.

sorry state of affairs and to remedy the social and moral ills that have been produced by the development of society. The distinction between history and justification, between the factual situation of mankind and how it ought to live together, was of the utmost importance to Rousseau. While we ought not to ignore history, nor ignore the causes of the problems we face, Rousseau believed we must resolve those problems through our capacity to choose how we ought to live. *The Social Contract* begins with the most oft-quoted line from Rousseau's work: 'Man was born free, and he is everywhere in chains'. This claim was the conceptual bridge between the descriptive work of the Second Discourse, and the prescriptive work that was to come. Humans, according to Rousseau, are essentially free, and were free in the state of nature, but the progress of civilisation has substituted subservience to others for that freedom. Since a return to the state of nature is neither feasible nor desirable, the purpose of politics is to restore freedom to us, thereby reconciling who we truly and essentially are with how we live together. This is the fundamental philosophical problem that *The Social Contract* seeks to address: how can we be free and live together? Or, put another way, how can we live together without succumbing to the force and coercion of others? We can do so, Rousseau maintains, by submitting our individual, particular wills to the collective or general will, created through agreement with other free and equal persons. Like Hobbes and Locke before him, Rousseau believes all men are made by nature to be equals, therefore no one has a natural, or divine, right to govern others, and therefore the only justified authority is the authority that is generated out of agreements or covenants. The most basic covenant, the social pact, is the agreement to come together and form a people, a collective which by definition is more than and different from a mere aggregation of individual interests and wills. This act, where individual persons become a people is 'the real foundation of society'.[38] Through the collective renunciation of the individual rights and freedom that one has in the state of nature, and the transfer of these rights to the collective body, a new person is formed. The sovereign is thus formed when free and equal persons come together and agree to create themselves anew as a single body directed to the good of all considered together. So, just as individual wills are directed towards individual interests, the general will, once formed, is directed towards the common good, understood and agreed to collectively. Included in this version of the social contract is the idea of reciprocated duties: the sovereign is committed to the good of the individuals who constitute it, and each individual is likewise committed to the good of the whole. Given this, individuals cannot be given liberty to decide whether it is in their own interests to fulfill their duties to the sovereign, while at the same time being allowed to reap the benefits of citizenship. They must be made to conform themselves to the general will or in Rousseau's words they must be 'forced to be free'.[39] For Rousseau, this implied an extremely strong and direct form of democracy. One cannot transfer one's will to another as one does in representative democracies. Rather, the general will depended upon the coming together periodically of the entire democratic body, each and every citizen, to decide collectively, and with at least near unanimity, how to live together, i.e. what laws to

[38] Book I, Ch 5.
[39] Book I, Ch 7.

enact. As it is constituted only by individual wills, these private, individual wills must assemble themselves regularly if the general will is to continue. One implication of this is that the strong form of democracy which is consistent with the general will is traditionally only possible in relatively small communities. The people must be able to identify with one another, and at least know who each other are. They cannot live in a large area, too spread out to come together regularly, and they cannot live in such different geographic circumstances as to be unable to be united under common laws. Although the conditions for true democracy are stringent, they are also the only means by which we can, according to Rousseau, save ourselves, and regain the freedom to which we are naturally entitled. Rousseau's social contract theories together form a single, consistent view of our moral and political situation. We are endowed with freedom and equality by nature, but our nature has been corrupted by our contingent social history. We can overcome this corruption, however, by invoking our free will to reconstitute ourselves politically, along strongly democratic principles, which is good for us, both individually and collectively.

Collectivism and Online Communications

If we trust in social contract thought, and I understand that many readers may not, we can see the power of the collective community. Even if you do not subscribe to Rousseau's normative social contract any reader of a paper discussing the regulation of the internet must at least acknowledge the power of the modern telecommunications network. The internet obviates some of the conditions of Rousseau's strong form of democracy. No longer do we need to live in a narrowly defined geographical area to form a functional community. We can come together at any time over any space to practice our democratic will. Communities, and indeed the principle of collectivism within a community, can band together individuals from different socio-economic backgrounds, from different educational backgrounds and from different cultural backgrounds. Today, we form micro communities, narrow communities focused on a particular aspect of an individual's life. These communities have standards and norms which are designed to reflect the aims and objectives of that community, and are quite distinct from the community values the member recognises in their everyday (offline) life. In examining micro communities Manual Castells notes that the internet allows us to experience a different kind of community support: support for what he calls 'networked individualism'.[40] Network individualism is defined by Castells in two ways: firstly the creation of new weak ties between people who share some characteristics in common, an example of such a community being SeniorNet, a network designed to bring together elderly people for support and the exchange of information; and secondly through technologies such as e-mail and chat the network provides for the maintenance of existing strong ties such as family ties which have been stretched by geographical relocation. Thus Castells sees the internet as primarily a tool of communication which can be used to form and strengthen bonds between persons who have interests or experiences in common. Communities in cyberspace come together as an extension of communities in real space, with the power of the network

[40] Manuel Castells, *The Internet Galaxy*, Oxford, Oxford University Press (2001) at pp 129-33.

being in its ability to shrink distances and time. Should you want to meet with others who share your interests in, for example, Ferrari cars, there is no need to travel to meet with others at a common time and place convenient to all. You may 'dip in' to a discussion at ferrarichat.com or thescuderia.net at any time and from the comfort of your own home. This leads Castells to note: 'the most important role of the Internet in structuring social relationships is its contribution to the new pattern of sociability based on individualism'.[41]

Whether one labels the relationships developed online as network individualism as Castells does, or as I prefer: weak collectivism, the key to understanding the unique challenges that cyberspace poses to regulators is to be found in these relationships. If we can return to some key figures I hope to be able to demonstrate exactly what these challenges are. Firstly let us turn to Lawrence Lessig's pathetic dot. Lessig graphically explains how the dot is controlled on page 88 of *Code and Other Laws of Cyberspace*.

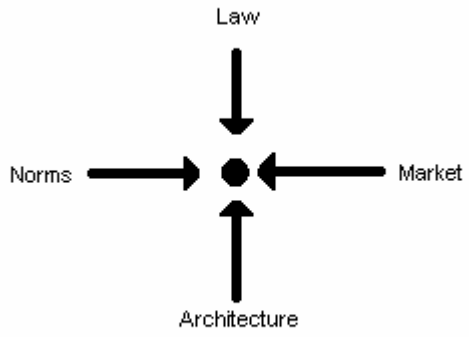

Figure 4 - Lessig's Pathetic Dot

As can be seen the dot sits in the middle of a crush of regulatory modalities and must contend with their combined weight (and effects). There is no 'wiggle room' for the dot. The dot is led and directed by these four modalities. It may be, as with the earlier example of the car stereo, that the regulator gets the balance wrong and finds that the market value of car stereos outweighs the potential penalties that the law imposes, but in principle the dot is controlled by the collective action of these four regulatory modalities. But, the dot, as we know, is not alone. The dot forms part of a community of dots. Where collectivism overcomes individualism the dots may agitate together as a group. When enough dots come together they form a community, which forms norms and thereby a collective of dots becomes a modality of regulation. But even when the collective falls short of this it effects the regulatory settlement. Network individualism or weak collectivism is an effect of modern communications cultures and is particularly strong in the decentred network that this the internet. With no single point of control, as is found in other media

[41] *Ibid* at p 130.

carriers, the opportunity for regulation through law or code is diminished and the opportunity for communities to set standards and values (short of norms) which challenge regulatory communications from regulatory bodies is enhanced. Thus dots start to coalesce in groups and into communities through the medium of the internet. These communities then gravitationally move toward other communities which share similar values and a network of networks begins to develop, as is seen in figure five.

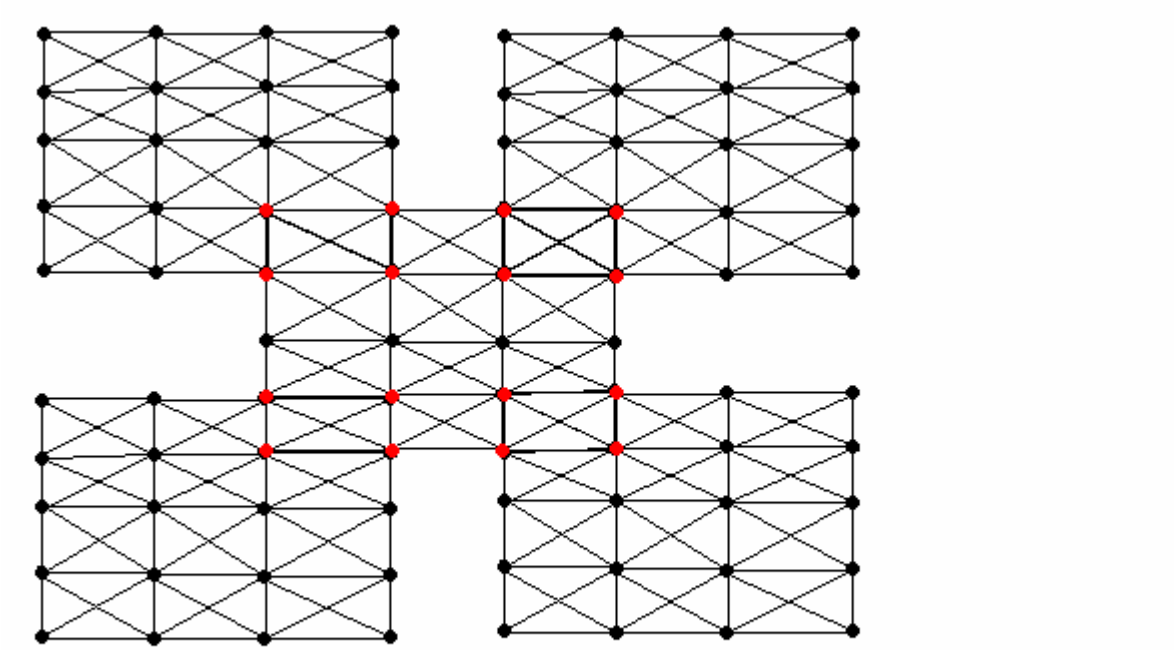

Figure 5 - How People Network

Figure five shows five overlapping yet unique micro communities. We may imagine them to have little in common but the fulcrum which connects them are the sixteen key nodes highlighted in red. These are individuals who are members of more than one community. By transferring values between the two communities they carry the regulatory transmissions of the one community beyond that community. Although these nodes represent individual members of the community with no greater significance (to that community) than any other node, by transmitting the values of that community to pastures new it allows their values to influence a further community (just as happened in the counties surrounding Essex during the Peasants' Revolt) where their views may be embraced or rejected by the new community following evaluation. Thus just as no network on the internet is completely unaffected by the events in other networks, no community is unaffected by events in other communities. The internet is not just a network of networks it is also a network of communities. This is the essential key to understanding regulation within the network. By connecting micro communities through shared points of contact we create a new type of community which allows for collectivism with individuals outside of your community. Although at first this sounds tautologous: how can you form a collective position with someone whom you do not know the identity of? in the network it is possible for collectivism to be shared through common nodes or points of

contact. This means that when regulators attempt to intervene into a single point in the network, such as peer-to-peer file sharing networks, the effects of their intervention may be felt throughout the network, and nodal responses may arise elsewhere and more importantly against the background of a different set of community values. This makes traditional command and control regulation highly disruptive. We therefore need a different model.

Symbiotic Regulation

Much better is to design a control model which affords all participants in the regulatory matrix an opportunity to shape the evolutionary development of their environment, evolution rather than revolution is the key to effective regulatory intervention and this means that communication between all parties is essential. According to the dynamic regulatory matrix the best regulatory model is not one built upon an active intervention into the settled regulatory environment, the result of which is likely to be extremely disruptive, rather it is one which harnesses, as best as possible,[42] the relationships already in place between the actors: in other words symbiotic regulation. The development of symbiotic regulation, although complex is not impossible.

How can traditional regulators, who are used to implementing a command and control model, match the complexity of these organic developments? It is suggested that the key component of the solution is to be found in mapping the communications which occur between regulatory actors, and in particular, Niklas Luhmann's theories of autopoietic social systems. Luhmann's thesis of autopoiesis[43] develops Humberto Maturana and Francisco Varela's biological concept of autonomous living systems[44] and proposes that social systems are self-referring entities created within their own organisational logic. This approach is a radical departure from mainstream sociological thought, which is based on the premise of collective human agency. According to Luhmann there is no central organisational body and no hierarchical structure merely unique subsystems, and subsystems within subsystems. A social system emerges wherever two or more actions are connected. At the most basic 'level' Luhmann classifies this as 'interaction'. But as the complexity of these interactions increase they formalise into distinct subsystems such as organisations or corporations each carrying unique specialisation and identity. These societal subsystems self-define 'meaning' and in doing so isolate themselves, creating a unique identity through the selection or rejection of relevant or irrelevant 'communications'.[45] This process allows an organisation to assume its own 'life', motivated and justified by its selective communication process. In this way, social systems reduce the overwhelming world complexity, establishing difference between themselves (the

[42] Chaos theory has already told us that complete symbiosis is very unlikely.
[43] Autopoiesis is a compound word: *auto* meaning oneself and by itself, and *poiesis*, production, creation, and formation. Hence, the word autopoiesis literally is 'self-production or self-creation'.
[44] F. Varela, H. Maturana & R. Uribe, 'Autopoiesis : The Organization of Living Systems, Its Characterization and a Model' 5 *Biosystems* 187 (1974).
[45] Nicklaus Luhmann, *Soziale Systeme*, Frankfurt, Suhrkamp (1984).

subsystem) and the environment (all other subsystems).[46] Thus communication is at the heart of Luhmann's theory, subsystems evolve and develop through the internalisation of information communicated from other subsystems. It is my belief that by treating the regulatory matrix as an autopoietic environment, with each group of actors considered a subsystem, we can begin to understand the regulatory environment more fully. In doing so though we ask regulators and regulatory theorists to embrace a much more complex regulatory environment as within Luhmann's model the effect of each communication between actors is dependent upon the internal logic of each of the external, self-referring subsystems. Control is the fundamental premise of regulation, but within an autopoietic model control becomes a problem of communication where those subsystems required to implement control are cognitively open but operatively closed.[47] This means that communications between actors can never be certain, but within Luhmann's terms a communication is a very specific event, allowing us to account for these difficulties in our regulatory model.

In an autopoietic context communication is an 'event' comprised of three key aspects: 'information', 'utterance' and 'understanding' which enable the autopoietic process by way of further 'communications'. Indeed, such communication forms the core of self-referential autopoietic systems and subsystems. Each of these aspects is selected (not necessarily by a person) from numerous possible choices thereby defining the identity and boundary of the subsystem. Information, as it implies, is the *what* of the message. Utterance is the *how*, the *who* and the *when*. Understanding is the *sense* or *meaning* generated in the receiver. The process of this communication leads to further communications relating to the information imparted, both within the subsystem and potentially within the environment (other subsystems). Through self-reference, and the memory of previous selections a subsystem focuses on only specific communications as among the possible social connections there are only a few that are relevant or compatible with its identity. Functionally differentiated subsystems within the social systems are thereby concerned and can only be concerned with communications that are relevant to their functioning, autonomous of one another. Thereby communicative acts effectively say nothing about the world that is not classified by the communication itself. This process ensures the creation of highly defined differences and attaches the rationale that identity is the creation of further, expected, communications, which form and stabilise boundaries. An entity builds up a unique backlog of selections made and selections negated. It uses this accumulation of selections, its meanings, as values for making future selections. This is a self-referential, closed process that maintains a circular dynamic. Its repetition, over time, maintains the identity and existence of the individual subsystem. As Mingers states:

> 'We can visualize the whole subsystem as an ongoing network of interacting and self-referring communications of different types and see how they can be separated from the

[46] Nicklaus Luhmann *The Differentiation of Society*, New York, Columbia UP (1982).
[47] Andrew Dunshire, 'Tipping The Balance: Autopoiesis and Governance', 28 *Administration and Society* 299 (1996).

particular people involved. The people will come and go, and their individual subjective motivations will disappear, but the communicative dynamic will remain.'[48]

Thus communication in autopoietic systems is not a process directed by the actions of individuals but is rather a system in which they act as the nodes temporarily located within the communication. People are unable to alter the course of communications as they have formed a self-referential loop within which actors play their part rather than write it. In this way, social systems effectively have a life of their own that gives direction to the thought and activity of individuals a communications dynamic. Therefore in designing a symbiotic regulatory intervention, the regulator does not need to actually map the content of all communications which will take place between subsystems, or nodes. All that is required is that the dynamic of such communication is mapped. In so doing the regulator may anticipate some of the nodal responses to the regulatory intervention and may take steps to alleviate the effects of such communication: in other words symbiotic regulation need not anticipate the needs of all actors in the regulatory matrix it need only anticipate the regulatory tensions that are likely to arise when actors communicate. This greatly simplifies the challenge it means that we can create links or associations between certain actions. We may not understand why a particular result is achieved, but that does not matter: we only need know it is so. Equally regulators may map that a direct intervention to curb individual freedom in cyberspace is likely to be met with a strong counter-action (or counter-communication), unless Netizens are offered strong social or economic incentives to support this intervention. Further, by mapping the lines of communication most commonly used in a regulatory matrix we are able to map how this counter-action is likely to manifest itself: perhaps by code attacks, such as hacking or denial of service attacks, perhaps by legal countermeasures such as the ACLU legal challenge to the constitutionality of the Communications Decency Act,[49] or perhaps by other 'direct action' such as making available copyright protected material on peer-to-peer networks. Therefore effective, symbiotic, regulatory interventions may be designed simply by regulators making two preparatory acts. Firstly, they need to produce a *dynamic* model of the regulatory matrix surrounding the action they wish to regulate, including in that model a map of the communications flows already in place, then secondly, they need to produce a regulatory intervention which harnesses the natural communications flow by offering to the subsystems, or nodes, within the matrix a positive communication which encourages them to support the regulatory intervention. If successful, the positive feedback which this will generate will reinforce the regulatory intervention making it much more likely to succeed.

It is suggested that if regulators were to use this two-stage design mechanism, they could design successful regulatory interventions for the most complex regulatory environment. The problem is that a dynamic modelling technique such as this is much more complex to apply during the design phase, and

[48] John Mingers *Self-Producing Systems: Implications and Applications of Autopoiesis, Contemporary Systems Thinking*, New York, Plenum (1995) at p 144.
[49] *Reno* v *ACLU* 521 US 844 (1997).

requires constant updating to reflect changes in the dynamics of the communications flow caused by social, economic or technological changes. In addition this model requires regulators to embrace uncertainty within the regulatory matrix (they may get the effect they wish but not understand why), and as such requires a remarkable leap of faith. The question is: are we ready to make such a leap?