

Technological Determinism, Markets and Networked Cultures. A review of: *The Future of Ideas* by Lawrence Lessig (Random House, 2001).

Review Article by ANDREW MURRAY¹

1. Introduction

Following my earlier review article,² which reviewed Andrew Shapiro's *The Control Revolution* and Mark Stefik's *The Internet Edge*, I find myself in the unenviable position of reviewing another classic text in the rapidly developing field of Cyber-regulatory theory. There can be no reader of this Journal who is not familiar with the works of Lawrence Lessig, whose texts are required reading for any Cyber-regulatory theorist. His first book, *Code and Other Laws of Cyberspace*,³ is probably the most celebrated text in the field and has been the focus of intense academic debate, comment and critique.⁴ In addition, he has set up groundbreaking Cyberlaw courses at the universities of Yale, Chicago, Harvard and now at Stanford Law School,⁵ and when US District Judge Thomas Penfield Jackson sought expert assistance in the case of *United States v Microsoft*⁶ he turned to Lawrence Lessig. Then earlier this year Professor Lessig was again the centre of widespread media attention in his attempt to have the Supreme Court overturn the Copyright Term Extension Act.⁷ Reviewers of Lawrence Lessig's work therefore must overcome a degree of anticipation, even reverence, when analysing his work. It is some comfort to be reviewing Lessig's lesser known second book, *The Future of Ideas: The Fate of the Commons in a Connected World*, as it allows the reviewer some

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² A. Murray, 'The Regulatory Edge of the Internet', Vol. 11.1 *IJLIT* 87 (2003).

³ Basic Books, 1999.

⁴ See for example: D. Post, 'What Larry Doesn't Get: Code, Law, and Liberty in Cyberspace', 52 *Stanford Law Review* 1439 (2000); A. Murray & C. Scott, 'Controlling the New Media: Hybrid Responses to New Forms of Power', [2002] 65 *Modern Law Review* 491; M. Rotenberg, 'Fair Information Practices and the Architecture of Privacy (What Larry Doesn't Get)', [2001] *Stanford Technology Law Review*; M. Nadel, 'Computer Code vs. Legal Code: Setting the Rules in Cyberspace', 52 *Federal Communications Law Journal* 821 (2000); D. McCullagh, 'Lessig Suffers from Bad Code' *Wired News*, October 6, 1999.

⁵ Lessig details his experiences at Yale, Chicago and Harvard in his book *Code and Other Laws of Cyberspace* at p.79. Details of his current posting at Stanford may be found on his website www.lessig.org.

⁶ Judgment of the United States District Court for the District of Columbia, Civil Action No. 98-1232 (CKK), (November 12, 2002).

⁷ Eldred et al. v Ashcroft, Judgment of the Supreme Court of the United States, No. 01-618. (January 15, 2003).

room to develop a thesis or reply to Lessig apart from the maelstrom of debate which surrounds his more well known works, in particular *Code*.

It should be noted that this book is not intended as a sequel to *Code*. Although it takes as it's starting point the basic thesis of *Code*, that regulation through architecture, or code-based tools is a powerful, often unseen and easily manipulated modality of regulation which has extensive capacity to regulate within code-based environments such as Cyberspace, the analysis presented in *The Future of Ideas* is both more sophisticated and more restrained than the powerful arguments employed in *Code*. *The Future of Ideas* is a more mature and refined text than the raw power of *Code* and has many similarities with the excellent *The Control Revolution*. In fact it is in Shapiro's work, not Lessig's earlier work, that the foundations of *The Future of Ideas* may be found: something Lessig himself acknowledges in the preface where he says, '[t]his book picks up where Shapiro left off.'⁸ This provides a solid foundation for *The Future of Ideas*: Shapiro's book is seen as a more balanced and rounded analysis of the developing systems of Cyber-regulation than Lessig's earlier work. Unfortunately, Lessig does not seem to develop the Shapiro analysis, instead preferring to replicate many of the arguments he produced in *Code* to make his case in *The Future of Ideas*. This means that much of the balance and subtlety of Shapiro's work does not survive. In particular he presents a vision of the future which is highly deterministic and which, in the view of the current reviewer, devalues the power and impact of the message he is trying to communicate.

2. What Larry Doesn't Accept – Part I Technological Determinism⁹

David Post's classic book review of *Code*, 'What Larry Doesn't Get',¹⁰ attacks Lessig's high degree of technological determinism. Lessig he argues tells us how the future *will be*: ever greater degrees of control will be exercised by controllers of architecture (or

⁸ *The Future of Ideas* p.vii.

⁹ This is in the accepted style used when reviewing or discussing Lessig's work. It is usually in the style 'What Larry doesn't get' after David Post's book review of *Code*, 'What Larry Doesn't Get: Code, Law, and Liberty in Cyberspace' op cit. n.4. It is an adaptation of Lessig's final chapter in *Code* entitled 'What Declan Doesn't Get'. I have varied this to 'What Larry Doesn't Accept' because it is clear from his work that he 'gets' the analysis which follows, he just doesn't accept it. This is I believe a flaw in this book.

¹⁰ Op cit. n.4.

code) to maximise their commercial returns without reference to the requirements or demands of Netizens. Lessig suggests that because control can be exercised it will, and that without diligence (and intervention of the state) a space will be developed which meets the demands of the code-makers rather than the citizens of the space. Post's powerful riposte is found in a section which he entitles, 'The Ought of it'.¹¹ Here he sets out the Cyberlibertarian response to Lessig's case. He recognises that attacking Lessig's modalities of regulation thesis is futile, but that the weak link in Lessig's thesis is how these modalities are implemented. Therefore he argues that although code-based controls *may* be implemented to achieve control without accountability there is no reason why they should or *ought* to be so implemented. Thus Post charges Lessig with technological determinism. Simply, he sees only one possible view of how technology will develop and that is a particularly closed and pessimistic view.

With this powerful riposte still fresh, one may assume that with his second book Lessig would have striven to avoid such a charge being laid at his door. It is somewhat surprising therefore to find that *The Future of Ideas* contains, if anything, a greater degree of technological determinism than could be identified in *Code*. This is most apparent in Part III: 'Dot.Control', where Lessig sets out his nightmarish vision of the future. Here he once more weaves his narrative skills which were put to such good effect in *Code* to convince the reader of his case. Perhaps the most passionate and well-crafted of these is in Chapter 10: 'Controlling the Wires'. Here Lessig marshals a dizzying array of tales and narratives to advance his views on the future of telephony and television. Prime among them is his discussion at pp.151-3 of 'Fat Pipe' technology. In this he spins a complex narrative of the once separate, but now converging, technologies of dial-up access,¹² and cable access television,¹³ to demonstrate how convergence is creating the opportunity for cable companies to gain a decisive market advantage in providing not only cable programming, but also Internet Access and telephony services. In Lessig's tale this advantage is a result of local monopolies awarded to cable networks by Congress and

¹¹ Op cit. n.4., p.1448.

¹² 'Internet Access across telephone lines is slow...one can't surf the Internet quickly at even 56K; nor can one share large files quickly', op cit. n.8., p.151.

¹³ 'Essentially an end-to-end system with little intelligence in the network', Id.

the FCC in the 1970s.¹⁴ As he draws us further into the tale, we learn of a illogical divergence in regulatory policy: while Cable TV companies were awarded such a monopoly over their wires, the telephone companies were refused a similar monopoly over theirs. As Lessig says, ‘from our perspective, there should be something odd about this decision.’

Where does this account and its effects lead us? Well according to Lessig the effect is that as cable companies can control the physical layer (the wires) and the content layer, the telephony companies, in particular AT&T, were forced into vertical service agreements to compete.¹⁵ With greater integration of the physical and content layers the ability to ‘build in’ control is increased. Lessig believes this potential is dangerous as such control can undermine the end-to-end structure of the Internet.¹⁶ To illustrate his point he gives five examples of these technologies being used for ‘gatekeeping’. These are: (1) video limits, (2) server restrictions, (3) fixed backbone choice, (4) filtering, and (5) no home network. Lessig claims these examples are descriptive of future technological developments should vertical integration continue or expand. This is clearly stated at p.158 where he says, ‘[c]able’s intent to exercise control is clear; it has already exercised control...we should expect that cable will continue to exercise control in the future.’ Here Professor Lessig is repeating the technologically deterministic style he used to such effect in *Code* to make his case. It appears he has chosen to ignore the critiques of David Post in favour of preserving the writing style he has used previously to such effect. This is based upon presenting a single, deterministic, view of the future and then offering his solution as the only potential alternative to this future. Of course there are many alternative views as to how vertical integration will effect the development of the Internet. Lessig’s view of a future dominated by cable and telecoms companies seems quite at odds with the strong expansion of wireless Internet access as seen in the

¹⁴ Id., pp.151-2. Interestingly Professor Lessig doesn’t discuss the one attempt to deregulate the cable market, The Cable Franchise and Communications Policy Act of 1984, which failed disastrously - From 1986 to 1990, the cost of basic service rose 56 percent, twice the rate of inflation. See A. Zaretsky, ‘The Cable TV Industry and Regulation’ Available at: <http://research.stlouisfed.org/econ/zaretsky/cable.pdf>

¹⁵ Lessig details AT&T’s plan to take control of two ISPs @Home and Road Runner and to restrict access to the AT&T network to customers of these two ISPs, thus vertically integrating AT&T’s control of the physical layer with the content of these two ISPs. Id., pp.153-4.

¹⁶ ‘Let’s first be clear about what’s at stake. Recall what end-to-end ensured: that the network would remain simple and, and that it would be unable to discriminate against content or applications it didn’t like. That value is threatened if end-to-end *on the Internet* is compromised.’ Id., p.156.

development of the 801.11b protocol; the increased use of Bluetooth and the rolling out of third generation UMTS services.¹⁷ Indeed elsewhere in the book Lessig discusses the strong advantages of developing wireless access in place of fixed line access.¹⁸ Clearly Professor Lessig is not ignorant of the potentials of alternate technologies in providing alternatives to the current fixed line monopoly, but in Chapter 10 he chooses not to discuss these alternatives. This allows him to play to his strengths in creating a linear or deterministic future which can only be dismantled by subscribing to his thesis; that of a spectrum commons, and not by other technological developments. This sleight of hand strengthens the claim made in the chapter, but weakens the overall argument as the careful reader becomes aware he/she is being subtly manipulated by a good advocate. I'm sure Professor Lessig would argue that the development of wireless alternatives in the manner discussed serve to strengthen his case for a spectrum commons rather than weaken it: only from a commons will such technological diversity develop. This leads though into the second and arguably more fundamental weakness in Professor Lessig's case: market determinism.

3. What Larry Doesn't Accept – Part II Market Determinism

The main thesis of *The Future of Ideas* is that valuable publicly-held resources, such as spectrum, should be held for the benefit of the community as a whole rather than allocated or otherwise transferred to private entities. Professor Lessig strongly believes in the application of 'The Commons', as developed in economics and environmental law theory, to safeguard our interests in such resources. The entirety of Part I of the book, 'Dot.Commons', is used to carefully construct this argument. This is by far the most closely argued part of the text and in it Lessig constructs strong arguments in favour of the applications of commons theory across three layers of information transmission, the content, code and physical layers.¹⁹ Professor Lessig chooses to focus his analysis on the

¹⁷ See e.g. 'Helium Balloons Promise Rural Broadband' *The Internet Magazine* 27 May 2003. Available at: <http://www.internet-magazine.com/news/view.asp?id=3444>; 'Enhancing Broadband with UMTS' *Telecoms Advice*. Available at: http://www.telecomsAdvice.org.uk/infosheets/bsg_umts.htm

¹⁸ Op cit. n.8., pp.77-84.

¹⁹ Id. pp.23-25. The physical layer is the actual carrier layer such as the wires or available spectrum, the code layer is the 'logic' layer which facilitates the functioning of the physical layer while the content layer is the 'top-level' material carried by the other layers.

benefits to be derived from the application of commons within the physical and code layers. This he argues will provide the necessary freedoms in these carrier layers, which will allow creativity to flourish in the content layer.²⁰ In this sense we see *The Future of Ideas* acting not as a sequel to *Code*, but actually as an extension of the earlier book. Whereas *Code* focussed on protecting freedom in the code layer, *The Future of Ideas* is very much focussed in protecting freedom (through a spectrum commons) in the physical layer.²¹

The easiest assault on Professor Lessig's call for a spectrum commons is to attack him using the standard critique of any commons argument; the 'tragedy of the commons'. Garrett Hardin's timeless critique of commons theory,²² is extremely powerful and must be met by any proponent of a commons. Professor Lessig duly meets Hardin head-on. As a well-trained social scientist he attacks Hardin's natural science theory by utilising some well placed social science theories. The works of Elinor Ostrom²³ and Robert Ellickson²⁴ are used to support the proposition that, 'norms adequately limit the problem of overconsumption', and that 'communities work out how to regulate overconsumption.'²⁵ Although this is, to the reviewer's mind, an extremely weak reply to Hardin, this line of attack on Lessig's thesis will not be continued as it simply replicates too much of the debate in the book. Instead another critique offers itself against Lessig's argument that, 'the creation of a spectrum commons will free innovators': this is his reliance on market determinism.

In Chapter 5, 'Commons, Wire-less', Professor Lessig contends that the status quo, wherein spectrum is controlled by the Government and allocated, either by tender (beauty contest) or auction, allows an 'easy opportunity for the old (incumbent) to protect themselves against the new.'²⁶ Lessig takes issue with both current models of spectrum

²⁰ See e.g. pp.50-8 'common code'. Here Lessig demonstrates how a commons in the code layer will allow freedom in the applications (or content) layer.

²¹ This is the focus of Part I of the book, but is particularly strongly sought in pp.83-4.

²² G. Hardin, 'The Tragedy of the Commons' *Science* 162 (1968) 1243.

²³ E. Ostrom, *Governing the Commons* (1990).

²⁴ R. Ellickson, *Order Without Law* (1991).

²⁵ Op cit. n.8., p.22.

²⁶ Id. p.84.

allocation, which for shorthand may be referred to as the FCC model²⁷ and the Coase model.²⁸ Currently, the majority of economic commentators on spectrum allocation support the Coase model and are, therefore, against Professor Lessig's views on how markets respond. Modern telecommunications systems rely upon the 'network effect' to gain the maximum market penetration and exposure. This means the likelihood of innovative products breaking into the market are slim unless that product makes use of an already widely adopted interfacing protocol. In the related field of cable telecommunications, Professor Tasneem Chipty in her paper, 'Vertical Integration, Market Foreclosure, and Consumer Welfare in the Cable Television Industry',²⁹ argues that 'integration does not harm, and may actually benefit, consumers because of the associated efficiency gains.' Network (or integration) benefits are similarly well recognised in the telecommunications industries; as demonstrated by, among many others, Dan Alger,³⁰ Nicholas Economides,³¹ and Thomas Hazlett.³² These authors have, through extensive research, established the requirement of clearly defined market controls in spectrum allocation. Professor Lessig dismisses these claims, saying, 'Hazlett is right if control is necessary. But is control necessary? Even if the market is a better system for allocating control than the state, is the market in spectrum better than free spectrum, if no ex ante allocation is required?'³³ The key, for Professor Lessig is the development of spread spectrum and packet switching technologies. His thesis is that with the development of new technologies which allow for packet switched data transmissions there is simply no need to allocate spectrum on an exclusive basis. In effect the current, spectrum inefficient models of wireless communication which rely upon

²⁷ The FCC was the major sponsor of the tender system.

²⁸ Spectrum auctions were first advocated by Ronald Coase in his 1958 paper 'The Federal Communications Commission' *Journal of Law and Economics* 2 (1959) 1.

²⁹ 91 *American Economic Review* 428 (2001).

³⁰ 'Telecommunications Network Elements with Market Power', CCH Power and Telecom Law May/June 1999, 3.

³¹ Professor Economides has produced dozens of papers on this subject. Examples including his paper 'Critical Mass and Network Evolution in Telecommunications' *Toward a Competitive Telecommunications Industry: Selected Papers from the 1994 Telecommunications Policy Research Conference*, Gerard Brock (ed.), 1995 (co-written with Charles Himmelberg) may be found at his website: <http://www.stern.nyu.edu/networks/papers.html>

³² Like Professor Economides, Dr. Hazlett has been a prolific author in this field. Examples of his work include, 'Assigning Property Rights to Radio Spectrum Users: Why Did FCC Licence Auctions Take 67 Years?' 41 *Journal of Law & Economics* 529 (1998) and 'Physical Scarcity, Rent Seeking and the First Amendment' 97 *Columbia Law Review* 905 (1997).

³³ Op cit. n.8., p.76.

strong transmission and dumb receivers, would be replaced with an end-to-end network, modelled upon that most famous of packet-switched technologies, the Internet. With intelligence at the edges of the network there is no need to broadcast using powerful and inefficient transmitters, instead the receivers ‘search’ for relevant transmissions. This allows many service providers to share the same spectrum, thus negating the need for either the FCC or the Coase model of spectrum allocation and allowing for a Lessigian spectrum commons. How will this commons develop? Again Professor Lessig is willing to give us real-life examples, anecdotes of how he sees his spectrum commons facilitating an innovations commons. We learn of David Hughes and Dewayne Hendricks. They are two free access innovators who developed a spread spectrum model allowing for high speed Internet access. Finding their way barred in the US by the FCC Hendricks took their system to Tonga, where he ‘could build the system as he was free of FCC regulations’. We also learn of the development of 802.11b, Bluetooth and Charmed Technologies, wearable computer systems. These anecdotes support Lessig’s thesis that, ‘free access to [] free resource should bring about the same sort of innovation that access to telephone lines produced’ and that ‘this free resource would thus enable wireless access for a wide range of new services – some still unimagined...keeping competition strong in this critical part of our information infrastructure.’³⁴ Thus, in Professor Lessig’s view the creation of a spectrum commons will inevitably lead to greater innovation and greater opportunities for innovators to develop and market their products. There is though no reason why this should be.

The weaknesses in Professor Lessig’s analysis is that we have returned to David Post’s ‘ought of it’. This time we are, though, referring to how the *market* will function. This is not technological determinism, but market determinism. Lessig sets out his vision of how free spectrum, *will* lead to developments such as the Hughes/Hendricks wireless network or the Charmed Technologies wearable computer. As Hazlett and others have demonstrated though, and as Lessig does not satisfactorily rebut, *ex ante* spectrum allocation is required, despite advances in technology. This is due to two effects. One is the network effect discussed above, which determines that for the maximum benefit of

³⁴ Op cit. n.8., p.82.

the end-user, informational products are to be interoperable. This means industry standards such as Bluetooth or 802.11b. Freeing spectrum will not remove these ‘gatekeeper technologies’, innovations products will only succeed if they meet such standards. A spectrum commons will not, therefore, succeed in creating the innovations commons Lessig envisages, at least not without an allied code commons; another aspect of Lessig’s argument. The second is the problem of interference or ‘white noise’. One fundamental advantage of private property rights is that they allow a single owner to determine what should be done with a resource. That person can choose to develop the resource by himself, or they can decide by contract to share the resource in question with others. Either way, the strong incentives to calculate how to maximise its value mean that there is no divergence between what the owner wants and the social welfare. The problem becomes difficult when too many people are allowed to make use of a single resource without co-ordination. What occurs there is a variants of the so-called ‘tragedy of the anti-commons.’³⁵ In broadcasting this is a particular problem, as if any one person can broadcast at will on any frequency, the resulting cacophony drowns out all individuals. Professor Lessig fails to demonstrate why technological advances will deal with these two effects. The network effect can only be adequately defused with the application of a ‘code commons’, but by providing a commons across both the physical and code layers there is no gatekeeper protocol. With no gatekeeper it is impossible to police the ‘white noise’ effect. In critiquing Hazlett Lessig asks, ‘is the market in spectrum better than free spectrum, if no ex ante allocation is required?’ The weakness of this question is the assumption that no ex ante allocation is required. Here it can be seen this assumption can easily be debunked. As he did in *Code*, Lessig has shown us only one possible future, without demonstrating why it must be. His theory that the market will develop in this way is thus deterministic and undermines his claim.

4. Conclusions

Despite the above shortcomings of this book it is still obviously a ‘must read’ text. Professor Lessig is one of the few academic authors who can transcend their narrow

³⁵ See M. Heller, ‘The Tragedy of the Anti-commons: Property in the Transition from Marx to Markets’ 111 *Harvard Law Review* 621 (1998).

specialism. His books are read not only by those of us who specialise in Cyber-regulatory theory, but also by sociologists, lawyers, political scientists and computer scientists. Professor Lessig's works are so widely read because of the easy to read narrative style he employs in making his arguments. The way he presents complex subjects means that instantly a non-expert can get to grips with it. All of us who work in this field have much to thank Professor Lessig for. He has popularised our field like no other commentator. But with such popularity and therefore influence comes great responsibility. Lawrence Lessig is a first rate orator, writer and advocate. He has a rare ability to weave complex arguments in a simple fashion and therein lies the root of my concern about this book. Most readers will be sufficiently dazzled by Professor Lessig's style to fail to question his findings. Often though there is as David Post said, no reason why things ought to be the way Professor Lessig says.