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INTRODUCTION

Net Neutrality as a Debate about More than Economics

The topic today is net neutrality. The Internet today is an open platform where the demand for websites and services dictates success. You've got barriers to entry that are low and equal for all comers ... I can say what I want without censorship. I don't have to pay a special charge.

But the big telephone and cable companies want to change the Internet as we know it. They say they want to create high-speed lanes on the Internet and strike exclusive contractual arrangements with Internet content-providers for access to those high-speed lanes. Those of us who can't pony up the cash for these high-speed connections will be relegated to the slow lanes. So here's my view. We can't have a situation in which the corporate duopoly dictates the future of the Internet and that's why I'm supporting what is called net neutrality.¹

Barack H. Obama, 8 June 2006 podcast

This is a book about net neutrality. It is intended to be read by the non-technical as well as the technical reader, by the non-economist as well as the economic, and also most definitely by non-lawyers. It is most dense in its economic and legal analysis of telecommunications in the opening chapters, yet those who are not telecoms/Internet² policy 'wonks' will find plenty to interest them in later chapters that focus on regulatory agencies, consumer welfare more broadly, media policy and freedom of expression, and political judgments such as the stated opinion of President Obama I have highlighted above. It does not accept the neo-classical price-oriented competition-based analysis which has been prevalent in telecoms policy for the past decade to 2008, preferring instead to analyse from that base, to discover net neutrality to be a problem of consumer and media policy. However, its critique of telecoms policy will provoke (perhaps wry) interest in those still wedded to the concept of telecoms based on the siege warfare over cost-based pricing between incumbent monopolies/oligopolies, competitive market entrants and regulators.

It is an international book, in that it is written by an English lawyer who now preaches³ but used to practise,⁴ but with significant input from study of the European Union⁵ (and European Economic Area) more widely, and with attention paid to North America⁶ and Japan,⁷ if less so to developing countries. At the end of the book, I expect you to disagree with me, whether you are a traffic prioritization free-market ‘RoundHead’ or an information-wants-to-be-free fundamentalist net neutrality ‘Cavalier’. My argument will be a ‘Middle Way’ between these extreme positions that strikes a balance between intervention and innovation, which inevitably means no-one will be happy, including me. It is not a debate with any easy non-controversial answers.

What is net neutrality? Legalistic and technical definitions will be compared and contrasted throughout the book as it is as much a term of art as a term of science. By way of introduction, I should lay out what it is not: it is not a panacea in the absence of effective inset competition in telecoms markets. In the United States, urban duopoly and rural monopoly telecoms throughout the latter Bush years led to significant fears of gatekeeper control over information flows by Internet Service Providers (ISPs). However, net neutrality is an issue that arises in all competitive and non-competitive information environments that use Internet Protocol (IP) and the public Internet to communicate. World Wide Web (WWW) inventor Sir Tim Berners-Lee puts the problem like this:

Net neutrality is this: If I pay to connect to the Net with a certain quality of service, and you pay to connect with that or greater quality of service, then we can communicate at that level. That’s all. It’s up to the ISPs to make sure they interoperate so that that happens. Net Neutrality is NOT asking for the Internet for free. Net Neutrality is NOT saying that one shouldn’t pay more money for high quality of service. We always have, and we always will. There have been suggestions that we don’t need legislation because we haven’t had it. These are nonsense, because in fact we have had net neutrality in the past – it is only recently that real explicit threats have occurred.⁸

In short, net neutrality is about the rules of the road for Internet users, and about the relationship between the owners of those roads and the users. Government is asked to make a decision as to which users have priority and

whether road charging should be introduced, ostensibly to build wider and faster roads in future.⁹ That is a profound issue, and that brief summary tells you there is plenty of critical detail within this argument that can shift the balance of advantage towards networks or users, and between different players within those groups.

Let's therefore crudely summarize the argument using the slogan that became the rallying cry for Generation X a quarter-century ago: 'I want my MTV (Music Television).' Users who wish to access video and other high bandwidth content cannot all do so at once over current networks, and probably not over future networks. Currently there is no speed limit for the Internet, nor are there sufficient 'lanes' for all users to travel at the speeds they wish (assuming their 'car', their Personal Computer or other device, can do so). So if you want your British Broadcasting Corporation (BBC) iPlayer streamed video, or Skype video call, or YouTube clip, or World of Warcraft update, you are in a queue, even if you don't realize it. In a future with guaranteed Quality of Service (QoS) – a future that has been waiting for 30 years and launched a thousand doctoral theses in computer science and network engineering – you may be able to pay more to get to the head of the queue, or the content provider may pay more to get to you faster, past the other members of the queue whose content providers won't pay. You may also be lucky enough to get into a queue that moves much more quickly for everyone (such as the university-funded Internet2), or unlucky enough to have to access your content over the slow-or-never mobile or wireless options,¹⁰ which at least offers mobility.

So why is this net neutrality 'problem' arising now? Two reasons. First, in developing countries most Internet users – if not most people – have broadband connections. But it turns out that those broadband connections are not fast enough for the uses that people want – not just YouTube but also public service content, for instance BBC video programming or online tax returns, as well as Peer-to-Peer (P2P) content. People are upset, particularly when they realize that they are sharing a connection with their neighbours, and that their speeds slow down dramatically in 'rush-hour' – the evening when they sit down to watch video on their computer. They bought connections that advertise 'maximum speeds' (i.e. unlimited by neighbours' congestion and other speed bumps on the Internet) of perhaps 8 megabits per second (8 Mbps) – enough to download 600 megabytes¹¹ of data in ten minutes, or a five-minute video clip of reasonably high quality. That speed means they

can click and almost immediately start watching the clip, and it will keep downloading in the background as fast as they are watching – so that they receive a seamless video clip. Downgrade the quality of the video and you can download the quality of the speed – but as a user, you don’t want to go back to the future!

This now gets tricky – the speeds need to increase in line with customers’ expectations, especially as most of your neighbours are now online – at the same time as you. Your expectations as a consumer are in part developed from your business or especially your university broadband experience, where you will probably have much faster speeds that enable you to download and upload much faster, and share content such as slide presentations by email almost instantaneously. Your office will have fibre-optic connections – that’s basically a motorway for the office – which solves most of the ‘last metre’ problems, at least. Your home won’t, not yet and perhaps not ever. It will have a copper pair of wires that were designed for circuit switched telephone calls, down which the phone company squeezes the data packets using technologies based on Digital Subscriber Line (DSL) standards. If you have cable, you have a similar set of problems. Your connection is slow, shared and uses a physical link that is obsolete. But count yourself lucky, if you use mobile or wireless, you could wait forever for peak-time content.

A Brief History of Network Neutrality

Ten years ago, 4 June 1999, I hosted a conference ‘near Stratford Upon Avon’ in England, inviting some US Internet lawyers to speak to UK communications specialists about the new discipline they were forging, the possibilities it offered and the dangers to its progress. I launched a book with my own and my friends’ views (British, European and American) on the subject from a European perspective, *Convergence in European Digital TV Regulation*, warning that the Internet unregulated model would have to accommodate the normative democratic values of the regulated European public service broadcasting model on the one hand, and the economic imperatives of e-commerce on the other. In the book, we also warned that the Information Society would depend crucially on broadband infrastructure, a theme returned to in the book of the conference, published in autumn 2000. A rash of works by conference attendees appeared in 1998–9 on the same theme such as Lemley and Lessig,¹² including path-finding works by Froomkin, Reidenberg and Samuelson.¹³

One particular issue for Lessig and Lemley that summer was the merger of long-distance phone company AT&T and cable company MediaOne. They told the FCC in an ex parte submission to the merger investigation¹⁴ that they feared the ‘end of end-to-end’.¹⁵ In brief, they feared that AT&T’s Internet openness, in as much as it existed, would be subsumed into the closed pay-per-view world of cable TV companies. AOL, the original ‘walled garden’ Internet provider (offering filtered, approved and partnered content in a ‘safe’ environment, as well as open Internet access for the brave), was merging with Time Warner, a copyright and cable behemoth, which threatened an even more closed experience.¹⁶ The interoperability debate is broader than simply an Internet access debate, as it affects innovation in software – indeed, the origin of the argument lies with software industry disputes over interoperability, an argument captured by Lessig in his contribution to the *Microsoft* litigation.¹⁷

In spring 1999, P2P music sharing site Napster was sweeping college campuses, and the music and movie companies were crying out for protection from the evils perpetrated against their cozy copyright oligopolies by this new P2P technology for file-sharing. I was interested in their argument, and in file-sharing as a technique to break open the broadcast/music oligopoly, though I argued that the European, or at least United Kingdom, relevance was slight as we had almost bankrupt US-owned cable companies and a telecoms monopoly that was denying that demand for broadband existed. In brief, we should be so lucky as to have two broadband companies that threatened to take a high-handed approach to their users’ access. I claimed, following Noam and others:¹⁸

The answer increasingly employed is to use the guaranteed service quality and enhanced security of the ‘walled garden’ broadband service providers’ network, to avoid the public Internet altogether. These ‘walled gardens’ have a very satisfactory legal status: they are cable networks. The private network ensures integrity of rights, video delivery, and allocation of property. ... The legal framework will ensure that this broadband VOD [Video On Demand], when it arrives, will be more the AOL-style ‘walled garden’ than true open access: private cable not public Internet.

The lack of legal certainty in assigning property rights, whether to one’s personal information or spectrum for 3G mobiles and local loop unbundling

(LLU – sharing the copper wire from telephone exchange to subscriber), was restricting the growth of a broadband Internet, and leading to a localized, Balkanized ‘walled garden’ private network approach, as Coasean analysis would suggest.¹⁹ In such a fragmented future, the issue of open access to those private networks is critical. Without a more legally certain international allocation of property rights, the old national legal restrictions will continue to apply to profitable mainstream operators, and I wistfully remarked that ‘the public Internet [will be] a source of piracy, romance and buccaneering on the high seas beyond the reach of national legal certainties’. This was not just because of the law and economics of the networks, but also the requirements imposed by governments and copyright and privacy lawyers on the content.

If you are a European telecoms lawyer, you will already know the quick march through policy that we need at this point²⁰ to understand where we have got to, but both US and European observers need to know where their policies diverged in 2001 to predict whether we are converging in 2009. I continue this analysis more extensively in Chapters 1 and 2, but here’s the summary.

European Telecoms Liberalization

The EU framework for telecommunications consists of the sector-specific ONP (‘Open Network Provision’) framework operated by the European Commission and the National Regulatory Authorities (NRAs) of the Member States of the European Union, and EU competition law applied by the European Commission and the national competition authorities and the court system.²¹ Corresponding authorities in the United States are the FCC and the US antitrust system.²² The EU telecommunications sector was liberalized by three legal means:

- Liberalization directives issued under EU competition law, Article 86 of the Treaty Establishing the European Community
- Harmonization Directives issued by the European Parliament and the Council on the basis of Article 95 of the Treaty Establishing the European Community
- A series of merger cases in which the dominance of horizontally and/or vertically integrated operators was structurally curtailed, by divestiture of cable networks,²³ competing mobile networks²⁴ or even Internet backbone networks.²⁵

The measures culminated in the adoption by the European Commission in 1996 of the Full Competition Directive,²⁶ mandating full liberalization of

telecommunications in the European Union in 1998, and a flurry of merger cases between 1998 and 2000. 1996 was also the year that the United States broke open its regional monopolies via the Telecommunications Act 1996. However, these measures left in place the incumbents' dominance of the local loop, the 'first hundred feet'.²⁷ It is economically unfeasible for a telecoms operator to duplicate that local loop, though urban cable networks have done so in several countries (notably North America, Germany, the Netherlands and Belgium). Therefore, the telecoms sector has been regulated using an extension of the 'essential facilities' doctrine²⁸ to the local loop and other monopoly infrastructure, to the chagrin of economists who believe that the North American cable build-out could have presaged similar competitive build in other countries, had shared access to the local loop been denied to them.²⁹ Nevertheless the European Commission (EC) opened the loop to competition in 2000, or rather to each national regulator's interpretation of how competitive it wanted its local loop to be, a process that is still ongoing.³⁰ The progress of European telecoms liberalization over twenty years has been slower than hoped for in most cases,³¹ despite which incumbents have rolled out DSL to the vast majority of their populations.

The EC at the same time was engaged in its protracted action against the vertically integrated monopoly of Microsoft over computer operating systems, servers and media player software, which was settled in the United States during 2000–2³² at the outset of the Republican neo-liberal period in the United States, but continued to rumble on in European courts.³³ I should make it clear that the widespread European view is that the George W. Bush presidency was an aberration in its adoption of neo-liberal agendas not only in foreign imperialist policy but also in competition policy, supported for the first six years by a compliant Republican House and Senate, which were under Republican control from 1994 to 2006. Therefore, the rolling-back of competition in US telecoms markets in 2001–6 can be seen from a European viewpoint as a historical anomaly, a period in which neo-liberal economic models succeeded over much empirical data demonstrating continued market failure and abusive monopoly.³⁴

The EC was not especially brave in its decisions made after full liberalization in 1998, in part out of deference to member state NRAs which were beginning to operate the system and were given a certain amount of latitude by the EC, latitude that is rapidly decreasing as it becomes apparent that almost 12 years after full liberalization, the now 27 NRAs have hugely divergent effectiveness and regulatory commitment to liberalization. Back in 2000,

architect of liberalization Herbert Ungerer felt confident enough to state: 'The approach of close cooperation with national regulators turned out to be largely successful.'³⁵ The pricing of interconnection and mobile termination were two issues that continue to reoccur despite being temporarily 'solved' in 1998–9.³⁶ Ungerer stated: 'Recent regulatory and antitrust decisions tend to be a mix of structural and behavioural measures.'³⁷ By 2009, the EC was pushing Member States to adopt a supranational authority – Group of European Regulators in Telecoms (GERT)³⁸ – that would be somewhat similar to the US FCC and ensure conformity by NRAs. Unsurprisingly, those plans had been watered down by governments who set up and supported the more recalcitrant NRAs. The European Commissioner, Europe's premier political figure in communications policy, in 2008 addressed incumbent telecoms operators (telcos) on progress:³⁹

Ten years after the opening of markets to competition, the job of regulators is only half done. I know that you do not like me saying this. But this is my role as European Telecoms Commissioner. It is because of your economic and political power that the Commission has to remain vigilant, as the independent guardian of competition in the European Union ... I know that it may be convenient, in the short term, to enjoy the protection of national rules and regulations ... Perhaps, this will allow you for some time to keep competition from abroad at bay. And to prolong badly needed transformation and modernization processes a bit longer.⁴⁰

However, back in 2000, it appeared that Europe was following the United States which, through the decisions in AOL/TimeWarner and AT&T/MediaOne, was really moving towards a 'new Kingsbury commitment' in cable, referring to the 1913 agreement that permitted AT&T a monopoly subject to universal service. The mergers of 2000 opened the cable networks to the theoretical promise of competition, which brought them into step with the Telecommunications Act 1996 provisions for LLU (known in the United States as 'unbundled network elements' or UNE), and enforcing competition in Internet backbone services. It came as something of a rude shock when these commitments unravelled at a furious pace in 2001–2, as the Internet bubble burst and analysts such as Lessig and Wu⁴¹ realized that policy needed to rally round a principle: that principle was network neutrality. Whether net

neutrality is the new common carriage, as Sandvig suggests⁴² and I unpack in Chapter 1, it is an idea of genuine descriptive power.

Bubbles Burst, Incumbents Delay, Deny, Degrade

Back in Europe, a year passed, the dot-com bubble that was so shiny, soapy and opaque imploded dramatically in summer 2000, the EU regulators also imposed openness conditions on AOL's merger with Time Warner, the largest in history, by requiring divestiture of its part-ownership of a large German ISP. Europe auctioned its 3G wireless licences in a messy, highly expensive process, costing hundreds of billions of dollars at the height of the bubble (paid after it burst), which further delayed any sign of broadband Internet access for the many. With the dearth of high bandwidth content start-ups (a self-fulfilled prophecy in the vicious cycle of capital-starved start-ups and bandwidth-starved consumers), British Telecom (BT) and other incumbent telecoms operators (telcos) continued to deny broadband demand existed, and new competitors by late 2002 were in terrible financial trouble in the wake of the Enron, Global Crossing and WorldCom scandals.⁴³ Napster was bought by Bertelsmann Music Group but was then sued into submission, replaced by more powerful, often encrypted and less legally suspect technologies such as Gnutella, KaZaA, BitTorrent and others. I crawled out of the wreckage of MCI WorldCom, whose CEO and CFO had committed the largest accounting scandal in the world to that date, a staggering \$11 billion (peanuts compared to the Citicorps and AIGs and all the others in 2007–9, of course). The broadband model was bust, I declared to the few who cared, and it was time for a Keynesian-Korean stimulus to mend it: to prime demand by fusing John Maynard Keynes' insights into recessionary spending on public works with the highly effective government-directed but ruthlessly competitive Korean environment for broadband deployment. It did happen in Japan and Hong Kong, which fast outstripped Korea in high-speed broadband by using fibre-optic cables into the building to achieve real broadband speeds of 100 Mbps. Meanwhile, BT in the United Kingdom and its European neighbours finally rolled out broadband in 2002–4, and Britain by 2008 had a dizzying 2–8 Mbps 'theoretical maximum' broadband connections for consumers. A few outliers delivered broadband more quickly, where viable cable and telecoms networks belonged to rival groups,⁴⁴ but these were very few and confined to the Netherlands, northwest Italy and Scandinavia.

There was another piece to the ‘end of end-to-end’ story: the content delivery to the consumer. Could this be achieved using the open Internet, where video would be delivered across continents at the same speed and QoS as all other bits, whether spam or P2P? Or would it need caching close to the end-user and the ‘last mile’, to ensure higher quality and take traffic off the network? I thought the latter, and further thought that Hollywood would be encouraged to put its wares on the Internet if this could be achieved. I wrote that we didn’t have any type of broadband Internet yet in Europe, and that to achieve it we needed first to host content locally. Between drafting this ‘Start of End-to-End’ paper in 2001 and finally publishing it in 2003, I rethought my views but came to the same conclusion: ‘Lord give me openness, but don’t give it yet’ – we needed an interim step on the way to a truly effective broadband Internet.

The European incumbent telcos had paused in their rush to the cable model, in part because of those regulatory fears of unbundling, of being forced to share their broadband networks with competitors, but largely because they did not have either content or bandwidth to make it worthwhile. Voice phone calls are simply bits on the Internet if there is sufficient bandwidth, and phone companies faced bankruptcy or at the least ‘commoditization’ if they permitted users to simply buy broadband and use it for Voice over Internet Protocol (VoIP). This was not a new fear by any means, and was the stuff of popular wisdom in 1997 thanks to ‘The Death of Distance’ by Frances Cairncross.⁴⁵ The easy way out for telecoms companies was to sit on their hands and employ an army of economists and lawyers to convince the regulator that unbundling was inefficient and/or morally wrong and sinful in a ‘free market’. Note that telecoms has never been a free market but a cabal of monopolists with a fringe of competition from the astute, regulatory minded and – in WorldCom and Enron’s cases at least – corrupt.

Having sat on their hands, the phone companies found that most problems magically simply melted away, as if in some Taoist fairytale – their competitors were bankrupt, most content companies were happy to maintain a non-Internet status quo, the regulators were impotent in the face of the highly paid economist hired hands and the phone companies were home free. They forced consumers to buy phone lines with their broadband access,⁴⁶ kept prices high and blocked or degraded content they didn’t like using snazzy new filtering equipment called Deep Packet Inspection (DPI)

using blade servers and other ultra-high-speed computing power. As Riley and Scott explain:

In the early days of the Internet, non-discrimination was easy to uphold because it was not technologically feasible for service providers to inspect messages and evaluate their content in real time. But recently, electronics manufacturers have developed so-called DPI technology capable of tracking Internet communications in real time, monitoring the content, and deciding which messages or applications will get through the fastest.⁴⁷

In short, telcos thought they had the field to themselves, except for a nasty-looking start-up in 2002–3 called Sky P2P, Skype for short, by that annoying Swede Niklas Zennstrom, who had dreamt up KaZaA in 2001. However, given that it was a P2P based Instant Message service masquerading as voice, they thought they could block it wherever it formed a serious threat. They had originally lobbied to block it from advertising itself as a phone service as it does not work in emergencies when the power cuts out and your computer battery dies (after all it is a cheap substitute with limits). By 2004, ISPs were being caught blocking a rival to Skype called Vonage in the United States. The other perennial problem for phone companies was the lobbying by the copyright industry to get ISPs to cough up the names of their subscribers who were sharing lots of P2P files (KaZaA had by now replaced Napster and soon was joined by Grokster and BitTorrent and other more advanced P2P technologies). Copyright players had decided since the dot-com bubble burst that their existing business model was just fine, thank you, and they were not forced to return to the table until Steve Jobs and Apple convinced them to join the iTunes digital store – by which time literally billions of copyrighted files were being swapped by users who did not want to return to that twentieth century business model of buying hard discs. ISPs resisted phone companies' attempt to get them to join in the war on their customers, heroically in the case of Verizon's battle with the recording industry.⁴⁸

In desperation, consumer advocates sought a light at the end of this dark 2002–4 tunnel. They found it in what became known as 'network neutrality', the Lessig–Lemley principle of 'end-to-end' (E2E), based on an engineering principle that the early Internet worked best when all packets were routed

with the same priority. Internet engineers had been working to refine the network for years, concerned that the 'one-size-fits-all' E2E approach was not sufficient for high quality and/or large volume transactions, in particular those Holy Grails voice calls and video transmission. In 2002, Tim Wu described 'net neutrality' in a working paper that became a 2003 ex parte submission to the FCC jointly with Lessig. Battle became joined at that point, with the cable and telcos claiming that such was their duopolistic competition, and so near the real competition from the third wireless broadband alternative, that they needed no such regulation. If they were going to fiddle with a customer's Internet, they warned, they would only do so in properly utilitarian manner for their benefit, or at least that which would bring greatest happiness to the greatest number of users, stockholders, bondholders, executives and the like. Companies are not governments, so their concern had to extend across these various constituencies, and profitable investments had to come first in that list of priorities.

That wireless alternative was becoming more than just theoretically interesting. The farcical European 3G auction may have delayed the build-out and aggressive marketing of 3G in Europe, which had led the United States in voice wireless through the 1990s, but 3G was very real in Japan by 2002. It was however almost the polar opposite of the open Internet pursued by net neutrality advocates. It was in fact a 'walled garden', inside which were the preferred partners of the network operators, of which by far the largest was NTT DoCoMo, the wireless arm of the incumbent. It charged its preferred partners 8% transaction fee on their sales, and provided for part of this tariff its billing services to the end-user. Thus ringtones, e-commerce sales and so on would appear on your wireless bill, truly a 'one stop shop'. To go from this 'walled garden' into the wider Internet took you away from the trusted partners of DoCoMo and into a slower and less secure environment.

That sounds like a fairly claustrophobic experience for more adventurous users, but an alternative had presented itself: Wireless Fidelity (WiFi). This was an in-building unlicensed spectrum technology that was simply supposed to enable the end-users to work wirelessly inside their own premises. However, boosting power, marketing the trademark 'WiFi' standards and building the technology into the laptop computer while mass producing wireless modems made the obscure Radio Local Access Network (RLAN) into a device owned by hundreds of millions by the middle of the decade. As I wrote with Ivan Croxford in 2001, 'I want my WiFi' was the consumer

call of the time (echoing ‘I want my MTV’ of the cable television generation). Moreover, consumers showed demand for national ‘hotspot’ coverage of WiFi, first in obvious transport hubs like airports and railway stations, then in ‘road warrior’ salesman refreshment stops like Starbucks. ISPs such as T-Mobile and Boingo and start-up TheCloud supported by BT aggressively partnered with such locations to provide what looked like national urban coverage in the tens and hundreds of thousands – this despite the RLAN being illegal for outdoor commercial use until 2002 in many countries.⁴⁹ None of these networks made much money, though they supplemented existing ISP wired and wireless networks, and it is now the case that dozens if not hundreds of WiFi hotspots are available in most urban locations (check your network availability as you read this book).

This phenomenal growth of WiFi occurred largely against the wishes, contractual terms and laws of their hosts, as Wu explained in the original net neutrality paper:

Operators showed an unfortunate tendency to want to ban new or emerging applications or network attachments, like WiFi devices or virtual private networks, perhaps out of suspicion or an (often futile) interest in price discrimination.⁵⁰

Why? Because it was free, it could be shared with anyone who had the password or could access the unprotected hotspot of a neighbour, and therefore it threatened to ‘cannibalize’ the revenues of ISPs. If consumers could achieve the theoretical maximums of 56Mbps on their WiFi, they could share data and voice with dozens of their ‘friends’. Several legal obstacles were rapidly constructed to stop consumers doing this: first, they were in breach of their contract with many ISPs if they shared – even unwittingly – their wired Internet connection outside their own household. Second, they could be held criminally liable if someone used their network to download illegal matter such as child pornography as shown in a Canadian test case. Third, they could be held civilly liable if someone used their network to, for instance, download copyright material. Importantly, these latter pair of legal problems came equipped with a standard-based solution: the encryption on WiFi base stations was made more powerful and more user-friendly. As a result, most users closed their networks to strangers and prevented a spectrum commons of WiFi free hotspots. However,

in some locations, notably Montreal, Canada, the 'Isle sans Fils' (Island without charge), social entrepreneurs have established free Internet networks using WiFi.

The backdrop to the net neutrality debate is therefore a series of revolutionary technological and user-centred breakthroughs, with the unmetered Internet itself only a decade old for European consumers, broadband only 5–7 years old, WiFi the same, Skype and other VoIP even younger. File-sharing via P2P dates to Napster in 1999–2000, with KaZAa and BitTorrent even younger. Broadband providers faced with this tsunami of innovation reacted quite logically in trying to slow down the pace of change, first by delaying the introduction of broadband, then by slowing its spread via WiFi, and by throttling P2P applications. Video and movie providers shelved previous plans to rapidly deploy Internet-based video in the 'dot-com' bubble of 2000–1, going into partnerships with broadband providers and P2P technology companies. The growth of bandwidth was choked off while both video producers and ISPs puzzled over a way to 'monetize' – to profit from – the new delivery technology.

In summary, telcos are trying to avoid a commoditization of their business, which means they fear and envy their mobile counterparts. Fear – because the user-friendliness and personalization of mobile phones means users are increasingly relinquishing fixed lines for mobiles, as well as investing heavily in more sophisticated terminals and expensive monthly subscriptions. Envy – because mobiles have been able to persuade users to pay for usage and speed of service, and content partners to pay for access to a higher quality, faster and more 'trusted' portal. In Japan by the end of 2008, almost 90% of mobile users had broadband services, and telco fixed-line services have been overtaken by fibre-to-the-home (FTTH) (13.1 m to 12.3 m with 3.9 m cable broadband). There were five mobile subscribers for every two fixed subscribers (105 m to 43 m). In broadband, the 90 m mobile users outnumber DSL users by 7 to 1 and total fixed broadband users 3 to 1.⁵¹ Even worse for fixed companies, VoIP subscribers reached 30% of fixed (10 m users). VoIP users typically pay far lower per minute charges and are therefore much less profitable than dedicated phone subscribers. VoIP is not permitted by most 3G mobile networks, which preserves their telephony revenues. In Austria, an even more potentially devastating substitution has taken place, with 3G subscribers choosing to use 3G modems ('dongles') on

laptops and netbooks (mini-laptops), and in 2009 that number is expected to exceed fixed broadband totals.

From History to the Future

That breakneck dash through recent telecoms history was necessary to give a little context to the net neutrality debate in 2009. You have heard the term and have some sense that it is important or controversial – or at least you must be working for a company or taking a course where someone thinks it is important. It is important to realize that (a) it is not a new debate; (b) it is not going away; (c) it grows in importance as the Internet and the importance of users accessing high-speed content grows in importance. So you've invested wisely so far.

In Chapter 1, I will explore how companies and governments are trying to upgrade home (and therefore small business) connections to fibre, or a close alternative called Very high-speed DSL (VDSL). For now, let's focus on what is happening on your line during peak-time, and what the phone company is going to do about it. Europe is only just over a decade into unmetered Internet access for dial-up connections and it would be a pity to go back to that type of future. So what's changed to threaten Berners-Lee's open Internet? DPI reshapes strategy for traffic management so that what was formerly a dumb network processing packets on a 'best efforts' basis, can now configure all kinds of re- and non-prioritization. Ridley and Scott state that:

Operators can tag packets for fast-lane or slow-lane treatment – or block the packets altogether – based on what they contain or which application sent them ... When a network provider chooses to install DPI equipment, that provider knowingly arms itself with the capacity to monitor and monetize the Internet in ways that threaten to destroy Net Neutrality and the essential open nature of the Internet.⁵²

The genie is very much out of the bottle regarding DPI and ways to make providers pay for higher quality: it exists and is used by most incumbent ISPs and many competitors. That means there is a very real issue about how this technology should be used. That affects more than simply speed of access to content. It also affects the rights of the end-user to receive content, and the privacy thereof, as well as the rights of content producers to provide

applications and services that end-users can access in reasonably conducive conditions. A different book could – and must – be written about the uses and abuses of DPI and other technologies, but for our purposes, we should accept that ISPs can manipulate the bits on the Internet for their (and sometimes) our benefit. Should we worry? We should trust but verify, at the very least.

All network owners have incentives to stop traffic flowing over their networks that is low value, high volume and for which it is technically unfeasible or uneconomic to charge – notably non-network affiliated content including user-generated and transmitted content. This content is very low value to the network and, with many millions of users all valuing each others' own-created Web 2.0 content, under current market and technological conditions there is insufficient value to charge individual users and thus all content may be throttled in the absence of a charging mechanism.⁵³ Content on limited bandwidth networks can 'choke' the network capacity, especially at peak times of usage (daytime for business, evening for consumers). In a 'best effort' environment without congestion charging,⁵⁴ this content has insufficient disincentives to prevent its flourishing: for instance P2P traffic and its use by early-adopter high-volume users. ISPs can choose to filter P2P traffic of various kinds – typically it is unencrypted relatively crude versions of popular file-sharing programmes, such as BitTorrent which is used to provide upgrades to the most popular multiplayer online game World of Warcraft. Many assertions are made about the implications of certain types of traffic, but regulators currently have no basis for deciding if such assertions represent real problems.⁵⁵

The following types of discrimination might constitute the type of non-neutral behaviour by ISPs that may be found to be harmful to consumer welfare: transparency failures and misleading advertising, 'throttling' or blocking, charging, certain types of more extreme and anti-competitive 'walled gardens'.⁵⁶

First, transparency failures. ISPs may fail to tell customers and application developers which services they offer – estimated bandwidth, latency, etc. This is essential to certain applications, which cannot run with latency, or which are blocked or filtered. Even where there is regulatory commitment to enforce net neutrality, the evidential problem remains. Van Schewick⁵⁷ suggested that the main problems currently lie in mobile networks, where VoIP is routinely degraded or blocked.⁵⁸ The problem here is that certain users are breaching their terms of use but being insufficiently or non-transparently

sanctioned, and certain programmes are being throttled but the same applies. Often a security justification⁵⁹ is used and is often unchallenged by regulators.

Next, blocking or 'throttling' is the furthest deviation from neutrality. Some economists think it justified, but the basic problem is a distortion of competition between the blocked and unblocked companies. For example, a company serving online gaming content from South Korea may typically choose to do so via P2P networks, whereas a US content provider might use a premium service sanctioned by the ISP of the end-user. Not only is the Korean content provider discriminated against, but neither end-user nor content provider may be aware of the nature of the problem.⁶⁰ This creates confusion among users as to whether and how content is throttled.⁶¹

Certain types of traffic that are highly valued by the end-user of the Internet can be discriminated against in whole or in part by service providers that are *not* dominant. This is because they either have good competitive or good traffic management reasons to do so; it makes their networks safer and more efficient, making it complicated to work out when their discrimination is motivated by arguably less benevolent factors, like blocking the competition. There can be motives to throttle content no matter what ISP is discussed, and that behaviour is potentially anti-competitive not within the layer of ISPs, but to content providers upstream which end-users are trying to access via the ISP network.

Blocking together with other forms of traffic shaping is particularly controversial because, under current network management tools, it is a blunt tool. For instance, all P2P traffic using a certain protocol may be blocked. P2P can respond by encrypting its traffic or otherwise spoofing, but this creates an 'arms race' much like that found in security software responses to the threat of breaches. In fact, the claims of ISPs are that P2P traffic contains a high proportion of malware, spam and spyware, and therefore it is filtered in the end-user's interest and in conformity with the terms of use for end-users.⁶² Many assertions are made about the implications of certain types of traffic, but regulators have no basis for deciding if such assertions represent big or small problems. The ISP assertion that P2P traffic contains a high proportion of malware may be disingenuous. Email spam and web surfing are the vectors for malware, but the ISPs do not block such traffic. Future networks may try to cap P2P more effectively, which can itself lead to an 'arms race' between encrypted P2P content and attempts by ISPs to detect P2P traffic. This is an

example of how a baseline of traffic and usage would help the regulator to understand the importance of claims made by stakeholders.⁶³

Since broadband ISPs have a termination monopoly or duopoly⁶⁴ over the end-user, they can use that to charge termination fees to those who wish to get access to the user. This behaviour is familiar to the cable TV industry, where only large content providers can secure free or even profitable carriage, whereas smaller content providers with less contracting power are forced to pay the cable TV operator for access. The fear is that a similar model will be imposed on the Internet, where only large content providers with sufficient negotiating power, and those with political influence to secure favourable carriage terms, will secure free carriage.

Next, let's consider P2P. The claim made is that networks cannot be upgraded successfully given the flood of P2P traffic. This is by no means a universally shared sentiment amongst ISPs and I note recent comments attributed to Matt Beal, BT Wholesale's chief technical officer: 'It is up to us at the core of the network to make sure there is enough bandwidth'.⁶⁵ He further stated BT's Next Generation Network (NGN – its all-IP network)⁶⁶ would 'put enough [bandwidth] volume out there ... so we don't have to [traffic shape]' which is 'quite Big Brother-ish'. There is therefore no consensus as to the type and extent of traffic shaping and other forms of blocking and throttling P2P traffic. Where ISPs do not have effective terms of use, or do not enforce uniformly those current strategies in place to dissuade 'unfair' use, two consequences can follow.

1. Users are summarily terminated or suspended – this can be conducted by any ISP and may well be justified. This practice could be made more transparent.⁶⁷
2. ISPs choose to filter P2P traffic – typically popular file-sharing programmes.

The rights perspective should be put openly. Davies and Banks explained:⁶⁸

One of the most important trends in recent years is the growth of multinational corporate censors whose agendas are very different from those of governments. It is arguable that in the first decade of the 21st century, corporations will rival governments in threatening Internet freedoms. Some American cable companies seek to turn the Internet into a controlled distribution medium like TV and radio, and are putting in place the necessary technological changes to the Internet's infrastructure to do so.

Increasing use of DPI is being created for both Western ISPs and more autocratic governments.⁶⁹ In both cases, the method chosen is co-regulation – the government sets the rules and the ISPs are allowed a broad measure of independence as to process to achieve the results the government sets out. This is controversial in that it passes powers to control freedom of expression into private hands, often without the constitutional protections that govern public authority intervention and censorship. Whether it is China or the United States or Europe that implements the policy, the ISPs are using similar tools and techniques and the language used in regulation is very similar.⁷⁰ The effects on user rights may be varied, but the techniques used are undoubtedly filtering, a form of censorship.

This makes network neutrality more than an empirical positivist economic issue: it is explicitly normative and political.

More Than Economics: Open Internet Policy

The network neutrality debate is only in part about economics and technology, despite what you might surmise from various pro-competitive statements by academics and the shape of the US and European debates. The extent to which even lawyers have been drawn into an open-ended debate regarding the merits of duopoly versus inset competition in telecoms, or the relative merits of open interoperable software environments versus proprietary property rights-based or corporate developments, or the benefits of end-to-end ‘dumb’ networks versus intelligent networks, displays the capture of the subject by economists and corporate technologists. The issues at stake are more fundamental to society than that. As a lawyer who has written for over a decade in favour of pro-competitive telecoms and media policy, I am not ashamed or abashed to state that I emphasize that communications policy is about fundamental rights of citizens as well as public welfare for consumers, and that it is about educated and informed users as well as optimally priced access networks. In short, what is needed is a balanced approach towards network neutrality as a central plank of a converged communications policy, ideally one which tries to both increase competitive choices for consumers as well as ensure the fundamental right for citizens to access the public Internet.

This conclusion should not be startling to anyone who has studied communications policy over the decades, though the capture of the debate by economists and technologists for the benefit of network investment over open access is a long-term trend that may not be reversed in the short term.

I argue that it needs tempering with considerations of fundamental rights, not overturning in favour of a *dirigiste* broadcasting policy. I take my cue from several experts, noting that they are pro-market advocates who also recognize a value to openness – that is, as opposed to private censorship – which extends beyond economically quantifiable results. Lessig offers caution as to the empirical outreach of economic analysis of law, explaining that its aim is totalizing. This analysis reflects the fear of that totalization, the need for a ‘balanced diet’ between law and economics,⁷¹ and the influence and paramount importance of human rights in policymaking, particularly here in the case of the rights to freedom of expression and privacy. Rights may have been considered ‘nonsense on stilts’ by utilitarians two hundred years ago, but we have earned the right to consider them today in the case of the Internet in developed countries, at the very least. Berners-Lee explained that the open standard of the WWW describes:

a vision encompassing the decentralized, organic growth of ideas, technology, and society. The vision I have for the Web is about anything being potentially connected with anything. It is a vision that provides us with new freedom, and allows us to grow faster than we ever could when we were fettered by the hierarchical classification systems into which we bound ourselves.⁷²

Lessig explains what the Internet architectural principle of ‘end-to-end’⁷³ means for innovation:⁷⁴

This end-to-end design frees innovation from the past. It’s an architecture that makes it hard for a legacy business to control how the market will evolve. You could call it distributed creativity, but that would make it sound as if the network was producing the creativity. It’s the other way around. End-to-end makes it possible to tap into the creativity that is already distributed everywhere.

The legacy of such technical self-regulation is that minimal direct government interference has been seen.⁷⁵ The self-regulatory bodies are international in character and were begun as non-commercial self-regulatory organizations (SROs).⁷⁶ The end-to-end principle has dictated that any content control be embedded in code by the content creator, and filtered by browser software installed and controlled by the end-user.

If innovation is typically both user-distributed and user-driven, the implications are that innovation is encouraged by interoperability and open access: in general, ensuring that content can be freely shared between those users. This view is in some conflict with content and network owners' desire to be recompensed for provision of local loop upgrades and has led to this animated debate. Note that content providers pay for their traffic to be carried by backbone ISPs, on a best effort basis, and the argument is about ISPs wishing to increase those payments as a result of either enhancing or blocking service, on a mandatory or opt-in basis (clearly a mandatory blocking service for those refusing to pay an extra toll is the most capricious of these possibilities, as we will see in the 'Madison River' case). Lemley and Lessig claim that innovation at the edge of the network is opposed by traditional media and network businesses, as it makes business cases based on controlling distribution bottlenecks redundant: where there is peer sharing, there is less opportunity for traditional bottlenecks and therefore control of revenues. However, the inverse applies also: without some means to secure revenues for the increased bandwidth necessary for Web 2.0 type applications to flourish, do network operators have an incentive to upgrade? Ed Whitacre of AT&T famously made this claim.⁷⁷ Of course that also can lead to a type of 'arms race' as P2P networks encrypt all traffic to prevent inspection, in the same way that firewalls on Intranets were evaded using Port:80 and other techniques.⁷⁸

Odlyzko and Levinson refute many of the arguments for fine-scaled charging which underlie the architecture of IP Multimedia Subsystem (IMS) and QoS. They note that:

Technology appears to be making fine-scale charging (as in tolls on roads that depend on time of day or even on current and anticipated levels of congestion) increasingly feasible. Standard economic theory supports such measures, and technology is being developed and deployed to implement them. But their spread is not very rapid, and prospects for the future are uncertain ... the case for fine-scale charging is not unambiguous, and in many cases may be inappropriate.⁷⁹

An emphasis on users as citizens and participants challenges conventional economic views of the debate – where rights are tradable, the emphasis on competition wins out in a neo-classical worldview, though with acceptance that information can improve markets (but a bias in favour of self-regulatory means of achieving more perfect information). For instance, it is conventional

sound analysis⁸⁰ that ‘The lack of a market failure in the wireless industry suggests that such regulation would be completely unwarranted. Consumers consistently benefit from increasingly lower prices and more features.’ This analysis also extends to the wireline industry, where there is competitive entry of a type, at least in business markets and for European consumers, and lower prices for higher speeds. A continual controversy in telecoms concerns the causation for these benefits: does the acceleration of benefits from technology hide an oligopolistic and uncompetitive industry structure? If that is so, and the majority of benefits flow over from more competitive industries and more innovative platforms – notably computing and the Internet – then should telecoms move to a computing or Internet type regulatory structure, with emphasis on prior open standards and ex post competition regulation?⁸¹ This argument was used by Lemley and McGowan in the late 1990s, and has been applied to telecoms over a lengthy period, from the commons perspective by Benkler, Lessig and others, and recently from a more market-oriented approach by Werbach and Weiser. Lemley and Lessig state: ‘The FCC’s presumption should be against approving mergers or policies that threaten these design principles, without a clear showing that the threat would not undermine the Internet’s innovation.’⁸²

It was claimed by some pioneers such as Perry Barlow that the Internet was a global phenomenon beyond nation-state control. It was suggested that the ‘Internet’ is an unbounded cyberspace in which borderless any-to-any communications is possible. In view of its origins, this appears a curious statement. The Internet is a creation of governments and educational institutions, and continues to be regulated by government, and indeed by private corporations as a proxy for government. It can be whatever users, governments and corporations decide it should be. There is no inherent bias towards openness or closure of the network that cannot be undone by critical decisions at this juncture. I note the opinion of Tim Wu, who coined the term ‘network neutrality’, and his bias towards markets in his work: ‘It is absolutely not a call for comprehensive regulation or nationalization of the wireless industry. The perspective is that regulation, if necessary, should be a last resort.’ I also note the analysis of the head of the Canadian regulator, the Canadian Radio-television and Telecommunications Commission (CRTC), Konrad von Finckenstein, who states: ‘Fundamental issues of technology, economics, competition, access and freedom of speech are all involved.’ Consider an excellent summary of these views offered by de Beer:⁸³

Too much of the network neutrality debate seems to be cast in economic terms, with advocates on either side trying to establish whether openness or deregulation will be most effective for competition and innovation ... My intention is not to detract from the economic arguments, but to bring in culture as another lens through which to view the network neutrality issue.

Commissioner Reding stated on 6 May 2009 in the European Parliament prior to its vote on the new telecoms law:⁸⁴

Even though traffic management can allow premium high quality services to develop and can help ensure secure communications, the same techniques may also be used to degrade the quality of communications or other services to unacceptably low levels. That is why, under the new EU rules, national telecom authorities will have the power to set a minimum quality level for network transmission services so as to promote net neutrality and net freedoms for European citizens.

So far, so unremarkable. Note that it is up to the national regulators whether they want to take on this extra task, which is technical, fiddly and may not be a high priority for some – or indeed all – of them. She then goes on to paint that policy in political rather than technical terms:

The fourth element I would like to underline is the recognition of the right to Internet access. The new rules recognize explicitly that Internet access is a fundamental right such as the freedom of expression and the freedom to access information. The rules therefore provide that any measures taken regarding access to, or use of, services and applications must respect the fundamental rights and freedoms of natural persons, including the right to privacy, freedom of expression and access to information and education as well as due process.

She is stating an extension of a principle for European telecoms regulation: the existing rules for common carriers – the phone monopolies – that require them to connect all users on demand to the phone network and allow them to communicate without prior censorship on their speech, will be extended to require carriers to permit Internet users to maintain their access to the

open Internet, subject to the law as enforced by courts. The open Internet access right – in reality based on the payment by citizens to those carriers – maintains the principle that the telecoms network is a common carrier. What is interesting in this debate is not simply that technology lets carriers fiddle with citizens' communications, but what motives they have for doing so, and how robust is the regulatory response to any ill-considered tampering.

Structure of the Book: Who's to Blame?

My starting point in unpacking the debate is that network neutrality has a positive or forward-facing element related to ISPs investing in faster Internet access and a negative or backward-facing element related to blocking or throttling on existing networks. I extend this negative net neutrality analysis as a proposal for 'net neutrality lite' for Europe, which the United States and other countries may also find useful. It is a pretence to claim that different countries can be independent of each other in these policies, when the content and router worlds are particularly globalized – what Disney, Google and Cisco do in the United States must necessarily have a massive impact on Europe, in particular because most of the credible market entry competition to European incumbent behemoths comes from the United States.⁸⁵

As this introduction begins to uncover, 'net neutrality' is a deceptively simple phrase hiding a multitude of meanings. First, it has to be unpacked to discover that it comprises two separate non-discrimination commitments. Backward-looking 'net neutrality lite' claims that Internet users should not be disadvantaged due to opaque and invidious practices by their current ISP. Forward-looking 'positive net neutrality' describes a practice whereby higher QoS for higher prices should be offered on fair reasonable and non-discriminatory terms to all-comers, a modern equivalent of common carriage. It is a more debateable principle, with many content providers and carriers preferring exclusive arrangements. That is what the first three chapters seek to establish. In Chapter 1, I introduce broadband supply and investment and blocking technologies and requirements, in Chapter 2 the types of 'negative' discrimination that may occur and the development of the debate in both the United States and Europe, and in Chapter 3 issues of QoS, user-generated and/or distributed content. In Chapter 3, I consider 'positive' net neutrality in detail.

I argue that the entire net neutrality debate has been set up as a false dialogue of the deaf between the net neutrality absolutists on one side and

the net neutrality refuseniks on the other. The absolutists are caricatured as favouring absolutely no traffic management, or prioritization, thus leaving the Internet in a type of primordial Garden of Eden in which even content delivery networks such as Akamai that push content closer to end-points (which we explore in Chapter 2) are seen as suspiciously 'efficient' in delivering packets closer to the end-user. Not surprisingly, Lessig and Lemley's argument is portrayed by net neutrality opponents as nostalgia for a halcyon 'Golden Age That Never Was'. Consider: Sandvig states that there has always been traffic management of various sorts on the Internet; Crowcroft robustly establishes the network engineers' perspective that – far from net neutrality being an end-goal – QoS on the Internet has always been a kind of Holy Grail to prioritize and more robustly deliver higher-value services, from the network operator's point of view; Clark, one of the three authors of the original 'end-to-end' principle, states that he would have more carefully chosen his terms had he realized the 'Talmudic' reverence with which his engineering argument was viewed by social scientists.⁸⁶ Traffic management on the Internet is a fact of life, and to suggest otherwise can clearly invite – and has created – a storm of derision for those of the extreme net neutrality persuasion.

The refuseniks have their man of straw to deride. However, if it is true that there has always been some kind of QoS on the Internet, it is equally true that for perhaps twenty-five years, carrier-class QoS was to be introduced 'next year'. Of course private networks and virtual private networks have dedicated circuits, and often dedicated networks, devoted to private clients of one type or another. Public networks have not achieved truly differentiated QoS to date, and perhaps never will. So there is another man of straw: the continued attempts to create QoS on a 'best efforts' network could be a hopeless quest, as searches for Holy Grails often are. If that is true, then increasing capacity many fold, as has been achieved by the super-fast Internet2 for university networks, would be the most useful resource in which to invest.

This leads to a further speculation. If the quest for the Holy Grail of QoS truly is doomed to fail, then the net neutrality absolutists are actually tilting at windmills themselves, and any move away from net neutrality is a waste of money. In the fullness of time, and assuming a belief in the self-correcting folly of markets even in the dark days of 2009, ISPs will see the error of their ways and return to the light of an unfettered open Internet. Two obvious problems present themselves: first a great deal of time, effort and money will

have been wasted in the meantime with irreparable harm (as so many harms are, though far from fatal) to innovation and end-user remixing; second, given the sunk costs in investing in DPI equipment and its management, will ISPs have become liable for their content as publisher not carrier by that point? The entire liability protection regime established in the late 1990s might have unravelled by then. Politicians must make these decisions, but how can we expect them to understand the issues, or to arrive at sensible solutions? The entire field is confused, and such principles as they exist are only at the extremes. I will examine this in Chapter 1 and Chapters 4 and 5.

I have to mention copyright if only to indicate a further caricature within the debate. It has two elements. The first is that all high-capacity consumer users of the Internet are file-sharing. The second is that this file-sharing is illegal, as it is sharing of copied 'pirated' files that breach others' copyrights. Both are of course highly contentious, but as with all half-truths, the kernel of truth does lie inside that there is large-scale 'theft' of 'pirated' material, to use the terms preferred by the copyright industry. I write this as The Pirate Bay, a rather blatant example of a site offering access to copyrighted material for free download, thus breaching copyright law, has seen its principal officers both fined and sentenced to prison by a Swedish court of first instance, though with appeal based on the judges' alleged professional bias and connections to the copyright industry. Ever since the prosecution of Napster and its founder Shawn Fanning in 1999, the copyright industries have waged a war on copyright violators online. This decade-long battle against 'pirates' (which conjures images of Somali teenagers with machine guns rather than Western college students in dorm rooms⁸⁷) has of course proved a fairly fruitless exercise for copyright holders, and a burdensome and expensive exercise for ISPs. End-users have typically had their rights broached in some form not least in breach of privacy, and in communications that expose their activities within their households (identity within families is always an early casualty of Internet access disputes). The solution offered is to chase individual infractors and to further attack a class of data traffic, P2P networks, or within that, a sub-class, BitTorrent. This can be achieved by various blunt tools, including throttling, torrent seeding, disconnection at fifteen-minute intervals, and so on. In France, the proposal to establish an administrative solution to close down the connections of persistent violators (so judged by ISP and copyright industries rather than courts) has been defeated in April and June 2009 (the so-called HADOPI laws), while controversy continues

over European Parliament amendments to consumer protection legislation online. We will return to this issue in Chapters 4–6. In Chapter 4, I broaden the debate to consider the types of filtering and blocking that ISPs have traditionally engaged in, and the legal liabilities that they have incurred. I consider the regulatory challenges in dealing with ‘lite’ net neutrality issues in Chapters 5 and 6 with the specific European and UK responses to content regulation, demonstrating creeping control and a reversal of the presumption that ISPs do not carry liability for their content. My discussion about how net neutrality regulation in the United Kingdom fits into the reviewed 2009 Electronic Communications Framework (the Directives which direct European NRAs to regulate ISPs) may be helpful. The book’s argument is illustrated by three reviews of existing policies: an extended discussion of British policy in Chapter 6, a discussion of EC policy in Section 5 and an early discussion of US policy in Chapters 2 and 3, because the US debate has cast its light and darkness on the later debates elsewhere.

I have some partial solutions but no panacea. Mobile Internet claims the same special protections from regulation that its forerunner, mobile termination, claimed, to enable walled gardens to flourish. In Chapter 7, I analyse the problems inherent in regulating the mobile Internet for net neutrality, with emphasis on pre-existing content and price discrimination and regulation in Europe. Finally in Chapter 8, I consider the potential for this debate to develop towards a form of net neutrality ‘lite’. Transparency and investigation are easy wins, principles that regulators can only discount on grounds of ignorance (‘net neutrality is a solution in search of a problem’) or resource depletion (‘we don’t regulate the Internet, it is too complicated’). It improves competitive forces, such as they are, so the pro-market advocates surely have little to disagree with, especially as it is to be achieved through co-regulatory means at lowest cost to ISPs. Co-regulation is a prevalent but awkward compromise between state and private regulation, with constitutionally uncertain protection for end-users and a worryingly large latitude for private censorship, which has been increasing throughout the last decade even as the law declares ISPs to be ‘three wise monkeys’, as discussed in Chapter 4. Any solution needs to be holistic, considering ISPs’ roles in the round, including their legal liabilities for content filtering. I will grapple with the dilemma that I may be giving the ISPs a free lunch: the appearance of a solution without even a partial remedy for end-users. I create trouble for myself by admitting to both economic and normative rationales, each pulling

in different directions, and attempt unsuccessfully to square that circle. That is why I only recommend net neutrality ‘lite’ – the easy backward-looking solution.

This is a policy area with no right answers that offer perfect solutions. Of course the Internet should be open to all, but of course private investment is the critical component in building a faster Internet. Of course universal service should be supported, but of course there must be some minimum access to the open Internet for all, whether they use a mobile 3G connection or a fast Internet Protocol Television (IPTV)-enabled premium service. If it says ‘Internet service’, it should do what it says on the tin, offer an open Internet (alongside walled gardens if expressly advertised as such). I am happier limiting my solution to emphasize the complexity of the problem than trying to claim a one-size-fits-all solution. Net neutrality is an issue with potentially profound consequences, and cannot be entirely left to market actors, however neutral or benign their motives.