

Introduction: neutrality, discrimination and common carriage

We cannot allow Internet service providers to restrict the best access or to pick winners and losers in the online marketplace for services and ideas. That is why today, I am asking the Federal Communications Commission [FCC] to answer the call of almost 4 million public comments, and implement the strongest possible rules to protect net neutrality. When I was a candidate for this office, I made clear my commitment to a free and open Internet, and my commitment remains as strong as ever ... The FCC is an independent agency, and ultimately this decision is theirs alone.

President Barack H. Obama¹

Net neutrality is a zombie² that has sprung to life recently. It is a policy of Internet³ non-discrimination based on innovation, free speech, privacy and content provider commercial self-interest, imposed on the technocratic economic regulation of telecommunications (telco) local access networks. The regulators, telcos and governments don't like it one bit. The laws and regulations are formally 'Open Internet' not 'network neutrality', as I will explain. It is Net Neutrality 2.0, to use a cliché in explaining the second wave of a technology-led innovation.⁴ Net neutrality is the principle that Internet Access Providers (IAPs) do not censor or otherwise manage content which individual users are attempting to access. That means that telcos should not block or 'throttle' Voice over Internet Protocol (VoIP, e.g. Skype, WhatsApp) or video (e.g. YouTube, BBC iPlayer or NetFlix) except

¹ Obama (2014).

² I have previously referred to net neutrality for a decade as an 'undead' debate which telecoms lawyers and economists have been unable to kill, for instance Marsden (2009), stating: 'No matter how many economists plant a stake in its heart, or come to bury it not praise it, net neutrality will not die.'

³ The 'Internet' is a network of Autonomous Systems, of which about 40,000 are of a scale that is relevant. See Haddadi *et al.* (2009).

⁴ van Eijk (2011b).

under narrowly defined conditions. Net neutrality regulation is critical to the future of Internet access for businesses and micro-enterprises, as well as students, citizens and all domestic users – and therefore to the future mass adoption of the Internet of Things (IoT), cloud computing and Big Data. In this book I claim, as Zhou Enlai stated of the French revolutionary movement in 1968 (not 1789),⁵ that it is too early for advocates to claim success: legal prohibition on discrimination by IAPs has not yet resulted in effective net neutrality regulation.

Net neutrality directly regulates the relationship between IAPs and content providers, providing rules about how IAPs may contract with and treat the traffic of those content providers, specifically that they may not discriminate against certain providers (either blocking their content or favouring commercial rivals such as IAP affiliates). It does not regulate those content providers directly. Internet access is a very special communications service, recognised and reinstated in the US in 2015 as common carriage after a strange 11-year experiment with deregulation. Common carriage, or variants thereof, is a status it has always enjoyed in most other countries. Without Internet access, there is no content, application or service to enjoy: it is the *sine qua non* of Internet use. For that reason, IAPs have a Faustian bargain with government: in exchange for the privilege of providing such a unique public service and the attendant rights to dig up the streets and conduct other works (for instance, enforcing a public Right of Way), IAPs accept that their service is subject to special rules. If this was not previously clear to the general public and politicians, the Snowden revelations of 2013 made it crystal clear. IAPs provide you with access to the Internet and thus can track your every click of a mouse and every bit that is transferred. Their cooperation with law enforcement is vital to mass or individual surveillance, and their long-term cooperation with law enforcement is part of that special Faustian bargain with the state.

This book marks the shift from net neutrality policy towards legal effect in Europe, and hence more intensive engagement in national law and regulation. In this comparative analysis of law and regulation towards net neutrality policy (with some reference to the Americas, East Asia and India), I examine how human rights, behavioural science and innovation economics have been brought to bear on the typically neo-classical economic models used to regulate telco networks through which we connect to the Internet. The telcos and their regulators' corporatist modes of regulation, co- and self-regulation (state-firm bargaining with former state monopolies like British Telecom (BT) and foreign investors such as T-Mobile) are now exposed to the clamorous demand of civil society organisations for multi-stakeholder governance (MSG).⁶ No

⁵ McGregor (2011).

⁶ Powell (2015).

one can ignore it, from the most vaunted technocrat or thrusting entrepreneur developing 5G mobile, cloud and IoT policies, to the Dutch grandmother using a video Instant Messenger (IM) service with her grandchildren, asking ‘Why is my Internet so slow now?’⁷

Ever since the broadband Internet was brought to users in the late 1990s, this has been the messiest issue in telecoms regulation narrowly, MSG for the Internet generally, and affects anybody who previously, currently or in future uses the Internet: all of us. It is fiendishly difficult to identify abuses of net neutrality, and many corporate economists have claimed it is a solution in search of a problem or abuse: Schrödinger’s net neutrality? It is and will be a nightmare to regulate; it is a joy for an academic case study in law, technological regulation more generally, economics and regulatory policy. In a major study of democratising regulatory decision making, Faris *et al.* ‘conclude that a diverse set of actors working in conjunction through the networked public sphere played a central, arguably decisive, role in turning around the FCC policy on net neutrality’.⁸ Civil society roles in Internet governance generally and lobbying of government and regulators has been critical to the emergence of net neutrality.

I advance an argument that the Internet itself was a radical departure from ‘normal business’ for telecoms regulation, which was largely ignored for as long as possible given the collapse of broadband competitors to incumbents after 2001. Web2.0 prosumers – web users who tweet and express their views to politicians – are not business as usual. This has been made abundantly clear in copyright as well as net neutrality policy over the period since Lessig predicted its arrival in 1999, with corporate response well explored by Wu and Zittrain, and in the European context Horten and Kron.⁹ Telecom lawyers and economists have largely overlooked this clash of cultures. Sutherland argues that:

Telecommunications policy research appears fundamentally different from [media and Internet studies], lacking the constant, fractious disputes between different schools of thought (e.g., realist v. interpretivist) ... telecommunications policy research seems to be an instance of Kuhnian ‘normal science’, a discipline which has adopted a research paradigm that is unchallenged. Taking the hegemonic research paradigm for granted, rigor has been assumed ... since other perspectives are excluded.¹⁰

In this book I argue that it is not business as usual for telecoms regulators, and that net neutrality cannot be dismissed as a technical or competition challenge

⁷ The most popular blog post by far on my net neutrality blog is that referencing former European Commission Vice President Neelie Kroes’ decision to adopt only net neutrality ‘lite’ in 2013. See Marsden, Chris (2014a).

⁸ Faris *et al.* (2015).

⁹ See Lessig (1999), Wu (2003a), Zittrain (2008), and in the European context Horten (2011). See also Kron (2012).

¹⁰ Sutherland (2014).

without serious implications for consumers and civil society interaction. I deliberately broaden the debate to consider the structure of the radical changes which Internet Protocol (IP) networks are wreaking on mass communications systems, for voice, data and audiovisual networks. At the time of writing, it is not at all clear how regulators will react to the mass mobilisations of users in the US (2014), India (2015) and potentially Europe (2016). Political scientists will find this a challenging and illuminating area to study, but for regulatory lawyers it is enough to remark that competition law will not entirely meet this challenge, as I explore in Chapter 2.

A word on how you, the reader, should approach the book. For those who recall my 2010 book,¹¹ this is not a second edition; it is a new book about legislation and regulation, how these have developed from policy, and why they have not solved the problems, which themselves have evolved. It is written with lawyers, social scientists generally and the well-informed general reader in mind. In 2014–15, over 6 million citizens replied to various net neutrality consultations, including over 2 million in India and 4 million in the US. Law and regulation have developed significantly since 2010, and the audience for this book will be well aware of many net neutrality issues. It is not an ‘idiot’s guide’ introduction to what the Internet is and how it works (though footnotes provide you with background reading). In this book I do not repeat myself by discussing the pre-regulatory theoretical background in depth.¹² While I am well informed by technical insights from computer scientists, I make no claims to innovative technical insight, and technologists should bear this in mind when reading especially this Introduction and Chapter 3, which outlines some technical issues. Books can and will be written about the technologies and policies of interception and intermediary liability, which I examine in Chapter 5, zero rating and mobile net neutrality examined in Chapter 7, and UK communications regulation in Chapter 6, and books have already been written about US net neutrality, competition law and net neutrality,¹³ and human rights and net neutrality.¹⁴ I refer to all of those.

What this book does offer to lawyers, other social scientists, policymakers and citizens is a state of the art analysis of how European net neutrality law and regulation has arrived at a liminal moment in 2016, when laws and regulations

¹¹ Marsden (2010).

¹² The two opposing law and economics camps on these issues are described in Marsden and Cave (2007). Hahn and Wallstein (2006), Yoo (2006), Speta (2004) and many economists were against regulation. Lemley and Lessig (1999, 2000), Wu (2003b, 2007), Frieden (2006), Cherry (2006), Economides and Tåg (2007), Weiser (2009), Frischman and van Schewick (2007) and van Schewick (2010) were in favour.

¹³ Maniadaki (2015).

¹⁴ See Belli and De Filippi (2015) and Nunziato (2009). For the opposing view, see Zelnick (2013).

have been drafted, passed and taken effect, but little actual enforcement or implementation has taken place.

As I explained in the Acknowledgements, this is the sum of many comparative research projects, transdisciplinary conversations, expert conversations and interviews over two decades. The book presents the results of fieldwork in South America, North America and Europe over an extended period (2003–15), the latter part of which focused on implementation.¹⁵ This book is based on empirical interviews conducted in-field¹⁶ with regulators, government officials, IAPs (known in European law formally as ‘Electronic Communications Service Providers’, as examined in Chapters 1 to 4), content providers, academic experts, non-governmental organisations (NGOs) and other stakeholders from Chile, Brazil, the United States, Canada, the United Kingdom, Netherlands, Slovenia and Norway. Collaboration between socio-legal scholars, senior computer scientists and economists is essential to serious investigation of network neutrality. Such intensive collaboration enhances much well-meaning law and humanities work in examining Internet law and telecommunications regulation, in such areas as behavioural advertising regulation and the implications of widespread commercial deployment of Deep Packet Inspection (DPI), which is explored in Chapter 5. The project builds on both my previous network neutrality research funded through the European Commission (EC), national governments in Europe and East Asia, the United Nations and Council of Europe, RAND Corporation, and the 37-partner European Internet Science (EINS) Network of Excellence, specifically its Joint Research Activity on Regulation and Governance.¹⁷

State of the law on net neutrality 2017

We begin at the end, or as I suggest in Chapter 8, the ‘end of the beginning’. ‘Open Internet’ legislation has been passed in the European Economic Area (EEA) via European Union (EU) Regulation 2015/2120 of 25 November 2015, and has been regulated in the United States via the Open Internet Orders of 2010 (transparency provisions) and 2015 (anti-discrimination).¹⁸ While regulatory and legislative logjams and litigation have resulted in delayed

¹⁵ The final four years of research (2011–15) was funded by the European Commission EU FP7 EINS grant agreement No. 288021 and internal funding from both Sussex and Essex Universities. No ISP or content provider has provided funding to the project since 2008, though several of each funded earlier stages. I am grateful to have been appointed Research Fellow at Melbourne University School of Law in 2012, and FGV Centre for Technology and Society in 2015.

¹⁶ With the exception of Chile, where the UN CEPAL in 2013 and Brazilian CGI in 2015 provided a forum for Chilean stakeholders to travel to workshops on comparative implementation.

¹⁷ EINS (2015).

¹⁸ FCC, Internet Policy Statement 05–151, 2005.

implementation of regulation in the US¹⁹ and European Union in the period since their respective initial intentions to regulate were announced in 2009,²⁰ several countries passed legislation and/or implemented regulation of net neutrality.²¹ Notable examples of laws with the date of regulation/legislation are: Chile (2010–11),²² Brazil (2014–16),²³ Singapore (2011),²⁴ Israel (2011)²⁵ and Costa Rica (2010).²⁶ Other nations have introduced forms of self- and co-regulation for net neutrality with varying degrees of regulatory commitment, including Norway (2009),²⁷ the UK,²⁸ South Korea (2013) and Japan (2009).²⁹ Canada has used existing law to regulate.³⁰ European nations with pre-existing laws include Netherlands (2012),³¹ Slovenia (2012)³² and Finland (2014).³³ EU Member States Germany and France³⁴ issued policies which have not been translated into specific net neutrality regulatory action. In Belgium, Italy and Luxembourg, proposals have been put forward for legislation, but no law was passed, in view of European Regulation negotiations from 2013³⁵ until the end of 2015.³⁶

In 2016 net neutrality policy was paused on the edge of enforcement, on both sides of the Atlantic. On the first anniversary of the entry into force of its Open Internet Order, the US FCC was in pre-election mode, implementing privacy regulation for its newly reinstated Title II common carrier IAPs but ignoring the obvious infringements of net neutrality by IAP zero rating services. This led 53 consumer organisations to write to the FCC Chair to

¹⁹ Crawford (2011).

²⁰ Marsden, Chris (2012).

²¹ Marsden (2013a, 2013b); Shin and Han (2012); Jitsuzumi (2012); Candeub and McCartney (2012).

²² Chile, Ley 20.453 de 18 de agosto 2010.

²³ Brazil, Law No. 12.965, 23 April 2014.

²⁴ Info-communications Development Authority of Singapore, 'IDA's Decision and Explanatory Memorandum for the public consultation on Net Neutrality', 2011.

²⁵ Amending Article 51C(b) Telecommunications Law 1982, Summarized by the Ministry of Communications, Israel, Internet (over-the-top) services and challenges to regulation, 2015. See also Greenbaum (2014).

²⁶ Costa Rica, *Guzmán et al. v. Ministerio De Ambiente, Energía y Telecomunicaciones* (2010).

²⁷ See Norwegian Communications Authority, Net neutrality guidelines, 2013.

²⁸ Marsden (2014a).

²⁹ Jitsuzumi (2015).

³⁰ CRTC (2009). See also Marsden, Chris (2010).

³¹ Netherlands Telecommunications Act 2012.

³² Slovenia, Law on Electronic Communications, No. 003-02-10/2012-32, 20 December 2012, Article 203(4), available in Slovenian at www.uradni-list.si/1/content?id=111442 (Accessed 24 September 2016).

³³ Finland, Information Society Code (917/2014), 2014. I am grateful to Professor Päivi Korpisaari, of Helsinki University for pointing me to the Finnish regulation.

³⁴ Jasserand (2013).

³⁵ COM(2013) 627.

³⁶ Olsen, T. (2015).

urge enforcement to begin.³⁷ In Europe, the eighth year of austerity economics meant starvation of public funds to deploy high speed networks or to reinforce the staffing of the national telecoms regulators. While Regulation 2015/2120 was published in November 2015, the Body of European Regulators of Electronic Communications (BEREC) was drafting Guidelines to be published in August 2016, with significant doubts that all – or many – of the 28 national regulators would take their enforcement responsibilities seriously. That remains to be seen in 2017 and thereafter. The UK was itself embroiled in a non-binding #Brexit referendum held on 23 June on whether to leave or stay in the European Union, which may eventually impact substantially on its telecoms policies. Telecoms is largely a Digital Single Market responsibility, liberalisation and competition primarily negotiated since the mid-1980s in Brussels rather than London. 2016 promised to be the year after the regulations were passed, but not the decisive year for net neutrality enforcement.

Chapters 1 to 2 explain the beginnings of net neutrality regulation in the US and Europe, before Chapter 3 explains some of the current debate over access to Specialised Services: fast lanes with higher Quality of Service (QoS). Chapter 4 then examines the new European law of 2015, with Chapter 5 examining the interaction between that law and interception/privacy. Chapter 6 takes a deep dive into UK self- and co-regulation of net neutrality. In each of the national case studies, initial confusion at lack of clarity in net neutrality laws³⁸ gave way to significant cases, particularly since 2014, which have given regulators the opportunity to clarify their legislation or regulation. The majority of such cases relate to mobile (or in US parlance ‘wireless’) net neutrality, and in particular so-called ‘zero rating’ practices, which I explore in Chapter 7. Finally, Chapter 8 offers a toolkit for regulation and conclusions. The conclusion notes the limited political and administrative commitment to effective regulation thus far, and draws on that critical analysis to propose reasons for failure to implement effective regulation. It compares results and proposes a regulatory toolkit for those jurisdictions that intend effective practical partial or complete implementation of net neutrality. It sets out a future research agenda for exploring implementation of regulation. This book marks the real start of net neutrality law after many false dawns.

I offer a solution that I term the co-regulatory common carriage answer, but I do not expect it to be implemented: regulators and lobbyists have spent two decades trying to ignore user demands for net neutrality and they will find co-existence with the zombie extraordinarily difficult. I argue against social or economic justifications for either barring any proprietary high-speed traffic at all, or for strict versions of net neutrality that would not allow any traffic

³⁷ Marsden, Chris (2016).

³⁸ Marsden, Chris (2013c).

prioritisation. There is too much at stake either to expect government to supplant the market in providing higher speed connections, or the market to continue to deliver openness without basic policy and regulatory backstops to ensure some growth.³⁹

I argue that higher QoS for higher prices on Specialised Services should be offered on fair, reasonable and non-discriminatory (FRAND) terms to all-comers, a modern equivalent of common carriage. As common carriage dictates terms but not the specific market conditions,⁴⁰ transparency and non-discrimination would not automatically result in a plurality of services. The type of service which may be entitled to FRAND treatment could result in short-term exclusivity in itself, for instance as wireless/mobile cell towers may only be able to carry a single high-definition video stream at any one point in time and therefore a monopoly may result. My argument is also that a minimum level of service should be provided which offers Open Internet access without blocking or degrading specific applications or protocols – an updated form of the Universal Service Obligation (USO),⁴¹ proposed by Ofcom and the UK government at 10Mbps by 2020.⁴² That provides a basic level of service which all subscribers should eventually receive, though already insufficient for the new generation of ultra-high definition TV (UHDTV). This minimum speed promise is controversial in many countries, because it interferes with private deals between IAPs and multinational content providers to discriminate in providing what is now called ‘zero rating’. This practice of ‘sponsored data plans’ provides free content within the ‘walled garden’⁴³ of the IAP’s special offer, paid for either by the IAP itself or the content provider. The former case is much cheaper than regular Internet traffic, because the content should be cached in the IAP’s own network and otherwise made more efficient to deliver, reducing the cost of hauling the data over the Open Internet.⁴⁴ There is nothing unusual in such deals to provide accelerated tailored content over the fixed Internet, and it has become the most popular means to receive BBC video content online in the UK, for instance.⁴⁵ It is, however, controversial in mobile IAPs, especially where there is no Internet access included in the subscriber’s bundle, yet it remains described as accessing the ‘Internet’ when it is actually only that content pre-negotiated. The Organisation for Economic Cooperation and Development (OECD) explains: ‘zero rating can clearly be pro-competitive ... [and] becomes less of an issue with ... higher or unlimited data allowances.

³⁹ Meisel (2010), p. 20.

⁴⁰ Cherry (2006).

⁴¹ Mueller (1998).

⁴² Department for Culture, Media and Sport (2015a).

⁴³ The concept of a ‘walled garden’ is discussed further in Chapter 5.

⁴⁴ See Farman (2015a, 2015b).

⁴⁵ Sweney (2016). See also Parnwell (2014).

Regulators need to be vigilant'.⁴⁶ This impacts most severely in poorer developing countries for new Internet users, and was the most controversial issue discussed at the United Nations Internet Governance Forum in November 2015.⁴⁷ I explore the issue in Chapter 7.

Net neutrality definition and policy

'Net neutrality' is a difficult term to define accurately, as it is a principle not a regulatory process.⁴⁸ I help to define it in this Introduction, but for those confused by the many claims by politicians and IAPs to support net neutrality, here is a clarification. Hahn and Wallsten explain that net neutrality:

usually means that broadband service providers charge consumers only once for Internet access, don't favor one content provider over another, and don't charge content providers for sending information over broadband lines to end users.⁴⁹

Note that all major consumer IAPs are vertically integrated to some extent, with proprietary video, voice, portal and other services. Conventional US economic arguments have been broadly negative towards the concept of net neutrality, preferring the introduction of tariff-based congestion pricing.⁵⁰ The lack of trust and security on the Internet, combined with a lack of innovation in the QoS offered in the core network over the entire commercial period of the Internet since NSFNet was privatised in 1995 meant that development was focused almost entirely in the application layer. Peer-to-peer (P2P) programmes, such as low-grade VoIP and file-sharing as well as the World Wide Web (WWW), were designed during this period.⁵¹ 'Carrier-grade' VoIP, data and video transmission was restricted to commercial Virtual Private Networks (VPNs) that could guarantee security, with premium content attempting to replicate the same using Content Delivery Networks (CDNs) such as Akamai (examined in Chapter 3), or IAPs' own offerings deployed within their network.

Network congestion and lack of bandwidth at peak times is a feature of the Internet: it has always existed. That is why video over the Internet was, until the late 1990s, simply unfeasible. It is why VoIP often has patchy quality, and why engineers have been trying to create better QoS. Prior to commercialisation in 1995, the Internet had never been subject to regulation beyond that needed for interoperability and competition, building on the Computer I and II inquiries

⁴⁶ OECD (2015), pp. 187–192.

⁴⁷ See Belli and De Filippi (2015).

⁴⁸ See Marsden (2013a).

⁴⁹ Hahn and Wallsten (2006).

⁵⁰ See David (2001).

⁵¹ Brown and Marsden (2013a), pp. 36–39; Cannon (2003) and references therein.

by the FCC in the United States, and the design principle of End to End (E2E). That principle itself was bypassed by the need for greater trust and reliability in the emerging broadband network by the late 1990s, particularly as spam email led to viruses, botnets and other risks. The E2E principle governing Internet architecture is a two-edged sword, with advantages of openness and a dumb network, and disadvantages of congestion, jitter and ultimately a slowing rate of progress for high-end applications such as high definition television (HDTV).⁵² E2E may have its disadvantages as compared with QoS. Steinberg, in a classic 1996 article, explained the cultural and engineering gulf between telecoms and Internet traffic designers. ‘BellHeads’:

are the engineers and managers who grew up under the watchful eye of Ma Bell and who continue to abide by Bell System practices out of respect for Her legacy. They believe in solving problems with dependable hardware techniques and in rigorous quality control ... Opposed to the Bellheads are the Netheads, the young Turks who connected the world’s computers to form the Internet. These engineers see the telecom industry as one more relic that will be overturned by the march of digital computing.⁵³

This argument continues unabated to this day, though the ‘relic’ continues to dominate local access for consumers. Bubley recently stated:

A lot of proposed SDN [Software Defined Network] models have Net Neutrality implications. For example, I heard many discussions about ‘app-aware service chains; and ways to ‘slice’ the network so it behaves differently for particular services or DPI-detected flows.⁵⁴

It is worth noting European regulator group BEREC’s remarks: ‘Over the Internet, a guaranteed end-to-end QoS offer is ... neither commercially nor technically realistic. Differentiated services (DiffServ), which fall just short of guaranteed end-to-end QoS, exist but continue to be exceptional’.⁵⁵ They add that: ‘where end-to-end QoS arrangements are currently in use, they almost always consist of specialised services (e.g. IPTV [Internet Protocol Television]), provided not over the Internet but within a closed network within the Internet Access Provider’s own network’,⁵⁶ but that:

mechanisms other than end-to-end QoS traffic classes have been developed over time for improving [E2E] network performance, including end-point based congestion control for reduction of the traffic load, Internet Exchange Points and the increased use of peering. CDNs are also used to improve the user’s experience

⁵² Saltzer, Reed and Clark (1984), p. 288.

⁵³ Steinberg (1996).

⁵⁴ Bubley (2015).

⁵⁵ BEREC, BoR (12) 120.

⁵⁶ *Ibid.*

of an application's quality (QoE). All of these mechanisms have evolved through commercial innovation, without the need for regulatory intervention. Furthermore, they do not threaten the system of decentralised efficient routing of Internet traffic, since they are applied at endpoints.⁵⁷

In December 2012 BEREC appeared determined to prevent attempts by former monopoly IAPs to assert control over Internet traffic, stating 'Put simply, ETNO [European Telecommunications Network Operators] is trying to extract additional revenues from its existing network assets, in a bid to reassert control over a changing communications ecosystem'.⁵⁸ Chapter 4 explains that this determination did not survive negotiations to create the 'horse designed by a committee' that is the dromedarian European law: Regulation 2015/2120.

Net neutrality lite and heavy

Dividing net neutrality into its forward-looking positive and backward-degrading negative elements is the first step in unpacking the term, in comprehending that there are two types of problem: charging more for more, and charging the same for less. IAPs can discriminate against all content or against the particular content that they compete with when they are vertically integrated.

Backward-looking 'net neutrality lite' claims that Internet users should not be disadvantaged due to opaque and invidious practices by their current IAP. That means no throttling, blocking of rival content (e.g. Skype, BitTorrent, NetFlix or WhatsApp), and ensuring the 'Four Freedoms' for Internet users: their own choice of content, applications, services and devices to connect to the Internet. In the US, regulators have a long history of fighting such discrimination, and in 2016 it is fairly clear that they would take action against such private censorship.

Forward-looking 'positive net neutrality' is the new focus of the problem: network owners with vertical integration into content or alliances have enhanced incentives to require content owners (who may also be consumers) to pay a toll to use the higher speed networks that they offer to end users. These 'fast lanes' are typically upgraded fibre to the customer's neighbourhood (or even road, or even house) rather than traditional copper networks. Positive 'net neutrality' or 'heavy' neutrality is argued to place a burden on investors in upgrading to faster IAP lines, though the costs have fallen dramatically and in 2016 most European and US Internet users can access a 30Mbps line. Infamously, the head of AT&T Ed Whitacre argued in 2005 that: 'The Internet can't be free in that sense, because we and the cable companies have made an

⁵⁷ *Ibid.*

⁵⁸ *Ibid.*

investment and for a Google or Yahoo! or Vonage or anybody to expect to use these pipes [for] free is nuts!⁵⁹

In 2016 the ‘net neutrality lite’ element is becoming regulated, and is less controversial than previously. Governments and regulators that fiercely fought net neutrality law have finally conceded that it may not be as disastrous as they had claimed, as I detail in the UK case in Chapter 6. They are only conceding net neutrality ‘lite’ because they have secured approval for their IAPs to discriminate on their fast lane services, which are now called ‘Specialised Services’ (examined in Chapter 3). For example, in November 2014 the European mobile IAPs finally agreed to stop fighting for the right to throttle their users’ Internet use when it became inevitable that a new European law would be passed in some shape. They declared that: ‘We are committed to maintaining an open Internet and to treating providers of similar content and services in a non-discriminatory manner, provided that they are legally and fairly offered according to Europe’s laws.’⁶⁰ But they argued they should discriminate on ‘fast lane’ services:

providing a range of services at different levels of quality and price, in order that all sectors of European industry can maximise their commercial opportunities from advanced services, and to providing affordable Internet services for consumers to help eliminate the digital divide.⁶¹

US and EU regulation of net neutrality 2017

The US regulator FCC has acted on several network neutrality complaints (notably those against Madison River in 2005 and Comcast in 2008), as well as introducing the principle in part through several merger conditions placed on dominant IAPs.⁶² The 26 February 2015 Open Internet Order applied from 12 June 2015 and promised to enforce net neutrality.⁶³ The FCC announced in July 2015 how to receive case-by-case advice about future plans, for instance zero rating schemes or Specialised Services, that may risk breaching net neutrality: ‘new process involves requesting and receiving an advisory opinion on specific, prospective business practices.’⁶⁴ At paragraphs 30–31 it explains that ‘Although advisory opinions are not binding on any party, a requesting party may rely on an opinion if the request fully and accurately contains all the material facts and

⁵⁹ Business Week International Online Extra (2005).

⁶⁰ Make the Net Work (2014).

⁶¹ *Ibid.*

⁶² *Comcast v. FCC* (2010) No. 08–1291.

⁶³ FCC, Internet Policy Statement 05–151, 2005.

⁶⁴ FCC, Open Internet Advisory Opinion Procedures, Protecting and Promoting the Open Internet, GN Docket No. 14–28, 2015

representations necessary for the opinion and the situation conforms to the situation described in the request for opinion.’ The FCC ‘may later rescind an advisory opinion, but any such rescission would apply only to future conduct and would not be retroactive.’ The FCC claimed in 2015 that the Order offered ‘Bright Line Rules’:

- No Blocking: broadband providers may not block access to legal content, applications, services, or non-harmful devices.
- No Throttling: broadband providers may not impair or degrade lawful Internet traffic on the basis of content, applications, services, or non-harmful devices.
- No Paid Prioritization: broadband providers may not favor some lawful Internet traffic over other lawful traffic in exchange for consideration of any kind – in other words, no ‘fast lanes.’ This rule also bans IAPs from prioritizing content and services of their affiliates.⁶⁵

That final provision should eliminate zero rating, but it does continue. Zero rating is a common practice in the US; for instance T-Mobile has offered 33 zero-rated music services since 2014.⁶⁶

As seen previously in the mergers of Bell Atlantic into Verizon and the formation of AT&T in 2005/06 and Comcast/NBC Universal in 2011, the US government has found itself most able to enforce net neutrality with decisions inserted into merger approvals. The 2015 merger of DirecTV into AT&T imposed such conditions on zero rating.⁶⁷ In its AT&T/DirecTV approval of 27 July 2015, the FCC stated at paragraph 395: ‘we require the combined entity to refrain from discriminatory usage-based allowance practices for its fixed broadband Internet access service.’⁶⁸ In response to accusations that AT&T ignored previous commitments in mergers, the FCC at paragraph 398 ‘require that AT&T retain both an internal company compliance officer and an independent, external compliance officer’. This regulation has some teeth. Comcast’s attempted takeover of Time Warner Cable abandoned in 2015 would also have been likely to see such conditions imposed alongside interoperability/neutralty in its dealing with third party

⁶⁵ FCC, In the Matter of Protecting and Promoting the Open Internet, GN Docket No. 14–28, 2015 (Open Internet Order).

⁶⁶ Northrup (2015).

⁶⁷ Telecom Paper (2015): ‘If approved by the commissioners, 12.5 million customer locations will have access to a competitive fibre connection from AT&T. The additional roll-out is around ten times the size of AT&T’s current FttP deployment and increases the national residential fibre build by over 40 percent ... AT&T will not be permitted to exclude affiliated video services and content from data caps on its fixed broadband connections. It will also be required to submit all completed interconnection agreements with the FCC.’

⁶⁸ FCC, In the Matter of Applications of AT&T Inc. and DIRECTV For Consent to Assign or Transfer Control of Licenses and Authorizations MB Docket No. 14–90, 2015.

device authentication – which concerns the freedom to attach devices to the network.⁶⁹

In Europe, more complete confusion over zero rating and Specialised Services existed amongst governments, European institutions and regulators in 2016. This will be the focus of the BEREC consultations that conclude in August 2016, explored at the end of Chapter 4. The European Parliament had negotiated ‘net neutrality lite’ rules on blocking/throttling in 2009 – with emphasis on the ‘lite’ – to be implemented via regulatory action and reporting from 2011 under the amended Electronic Communications package.⁷⁰ It essentially permitted discrimination (under certain conditions) on speed and price for new network capacity, but insists that existing networks do not discriminate ‘backwards’ – that is, do not reduce the existing levels of service or block content without clear and transparent notice to users, and demonstrable reasonableness of those actions. This had to be adopted by national parliaments in June 2011 – though many delayed.

The European Parliament, European Commission and newly formed BEREC, on behalf of the 28 national telecoms regulators, all announced investigations into the implementation of net neutrality carried out in the second half of 2010, at the end of which the European Commission presented to the European Parliament its first annual findings in the area. Development of European legal implementation of the network neutrality principles has been slow, with the European Commission referring much of the detailed work to BEREC, which undertook an extensive work programme on net neutrality from 2011, leading slowly towards European legislative activity in 2013–15, and BEREC Guidelines to enforce the 2015 regulation by August 2016.

In 2012/14 three Member States implemented laws that were much stricter than the 2009 rules. The most famous case was the Netherlands, where questions were asked in parliament about Skype blocking in 2009,⁷¹ and by spring

⁶⁹ Brodtkin (2014): ‘Roku is pleased to inform the Commission that effective November 25, 2014, Roku and Comcast entered into an agreement pursuant to which Comcast has, among other things, agreed to authenticate the HBO GO and Showtime Anytime apps on Roku video streaming devices for Comcast’s subscribers whose subscriptions entitle them to access the content and services made available through such apps’ – filed in the decision on the Comcast–Time Warner Cable merger, stopping selective blocking of HBO and AShowtime apps on Roku and Playstation 3 but not Apple TV or Comcast-affiliated devices. Yet Roku in August 2014 had argued that ‘Rather than prioritizing platform support by customer interest or software compatibility, MVPDs [cable distributors] can use their power of authentication to favor one streaming platform over another. A large and powerful MVPD may use this leverage in negotiations with content providers or operators of streaming platforms, ultimately favoring parties that can either afford to pay for the privilege of authentication, or have other business leverage that can be used as a counterweight to discriminatory authentication. Additionally, MVPDs with affiliated ISPs can abuse their power over authentication by choosing to authenticate only their own or affiliated offerings.’

⁷⁰ Directive 2009/136/EC (Citizens’ Rights Directive) and the Declaration appended to Directive 2009/140/EC (Better Regulation Directive).

⁷¹ Aanhangel Handeligen II (Appendix Official Report), 2008/09, nr 2765 and 2766.

Table 1 BEREC papers on net neutrality 2010–15

BoR (10) 42	BEREC Response to the European Commission's consultation on the open Internet and net neutrality in Europe
BoR (11) 44	Draft BEREC Guidelines on Net Neutrality and Transparency
BoR (11) 67	Guidelines on transparency as a tool to achieve net neutrality
BoR (12) 30	A view of traffic management and other practices resulting in restrictions to the open Internet in Europe – Findings from BEREC's and the European Commission's joint investigation
BoR (12) 31	Differentiation practices and related competition issues in the scope of Net Neutrality
BoR (12) 32	BEREC Guidelines for Quality of Service in the scope of Net Neutrality
BoR (12) 33	An assessment of IP-interconnection in the context of Net Neutrality
BoR (12) 34	BEREC public consultations on Net Neutrality Explanatory paper
BoR (12) 120	Statement with observations about net neutrality for ETNO's proposal to International Telecommunications Union (ITU) World Conference on International Telecommunications
BoR (13) 117	Ecosystem Dynamics and Demand Side Forces in Net Neutrality: Progress Report and Decision on Next Steps
BoR (14) 117	Monitoring quality of Internet access services in the context of net neutrality
BoR (15) 90	Report on how consumers value net neutrality

2011 the largest IAP, KPN, was boasting on investor calls about spying on user behaviours so as to block the new messaging app, WhatsApp, that was leading users to stop texting.⁷² As a result, when the Netherlands voted on adoption of the 2009 package on 22 June 2011, it strengthened the powers of its regulator substantially to outlaw discrimination and the use of the spying technology that KPN had used. The law was later confirmed by the Dutch Senate in April 2012, though the regulations to make detailed rules were not passed until mid-2013. Nevertheless, by June 2011 the 2009 laws had unravelled before they had even been implemented in most countries. This, together with Slovenia adopting even more stringent rules than the Netherlands in its telecoms law of December 2012, meant that the rules would inevitably have to be revisited.

At national level, other EU Member States have been slow to recognise net neutrality problems, despite strong anecdotal evidence arising, which I analyse in the UK case in Chapter 6. The UK government opposes net neutrality, and

⁷² Sterling (2011).

Ofcom's role has been both restricted to encouraging self-regulation and since 2009 funding research by SamKnows into detection of Traffic Management Practices (TMP).⁷³ and its effect on consumers. I explore the opaque practices of co-regulatory forums where governments or regulators have decided on partial private rather than public diplomacy with IAPs. Empirical analysis of UK IAP practices has showed that net neutrality violations have been far more frequent than in the US.⁷⁴ The government itself has been inert, even erroneously reporting to the European Commission in its 15th Annual Implementation Report on telecoms liberalisation that no problems were occurring in 2009–10.⁷⁵ The UK regulatory regime has focused on behavioural 'nudge' responses to net neutrality violations, though it has also conducted technical measurement of both broadband speeds and traffic measurement, as well as a recent study into types of monitoring,⁷⁶ so that 'regulators keep a close watch on the operations of the market, using frequent detailed traffic measurement reports'.⁷⁷ It has a fatal flaw in its light touch co-regulatory regime: the consumer's major obsession when switching provider is the headline speed that IAPs promise in their advertising, not any unannounced and typically concealed blocking. The UK situation is further considered in detail in Chapter 6, as well as in Chapter 4, given it is subject to European law, at least as is the case at the time of writing.

European net neutrality was intended to sink slowly below the waves of symbolic public safety legislation and self-interested pro-industry regulation after 2009. As the ink was drying on the national laws implementing the 2009 rules, the European Commission had to write new rules, which it announced in June 2013 and presented the Connected Continent proposal on 11 September 2013.⁷⁸ Malcolm Harbour MEP's Opinion on implementation of the 2009 Directives was amended that month by his committee to add these pro-regulatory comments:

there is a potential for anti-competitive and discriminative behaviour in traffic management and calls, therefore, on the Member States to prevent any violation of net neutrality;

5. Underlines that end to end quality of service prioritisation alongside best effort delivery could undermine the principle of net neutrality; calls on the Commission and regulators to monitor these trends and, if appropriate, to deploy

⁷³ It was proven by SamKnows in 2008 that British Telecom throttled all P2P traffic aggressively during the evening peak: see Collins (2008).

⁷⁴ Cooper and Brown (2015).

⁷⁵ COM(2010) 253.

⁷⁶ Ofcom, 12th Annual Communications Market Report, 2015. See also the Ofcom-commissioned study by Predictable Network Solutions Limited (2015).

⁷⁷ Crowcroft (2015).

⁷⁸ COM(2013) 627.

the quality of service obligation tools set out in Article 22 of Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services, and if necessary to consider additional EU legislative measures.⁷⁹

The Member State governments and European Parliament returned to negotiation of these rules for over two years to autumn 2015, culminating in a vote in the European Parliament to adopt the rules on 27 October 2015. This is the focus of Chapters 4 and 5 of the book, followed by consideration of comparative case studies in implementation in Chapters 6 and 7.

Net neutrality 'lite' law is 'on the books' in 2016, but regulating the fast lane Specialised Services and zero rating has been prevented in Europe, and is undecided in the United States. These problems will be the focus of the book. Before we can explore the future and present, however, we need to look to how we got here: the history of net neutrality and its predecessor, common carriage.

History of common carriage: forerunner to net neutrality

Network neutrality is the latest phase of an eternal argument over control of communications media. The Internet was held out by early legal and technical analysts to be special, due to its decentred construction, separating it from earlier 'technologies of freedom' including radio and the telegraph.⁸⁰ Net neutrality has been variously defined, most prominently by regard to its forerunner: common carriage. Common carriers who claim on the one hand the benefits of rights of way and other privileges, yet on the other claim traffic management for profit rather than network integrity, are trying both to have their cake and to eat it.⁸¹ Common carriage is defined by the duties imposed on public networks in exchange for their right to use public property as a right of way, and other privileges. The telecommunications network is a common carrier, as is the public road. Noam explains that:

When historically they [infrastructure services] were provided in the past by private firms, English common law courts often imposed some quasi-public obligations, one of which one was common carriage. It mandated the provision of service to willing customers, bringing common carriage close to a service obligation to all once it was offered to some.⁸²

We need to explore this history in order to explain that the policy impetus behind net neutrality is not 'a problem in search of a solution' but a return to

⁷⁹ Harbour (2013).

⁸⁰ De Sola Pool (1983).

⁸¹ See Frieden (2010) and Werbach (2010).

⁸² Noam (1994).

classical ideas of how communications networks serve the public interest. In this history, I draw on eminent US communications scholars, mathematician Odlyzko⁸³ and lawyer Cherry,⁸⁴ as well as UK-based legal academics Atiyah, Otto-Freund, and the great Victorian legislator William Ewart Gladstone, author of the Railways Act 1844, the model of modern communications legislation.⁸⁵ This section may appear to consist of nineteenth-century ‘train spotting’ at first glance, but it is essential to realise that Internet access in the twenty-first century is comparable to railways in the nineteenth: it transforms economy, society and ecology in extraordinary ways. Internet access, like train access, is not a ‘widget’ problem of competition law, but a communications network with deep roots in the body politic and citizens’ daily lives. That does not mean it needs no competition, but that it requires far more innovative practices that must not be closed off by the company that provides local access. This was recognised by Gladstone in 1844, and should be recognised by legislators today.⁸⁶

Common carriers in mediaeval times included farriers and public houses (every horse to be shod and person to be allowed shelter without discrimination between travellers). In *Lane v. Cotton* (1701), Sir John Holt CJ stated: ‘If a man takes upon him a public employment, he is bound to serve the public as far as the employment extends; and for refusal an action lies, as ... Against a carrier refusing to carry goods when he has convenience, his wagon not being full.’⁸⁷ Holt CJ limited liability in the landmark case of *Coggs v. Bernard* in 1703,⁸⁸ which led to an expansion of common carriers taking advantage of the special legal status. In refusing to impose strict liability, he relied on his interpretation of what was known of Roman law, overturning the 1601 precedent in *Southcote’s Case*.⁸⁹ Citizens have ancient rights of way and of service ‘by the custom of the realm’, inherited by the American colonies far before the original Tea Party.⁹⁰

The UK Carriers Act of 1830 was the first legislation for carriage of goods by land, codifying the common law and replacing the traditional tort of bailment as condition for carriage of goods.⁹¹ The Act applied to all common carriers by

⁸³ The application of his modelling to Internet traffic has been groundbreaking, see Odlyzko (1998, 2004, 2014a) and Table 4.

⁸⁴ Cherry (2006, 2008). This culminated in Cherry and Peha (2014).

⁸⁵ See Railway Regulation Act 1844, s.6, and Kahn-Freund (1963).

⁸⁶ Marsden (2015).

⁸⁷ *Lane v. Cotton* (1701) 1 Ld Raym 646, at 654.

⁸⁸ *Coggs v. Bernard* (1703) 2 Ld Raym 909, 13 William III. See Holmes (1881), p. 132.

⁸⁹ *Southcote’s Case* (1601) 4 Co Rep 83b; Cro Eliz 815, discussed by Jones and Theobald (1833), extensively in footnote 13 at pp. 38–39, and in the text at pp. 41, 58–62 and xli.

⁹⁰ Jones and Theobald (1833) Appendix: Common Carriers, p. v. They devote the entire Appendix to describing the definitions and duties of common carriers.

⁹¹ Carriers Act 1830, Chapter 68 11 Geo 4 and 1 Will 4, s.1, for ‘more effectual Protection of Mail Contractors, Stage Coach Proprietors, and other Common Carriers’.

land, and defined a common carrier as any individual, firm or company (other than the government) who or which transports goods as a business, for money, from place to place, over land or inland waterways, for all persons (consignors) without any discrimination between them.⁹² Sir William Jones argued that the 1830 Act left open the possibility that carriers are ‘still at liberty to make a special contract in the usual form’.⁹³ The UK Railways Act 1844 included common carriage provisions for common carriage and ‘Parliamentary trains’:

all Passenger Railway Companies ... shall, by means of One Train at least to travel along their Railway from one End to the other of each Trunk, Branch, or Junction Line ... once at least each Way on every Week Day ... provide for the Conveyance of Third Class Passengers ... The Fare or Charge for each Third Class Passenger by such Train shall not exceed One Penny for each Mile travelled.⁹⁴

Common carriage should not be confused with charging tolls for higher speed networks, though the Turnpike Riots of eighteenth-century England were associated with turning the King’s Highway into a private road, and UK opposition to road charging continues. Common carriage is not a flat rate for all packets, or necessarily a flat rate for all packets of a certain size. It is a *non-discrimination bargain*: for the privileges of classification as a common carrier, those private actors are granted the rights and benefits that an ordinary private carrier would not have. It should be noted that telegraph lines ran alongside railway lines, which led to a provision in the Railways Act 1844 that government could take over railways in time of war, a power reproduced in the US Pacific Telegraph Act 1860, and that modern telecommunications run in part alongside railway lines, with the original alternative infrastructure to British Telecom in the UK being that of British Rail (later Racal) Telecommunications, which contracted with BT’s competitors to offer them backhaul – not least because, as a common carrier, railways provide secure rights of way for their services.⁹⁵

The monopoly of railways with the historic UK ‘mania’ booms in investment in the 1830s and 1840s (to be repeated in the US in the 1860s and 1870s),⁹⁶ and their clear superiority over canals and all other forms of conveyance of goods, led to calls to extend the law beyond the 1844 Act. The common carriage requirement was fully brought in by the Railway and Canal Traffic Act 1854 s.7,

⁹² Note that a carrier must carry goods of the consignor for hire and not free of charge in order to be called a common carrier. Further, he must be engaged in the business of carrying goods for others for money from one place to another. A person who carries goods occasionally or free of charge is not a common carrier.

⁹³ Jones and Theobald (1833), Appendix: Common Carriers, p. xii.

⁹⁴ Later extended by the Railway and Canal Traffic Act 1854, s.7, abolished in the Transport Act 1962, s.46(3), but maintained in the Standard Conditions of Carriage of the British Railways Board, and for carriage by road, canal and carriage of goods by sea.

⁹⁵ Kessell (2015).

⁹⁶ See Odlyzko (2014b).

which imposed liability on the railway company for ‘neglect or default’. Where the operator attempted to limit or exclude his liability for such loss in the contract for carriage, the exclusion clause would only operate where it was ‘just and reasonable’. The 1854 Act led in the 1860s to a perceived need to further tighten regulation of charges, and in 1865 a Royal Commission and Select Committee inquiry led by Lord Carlingford, president of the Board of Trade. This concluded that his own Board of Trade was not ‘sufficiently judicial’, that the courts were insufficiently expert on railways, and that Parliament was ill-equipped for such a permanent role. The Railway and Canal Traffic Act 1873 then created the specialist Court of the Railway and Canal Commission to enforce the 1854 Act.

In court practice, the common carriage requirement led the ‘fanatical adherent to freedom of contract’.⁹⁷ Bramwell B held in *Vaughan v. Taff Vale* (1860) that where railways offered insurance to cover liability for customers, then declining that insurance would shift liability entirely onto the customer.⁹⁸ This watering down of Parliament’s 1854 intention was continued by Blackburn J in *Peek v. The North Staffordshire Railway Company* (1863), who stated that:

a condition exempting the carriers wholly from liability for the neglect or default of their servants is prima facie unreasonable. I do not go as far as to say that it is necessarily in every case unreasonable and void, if [a carrier] offers in the alternative to carry on terms that he shall have no liability at all and holds forth as an inducement a reduction of the price below that which would be reasonable remuneration for carrying at owner’s risk, [...] I think that a condition thus offered may be reasonable enough.⁹⁹

The definition of traffic was later clarified and limited in *Spillers and Bakers Ltd v. Great Western Railway Company* (1911).¹⁰⁰ Hodges argued that rail transport was too great a public common carriage to be left to contracts adjudged by fanatical laissez-faire Victorian judges, approving of Cardwell’s Railway and Canal Traffic Act of 1854:

[t]he necessity of a supervision of some kind over the traffic on our railways has long been acknowledged and it was felt that it would be an intolerable abuse if the Queen’s subjects were deprived (by the railways) of the protection which the crown formerly afforded them when travelling over the ancient highways. Moreover, it may be assumed that the need for rigorous control and supervision is even more necessary than formerly when before the railways there could be no monopoly of the means of conveyance.¹⁰¹

⁹⁷ Atiyah (1980).

⁹⁸ *Vaughan v. Taff Vale Railway* (1860), 5 H&N 679 157 ER 1351.

⁹⁹ *Peek v. The North Staffordshire Railway Company* (1863) 10 HLC 473, at 557.

¹⁰⁰ *Spillers and Bakers Ltd v. Great Western Railway Company* (1911) 1 KB 386.

¹⁰¹ Hodges and Manley Smith (1876).

The final nail in the coffin of railways common carriage came with the Transport Act 1962 ss.43, 46(3), which removed all common carriage liabilities from the now-nationalised railways. Kahn-Freund stated: ‘the Act goes much further in giving effect to laissez-faire in the law of transport than English law has ever done at any time since the seventeenth century.’¹⁰² Common carriage thus has a somewhat unhappy judicial history in mainland UK, with the nationalised nature of telecommunications somewhat obscuring the picture in that industry. While I do not caution that UK judges are as fanatically free market and anti-consumerist as their early Victorian forebears, it is worth contemplating how a common law approach to the tortious liabilities of access providers may arrive at very different conclusions than European consumer law.

In mass communications in the US, ‘the issues comprising Net Neutrality have been around since the *Pacific Telegraph Act of 1860* and they are here to stay whether the 2015 *Open Internet Order* survives judicial review or not.’¹⁰³ Article 2 of that Act states: ‘messages received from any individual, company, or corporation, or from any telegraph lines connecting with this line at either of its termini, shall be impartially transmitted in the order of their reception, excepting that the dispatches of the government shall have priority.’¹⁰⁴ The US Supreme Court in 1901 confirmed that a public telegraph company (and more especially the largest) has a duty of non-discrimination towards the public.¹⁰⁵ Telecoms networks were established to be common carriers as they achieved maturity, following telegraphs, railways, canals and other networks. Noam explained in 1994: ‘it is not the failure of common carriage but rather its very success that undermines the institution. By making communications ubiquitous and essential, it spawned new types of carriers and delivery systems.’¹⁰⁶ He forewarned that net neutrality would have to be the argument employed by those arguing for non-discriminatory access, as well as accurately predicting the death of common carriage ten years later.

Common carriers are under a duty to carry goods lawfully delivered to them for carriage. The duty does not prevent carriers from restricting the

¹⁰² Kahn-Freund (1963). However, until the Railways Act 1993 (which not only privatised the railways but substituted freedom of contract), the 1962 Transport Act was observed more in the breach as contract replaced statute, maintained in the Standard Conditions of Carriage of the British Railways Board, and for carriage by road, canal and (at least theoretically) carriage of goods by sea.

¹⁰³ Quatrocchi (2015).

¹⁰⁴ Pacific Telegraph Act of 1860, 18 June.

¹⁰⁵ See *Western Union Telegraph Co. v. Call Publishing Co.* 181 US 92, 98 (1901).

¹⁰⁶ Noam (1994) p. 435, explaining that: ‘When historically they [infrastructure services] were provided in the past by private firms, English common law courts often imposed some quasi-public obligations, one of which one was common carriage. It mandated the provision of service of service to willing customers, bringing common carriage close to a service obligation to all once it was offered to some.’

commodities that they will carry. Carriers may refuse to carry dangerous goods, improperly packed goods or those that they are unable to carry (on account of size, legal prohibition or lack of facilities). This definition offers several reasons for refusal of common carriage that can be extended to IAPs – for instance, spam and viruses may be refused. In common law countries such as the UK and US, carriers are liable for damage or loss of the goods that are in their possession as carriers, unless they prove that the damage or loss is attributable to certain excepted causes (e.g. ‘Acts of God’).¹⁰⁷ That provides several more reasons for loss – one thinks of the loss of undersea cables, or alleged foreign power Denial of Service (DoS) attacks. It might be stretching a definition to suggest that P2P streams can be ‘jettisoned’ in order to allow other traffic to progress during peak time congestion.

Twenty-first-century IAPs who choose to manage traffic in a discriminatory fashion cannot be considered common carriers. Chapters 1 to 4 deal with the legal implications of abandoning common carriage and the need for net neutrality rules to replace them. If they cease being common carriers, they then open themselves to liability for the ‘cargo’ they inspect before they agree to carry it on a discriminatory basis. Chapter 5 deals with that issue.

Deep packet inspection and traffic management

In order to manage traffic, new technology allows any of the IAP routers (if so equipped) to look inside an unencrypted data packet to ‘see’ its content, via DPI and other techniques. Previous routers were not powerful enough to conduct more than a shallow inspection that simply established the header information – the equivalent of the postal address for the packet. An IAP can use DPI to determine whether a data packet values high-speed transport – as a television stream does in requiring a dedicated broadcast channel – and to offer higher speed dedicated capacity to time-dependent content such as HD video or voice calls using VoIP. That could make a good business for IAPs that wish to offer higher capability for ‘managed services’ via DPI.¹⁰⁸ Not all IAPs will do so, and it is quite possible to manage traffic less obtrusively by using the DiffServ protocol to prioritise traffic streams within the same Internet channel.¹⁰⁹

¹⁰⁷ In the wonderfully descriptive language of the common law: ‘Fault of the shipper as an excepted cause is any negligent act or omission that has caused damage or loss – for example, faulty packing. Inherent vice is some default or defect latent in the thing itself, which, by its development, tends to the injury or destruction of the thing carried. Fraud of the shipper is an untrue statement as to the nature or value of the goods. And jettison in maritime transport is an intentional sacrifice of goods to preserve the safety of the ship and cargo.’ See Longley (1967) and references in Noam (1994).

¹⁰⁸ Frieden (2008).

¹⁰⁹ Brown and Marsden (2013a), p. 144.

DPI and other techniques that let IAPs prioritise content also allow them to slow down other content, as well as speed up content for those users who pay (and for emergency communications and other ‘good’ packets). This potentially threatens competitors using that content: Skype offers VoIP using normal Internet speeds; uTorrent and BBC’s iPlayer have offered video using P2P protocols. Encryption is common in these applications and partially successful in overcoming these IAP controls, but even if all users and applications used strong encryption, this would not succeed in overcoming decisions by IAPs simply to route known premium traffic to a ‘faster lane’, consigning all other traffic to a slower, non-priority lane (a policy explanation simplifying a complex engineering decision). P2P is designed to make the most efficient use of congested networks, and its proponents claim that, with sufficient deployment, P2P could largely overcome congestion problems.

In 2009 congestion on the Internet was said to be caused by P2P file sharing, and consumer advocates feared DPI leading to pervasive Internet monitoring by IAPs and advertisers. Seven years later, how quaint these fears seem. First, P2P is no longer seen as a significant cause of congestion, but merely an artefact of the midband decade in which consumers struggled with 256 Kbps–4 Mbps connections. Today it is UHDTV video streaming and downloading which is the concern. Video streaming arose as a policy concern with the blocking of both Norwegian and UK state broadcaster video streaming in the mid-2000s, which led both nations to a co-regulatory solution with varying levels of success. In the period since 2010, it has been redefined as a commercial concern arising in the US with NetFlix and in varying manifestations in other nations. In addition, audio streaming on the far more limited mobile bandwidth has been a concern with various IAPs providing ‘free’ (i.e. positively discriminated) offers for music services, such as Spotify. This is a ‘legitimate’ successor to the P2P service that accompanied much of the early net neutrality controversy surrounding Napster. Net neutrality may therefore be returning to its roots in the 1990s, when Lemley and Lessig first identified it as a video over Internet issue – turning the Internet into an on-demand cable TV service where Internet traffic becomes a second-class service to the first-class proprietary video (and audio) offer.

As what of pervasive monitoring? In June 2013 National Security Agency contractor Edward Snowden left his Hawaii home for Hong Kong and then Russia. He had given a hard drive of classified documents to documentary film maker Laura Poitras and investigative journalist Glenn Greenwald. These proved beyond all reasonable doubt that major IAPs had collaborated for years with security agencies in the US, UK and many other countries to provide monitoring in real time and via retained historic browsing data of all Internet users in those territories and whose traffic passed through those territories. Moreover, spyware had been used to infect user machines and to trace

user behaviour online. The era of Total Information Awareness and surveillance was shown to have started. This made concerns regarding DPI and advertising both proven and trivial – yes, IAPs clearly had the ability to track all users, but more importantly they had been using this capacity for years and it was funded by both advertisers and in advanced projects by the security agencies. Snowden’s revelations revealed how acutely the privacy concerns of advocates were shown to have been under- rather than over-blown.¹¹⁰ Net neutrality, defined as freedom to use the Internet without interference, may be considered a pre-Snowden anachronism given the knowledge he revealed. Bear in mind that what Snowden knew is historical, dating to 2013, and surveillance has advanced considerably in the intervening period.

Back to the future: *plus ça change ...*

Cast your mind back to the start of 2009. It was three months after the global financial crisis had sent the developed world’s economies into near meltdown. This in part secured the election of the first black US president, who pledged to rescue the economy through infrastructure spending, restart US relations with the many countries opposed to the invasions of Iraq and Afghanistan, close the Guantánamo Bay torture facility and secure something called ‘net neutrality’. It was barely eight years since the ‘dot-com’ meltdown that bankrupted Internet and telecoms corporations worldwide, ending the great Internet boom of the late 1990s and the largest consumer boom that the US and UK had ever seen. In spring 2009 I wrote a book about how net neutrality could best be secured by using a mix of co-regulation and pragmatism rather than competition law or engineering alone.

Those conclusions stand, though there is now an enormously greater store of empirical evidence to bring to bear and the solutions are clearer and more challenging than it appeared then. This is no victory lap, nor have my conclusions changed. What has changed is that there is now much more legislation and regulation for a socio-legal scholar to write about. There is also a much larger canvas on which to paint a story about net neutrality, not only because we are now acknowledged to live in a post-Foucaultian nightmare of control and surveillance, but also because the Internet is as ubiquitous as its proponents claimed it would become. In 2009 average Internet download speeds in the UK were 4Mbps. P2P file sharing was threatening congestion on slow broadband networks. Piracy threatened the future of the music and movie industries, claimed their intellectual property lawyers. Facebook was overtaking MySpace as the largest social network in the English-speaking world, with one in ten people in the UK having signed up. Google was emerging as a dominant search

¹¹⁰ Richards (2015).

engine that would be affected by competition law investigations.¹¹¹ No-one had heard of Spotify, Twitter, WhatsApp, SnapChat, Instagram or Netflix. You could not use a 3G network to download apps from the iTunes Store, because the iPhone was only launched in mid-2007 and data acquisition was so slow and expensive that it was assumed downloads all took place on Wifi. The iPad and all other tablet computers did not exist. No one had heard of Julian Assange or Wikileaks, let alone Edward Snowden. The extraordinary information-sharing capacities of the Internet have created huge problems and capabilities for governments and corporations that invest in trying to control information and how citizens use that power. A purity of net neutrality intentions or declarations is hence impossible, whatever advocates may argue. Internet surveillance is pervasive for all but the most advanced users of military surveillance-strength encryption. The 2009 book was written before Wikileaks; this book is written far after Snowden. We need to exhibit realism not naivety in the legal expectations placed on IAPs, to govern what is now known of the extra-legal powers that were exerted to persuade those IAPs to participate in mass surveillance.

The single most interesting aspect of net neutrality is the fierce fight that has been waged for over 15 years to secure the future of the Internet: the international political economy of net neutrality, and the institutional economic aspect. Telecoms companies and their lobbyists first claimed it is of no relevance, then fought fiercely to oppose it. It was meant to be solved in Europe in 2009, when options for regulation were attached to the 'telecoms package'. It was meant to be solved in the US when Obama's first FCC chairman announced that there would be a consultation, then an 'Open Internet Order' in 2009–10. It was meant to be irrelevant to mobile data or developing countries because net neutrality was a luxury problem, not a question of universal access and human rights. But net neutrality is the policy gift that keeps on giving, encompassing all of these areas in ever greater profundity and detail. It will keep academics in articles for decades. We have moved on from the innocence of the 1990s, when it could be declared that:

The introduction of the Internet was accompanied by evolving procedures and behavioural patterns among its users. A new field of industry self-regulation has emerged in relation to the Internet: 'Netiquette' was the first informal code of conduct ... Codes of practice are needed to regulate issues like respect for privacy, public decency, and protection of minors, accuracy or the application of filtering software.¹¹²

IAPs never did netiquette for last mile access; they relied on hard regulation and softer rules for interconnection.¹¹³ While there are informal standards – for

¹¹¹ Pollock (2010). Pollock's paper had been presented in drafts since 2007.

¹¹² Kleinstuber (2004), pp. 61–75.

¹¹³ BEREC BoR (12) 33, EC (2014).

instance BT has been remarkably generous in not cutting off users of ‘spammy’ competitor IAPs – hard rules and hard cash rules this field. The elements of self- and co-regulation that prevail in technical standard setting and much technical interconnection do so because there is both ‘positive sum’ economic self-interest in expanding the Internet market for all IAPs,¹¹⁴ and also the ‘zero sum’ backstop of a regulator and ultimately courts enforcing the meta-narrative of a rule-based game. I explained in 2008 that this may be an emerging ‘middle mile’ net neutrality problem, with IAP discrimination against CDNs and other actors, which is discussed in Chapter 3.¹¹⁵

The net neutrality problem is complex and far-reaching: European attempts to dismiss it as a problem that can be overcome by local loop (last mile) telecoms competition fail to acknowledge persistent problems with market failure. The physical delivery of Internet to consumers is subject to a wide range of bottlenecks, not simply in the ‘last mile’ to the end user. There is little ‘middle mile’ (backhaul) competition in fixed IAP markets, even in Europe where the commitment to regulation for competition remains, as wholesale backhaul is provided by the incumbent privatised national telecoms provider (in the UK, British Telecom). Even if platforms did compete in, for instance, heavily cabled countries, there would remain ‘n-sided’ market problems in that there is no necessary direct (even non-contractual) relationship between innovative application providers and IAPs, for instance a Korean games developer and a UK IAP.¹¹⁶ Platforms may set rules to ‘tax’ data packets that ultimately impoverish the open innovation value chain, so ultimately causing consumer harm. Thus the archetypal garage start-ups such as Facebook (founded in 2003) and YouTube (founded in 2005) would have had less opportunity to spread ‘virally’ across the Internet, as their services would have been subject to these extra costs.

We need to dig deeper into why IAPs want to infringe on neutrality in the first place, and how policymakers responded short of legislation in the period to September 2013. These are the foci of Chapters 1 to 3.

¹¹⁴ D’Ignazio and Giovannetti (2015).

¹¹⁵ Candeub (2015) references my arguments at note 55.

¹¹⁶ Economides and Tåg (2007).