Spectrum Reform:
The Theory, Practice, Politics and Problems

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Abstract

Regulation of the radio spectrum is just over 100 years old – in the UK the first act of Parliament in this area was in 1904. For almost all that period, the regulator has managed the spectrum in a very direct “command & control” manner. As market economics have been more widely used across other areas of our economy there has been increasing interest in utilising a market in radio spectrum to deliver greater economic benefits. Actually achieving this has proven to be a slow, contentious and complex process. Various countries have played leading roles at different stages of the process, most recently the UK. This article looks at the reforms introduced in the UK in the last few years in the form of spectrum trading, spectrum usage rights, novel auction formats and the removal of political influences. It then asks whether the spectrum management journey is approaching its end and whether there are lessons that others can learn from the experience of the UK.

Introduction

Radio spectrum is often considered to have similar properties to land – both a finite resources, with some areas that are highly desirable and as a result congested, and others that are less so. Imagine, then, that you could only buy your house from the Government, that you had to return it after 20 years and that you had no rights to sell it to anyone else, to rent it, or to change it in any manner. That, however, is the situation that predominates around the world in spectrum management. Regulators have been on a journey to liberalise spectrum management for many years. This paper provides a brief overview of the history of that journey before looking at the role played by the UK.

A brief history

Much has been written about the history of spectrum reform – perhaps one of the best descriptions of activities around the world can be found in Marks and Yuguchi [1]. A summary of their work in a diagram presented in their paper is provided in Figure 1 below where we have added the shading to approximately represent the different eras.

The theory stage began in the 1950s, although by far the best known contribution is from Ronald Coase who set out the theory that showed that trading within a system of property rights could lead to optimal outcomes as long as certain criteria were met. The Coase theorem is a seminal part of modern spectrum management. However, the theories remained just that – conceptual ideas – up until the 1980s. Why there was no real action during the 20 years after Coase is unclear, but perhaps due to the fact that pressures on the spectrum remained relatively weak during this time – it was only in the 1980s that cellular and other consumer applications emerged strongly.
The US assignment journey began in the early 1980s. Up until then, the US, like most other countries, allocated its spectrum via “beauty contest”. This was an approach whereby potential users of the spectrum made a case to the regulator as to why their ownership of the rights would be of greatest benefit to the country. The regulator then selected the application they judged to be in the best interests of the consumers and citizens. While this worked well elsewhere, decisions by the FCC in the US were increasingly subject to legal challenge. In an effort to avoid this, the FCC moved to using lotteries but these were clearly sub-optimal with thousands of applicants, most of who were only looking for windfall gains. Market economics, with its use of auctions seemed a good way out leading to the PCS auctions in the mid 1990s. While auctions have had many problems, they are widely seen as the “least bad” way of assigning spectrum and are now the default assignment mechanism across most of the world.

New Zealand and Australia have long been at the forefront of spectrum reform. To some degree they are aided by their geographies – neither have to worry about causing interference to their neighbours as a result of changed spectrum policies. Both countries have sought more “hands off” regulation, often via approaches that place large blocks of spectrum into the hands of commercial entities who then manage these blocks for profit. Australia has also implemented novel licensing conditions in an effort to maximise the flexibility within a licence. However, the results of these
changes have been rather limited because neither of these countries has a large enough population to deliver the economies of scale needed to interest manufacturers of consumer equipment. As a result, few novel services have emerged first in these countries.

**The UK moved centre stage** in the mid 1990s as a result of inspired and innovative leadership at its regulator, then called the Radiocommunications Agency (RA). This started with an assessment of the economic value that spectrum added to the economy (some 3% of GDP) and from this developed a mechanism of pricing spectrum to encourage appropriate behaviour. The work was underpinned with an independent review from Professor Martin Cave, strongly advocating the implementation of trading as a mechanism to buy and sell spectrum amongst users.

There have also been other notable initiatives. The Spectrum Policy Task Force in the US in 2002 put forwards some new ideas, but few if any appear to have been acted upon. The European Commission is pursuing a pan-European agenda of implementing flexibility in spectrum allocations and Japan and others are also moving more towards the marketplace.

**The Spectrum Framework Review**

In December 2003 a new regulator was formed in the UK. Known as the Office of Communications, or Ofcom, it was assembled from five legacy regulators covering the broadcasting, content, telecommunications and radio spectrum arena. The rationale was that convergence was bringing all these sectors together, requiring a new converged regulator. But perhaps it was the manner in which it was formed, rather than its new remit, which gave it the greatest scope for bringing about spectrum reform.

Firstly, it was set up at “arms length” from the Government. Unlike the RA, which had been an executive agency of a Government department, Ofcom was given substantial independence. While it has links to two Government departments, it is not accountable to either, and no politician can direct Ofcom other than via an act of Parliament – an approach that has never been adopted before. Its funding is set on a long-term basis and other than the Chairman its senior officials are not political appointees. While it would be naïve to suggest that it is immune to all political pressure, it is certainly strongly able to make its own decisions and steer a consistent course.

The second key decision was to make a break from the past. Rather than having a “super-regulator” that merely embraced all of the legacy regulators, a new Chief Executive and management team were sought. Of the top 40 or so managers at Ofcom, some 80% were brought in from outside with only a few of those from the legacy regulators remaining. Of those new recruits almost all were new to regulation. Many had a history in the commercial sector, some as consultants and others with key roles in industry.

The third decision, fitting well with the new “top team”, was to undertake fundamental reviews of each of the key areas covered by Ofcom – broadcasting, telecoms and spectrum. These started from first principles, questioned all that had
been undertaken in the past and sought a clear, logical rationale for future strategy. One of the results was the Spectrum Framework Review (SFR), published in 2005 [2].

The key insight of the SFR was to note that there were three ways that spectrum could be managed. These were:

1. Command & control. An approach whereby the regulator determines what the spectrum can be used for and who should own it. Changes can only be made with the approval of the regulator. In 2004, this approach was used for over 90% of the spectrum.
2. Market forces. Under this approach flexible licenses are provided which allow the licence holder to change the use they put the spectrum to and to sell their licences to others (“liberalisation” and “trading”, respectively).
3. Licence exempt. Often termed unlicensed or “spectrum commons”, this approach allows anyone to use the spectrum without a licence as long as their equipment conforms to certain restrictions, normally relatively low transmit power levels. In 2004 around 6% of the spectrum was licence exempt, including the highly successful 2.4GHz band used for WiFi and BlueTooth.

The SFR then clearly established that only the regulator could decide on the right balance between these different mechanisms. For example, there appears to be no means, other than by regulatory decision, that spectrum could transition from market forces to licence exemption. In principle, a user group could try to acquire spectrum from a licence holder and turn it into a “private commons” but, so far at least, this has appeared too complex to occur in practice\(^1\). The SFR broadly said that there was sufficient licence exempt spectrum but that the majority of spectrum should transition from command & control to market forces. By this, it meant that restrictions on usage and technology should be removed to be replaced with flexible licence conditions and that the spectrum should be made tradable. Only around 20% of the spectrum would remain as command & control – broadly in those areas where there were severe international restrictions limiting Ofcom’s ability to introduce flexibility. Certain satellite usage is a good example of this, where allocations are made at a global level. Other examples include certain types of aeronautical communications and radio astronomy. However, even with some of these applications, there is often more scope for using some market mechanisms than is initially apparent.

Many today would agree with the general principle of moving from command & control to market forces. It is embedded within the oddly named “WAPECS” initiative within the EC and is slowly gaining traction around the world. Perhaps more controversial, particularly in the US, is the balance between market forces and spectrum commons, and it is worth dwelling on this here, before going on to look at the impact of technology and the need for new flexible licence conditions.

Two observations have led to a call for more commons. The first is that spectrum appears to be relatively underused. Measurements of spectrum usage in licensed bands, even in city centres, often only discover around 20% occupancy, leading some

\(^{1}\) A number of policy makers and academics are currently investigating this area and it may be that new ideas are forthcoming.
to suggest that licensing is inefficient and results in a scarcity of spectrum. The second observation is that innovation appears to happen in commons. Both are somewhat flawed. While there is not the space here for a detailed discussion it is worth noting firstly that commons bands are generally equally as lightly occupied as licensed bands and so a change in regime will not necessarily change the degree of scarcity. The low levels of occupancy actually result firstly from difficulties in measurement and secondly from the need to reuse spectrum with some spectrum necessarily remaining unused between two areas of intense usage. Secondly, there appears to be just as much innovation occurring in licensed bands as in commons. So while the commons has led to BlueTooth and WiFi, licensed bands have resulted in cellular, TV, mobile TV, GPS navigation, the BlackBerry and much more. Indeed, by value to the economy, commons generated only about 1% of that delivered by licensed spectrum. From this it seems appropriate to deduce that providing flexibility in licensed allocations is generally more likely to deliver value to the economy than by turning those allocations into commons. However, there are exceptions, especially at higher frequencies, and these issues were analyzed and discussed in detail in Ofcom’s Licence Exempt Framework Review (LEFR) in 2007 [3]. In outline, the SFR set a strategy where only 21%² of the spectrum would remain under command and control, 7% would be spectrum commons and the remaining 72% would transition to market forces. Ofcom set a goal of reaching this target by 2010. Determining these figures was based on deciding which applications needed to remain command & control and then simply looking at the spectrum allocation table and calculating the percentages that would fall into each category as a result.

The key areas of spectrum that Ofcom aimed to liberalise were business radio, fixed links, cellular, broadcasting and emergency services. Of these, business radio, emergency services and fixed links were relatively simple with little in the way of change of use expected and bands of lower value so questions of windfall gains or distortions did not arise. Broadcasting has been complicated by other legislation in the UK relating to broadcasting obligations. This generally means that even if the spectrum were liberalised, the obligations, for example, to provide quality programming to most of the UK would prevent any realistic change in use.

A key problem for Ofcom has been, and remains, the liberalisation of the 2G cellular spectrum. This spectrum at 900MHz and 1800MHz was given to four cellular operators over a decade ago with the licence conditions that GSM technology had to be used. Ofcom would like to allow any technology and usage in these bands. However, this has the potential to change the competitive environment in cellular telephony since different operators have access to different frequencies. To simply liberalise the 2G spectrum in the hands of the incumbents might confer a competitive advantage upon some of them. There are many possible alternatives including reclaiming spectrum and sharing spectrum, but none that are palatable to all of the existing operators. Ofcom is still working to find a resolution to this problem which is delaying liberalisation of any cellular spectrum and some auctions. This issue is currently the key constraint to Ofcom’s liberalisation plans and one for which there is no clear end in sight.

² These percentages relate to the spectrum between 100MHz and 60GHz. They are weighted such that an allocation of 10MHz bandwidth at a centre frequency of 100MHz would have the same weighting as an allocation of 100MHz bandwidth at 1GHz centre frequency.
Other problems relate to the need to implement new IT systems and the discovery that some pieces of spectrum are shared between more users than was initially apparent including military or Government use.

In 2008 Ofcom reviewed how it was doing against its target [4]. It concluded that its strategy was still correct and that the percentage goals it had set were still appropriate but that it was delayed by around two years in the achievement of these targets. The reasons for the delays are varied and typically relate to implementation difficulties. Ofcom has found that almost every piece of spectrum that it wishes to move to market mechanisms is likely to have complexities that only come to light with detailed analysis. These complexities will likely require time and resource to analyse and in some cases particular transitional strategies and solutions are needed. Implementing radical new strategies in areas which have stayed relatively unchanged for decades transpired to be difficult and more time consuming than Ofcom originally expected. However, it still hopes to hit its targets by around 2012.

The SFR has been instrumental in taking Ofcom to the forefront of spectrum management. While the ideas in the SFR are not radical and build upon those developed globally by others, the SFR has provided a clear roadmap for spectrum reform enabling Ofcom to steer a consistent path over its existence.

**Dealing with new technologies**

The debate and thinking about spectrum management tends to get deflected, if not severely perturbed, by the advent of new technologies. At the simplest level these can result in interference to others, but the more innovative technologies, such as ultra wideband (UWB) and cognitive radio can appear to undermine the entire spectrum management paradigm. UWB and cognitive, or white space devices, have resulted in huge interest, lobbying and regulatory difficulties in the US, less so in the UK. It is worth dwelling firstly on the overall issue of interference management in spectrum before turning to look at these new technologies and analysing their impact on spectrum management.

The most fundamental issue in spectrum management is to control interference between users. Without such control, systems can cease to work and anarchy can result. A good example of the problems that can occur is Nextel, an organisation that purchased many local wireless licenses across the US. These local licenses were relatively sparsely used with few transmitters and as a result caused little interference to their neighbours, the public safety organisations. However, as Nextel changed the use to more intensive cellular networks, the interference rose, eventually resulting in a complex and expensive arrangement to move Nextel to alternative frequency bands. An optimal spectrum management regime would both allow flexibility but at the same time prevent interference cases such as Nextel occurring (or, better, allow neighbours to negotiate over optimal levels of interference between them).

In the SFR Ofcom noted that liberalising spectrum (that is, removing restrictions on usage and technology) could potentially lead to increased interference to neighbours under the existing licensing regime. This, of course, may not be problematic in that interference levels set by the regulator tend to be cautiously low and as a result do not optimise the use of the spectrum. However, there may be some situations where a
major increase in interference could potentially occur which might be harmful. Current licenses tend to specify the powers that a transmitter can emit, often both within its band of operation, and outside of this band where vestigial emissions are permitted to ease equipment design. These restrictions are often plotted as power levels against frequency and are known as “masks”. However, masks do not directly control interference. Simply increasing the density of a transmitter network, while keeping all the transmitters within the same mask, will result in more interference to users because more radio power is being transmitted in a given area. Indeed, this is exactly what happened in the Nextel case. In the UK, some simple calculations suggest that if two neighbouring bands were used for terrestrial TV transmission, then one were changed to mobile TV, with a resulting 10-fold increase in base stations to provide handheld coverage, the results might be that more than 10% of the neighbouring TV viewers would suffer unacceptable interference. To simply liberalise while using the legacy approach of a mask appears dangerous. Ofcom noted this in the SFR and since then have been working on an alternative approach called Spectrum Usage Rights (SURs).

SURs restrict the interference that a licence holder can cause to others, rather than the power levels that they are allowed to transmit. In principle, this is clearly superior. Since it is the interference that is the problem, not the transmitted power, then directly controlling the “problem” through the licence results in the most flexible yet most accurate method of regulation. Regulating the interference would then allow any technology or application, but would prevent, for example, a 10-fold increase in TV transmitters unless either much lower power levels were used or some agreement could be reached with neighbours as to a changed interference limit. Indeed, this later element – the ability of neighbours to agree to change the interference they cause each other in order to optimise their efficiency – is one of the most powerful elements of SURs. In passing it is worth noting that SURs cannot readily be applied to spectrum commons because there is no single entity that can control the interference levels caused. As a result, the ability of users to negotiate changed interference levels is lost, requiring the regulator to estimate the most appropriate levels. This is another reason why a licensed approach can, in many cases, deliver greater value than a commons approach.

The problem with controlling interference is that it is difficult to verify. Ofcom have studied and consulted on this issue for over three years, resulting in a workable approach using carefully defined modelling tools. In April 2008 they issued the first licenses in SUR format. SURs bring many benefits in addition to flexibly controlling interference – for example they effectively set a “noise floor” for licence holders that they can use in network design and can expect not to be exceeded. SURs are an important building block in both enabling liberalised use of the spectrum and clarifying the rights of licence holders.

The first “problem” technology to appear on the scene was UWB. UWB is a technology that allows extremely high data rates to be achieved over short distances (typically less than 10m) using very low power transmissions spread across a broad swathe of spectrum. UWB is innovative and potentially can deliver significant value to consumers. It is only “problematic” because of the difficulty in using market-based or other conventional spectrum management approaches to enable it. In theory, a UWB user could negotiate access with all of those licence holders who own the
spectrum that the UWB emissions would fall within. However, for a typical UWB system there might be ten or more licence holders and there could be millions of UWB users. Getting all the users to agree with all the licence holders is logistically challenging and hold-out problems might emerge. Most regulators have judged that a market-based negotiation for access will probably fail due to these coordination difficulties and have decided to intervene directly.

The other alternative is to fit UWB within the existing licensing regime. To do this, the regulator has to allow emissions within licensed bands, albeit at very low levels which in many cases will not make any material difference to the licence holder. Clearly, the licence holders will be against such an intrusion for which the regulator, typically, is not intending to compensate them. Hence, the ground is set for a battle between the regulator, representing the UWB users, and the licence holders.

Simplistically, different approaches were adopted in the US and UK to enabling UWB, although the end result was similar. Understanding these differences is instructive to a discussion later in this paper about lessons regulators might take from the UK experience. The US approach to UWB could be simplistically described as “allow it and if it causes interference we will sort it out later”. Essentially, with strong support from the FCC and its Chairman of the time, who was very much in favour of innovative technology, UWB was allowed on the basis that problems seemed unlikely but if they did subsequently emerge then the FCC would amend its regulations. The UK approach was based on an economic analysis. Ofcom estimated the economic benefit that allowing UWB would bring. It then looked at the cost of the interference that it might cause. Its key finding was that if UWB interfered with 3G cellular then the cost of this interference would be greater than the benefit gained. Hence, Ofcom modified the UWB power limits to avoid cellular but to enable UWB at higher frequencies. These limits were subsequently adopted across Europe. While still contentious, this approach allowed a rational and evidence-based discussion as to the merits of UWB.

The other “problem” technology to emerge is cognitive radio, often known as “white space devices” in the US. Cognitive devices monitor licensed spectrum, looking for unused frequencies, or “white space”. They then transmit on these frequencies as needed, vacating them before the owner of the band needs to use them. Again, they are problematic for spectrum managers in that they enable unlicensed access into licensed bands and raise questions about rights of ownership.

The debate about cognitive devices is ongoing but again a different approach is being followed in the US and UK. In the US trials have been used to consider interference issues. These became highly controversial but did eventually lead to a ruling on white space access in November 2008.

In the UK, Ofcom started by noting in the SFR that, as with UWB, the ideal approach to cognitive would be for the cognitive users to negotiate access with the licence holders. This is more practical for cognitive than UWB because cognitive emissions do not spread over multiple bands. Therefore, a cognitive user, or more likely a body representing all cognitive users, might only need negotiate with one licence holder – the military for example. Hence, Ofcom concluded that in general there would not be
a coordination failure and that the existing spectrum trading legislation was sufficient to enable cognitive access.

However, within the bands retained for digital TV broadcasting the situation is different – and also different between the UK and the US since terrestrial broadcasting is a key delivery mechanism still in the UK where only around 50% of homes are passed by cable. Here, the licences have been provided to the broadcasters for specific transmitters at given locations and particular frequencies. Because gaps are left between reusing the same frequencies there is some “white space”. This does not belong to the licence holders and so it is up to the regulator as to how best to use it. For the most part Ofcom have decided to licence this white space in a technology-neutral manner and envisage it might be used for local broadcasting or programme-making applications. However, the white space is difficult to identify and package into a form suitable for licensing and Ofcom envisage that even after it has auctioned all the packages it is realistically able to identify that there will still be white space available. Since the effort and complexity of licensing this appears excessive Ofcom have concluded that it would be better to be unlicensed.

Hence, Ofcom have stated that if cognitive devices do not interfere with TV transmissions then they should be allowed in the remaining TV white space. They are now establishing through a modelling process what the parameters of cognitive devices would need to be in order to ensure that interference does not occur. They will then consult on these parameters and after appropriate debate will exempt devices from licensing that meet them. Ofcom would not need to measure the devices itself – existing type approval processes will be sufficient – and they do not currently envisage that they will need to conduct any trials. There is a risk that allowing cognitive access in these bands will prevent a change of use from broadcasting at some point in the future because the cognitive devices may not correctly detect the new use. Ofcom’s view is that, given the legislation surrounding broadcasting in the UK and the relatively high percentage of homes that watch off-air, it expects broadcast transmissions to continue for a minimum of 10 years and likely much longer. Hence, the risk of preventing a change of use in this specific case appears small.

Other new approaches and technologies will likely emerge over time. Each will need to be dealt with on a case-by-case basis, but we believe the combination of SURs and a framework for evidence-based economic analysis will enable us to respond appropriate.

**The journey so far**

Since its inception at the end of 2003, Ofcom has travelled some way in advancing spectrum management. It has published the SFR and multiple resulting policy documents. It has held three auctions and is shortly to complete the current phase of its major spectrum release programme with two substantial auctions. It has developed and introduced an innovative new form of spectrum licensing. It has enabled UWB,

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3 Note that this is not the case for the bands freed up as a result of the transition to digital broadcasting – the so called “digital dividend”. This will be auctioned as nationwide licenses and so the SFR principle of negotiating cognitive access will apply here.
promoted spectrum release by the Government and implemented trading across many licence classes.

But equally it has struggled in some areas. Perhaps most notably, it has not yet introduced any reforms to cellular. This means, for example, that cellular operators with licenses at 900MHz and 1800MHz are still only able to use this spectrum for 2G GSM systems. The reasons for delay are complex and relate to the existing competitive playing field in the UK and the risk that changing licence conditions might distort that playing field. This is an example of how much easier it often is to devise a spectrum strategy than to implement it.

It seems that the insight of Machiavelli is still very much true today. When introducing new concepts such as SURs, many of the existing licence holders, who are profitable under the existing regime, are cautious. Those who might benefit most are the new entrants and smaller players but their voice is often weak in regulatory debates. This requires the regulator to continually explain and justify their plans.

Finally, the previous 100 years of command & control licensing has built up an extremely complex arrangement of tightly nested spectrum use, with multiple complex sharing arrangements and many legacy systems still in use. Understanding this is time consuming, making change slower than would initially appear necessary.

Despite these problems, the end of this journey is in sight. Once Ofcom have resolved the difficulties in areas such as cellular, finished their auction programme and completed the application of liberalisation and trading across all those licence classes set out in the SFR it will have delivered on the strategy set out in 2003. Just how long this will take is not clear, but Ofcom hope much will be done by the end of 2010. At that point, most of the spectrum will be in the hands of a market that will be able to buy, sell, divide and change its use. The role for the regulator could be limited to resolving interference issues, participating in international fora and from time to time considering the impact of innovative technologies. Indeed, it will be difficult for the regulator to do more since most of the spectrum will no longer be under its direct control in any case.

So what of the results? Ofcom’s move to a market-based approach is designed to allow innovative new uses, to enable rapid change of use and ownership of the spectrum and overall to increase the economic benefit that the UK experiences from spectrum. Has there been any evidence that this has occurred?

Well, the value that the UK derives from the use of radio spectrum is estimated to have risen from approximately £28bn in 2002 to around £42bn in 2006. This value has predominantly been realised by consumers in increased consumer surplus from using mobile phones and consuming broadcast entertainment. It is clear that the benefits afforded by spectrum are substantial and growing fast. Without a counterfactual case it is difficult to say how much of this would have occurred under different spectrum management regimes. In practice, it may be rather too early to see significant benefits from these reforms. This is because firstly Ofcom are mid-way through the implementation of their market-based approach and secondly that changes in spectrum management policies often take 5-10 years to have a major impact since it
typically takes this long to acquire spectrum, construct a network and build a substantial subscriber base.

There have not been any obvious new innovations that have been pioneered in the UK as a result of the new regime. Again, this may be a case of timing or it may be that the regime was already sufficiently liberal to allow many of the key innovations to be introduced. Also, a country the size of the UK cannot pioneer large-scale consumer innovations alone since it does not have the economies of scale that major manufacturers require. So we may have to await reform in other countries to fully see the benefits in the UK of Ofcom’s policies. Equally, we have recently seen, for example, Qualcomm acquire the L-Band spectrum (1452-1492MHz) for the purposes of testing out new ideas that might lead to developments such as mobile TV.

Being realistic, it seems unlikely it will ever be possible to accurately determine the benefits that would have materialised under the old and new regimes and show a benefit of one compared to another. Both approaches cannot be used simultaneously in one country and comparing between countries is complicated by the many differences that invariable occur as well as the inherent international linkages in spectrum usage. Even nearly 20 years after GSM was mandated across Europe it is still not clear as to whether it would have become more or less successful under a different management regime. Even so, perhaps over the coming years there might be a number of pointers to suggest that the new approach is delivering on its promises.

If I ran the FCC…

It is dangerous to extrapolate strategies and policies across international borders to countries with quite different situations and it would be disingenuous at best to suggest that the UK had a monopoly on spectrum thinking. Indeed, if regulators elsewhere were asked to name the two leading regulators in the world, many might pick the UK and the US. The US can rightly claim to be in the lead in a number of areas – for example it is probably the country where the most spectrum trading takes place to date. So while it is always possible to suggest improvements, the US is already in very good shape. Nevertheless, returning to Figure 1, it is striking that the US led in spectrum reform from the 1960s to the mid 1990s, both in terms of its academic thinking and its implementation. However, since then, it has predominantly been other countries that have taken the reforms forwards. Why is this, and does it matter to the US?

Much of the answer must lie in the difference in structure of the FCC and Ofcom. The FCC is much more heavily influenced by politics than Ofcom and also appears to respond more strongly to the key areas of interest of its Chairman, a political nomination. This can make it harder for the FCC to follow a clear and consistent strategy, especially the one adopted by Ofcom which asserts that spectrum use should be free of political and social constraints. The chairman also has a very strong role in FCC policy – having a chairman whose interest lay elsewhere from spectrum, or worse who believed in using spectrum for political purposes could have significant repercussions. Getting Commissioners who can set aside politics to make the “right” decisions would also be immensely helpful.
The “clean sheet of paper” that the formation of Ofcom allowed was also invaluable in providing a rationale and mandate for change. The FCC has undertaken similar initiatives, for example the Spectrum Policy Task Force, but these do not appear to have led to clear strategic direction. Also, the focus on “evidence-based regulation” has given Ofcom a strong position and reputation for intellectual rigour that has taken much of the politics out of decision making – perhaps emphasising this at the FCC might help de-politicise contentious areas. Of course, not all issues can be addressed in a logical manner – concerns about content perhaps being the prime example where social concerns are key. In Ofcom, content regulation has been separated out from the areas where economics and technology are critical so that different skillsets can be brought to bear.

So, in answer to the question posed at the start of this section, if I had the hypothetical opportunity to run the FCC however I choose I would seek to have it reformulated into a regulator at arms-length from the politicians with a clear legal framework, as far as was possible within constitutional framework. I would seek some new members for the management team, not because there is anything wrong with the existing team, but because of the reinvigoration and mandate for change that a new team provides. I would aim to set out a clear strategy like Ofcom’s Spectrum Framework Review and work to deliver against that using evidence-based analysis.

In practice, it is probably just a bit too fanciful to believe that changes of this nature can be expected. The constitution of the FCC and the manner of appointment of its senior officials is unlikely to change any time soon. But the delivery of a clear strategy is possible – indeed the appointment of a new Chairman is a good time to launch such an initiative. If an over-arching “framework” strategy could be written and become the guiding document for the FCC this would do much to counter the changing priorities of commissioners and political influence and would enable longer term changes to be delivered. However, this must not be another Spectrum Policy Task Force report that can be left on the shelf but a document delivered from within the FCC with the backing of all senior managers and commissioners. Ofcom’s Spectrum Framework Review might be a useful model.

References


Further reading


Biography
William joined Ofcom as Head of Research and Development and Senior Technologist in 2003. Here he manages a team providing technical advice and performing research across all areas of Ofcom’s regulatory remit. He also leads some of the major reviews conducted by Ofcom including the Spectrum Framework Review and Ultra-Wideband Consultation. Previously, William worked for a range of communications consultancies in the UK in the fields of hardware design, computer simulation, propagation modelling, spectrum management and strategy development. William also spent three years providing strategic management across Motorola’s entire communications portfolio, based in Chicago.

William has published ten books, sixty papers, and four patents. He is a Visiting Professor at Surrey University and a Fellow of the Royal Academy of Engineering. He is a Fellow of the IET where he has served as a Vice President and is a Fellow of the IEEE where he was General Chair for the DySpan 2007 conference. His biography is included in multiple “Who’s Who” publications around the world. He sits on the judging panels of the Wall Street Journal “Annual Innovation Awards”.

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