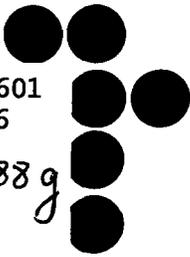


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COMMUNICATIONS
FORUM

"ECONOMIC APPROACHES TO SPECTRUM MANAGEMENT"

Thursday, May 5, 1988

Seminar Notes

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
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Dr. Douglas Webbink
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Policy and Rules Division, Mass Media Bureau
Federal Communications Commission

Dr. Keith Shotton
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Dr. Michael Marcus, Moderator
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This final session of the 1987-1988 MIT Communications Fora, addressed different approaches to managing radio spectrum. The two speakers, Douglas Webbink* Assistant Chief for Economics, Policy and Rules Division, Mass Media Bureau of the Federal Communications Commission (FCC) in the United States and Keith Shotton,** the Director of Radio Technology in the Radio-Communications Division (Department of Trade and Industry) in the United Kingdom had this opportunity to compare and contrast their respective views on alternative spectrum management approaches, especially spectrum auctions. It came to light in the course of the session that although the U.S. (the FCC) has been a pioneer in discussing new spectrum management approaches, those in the U.K. may actually be closer to implementing an alternative spectrum management system. It was also evident from questions posed by the speakers and members of the audience that the spectrum auction approach, as it is currently envisioned, may not be a panacea though it is a policy route worth exploring.

Dr. Webbink of the FCC would consider himself an advocate of more economic approaches to spectrum management. He raised several questions in critiquing the current manner in which spectrum is managed in the U.S. today: Should we have centralized control over spectrum decisions? Should we treat spectrum more like private property (e.g., land, automobiles, etc.)? He explained that, in fact, to change current regulatory practice in this area might require substantial changes to the current Communications Act of 1934, e.g., The Act currently prohibits private parties from "owning" any spectrum, includes a requirement for a finding of public interest, convenience and necessity in the initial grant and renewal of radio licenses. He noted that some FCC Commissioners would probably not support such changes to the Communications Act.

Webbink went on to argue that today when radio stations are "sold" the purchasing party is usually more interested in securing the spectrum license, than in possessing the property on which the radio station is located. Webbink also questions the historical argument that spectrum is a "scarce" resource and therefore should be managed via regulation rather than allowing market forces to manage spectrum supply and demand. He believes that spectrum is no more scarce than other resources, e.g.,

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water, land, and therefore should be allowed to be used under minimum restrictions like the latter.

If, as Webbink advocates, spectrum was privatized then practices like comparative hearings, restrictions on foreign ownership, and restrictions on content would disappear. He noted that we are nowhere near this point today. However, he does argue that there are already some property rights that have been developed in spectrum use. He believes that most attorneys would agree with his observation that once someone gets a broadcast license it is very unlikely they will involuntarily lose it, although the owner will need FCC approval to sell a station.

Webbink pointed out that in the last fifteen to twenty years the FCC has moved to give users more rights to spectrum use. For example, stations are allowed to use the sub-carrier for digital data transmission and other services unrelated to broadcasting. He noted that satellite carriers have also been afforded an increasing level of flexibility in the use of spectrum.

In contrast to the FCC's increasing flexibility, Webbink admits that the current regulatory process can be very, very slow. It is still standard practice of the FCC to hold comparative hearings when two or more applicants apply for use of the same broadcast frequency. However, in response to the problems caused by using comparative hearings, the FCC has tried alternative approaches such as using a "lottery" system to chose applicants for cellular radio licenses. Although Dr. Webbink is quick to point out the positive aspects of such a system, he is also eager to cite the little publicized "after effects" of such innovative systems as lotteries. For example, Dr. Webbink remarked that although the lottery system streamlined the process of awarding cellular licenses, many of these initial licenses were quickly resold in a kind of private auction. He believes that the desirable features of this secondary auction have not been explicitly recognized and analyzed by the industry and the regulators.

Some of the alternatives to the current "free" spectrum approach were noted by Dr. Webbink. Senator Hollings has advocated a transfer tax in a recently proposed bill; the fee

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would be based on the sale price of a station and its facilities. Webbink believes that the fees being charged for spectrum licenses today are really very modest, e.g., \$200 for cellular operators. However, Webbink does suggest exercising caution in changing the current system of licensing since he is concerned that a new system might make things worse instead of better.

Dr. Keith Shotton, the second speaker, was quick to point out that the idea of spectrum management started in the U.S. He noted that there have been a number of environmental factors which has changed the way the British look at spectrum management. For example, the Radio-Communications Division (formerly the Radio Regulatory Division) is part of the Department of Trade and Industry (DTI) in the U.K. and is thus influenced by the latter's economic beliefs and policies.

The DTI wants to promote a competitive economy, to stimulate enterprise and reduce red-tape, increase privatization, and promote competition especially in the consumers' best interest. The Radio-Communications Division is now also much more responsive to the views of spectrum users, manufacturers, etc.

Shotton noted a major difference between the U.S. and U.K. systems of spectrum regulation, namely that in the U.K. comparative hearings for spectrum licenses are not used. According to Shotton, because of this policy, many people have criticized the system as being secretive. He notes that until the 1980's there was even widespread suspicion that the U.K. system was restrictive.

He went on to describe how his organization, the Radio-Communications Division, operates today. Its four major roles are (1.) to operate as international negotiators regarding spectrum matters, (2.) to decide on how spectrum will be used in the U.K. (non-military uses) and issue licenses, (3.) to set equipment standards, and (4.) to police spectrum. Like the U.S., the defense department in the U.K. is a large user of spectrum and priority is given to defense and public safety uses. The U.K., like the U.S., also deals with licensing spectrum on a first come, first serve basis.

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Shotton emphasized the recent involvement of independent committees and consultants in evaluating spectrum management practices in the U.K. For example, in 1982, an independent inquiry was performed by Merriman; part of the project was to address the issue of a potential spectrum shortage in the U.K. looking ahead to the next two decades. In 1983, the Merriman Report was issued and, according to Shotton, came up with a number of recommendations in tune with government thinking. For example, the report suggested introducing market forces into the management of the radio spectrum.

The CSPI consulting organization (now part of Booz Allen) was subsequently contracted to look at how spectrum in the U.K. could be managed. In reviewing the results of the CSPI study, Shotton notes the emphasis on economics rather than technology. For example, CSPI suggested that spectrum licenses should be granted for uses with the highest value and therefore the highest economic benefit.

The CSPI study looked at the private uses of fixed links in the U.K. The research revealed that the PTOs (British Telecom and Mercury) had approximately two times as many fixed links as the private users, but ten times as much spectrum. According to Shotton, CSP characterized this situation as "demand suppression and PTO bias" caused by the regulatory framework of the day.

In general, the CSPI study was optimistic about the spectrum situation in the U.K. The study noted that the current spectrum in the U.K. could handle demand over the next twenty years. However, CSPI felt that particular uses of spectrum, especially microwave fixed links, were being suppressed by the current system. In the mobile area, CSPI felt the current capacity was being underused and found the current system favored the public sector. CSPI felt that the regulatory climate was in fact also suppressing demand in the mobile area. Finally, CSPI looked at the broadcasting area; there were four national channels in the U.K. CSPI concluded that four channels was not the most efficient use of spectrum in economic terms.

CSPI's study also concluded that approximately 100 million pounds per annum could be gained if the DTI could "assign"

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(give rights to use certain frequency to a user) and "allocate" (delegating a block of spectrum to a particular use) spectrum more effectively. CSPI felt there was enough spectrum in the U.K. for the next twenty years (except perhaps in the London area).

According to Shotton, CSPI's recommendations included (1.) making access to spectrum easier, (2.) creating FPOs (Frequency Planning Organizations) which would operate under twenty year spectrum management licenses. CSPI wanted a system in which the FPOs would be competitive and thus suggested that at least two FPOs offer spectrum for similar purposes.

Shotton noted that the British government published the CSPI report without commitment and invited public comment. According to Shotton, some people suggested perhaps turning the Radio-Communications division into a quasi-private or entirely private organization, as well as adding staff to the division. The private mobile radio people apparently were dubious about CSPI's projections about spectrum availability and questioned if competition could really exist between FPOs. Shotton also noted his own concerns with the proposed FPO system. He raised some interesting questions, such as (1.) How do you deal with broadband systems when you have FPOs dealing with narrow bands of spectrum? (2.) How do you police spectrum usage?

Shotton noted that the FPO idea and the alternative auction approach to spectrum management were still being evaluated. He raised several factors which must be considered in possibly changing the current system, e.g., the needs of specialty frequency users, such as defense; compatibility of any new system with the international framework, etc. Shotton also explained that by 1992 all trade barriers in Europe are to be torn down. Thus, the U.K. must consider the implications of changing its spectrum management policy in light of developing European-wide communications services in the future.

In concluding this session, Mike Marcus noted that it is often difficult for a regulatory system to respond to technology change. In fact there is usually a trade-off between spectrum intensity and technology intensity. According to Marcus, the

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historical bias has been towards adopting solutions which are spectrum intensive since spectrum has been treated as a "free good." Marcus suggests that utilizing a private spectrum auction approach would actually give us a better idea of what spectrum might cost. He believes that this approach would improve competition, especially in the radio area, and prevent the spectrum shortfall many are projecting.

Both Webbink and Shotton agree that adopting a spectrum auction approach may not be a panacea for all users, but it could be more economically efficient than the current systems in place in the U.S. and U.K. In answer to a question about public service use of spectrum, Shotton explained that in the U.K. the public safety organizations have to go out and buy vehicles in the open market. He argues that, although it might be the radical approach, this group of users could also be required to bid for spectrum. Webbink would also agree that this approach should be tried in the U.S. with public radio services. Both speakers agree that public broadcasting should be receiving more money to run their operations. Webbink would argue that if this group directly experienced the real costs of using the spectrum, they would be forced to better evaluate how to spend the money; perhaps they would opt to buy more radio and/or cable transmission capabilities rather than broadcast spectrum.

* Dr. Webbink explicitly stated that the opinions he expressed in the course of this Forum were his own and not necessarily the views of his employer the FCC.

** Dr. Shotton made it clear during his talk that he was not expressing personal views or those of his Department, but was describing the public debate on spectrum pricing now taking place in the U.K.