

Regulatory Convergence in the Information Industry

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I. Introduction

Many aspects of the information industry are regulated. There are multiple reasons why they need to be regulated, including technical limitations and monopoly status. Components of the information industry under regulation include telephone carriers, cable operators, television broadcasters, and wireless communication providers.¹ Traditionally the Federal Communications Commission (FCC) has regulated them on the basis of industry type. For example, cable operators generally report to the Cable Bureau and wireless companies to the Wireless Bureau. This structure worked because there was little overlap among them. Technologies had limitations and were only used for one application. Today digitalization is expanding the functions of these technologies allowing them to offer multiple services. Common carriers now offer more than just telephone services and cable companies more than cable programming. These facts are making industry-based regulation inadequate and impose an unnecessary burden on companies and personnel at the Commission. For this reason, it is preferable for regulation to converge along functional lines² rather than industry related ones.

The paper identifies the services that companies in the information industry are providing and uses this information to determine the regulatory implications and the ability of the FCC to deal with them. This paper also recognizes the issues that each of the bureaus has had to resolve to determine if, over time, there have been more issues that pertain to multiple industries. Based on the identification of issues, the paper evaluates

¹ This paper will refer to each of these sectors as an industry that is a component of the larger information industry.

² This paper recommends a reorganization of the FCC based on functional units. This refers to a division of labor based on the common functions handled by the Commission. The objective is to centralize most functions under a single department instead of being separated across different bureaus. Examples of functions that are currently separated are rates, spectrum allocation, and licenses,

the adequacy of the current industry based structure at the FCC in handling these problems. The identification of issues was based on the analysis of 183 randomly selected orders published by each of the industry bureaus. The authors analyzed these orders using software-based content analysis of a random set of documents for 1994, 1996, 1998 and 2000. The codification of orders used the criteria “bureau functions” to identify the issues that each of the bureaus had to face for each of the selected years.

This paper argues that technological developments and deregulation have led to the emergence of issues that cannot be easily addressed on an industry basis by FCC bureaus. The authors expected to find more cross-industry issues in the later years than in the earlier years analyzed. However, the analyses showed that there were cross-industry issues throughout the period.

II. Background

Regulatory convergence refers to the increasing centralization of regulatory authority towards a system based on functional units instead of industry divisions. The objective is to have similar issues centralized in one office instead of being divided across bureaus. Additionally, greater convergence of regulation would entail more power to the FCC while reducing the responsibilities of state public utilities. Regulation of information related industries at the federal level could eliminate unnecessary redundancy, save on agency resources, reduce jurisdictional conflicts, and possibly lead to lower rates as a result of simplified regulation of these industries.³ As was pointed out by Lehr and Kiessling “... a strong centralized authority is needed to facilitate deregulation. The process of liberalization is likely to proceed more rapidly and easier to manage and coordinate if authority is centralized.”⁴ This paper focuses on regulatory convergence within the FCC rather than the division of power between federal and state commissions.

³ For a more detailed discussion of the need for centralized regulation see Lehr, William and Thomas Kiessling “Telecommunication Regulation in the United States and Europe: The Case for Centralized Authority,” in *Competition, Regulation and Convergence: Trends in Telecommunications Policy Research*, S. E. Gillett and I. Vogelsang (Eds.), Lawrence Erlbaum Associates: Mahwah, NJ, 1999.

⁴ Lehr, William and Thomas Kiessling “Telecommunication Regulation in the United States and Europe: The Case for Centralized Authority,” in *Competition, Regulation and Convergence: Trends in Telecommunications Policy Research*, S. E. Gillett and I. Vogelsang (Eds.), Lawrence Erlbaum Associates: Mahwah, NJ, 1999. p. 39.

Information industry regulation has a long and complex history. Traditionally the greatest difficulty has been the division of jurisdiction between state and federal governments. The preemptive power of the FCC has been granted many times while also being questioned.⁵ An added difficulty to the regulation of telecommunications in the United States is the dispersion of jurisdiction across multiple government agencies. The Department of Justice enforces antitrust concerns and lately has had a prominent role due to numerous mergers taking place. The FCC is also subject to Congress, which approves its annual budget and proposes regulation. Additionally policy initiatives may originate from the National Telecommunications and Information Administration, (NTIA), which advises the President about telecommunication issues. Although the NTIA does not develop rules for the industry, discussions within this forum are relevant for the Commission as well. An example is the use of auctions to allocate spectrum space, an idea that originated with the NTIA. As well, FCC orders can be challenged in court, specifically the US Court of Appeals for the District of Columbia. It is therefore the interaction with other entities that has ultimately resulted in the laws that govern these industries.

The organizational structure of the FCC on an industry basis was not the result of careful design at the Commission. Both the broadcasting and telecommunications had a place in the FCC organizational structure because they were both predecessors to the creation of the Agency. The Mann-Elkins Act of 1910 gave the ICC regulatory jurisdiction over telecommunications. When the FCC was formally established by the 1934 Act, regulation of carriers was assigned as one of its responsibilities. Similarly the Federal Radio Commission (FRC), which was established in 1927, was the first federal agency that regulated radio airwaves for both two-way communication and content broadcast.⁶ The main function of this office was to allocate frequencies by means of licenses. Initially radio licenses pertained primarily to communication related applications that were more prevalent in naval ships. The first differentiation between broadcast radio and communication related radio happened in 1923 when the Commerce

⁵ For a more detailed discussion of the division of power in telecommunications regulation see Huber, Peter, Michael Kellogg and John Thorne, *Federal Telecommunications Law*, Aspen Law & Business: Gaithersburg, NY, 1999.

⁶ For a more detailed discussion on the history of radio communications regulation see *National Broadcasting Co. v. United States*, 47 F. Supp. 940, 1942 U.S. Dist. LEXIS 2192 (D.N.Y. 1942)

Department determined that broadcast radio stations could not send communication messages acknowledging reception of letters, telegrams, or telephone calls.⁷ When the FCC was created it inherited the functions of both the ICC and the FRC, which naturally became the Common Carrier Bureau and the Private Radio Bureau. When the demand for radio broadcasting licenses started to increase, the Commission was forced to evaluate applications on the basis of content. This resulted in the beginning of content regulation, which was not among the FCC's initial mandates. Although regulation of content was later introduced, the subject has always been controversial. The integration of the ICC and the FRC can be seen as the antecedents for the Commission's division of functions. The early structure of the FCC included only the Common Carrier Bureau, The Private Radio Bureau, which later became the Wireless Bureau, and the Broadcast Bureau, which later became the Mass Media Bureau. The Common Carrier Bureau is responsible for telecommunications while Mass Media and Private Radio shared responsibilities over allocation of licenses for broadcast and communication services. The Cable Bureau was established due to lack of agreement within the Mass Media Bureau about the control of cable regulation. Regulation of cable operators began at the Cable Television Task Force. The purpose of this group was to find ways to expedite the development of cable. Since the Broadcast Bureau had not given enough attention to this issue, the then Chairman of the FCC, Dean Burch, elevated the Task Force to bureau status. The resulting 1972 cable regulations established the bureaus that continue to regulate different aspects of the information industry.

III. Methodology

We selected a random sample of 183 orders for the years 1994, 1996, 1998, and 2000. This means that there were approximately 40 orders for each of the bureaus. Since there were different numbers of orders every year, we selected only 5% of orders for each of them. The criteria used for the codes were FCC functions. This means that when we read the orders we coded the phrases that mention an activity conducted by the FCC. For

⁷ For a detailed description of the history of wireless regulation see Howard A. Shelanski, "Symposium: Telecommunications Law: Unscrambling The Signals, Unbundling The Law: Article: The Bending Line Between Conventional Broadcast And Wireless Carriage," *The Columbia Law Review*, May 1997.

example, if the order specified that the bureau was granting a license for a radio station, the code was “granting of license for radio broadcast.” Textual analysis software was used to facilitate this task. Once the documents were coded the software was able to create tables of quotes, and tables of codes that included instance counts. The instance counts are simply tables of codes that indicate the number of times that each code was used for any given year and bureau. These tables are useful because it is possible to see at a glance the activities that were more common at each bureau. This information was used to identify the activities that most occupied the bureau’s time and resources.

The analysis of orders only included those published by the Common Carrier, Cable, Wireless, and Mass Media Bureau. The Consumer Information, Enforcement, and International Bureaus were not included in this analysis because they do not specifically represent industries.

IV. Convergence of Information Industries

The purpose of this section is to highlight the number of new services that these industries are providing. In identifying them the reader will become aware of both the convergence that is happening and the regulatory challenge that is likely to occur if the FCC regulates them.

Carriers

Traditional telephone companies are changing their businesses in dramatic ways. All of them provide voice and data transmission via traditional copper wires. There have nonetheless been considerable developments using this infrastructure. With a relatively simple upgrade they are able to provide digital subscribe lines (DSL), which allows high speed access to the Internet. A more sophisticated use of these lines is an application being developed by AT&T called device management which, using specialize hardware and a web interface, allows users to control or monitor home or company devices such as air conditioning and heating units. Carriers are also acquiring cable infrastructure to complement their own copper ones. This expands their business by adding programming

and, in a not-too-distant future, interactive television. Recently attempts have been made to provide telephone services over coaxial cable infrastructure. A satellite infrastructure is also able to provide similar services which, added to ground wireless transmissions, completes the range of services that these companies are attempting to put together. With few exceptions, all of carriers are adding services to their traditional telephone business. In an attempt to attract consumers that are dissuaded by having services bundled and billed by a single company they have upgraded their networks and engaged in multiple alliances and acquisitions of other companies. Additionally, companies that already offer all of these services have been able to charge comparatively lower fees to having these services provided by different companies. Table 1 presents the list of carriers and the services that they are able to provide.

The implementation of new services by carriers creates regulatory challenges for the FCC. First, there are more issues that are not the traditional realm of the Commission such as those related to the evaluation of mergers and acquisitions. The current structure based on industry divisions is inadequate to evaluate acquisitions because a lack of integration may lead them to look only at the impacts to the industry where the company initially operated. Second, accustomed to address issues on an industry-by-industry basis, the regulation of all of the services together poses a problem because it requires personnel with a broad knowledge of the information industry instead of individual segments. The third additional challenge is management of the trade-off between convenience and savings to users versus market domination from the use of one carrier. While it is good for the consumer to have access to many services from a single provider, it also creates a dependency that may be difficult to break. Successful companies that offer these bundled arrangements may dominate markets. The FCC has not had to evaluate the potential market power of companies that provide services across all regulated industries

Wireless

Activity in the wireless industry has been extraordinary. Traditional common carriers have bought wireless companies. Mergers, acquisitions, and alliances in the industry have led to important developments. First, greater coverage of wireless service

gave rise to a new service called “three state local calling” which Qwest provides. Second, mergers with wireline carriers allow the development of integrated services such as “one phone” which routes an incoming call to the office, the home, or a wireless set until the person picks up. Wireless technology has also improved and today there is an increasing number of services that are beginning to emulate the quality of those provided through wirelines. Wireless access to the Internet, for example, can be done via a traditional laptop computer that dials-up the network. Alternatively, newer devices incorporate many of the common web applications to their systems. Customers can have portable access to their e-mail and personal web pages that contain information that matters to them. As is shown in Table 1, the major wireless carriers can provide local, long distance, and Internet access along with other value added services.

These new services pose regulatory challenges because they no longer fall within the context of simple voice telephony. Additionally, greater concentration has occurred and the potential for market power abuse may become an issue. The addition of services outside of their traditional fields means potential conflict on interconnection agreements and access charges. If a customer, for example, decides to fulfill all of his information needs using a wireless service alone, he should be able to have access to directory assistance. This service nonetheless requires access to databases that have generally been under the control of common carriers. Services that have required interconnection with another company’s servers or networks have had rates determined by the FCC, with the help of interested parties. Integration of services means that the Commission will be involved even more in providing guidelines and resolving conflicts for interconnection agreements that extend beyond Common Carrier responsibilities. Bundled services also include regulated and unregulated areas. This can be problematic because companies that have been heavily regulated may protest at the Commission that competitors offering similar services are under little regulatory oversight. In the wireless arena a great challenge is access to spectrum for services that require greater capacity. In this realm, the Commission has to cope with requests from multiple interests. The scarcity of spectrum puts wireless providers at a disadvantage compared to wire based connections that can make data transfers at faster speeds. This leads to pressure for access to

spectrum. Mergers and acquisitions have accomplished a similar expansion but lead to greater concentration.

Cable

In the cable segment, integration with other industries is also occurring. The largest cable companies, Time Warner, TCI, Media One, and Comcast have all made arrangements with companies in other information industries. Perhaps the most significant is the purchase of TCI and Media One by AT&T. Time Warner and Comcast have both made agreements with common carriers to expand services beyond their traditional programming. Time Warner, for example, has made an agreement with AT&T to provide cable telephony. Arrangements with other information related companies such as Microsoft and Compaq is helping them to provide fast access to the Internet. Five years ago cable companies considered the upgrade of their infrastructure an expensive option. Today they are investing not only to facilitate two-way transmission over their coaxial networks but also replacing them with fiber optics.⁸ The need for fast, reliable, and integrated services has motivated them to engage in investments that were once considered too expensive. Before the convergence opportunities became apparent, cable companies, unlike common carriers, faced large debts. The addition of new services over their updated infrastructures has made them more attractive companies. Today cable carriers have the best infrastructure to handle bundled communication services. They have the bandwidth necessary to provide telephony, Internet access, and interactive programming services. A weakness of cable is that it is a shared medium and the more people that access bandwidth, the lower the transmission speed provided to all customers. In contrast, common carriers have been able to provide these services over their DSL lines but are unable to offer it to all of their subscribers because the technology has a limit of 18 thousand feet from the central office. Given technological limitations, there has been a need for interconnection to take advantage of each technology's strengths. The

⁸ Michael Arellano, "Gentlemen, Start Your Engines" *tele.com* Section: Purchasing Patterns, March, 1998; Vol. 3, No. 3; p. 45; Adelphia Selects Harmonic's Solutions for Multi-million Dollar Infrastructure Upgrade, *Business Wire*, June 5, 2000; "Prepared Testimony Of Richard D. Parsons President, Time Warner Inc. Before The Senate Committee On The Judiciary Subcommittee On Antitrust, Business Rights And Competition" *Federal News Service*, July 7, 1998.

latest development in this industry is the possibility for people to click on an icon to obtain price and relevant information of things shown on the program they are watching, such as clothing, furniture, and music. To make this possible there must be a connection to the Internet that would allow a viewer to access the site of the product or service. This can only be possible with a close integration of networks, for which cable is best placed. Additionally many cable providers are interested in other information related industries such as publishing and programming. These associations make regulation complex because of the conflict of interests that can lead them to carry their own programs as opposed to those developed by competitors. The FCC is currently facing the challenge of allowing open access to the cable infrastructure.

Regulatory challenges in this area include issues of market domination that could result from mergers. Interconnection agreements are another potential issue of contention. The extension of regulation to content of programs and web sites may also reemerge since cable owners are also developers.

Broadcast

Developments in broadcast technology have come more slowly than in other areas. Radio frequencies used for the delivery of programming continue to be used for this sole purpose. Internet technologies have resulted in revolutionary applications from broadcasters that allow both the live “webcast” of television signals and the availability of streaming video files. For the largest television broadcasting companies, expansion to other industries has come more through acquisitions than through an expansion in the applications of their technologies. Like cable, this is a diverse sector because it includes

Table 1
Companies and Services Provided

Company	Local Telephone	Long Distance Telephone	Wireless Telephone	VAS *	Cable TV	Internet Access	Broadband Internet Access	Wireless Internet	Interactive TV	Satellite TV	Prepaid Cards	Advanced Wireless**	Internet directories	Equipment distributor	Paging	Content Production
AT&T	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Verizon	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		
SBC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>						
Qwest	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Nextel			<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Time Warner	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
Comcast	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
ABC					<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>
NBC					<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>
CBS					<input checked="" type="checkbox"/>											<input checked="" type="checkbox"/>
Fox					<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>

* Value added services can include, data mail, one number service, voice mail, caller ID, call conferencing.

** Advanced wireless can include: three state local calling, transfer of calls through multiple devices, high speed data transfer, in flight calling, and direct two way (walkie-talkie features).

areas such as publishing, program distribution through cable properties, program content development, retail, and even theme parks as is the case with ABC a subsidiary of Disney. The greatest challenge for regulators remains ownership limitations and, more importantly, the definition of broadcasting when it occurs over the Internet. Growing issues include distribution rights, copyrights, content regulation, must-carry rules, geography, and local content. Since the Internet has remained relatively unregulated there is no place in the current Commission's organization to regulate these issues. Data communications may need to be included among the FCC areas. Otherwise the Commission may decide to leave these issues unregulated.

V. Regulatory Convergence: Analysis of Orders

This section corresponds to the analysis of FCC orders from the Common Carrier, Cable, Mass Media, and Wireless Bureaus. It is organized chronologically and by bureau. The purpose is to determine if, over time, there has been an emergence of issues that have a cross-industry impact and if the presence of these issues requires a reorganization at the FCC. The earlier years (1994, 1996) were expected to have fewer cross-industry issues than in the later years (1998, 2000).

Common Carrier Bureau

“The Common Carrier Bureau regulates wire and radio communications common carriers, such as telephone, and telegraph. In addition to licensing radiotelephone circuits and assigning frequencies for their operation, the Bureau supervises charges, practices, classifications and regulations in interstate and foreign communication by radio, wire and cable; considers applications for construction of new facilities and discontinuance or reduction of service; acts on applications for mergers, and prescribes the accounting practices of communication carriers.”⁹

⁹ Federal Communications Commission. July [Online], Available <http://www.fcc.gov/bureaus.html>.

As can be appreciated from its self-description there is already some indication of the overlap of regulation that exists among the various bureaus at the FCC. The first sentence states that it regulates wire and radio communications, the latter also being under the jurisdiction of the Wireless Bureau. The second sentence indicates that it assigns frequencies for radiotelephone circuits. This activity also involves overlap with the Wireless Bureau. Although the International Bureau is not analyzed in this paper, the regulation of foreign communication overlaps with that division of the FCC as well.

The 1994 orders that we analyzed indicate that the Common Carrier Bureau's activities concentrated on three major activities: (1) tariffs; (2) network reliability; and (3) interconnection. Since the provision of telephone services was considered a natural monopoly, one of the major concerns for the Bureau was the regulation of rates for these services. This remains a major activity. It includes the calculation of rates and allowable returns, collection of tariff information, and enforcement. Network reliability activities at the Bureau included network monitoring through collection of information filed to the Commission, monitoring of outages, and the impact that these have on users. The Commission seemed to place special attention on the network reliability of emergency services such as 911.¹⁰ Interconnection activities included development of rules, enforcement, and pricing. Tariffs are not unique to this Bureau—cable operators are also subject to this regulation. Similarly, interconnection and network reliability will become important activities for cable and wireless companies as well. Therefore this function, which has traditionally been under the jurisdiction of this Bureau, is also of interest to other bureaus.

As a transition period, 1996 was a year where many of the activities identified above were still taking place but evidence of new issues related to the Telecommunications Act of 1996 were starting to emerge. An issue of particular interest is the determination of rates for video dialtone.¹¹ The provision of this emerging service

¹⁰ "... the rules require carriers to notify the management of any 911 facilities affected by an outage." FCC, Mass Media Bureau. Second Report and Order, CC Docket No. 91-273 Washington D.C.: FCC, August 1994.

¹¹ Video dialtone is also known as video on demand and more recently has been designated as open video systems (OVS). The service includes broadcast television and pay-per-view programming.

¹² In 1990 video dialtone was not yet offered even though the FCC was already developing regulations for it. See "News Conference With Senator Conrad Burns (R-Mt), Senator Al Gore (D-Tn), Representative

is important for several reasons. First, the service itself can be considered the result of convergent technology. Although carriers have tried to offer video dialtone service since the early 1990s,¹² it was not until recently that companies began to offer it. The service originated with common carriers and turned out to be within the area of regulation of the Carrier Bureau but the Cable or Mass Media Bureaus could have just as easily regulated this service. Price caps for this service, as specified in the 1996 Act led to some problems of interpretation because the Act only eliminated the Commission's rules and policies regarding video dialtone service but not the price cap on telecommunication services. Problems of interpretation have been common since the Act and are likely to become more pronounced as a result of technological convergence and mergers across-industry boundaries.

There other issues of relevance for other bureaus: regulation of calling number identification service¹³ to protect consumer privacy and international call blocking¹⁴ that aides in the prevention of international calling fraud as well as access to adult-oriented information services abroad. These two services are significant because they both can be issues of concern for the other bureaus. International call blocking for the prevention of fraud or access to adult oriented services abroad is an issue of interest for the provision of communication over wireless networks. Protection of privacy, within the context of telephone number display on a caller ID unit, is also an issue of concern in wireless communications. From a regulatory perspective, there is no reason why they would have to be separated on the basis of being a wireline or wireless service.

The administration of the Universal Service Fund (USF) was another important task at the Common Carrier Bureau. One of the issues evident in the orders analyzed for 1996 was the impact of changes in a carrier's study areas¹⁵ on the Universal Service

Rick Boucher (D-Va), Representative Michael G. Oxley (R-Oh)," in *Federal News Service*. Washington D.C., 1991.

¹³ Federal Communications Commission (FCC), Common Carrier Bureau. Memorandum of Opinion and Order, CC Docket No. 91-281. Washington D.C.: FCC, December, 1996.

¹⁴ Federal Communications Commission (FCC), Common Carrier Bureau. Third Report and Order CC Docket No. 91-35, Washington D.C.: FCC, March 25, 1996.

¹⁵ As defined by the FCC a study area is "...a geographical segment of a carrier's telephone operations. Generally, a study area corresponds to a carrier's entire service territory within a state. Thus, carriers operating in more than one state typically have one study area for each state, and carriers operating in a single state typically have a single study area." in Federal Communications Commission (FCC), Common Carrier Bureau. Memorandum, Opinion, and Order AAD 95-30. Washington D.C.: FCC, May 1996.

Fund. The concern was that allowing modifications to the boundaries of these areas would affect the size of the contributions to the fund. Carriers like to change these areas to make their operations more efficient and provide better customer service. In some circumstances study areas are artificial boundaries that may not have much relationship to the communication patterns of communities that live in separate study areas. Universal service is an issue that will likely become more prominent in the provision of Internet access, which now pertains to more than just carriers.

Another activity that took significant time at the Bureau was dispute resolution. In most conflicts among carriers, the FCC, or state Public Utility Commissions (PUCs), a great deal of time and effort was spent in gathering evidence, requesting comments from possibly affected parties, analyzing the evidence by means of technical, economic, or legal studies, presenting the relevant material to courts, and determining a decision and course of action. In 1996 conflicts arose as a result of inadequate compensation for services provided by carriers, erroneous cancellation of 800 numbers for calling centers, and dispute over the determination of rates. Given the amount of conflict resolution activity that takes place at the FCC it may be adequate to set up a division exclusively dedicated to this task.

In 1998 rates once again took a prominent role among the Bureau's activities. The determination of carrier specific and shared costs for the provision of local number portability (LNP) was an important issue regarding tariffs. Given that many carriers were still regulated on their tariffs, adequate calculation of costs was important to prevent these firms from being overcompensated for network upgrades that were tangibly related to the provision of this service. In general, the Commission considered LNP as an important network feature to further promote the entrance of new carriers in local markets. Although competition is the Commission's primary concern in requiring carriers to offer this service, it is also a service that benefits consumers. In the future, e-mail and web address portability will become necessary as the Internet becomes more established in American society. At that point, if regulation remains separated by industry, the FCC would have to determine if jurisdiction on that issue is the responsibility of the Carrier, Wireless, Cable, or even the Mass Media Bureaus.

Within the context of rates, the Bureau had to decide on the appropriate compensation for unbundled network elements (UNEs). UNEs allow competitors to buy portions of other carriers' networks to provide competitive services without incurring the cost of construction of a network of their own. Since the 1996 Act was passed this has been an issue of contention among carriers. Today a similar issue is starting to emerge within the context of cable and the desire of Internet Service Providers to lease these facilities from companies that have broadband infrastructures. On this occasion the Commission decided not to get involved although pressure from the public and ISPs is forcing them to have discussions about the issue and possibly propose regulation to open the cable infrastructure.

Operation and administration of the Universal Service Fund is another common task. In the files that were analyzed for 1998, the concern was over the appropriate compensation to wireless carriers that provide service to otherwise under-served regions of the country. In the presence of new carriers such as cable companies offering telephone services there will be a need to determine compensation for them as well. A USF division may be a more efficient way of regulating this issue at the FCC.

In 2000 we found the traditional issues of rates and support for the Universal Service Fund. Additionally the Bureau took the initiative to propose a rule aimed at consumer protection called "Truth in billing." The objective was to require carriers to provide a better explanation of the charges appearing on a user's bills. Although the Bureau generally takes into consideration the impact that its decisions have on consumers, it does not directly take initiatives specifically to protect them. This regulation would have been a more appropriate task for the Consumer Information Bureau. Since this Bureau already exists, it is unclear why this initiative was not among its responsibilities

The other two major activities for the Bureau this year were enforcement and implementation of the 1996 Act as well as the approval of mergers and acquisitions. With respect to the Act, the Bureau was dealing with the provision of interstate services by local telephone companies, specifically out of state directory assistance. In the Act it is specified that these services have to be provided by separate affiliates. Companies were therefore requesting that the Commission waive this requirement. Additionally the

Bureau was concerned about nondiscriminatory access for competitive access providers to databases of phone listings held by the RBOCs. It wanted to ensure that competitors had a level playing field in the provision of these services. With convergence, directory listings have been posted on the Internet. Regulation of this service may not be necessary in the future.

In terms of mergers and acquisitions, the Bureau took time in reviewing petitions by SBC, which wanted to extend the time the Commission determined for it to comply with the conditions of its merger with Ameritech. Although it was not among the orders that were analyzed for this research, the Bureau has, since the passage of the 1996 Act, been busy approving mergers and acquisitions. In 2000 two other mergers under review are Qwest / US West and MCI WorldCom / Sprint.

As can be seen from the four years analyzed, the Bureau confronted issues for which jurisdiction does not necessarily have to be held by the Carrier Bureau.

Wireless Bureau

As described by the FCC, the Wireless Telecommunications Bureau regulates stations serving communications needs including private land mobile, private operational fixed microwave, aviation, marine, personal, amateur, and disaster. The Bureau is also responsible for all domestic wireless telecommunications programs, except those involving satellite communications. Its Auction Division is responsible for conducting PCS auctions. The Bureau also is responsible for rule making and regulatory matters concerning Public Safety, Industrial, Land Transportation, and other private mobile services, Aviation, Marine, Amateur, Interactive Video Data Service (IVDS), Broadcast Auxiliary Service, Personal Radio Services, point-to-point microwave, antenna tower clearance, and the radio operator examination program.

As can be seen in the description, the Wireless Bureau is probably the one that overlaps most with the Carrier and the Mass Media Bureaus. To a certain extent, wireless communications could have been under the jurisdiction of the Common Carrier Bureau. Alternatively the Mass Media Bureau could have done frequency allocation and granting of licenses.

The daily activities of the Bureau concentrate primarily on the granting of licenses and allocation of frequencies for communication services. Other activities include investigating the violation of rules, dispute resolution, developing regulation to encourage research and development, and protecting competitive practices. In 1994 the Wireless Bureau concentrated most of its efforts on licenses and frequency management activities. In the context of licenses, the Bureau faces new challenges with emergence of technologies that allow convergence. Specifically, the Bureau, before the 1996 Act had a policy that rewarded innovation in the conservation of spectrum. They were called the “pioneer preference” licenses. Companies that successfully demonstrated a technology that made better use of the spectrum were granted licenses free of charge. In 1994, Cox Enterprises develop a technology that used the spectrum more efficiently by combining PCS and cable infrastructure.¹⁶ The company later won the Technology Award for this innovation. In the presence of this technology the question is what bureau should be responsible for its regulation. Is it an extension of cable services or simply another PCS provider? This is, therefore, another example of the overlap that is likely to become more common with convergence.

Another relevant development was the approval given to AT&T to provide voice over satellite services between the US and the Virgin Islands, and points in Central America, South America, the Caribbean and Africa for the years 1993-1997. The Common Carrier Bureau has generally regulated AT&T. In this case we observe an extension of the company’s services that requires the use of satellites. This extension of their services was filed to the Wireless Bureau in order File No. I-T-C-93-123(a) where it requests permission to provide voice via satellite. This is an example of the administrative burden that can occur if the Commission continues to regulate based on industries. Carriers will be forced to file multiple requests for a single service as was the case here. Another development was the granting of licenses for interactive video and data services (IVDS) which was described by the FCC as a service that would allow users to “choose the camera angle during a sporting event, pay bills, shop until they drop at malls, choose endings to TV shows, check college catalogs, play video games, choose

¹⁶ PCS over cable is a technology that uses cable microcell integrator transceivers. The cable plant is used to distribute signals between the cable and the wireless infrastructure. Cable infrastructure is used to fill the gap of areas that are not covered by PCS.

movies on demand and/or order a pizza with without [sic] the toppings.”¹⁷ using wireless transmitters. Although the technology has not been deployed it represents another of the multiple emerging services that do not fall easily among the FCC’s industry bureaus.

In 1996, the most significant development that emerged from the orders analyzed is the allocation of licenses for fixed wireless services. These services can serve as an alternative for local loops and generate competition for the RBOCs by allowing access to the end user through wireless connections. Since the order granted licenses for these services it also made requests to changes in the contributions to the Universal Service Fund.¹⁸ Traditionally the fund has been under the jurisdiction of the Common Carrier Bureau, but as new technologies enter the market and voice communications are provided over multiple infrastructures, the need for non-traditional carriers to support the fund may become necessary. In this case both the Wireless and Carrier Bureau would have to coordinate their activities to determine if and how these new carriers participate in the fund. The issue was not resolved in this order and it remains a controversial topic.

In 1998 the activities that took most of the Bureau’s time was frequency management and the granting of licenses. One important development that year was the allocation of frequencies for the provision of Local Multipoint Distribution Services. This technology uses fixed microwave links to provide broadband transmission of voice, data, and Internet access. When the technology was first released, cable and carriers were forbidden from using it but this year the FCC released the restriction.¹⁹ Given the type of services that can be delivered using this technology it is not clear that the Wireless Bureau would be the only one with the responsibility of regulating them. The Common Carrier Bureau would likely be involved in the regulation of this new service to facilitate their entrance. Companies using this technology can develop an alternative local loop. This is viewed favorably by the Commission which considers it a way of breaking up the stranglehold that the RBOCS have over this portion of the network.

¹⁷ Public Utilities Fortnightly, “Spectrum Auctions at the FCC: A Lesson for Utilities?” October 15, 1997, p. 26

¹⁸ Federal Communications Commission (FCC), Wireless Bureau. First Report and Order No. WT Docket No. 96-6. Washington D.C.: FCC, August 1996.

¹⁹ Communications Daily, June 27, 2000, Tuesday, Section: Comm Daily Notebook.

Another related technology that poses similar regulatory challenges is Commercial Mobile Radio Services (CMRS) otherwise known as cellular and PCS suppliers. Although the allocation of spectrum was the responsibility of the Wireless Bureau, there have been additional issues that cross bureau boundaries. In order WT Docket No. 96-162,²⁰ the Bureau granted a waiver for a common carrier to take more time to establish a separate affiliate to provide this service. On February 11, 1998, the Commission specified that incumbent local exchange carriers had to establish a separate affiliate for the provision of this service. The purpose was to generate competition through preventing the RBOCs from enhancing their power by adding more options to their networks. Other issues of concern related to CMRS are those of interconnection, reciprocal compensation, and universal service. The debate on these services has been whether or not to consider them carriers. Wireless operators would rather not be carriers so they do not have to contribute to the Universal Service Fund. While some CMRS are comprehensive and can potentially substitute for the services of a wireline carrier, others, such as pagers, are not. The responsibility of the FCC in this respect will be to determine if these carriers will be subject to the same type of regulations that common carriers have.

The Wireless Bureau has also determined standards for the operation of wireless devices. This function is of such a broad scope that it does not need to be divided by industry. It could easily stand on its own as a functional division at the FCC.

For 2000, the orders analyzed showed that activities at the Bureau concentrated on its traditional functions of frequency allocation, granting of licenses, enforcement of rules and spectrum management, all of which are broad enough and do not need to be solely under the jurisdiction of this Bureau.

²⁰ Federal Communications Commission (FCC), Wireless Bureau. First Report and Order No. WT Docket WT Docket No. 96-162, Washington D.C.: FCC, April 1996.

Cable Bureau

Change for cable companies has come a little slower than that for carriers. In spite of the efforts that companies have made to expand the scope of their business, it was not until recently that improvements in technology have allowed them to offer services such as Internet access. The future sounds even more promising. Companies plan to make television interactive to take advantage of both Internet and program distribution technologies.

The Cable Bureau has been primarily concerned with issues that pertain to its industry. Technological improvements and deregulation, nonetheless, are leading to the arrival of new areas not previously confronted by this Bureau and their regulation will need greater integration with other bureaus or, as has been suggested in this paper, a complete overhaul of the structure of the FCC based on functions.

Most cable companies operate under monopoly. For this reason a large portion of the Bureau's activities concentrate on the determination and enforcement of rates as well as the certification of new franchises. For cable companies, rates correspond to monthly charges for programming services and equipment

In 1994 rates were most prominent, but new issues resulting from convergence were beginning to emerge. In particular the Bureau was trying to implement a productivity offset on tariffs. Unlike carriers, cable rates were based primarily on costs while technology was assumed static. For this reason, the general trend in cable rates has been upward. Telephone carriers, on the other hand, have had to comply to a productivity offset in their rates that is calculated from the assumed efficiencies generated by new technologies. The trend in telephone rates is therefore downwards. Cable companies, nonetheless, argued that technology in their area had not changed and therefore had not resulted in any efficiency gains. The issue was not resolved but a suggestion for discussion was proposed. The attempts by this Bureau to impose a productivity offset reflects the desire to simulate the methodology for rates used by the Common Carrier Bureau. Given the similarities in this area, a more efficient way of regulating this might be through integration into a single division.

The analysis of orders for the Cable Bureau seemed to indicate that its officials got more involved in the calculation and enforcement of rates than the state's PUCs, which are more involved in the determination of telephone rates. The Bureau also handled customer complaints and reimbursement for higher than approved rates. This has led to some conflicts between the PUCs and the Bureau about jurisdiction. The lack of clarity in the authority of these to agencies exacerbates the regulatory burden that these companies face because, aside from having to comply with regulations from each bureau, they also have to do it for each of the states where they provide services.

Like rates, certification of cable franchises is beginning to see the effects of changing regulation. Under monopoly, cable companies had to be certified and were subject, like their telephone counterparts, to rate controls. Since competition is starting to emerge, the Commission decided to ease their regulation of certification and rates. The Bureau assumes that all cable companies operate under monopoly circumstances. It is therefore the responsibility of the operator to prove that competition exists in its market. If the Bureau agrees with the evidence provided by the company, it eliminates the rate regulation as well as the need for certification. The procedure is not the same for carriers, which have much stricter conditions. The question is, therefore, whether they are different enough to have different criteria for deregulation?

Of the orders analyzed, rate oversight was the primary activity for the Bureau in 1996 and 1998. In 1996, most of the orders concerning these issues were cable specific with the exception of relief from rate regulation and certification for small operators. As was stated above, in 1994 the Bureau wanted to integrate a productivity offset on the rates of cable operators. Since they were unsuccessful, in 1998 there were attempts to incorporate an advertising offset.

Additionally the Bureau has recognized that the regulatory burden imposed on these companies is large and has relieved them from regulation on the basis of their size. Easing regulatory oversight for companies that fulfill certain criteria is not the exclusive domain of cable. Similar concessions can be granted to firms in other regulated industries. Initiatives of this type should not come on a bureau basis anymore since similar concessions would also benefit companies on other industries. A deregulatory

body at the FCC may be a better approach to provide consistency in the regulation of these industries.]

Two other issues that the Bureau encountered were disputes concerning areas of dominant influence (ADIs) and carriage rights. According to the FCC, “An ADI is a geographic market designation that defines each television market exclusive of others, based on measured viewing patterns.”²¹ ADIs are important because they allow regulators to enforce legislation concerning the number of stations owned within an ADI or adjacent ADIs. They are also used to determine must carry obligations. Recently ADIs are being substituted by Nielsen’s Designated Market Area (DMA), which is considered to reflect a community’s viewing patterns more accurately. These areas are becoming increasingly important due to the introduction of new technologies capable of carrying programming. Satellites and now even the Internet provide programming. The question is how do they change the significance of DMAs when companies can now broadcast programming from all over the world. How will this affect traditional, area bound, TV programming? The important point here is that ADIs, which were regulated by the Cable Bureau, are closely related to the issues regulated by the Mass Media Bureau and, more recently, the Wireline and Wireless Communications Bureaus. It is artificial to bind the issue to a particular industry when technology is making the distinction irrelevant. Must carry rights, which are related to ADIs, were originally an issue that pertained to cable companies because they were obliged to carry the broadcast signals of their ADIs. Today satellite companies that send programming directly to users’ home satellites face similar obligations. Since programming through satellite and Internet technologies can come from anywhere in the world, how does this affect traditional TV stations? Does this mean that we have to restrict access to programs from abroad to protect the feasibility of local stations? If that is the case, which bureau should have such responsibility? Here again the boundaries cannot easily be determined.

In 2000 the most controversial issue was the lease of cable facilities to Internet service providers. In memorandum of opinion and order No. CSR-5407-L,²² Internet

²¹ Federal Communications Commission (FCC), Cable Service Bureau. Memorandum of Opinion and Docket. CSR-4416-A. Washington D.C.: FCC, May 1996.

²² Federal Communications Commission (FCC), Cable Service Bureau. Memorandum of Opinion No. CSR-5407-L. Washington D.C.: FCC, February 2000.

Ventures, Inc. and Internet on Ramp Inc. tried to convince the Commission to develop regulations to make cable's broadband infrastructure available to them. In the material that they submitted they claimed that they, like cable, are providing programming. In this case they were relying on the emergence of a few TV stations that made their programming available online. The Commission, bounded by the existence of previous regulation, argued that cable infrastructure is available for lease only to program distributors. They disagreed with the statement that ISPs are program service providers because they themselves do not offer them. In February when the memorandum was issued the Commission did not change its position. This meant that cable operators were not required to lease their facilities. It was not until June 2000 that the FCC chairman formally opened a proceeding to solve this issue.

Mass Media Bureau

Unlike cable and carrier companies, there is competition in the provision of television and radio broadcast. The industry is regulated because technical issues prevent the installation of multiple stations with the same frequency in the same geographical area. The Bureau therefore has the responsibility of approving the establishment of new stations to prevent interference. This activity generally requires technical studies to verify that interference is not taking place. A similar function is carried out by the Wireless Bureau, which makes frequency allocation for the provision of communication services. A major difference in the way these two bureaus allocate frequencies is that one provides them free of charge while the other requires a payment. In exchange for free licenses radio and television stations are subject to greater regulations. A bureau dedicated to frequency allocation may be a better forum to analyze these issues.

In 1994 the Bureau was occupied with its traditional areas. One of these was enforcement of rules regarding programming content, specifically forfeiture for stations that exceeded the permitted commercial time for children's programming. This type of regulation is of interest because cable operators are not subject to the same restrictions with respect to content because they, unlike radio and broadcast stations, do not obtain the same benefits that broadcasters do. The regulation is nonetheless pertinent to cable

operators as well. In memorandum of opinion and order No. CSR-5407-L,²³ Comcast complained that Internet broadcasting was not subject to programming regulation such as the V-chip, close captioning, and emergency alert rules. Regulation of content is no longer an issue that pertains to radio and TV stations alone. Satellite, wireless, and wireline technologies are now able to offer programming. Discussions about the regulation of content for these technologies is likely to reemerge.

In 1996, 1998 and 2000 the Bureau was occupied with the traditional activities of licenses, content, and equal opportunity issues. The most significant change was the ease of restrictions on the number of stations that a single entity can own. Prior to the Act commercial ownership of stations was limited to 20 AM and 20 FM nationwide. The 1996 Act allows entities to own up to 8 stations in a single market depending on the number of competing stations existing in that market. Similar changes happened to the ownership of television stations and newspapers and, more recently, the Commission is also considering easing restriction on cross-industry ownership. This last development will further accelerate the convergence across these regulated industries and issues of market power are likely to take much of the Bureau's time. Considering that mergers and acquisitions are taking place among companies in different industries, the FCC should be prepared to evaluate the impact on the market of all industries affected instead of just the ones where the company was originally situated.

VI. Discussion and Conclusion

Regulation of information industries has traditionally been along industry divisions. This distribution of responsibilities has come about more by accident than by reasoned design. The original structure of the Commission was never questioned because the differences among the regulated industries were defined enough to justify such a division of functions. Today convergence and developments in information technology have led to the emergence of issues that cannot be easily regulated on an industry basis.

²³ Federal Communications Commission (FCC), Cable Service Bureau. Memorandum of Opinion No. CSR-5407-L. Washington D.C.: FCC, February 2000.

Maintaining such a structure can lead to conflict, confusion, and waste of resources from all parties.

The analysis of services provided by each of these industries indicates that there is great integration among companies from different industries. This has led to the development of services that take advantage of all of their technological capabilities. Integrated services pose regulatory challenges because they no longer fit within the industry structure of the bureaus and thus jurisdiction over any given issue may be arbitrary.

In the analysis of orders it was expected that issues in 1994 would be more industry specific than in later years. Little difference was found. Surprisingly, cross-jurisdictional issues appeared consistently throughout the period of study. The analysis of orders identified old and emerging issues that could be more adequately regulated if they were addressed by a group of experts in such areas instead of being divided among the various bureaus. The issue of rates, for example, has been divided among Cable, Common Carrier, and PUCs. Cable companies that offer telephony related services now have to file documentation to multiple agencies. This is an inefficient use of resources for companies and for the Commission. Another common activity at the FCC, which is separated by industry, is the allocation, management, and enforcement of frequencies. Some are given to broadcast stations by the Mass Media Bureau and others to common carriers by the Wireless Bureau. Since interference studies have to be conducted to detect interference and because the technical aspects of frequency allocation are similar, the FCC would be better equipped if it had a division solely dedicated to such functions independent of industry applications. This integration would give them better knowledge of the trade-offs that have to be made in allocating spectrum for some applications but not to others. Universal Service issues are no longer related to telephone service alone. Access to the Internet is also becoming important to society and support for access might be necessary. Cable, common carriers, and wireless carriers would have to share responsibilities to support this mandate. Its regulation does not pertain to carriers alone anymore.

The analysis of orders also identified new issues that do not easily fit within the confines of one bureau. Video dialtone, for example, has been an initiative of telephone

carriers but this service is clearly more related to programming, which has been regulated by the Mass Media Bureau. Interactive video services, an initiative of cable companies, requires connections to the Internet. The service therefore does not fit easily in any one of the bureaus. Caller ID services are currently the domain of common carriers but wireless users can also benefit from it. Overlaps in the regulation of this service by the two bureaus will happen.

Finally the interconnection agreements that are necessary to offer value added services can no longer be regulated on an industry basis, an integrated functional organization at the FCC can better serve the development of these industries and their consumers. Although there will always be issues that cannot have their own bureau, a comprehensive “Information Industry Bureau” can take care of industry specific issues that could be under the responsibility of a more specialized functional area. The ultimate objective therefore is to ease regulation and eliminate redundancies, confusion, and waste of resources. A functionally organized FCC could better address old and new issues and foster greater developments in this industry.