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Speaking with Forked Tongues: Mercantilism, Telecommunications Regulation, and International Trade

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REVIEW ESSAY

Speaking With Forked Tongues: Mercantilism, Telecommunications Regulation, and International Trade

When Countries Talk: International Trade in Telecommunications Services By Jonathan David Aronson and Peter F. Cowhey. Cambridge, Massachusetts: Harper & Row Publishers, 1988. Pp. xxii, 292. $29.95.

Reviewed by GLENN HARLAN REYNOLDS*

Over the past decade, two profound revolutions have swept the global economy, with particular impact on the United States. One is the growing importance of services, both domestically and as a component of international trade. The other is a tremendous explosion in the technology of telecommunications and an accompanying move toward deregulation of many telecommunications enterprises.

These developments are not unrelated. Much of the growth in service industries and in services trade stems from the explosion in telecommunications capabilities available to organizations and individuals: where once, for example, a Swedish business executive needing advice on U.S. customs laws would have had to consult a local expert in Stockholm (if one were available) or contact a U.S. law firm by mail, she can now have her answer in minutes via telephone, facsimile, or other electronic means. Similarly, much of the explosion in telecommunications technology has resulted from the voracious demands of service industries (especially banking and the management of large corporations) for greater and more flexible information flow. And both of these explosions have produced intolerable pressure on preexisting regulatory frameworks, with their often burdensome and arbitrary distinctions and discriminations, while the removal of many of those regulatory barriers has spurred growth in services and technology.

All of these phenomena are explored at some length in *When Countries*

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Talk.[1] From an unabashedly free-market perspective, Aronson and Cowhey examine the changing nature of the telecommunications sector, both as a crucial input to all services and as a source of services trade in itself. They conclude that the strategic importance of telecommunications services (which they correctly describe as being "at the heart of the struggle for leadership in high technology"[2]) means that national governments will be under enormous pressure to engage in subsidies, discriminatory purchasing and standard-setting, and other "mercantilist" practices. They note, however, that this pressure will be matched by the need to maintain open, flexible, and inexpensive telecommunications networks in order to remain competitive in other vital service areas, such as banking, insurance, and data processing.[3] The eventual shape of the telecommunications industry, and of the service industries that it makes possible, will be determined by the relationship between these two forces.

Though aware of many possibilities for trouble along the way, Aronson and Cowhey are optimists. They admit that some future historian may look back and "conclude that the telecommunications authorities of the world won a remarkable struggle to sustain their quasi-monopolistic control over the industry in the face of a major assault by their largest customers,"[4] but they find it more likely that she will "write that starting in the 1970s the world reversed its rigidly mercantilist controls over the telecommunications industry and opened up major new markets for global commerce even though global trade in other goods was subject to many new limitations."[5]

I will discuss this conclusion, and the analysis supporting it, but will first provide a brief description of the current environment with particular attention to the contrasting approaches favored by U.S. and European regulators. Following a discussion of technological and trade issues covered by Aronson and Cowhey, I will also look briefly at a topic they ignore: the political and social implications of the new technologies and the regulators' responses to them.

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1. J. ARONSON & P. COWHEY, WHEN COUNTRIES TALK: INTERNATIONAL TRADE IN TELECOMMUNICATIONS SERVICES (1988) [hereinafter ARONSON AND COWHEY].

2. *Id.* at 11.

3. *Id.*

4. *Id.* at 10.

5. *Id.*

THE GLOBAL TELECOMMUNICATIONS ENVIRONMENT: SOME HISTORY AND BACKGROUND

It has not been very long (only a little over a century) since "international telecommunications" meant "mail" and even less time (about twenty five years) since "data transmission" meant the shipping of punched cards. The first international telecommunications conference was the Telegraph Conference of 1865, which led to the formation of the International Telegraph Union, predecessor of today's International Telecommunication Union.[6] For most of the time since then, government regulation of international telecommunications has involved the extraction of monopoly rents that could be used to subsidize other activities. Sometimes this was done through direct financial transfers (as in the case of West German cross subsidization of postal service with telephone revenues); other times it was accomplished through indirect measures, such as the maintenance of over-staffed facilities and redundant factories in order to maintain employment. A universal practice was the pricing of long-distance services at exorbitant levels in order to subsidize the provision of local telephone service below cost, which had both political and practical dividends.

Services everywhere were provided by monopolists.[7] In the United States, this meant the private (but heavily regulated) AT&T; virtually everywhere else, it meant entities directly controlled by the government, generally known as Postal, Telephone and Telegraph authorities, or PTTs. Outside of rate-setting (usually handled by separate bodies), the same entities that engaged in the provision of services were responsible for technical regulation, standard-setting, and so on. Not surprisingly, this meant that a substantial number of regulations ostensibly designed solely to protect the network from harm caused by incompatible devices actually served to protect the telephone company from competition—as in the *Hush-A-Phone* case, where it was maintained (ultimately unsuccessfully) that the attachment of a simple plastic noise shield to a telephone mouth-

6. For a clear history of the International Telecommunication Union and the international communications environment, see generally G. CODDING & A. RUTKOWSKI, THE INTERNATIONAL TELECOMMUNICATION UNION IN A CHANGING WORLD 3-55 (1982).

7. This was not true in the early days of the U.S. telephone network, which for several decades saw vigorous competition in the local-services arena, with most towns containing more than one local telephone company. By the early 1920s, however, a consolidation had taken place and little competition existed. For an interesting history of the early telephone network and its highly competitive character, see Bornholz & Evans, *The Early History of Competition in the Telephone Industry*, in BREAKING UP BELL: ESSAYS ON INDUSTRIAL ORGANIZATION AND REGULATION 1 (D. Evans ed. 1983).

piece could result in dire consequences.[8]

For many decades, these restrictions probably did little harm. The technology for providing what is elegantly known in the trade as POTS (for Plain Old Telephone Service) was such that economies of scale predominated, making it a true natural monopoly, and the ability to provide any other services awaited the development of technology more advanced than the electromechanical systems of the day. With most economic activity still centering around the production and consumption of goods, and with much of the business world operating at a slow enough pace to accommodate the mails, the harm done by overpriced long distance service was probably counterbalanced by the benefits of using long distance revenues to subsidize local rates. Expanding the telephone network through such subsidies to include almost everyone made it more valuable to all who used it. Life was easy for regulators, and economists and policy analysts paid little attention to telecommunications issues.

Technology, however, is no friend to regulators' peace of mind, and the inattention of policy analysts is a chancy thing at best. As the new technology of computers began to creep into the world of telecommunications and *vice versa*, the tidy regulatory distinctions of previous years were threatened. The traditional view of the public telephone network as having "a simple Euclidean structure, with an inside and an outside"[9] began to erode, and the telephone network began to be seen as a far more complex collection of submarkets. Simultaneously, a new enthusiasm for deregulation came into vogue (especially in the United States), and economists and policy analysts began to look at the telecommunications industry as a likely field for analysis and experimentation. In response to both factors, the Federal Communications Commission began to chip away at the traditional Bell System monopoly, establishing new sectors open to competition.[10] Much more slowly, other nations began to follow suit.

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8. Hush-A-Phone Corp. v. United States, 238 F.2d 266 (D.C. Cir. 1956).

9. P. Huber, The Geodesic Network: 1987 Report on Competition in the Telephone Industry 1.6 (1987) (prepared for the Department of Justice in accordance with United States v. Western Electric, 552 F. Supp. 131, 194-95 (D.D.C. 1982)).

10. The Commission opened up domestic long distance competition in private line services which allowed Microwave Communications, Inc. (MCI) to enter the private line business by establishing a microwave link between Chicago and St. Louis. *In re* Applications of Microwave Communications, Inc., 18 F.C.C.2d 953 (1969); *In re* Specialized Common Carrier Services, 29 F.C.C.2d 870 (1971) (decisions allowing creation of specialized systems offering long distance communications service connecting to the local telephone company network); MCI Telecommunications Corp. v. FCC, 561 F.2d 365 (D.C. Cir. 1977) *cert. denied*, 434 U.S. 1040 (1978) (usually referred to as the *Execunet I* case); MCI Telecommunications Corp. v. FCC, 580 F.2d 590 (D.C. Cir. 1978), *cert. denied*, 439 U.S. 980 (1978) (*Execunet II*) (allowing MCI and others to enter into competition with AT&T in sale of long distance services directly to the public).

The United States Experience

The U.S. experience with telecommunications liberation shows that technological and market developments have played at least as large a role as regulatory philosophies. Although microwave networks created consternation by casting doubt on the natural monopoly character of long-distance service, it was the computer revolution that created the most difficulty for the traditional regulatory structure. In the early 1960s the number of computers in the United States increased sharply.[11] These early mainframe machines stood alone, but it rapidly became apparent that requiring users to approach the computer as if it were some Delphic oracle, though satisfying to the technicians who maintained the machines and controlled access, was far from the most efficient way of doing business. As a result, ways were explored of making computers more accessible, primarily through telecommunications.

These efforts created all sorts of problems with which the existing regulatory framework was ill-suited to deal. The most obvious method of communication among computers, and between computers and users, was via the public telephone network. However, the existing switched network was poorly suited for such purposes: the digital signals used by computers had to be converted to analog signals that could be carried over lines designed with the human voice in mind, then converted back to digital signals at the other end, a process that utilized modems that were slow, expensive, and unacceptably error-prone.[12]

Modifying the telephone network to support data communications was possible (indeed, the Bell System had considerable experience in doing just that for its own internal purposes), but AT&T was not especially interested in doing so since it was barred from entering the computer business

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In addition, the Commission removed barriers to connection of non-Bell System equipment to the telephone network, allowing the growth of competition in the Customer Premises Equipment (CPE) sector (CPE includes all equipment, other than specialized network interfaces, installed on the customer's property. Such equipment runs the gamut from Private Branch Exchanges, which are essentially customer-owned switches, down to individual handsets, answering machines, etc.). The chief effect of this policy was the growth of considerable competition in the telephone handset market. *See generally* Comment, *Competition in the Telephone Equipment Industry: Beyond* Telerent, 86 YALE L.J. 538 (1977).

11. This growth has continued at an accelerated pace, of course.

12. Modems are so called because they *mod*ulate the digital signals used by computers (which consist of simple on-off pulses) into analog signals consisting of audible tones that can be transmitted by ordinary telephone lines designed for voice communications, then *dem*odulate the analog signals back into digital signals again at the other end. For the purposes of this discussion all that need be understood is that modems are slow, expensive, and (until recently, and in most countries) subject to rigorous control by the telecommunications provider.

by the 1956 consent decree settling an antitrust case brought by the Department of Justice.[13] Also, computer companies feared that AT&T might manipulate computer communications standards for anticompetitive ends if the consent decree restrictions were relaxed.

With offsetting power blocs preventing action by other sectors of the government, the Commission attempted to deal with these problems in a number of proceedings. These attempts shed considerable light on the difficulties involved in adjusting regulatory frameworks to meet changing technologies and provide an interesting contrast to the approaches taken by foreign telecommunications authorities in response to the same problems. The Commission faced a twofold challenge: ensuring that obsolete regulations did not strangle new technologies, while also ensuring that entrenched companies (particularly AT&T) could not fence out new competitors.

Its first effort, the so-called *Computer I* proceeding, involved a three-part classification scheme based on technical characteristics: data processing, communications services, and hybrid services. Each classification was subjected to different types and amounts of regulation.[14] So-called data processing services were not regulated, since the Commission found that competition in that field was already widespread. Communications services, comprising those aspects of data transfer that appeared close to traditional phone-company offerings, were regulated as common carrier offerings under Title II of the Communications Act of 1934, meaning that they were subject to traditional regulation of rates, tariff structure, etc.[15] And hybrid services, defined as offerings combining "[r]emote [a]ccess data processing and message-switching to form a single integrated service"[16] were treated as either unregulated data processing services or as common carrier communications services based on a case-specific determination of which aspect was predominant. AT&T and its operating subsidiaries

13. United States v. Western Electric, 1956 Trade Cas. (CCH) ¶68,246 (D.N.J. 1956). This decision barred AT&T from entering unregulated markets and limited it to the provision of common-carrier telecommunications services and government projects. AT&T's manufacturing activity was limited to products for its own use and it was required to make its patents available to all comers. These restrictions remained in effect until the 1982 consent decree that effectuated the Bell System breakup.

14. Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Services and Facilities, Tentative Decision, 28 F.C.C.2d 291 (1970); Final Decision and Order 28 F.C.C.2d 267 (1971); *aff'd sub nom.* GTE Service Corp. v. FCC, 474 F.2d 724 (2d Cir. 1973); decision on remand, 40 F.C.C.2d 293 (1973).

15. *See* Communications Act of 1934, *as amended*, 47 U.S.C.A. §§ 151, 201-224 (West Supp. 1989).

16. 40 F.C.C.2d at 295.

were, the Commission assumed, forbidden from providing data processing services by the terms of the 1956 consent decree, but the Commission did formulate rules by which other regulated carriers could provide data processing services. Those rules required structural separation, that is, the creation of separate data processing subsidiaries so as to prevent improper cross-subsidies, discrimination, or other anticompetitive behavior.

Although this regime seemed eminently sensible in the early 1970s, it quickly proved to be unworkable, not least because virtually all of the action was in the hybrid category. *Computer I*'s case-by-case regulation meant, among other things, that identical devices or services could be treated in different ways depending on how they were marketed, a plainly unacceptable result.

The Commission went back to the drawing board and emerged with the *Computer II* proceeding,[17] which was a distinct improvement in many ways. Recognizing that technical or marketing distinctions were doomed to obsolescence in short order, the Commission adopted a more functional approach.[18] *Computer II* divided services into two categories, "basic" and "enhanced." Basic services were the offering of transmission capacity for the movement of information by a common carrier.[19] Any technologies or services involved in providing such transmission—for example, data processing, computer memory, or storage—would be basic services so long as they served that function. Considering such services to be traditional common carrier activities, the Commission continued to subject them to Title II common carrier regulation.

Enhanced services were defined as "any offering over the telecommunications network which is more than a basic transmission service."[20] Since the Commission found that the enhanced service market was truly competitive, and that consumers were deriving meaningful benefits from that competition, it concluded that regulation of enhanced services was not in the public interest.

In order to keep AT&T from using those sectors of the market in

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17. Second Computer Inquiry, Final Decision, 77 F.C.C.2d 384 (1980).

18. *Id.* at 430.

19. *Id.* at 420.

20. *Id.* The Commission further explained what it meant by enhanced services by saying that the functions it considered "more than a basic transmission service" consisted of:

> [S]ervices, offered over common carrier transmission facilities . . . which employ computer processing applications that act on the format, content, code, protocol or similar aspects of the subscriber's transmitted information; provide the subscriber additional, different or restructured information; or involve subscriber interaction with stored information.

47 C.F.R. § 64.702(a) (1988).

which it had monopoly power to gain an unfair advantage in competitive sectors, the Commission imposed a regime known as "structural separation," which had previously been applied to other carriers under *Computer I*. This meant that the competitive services would be provided by a separate subsidiary, which came to be known as AT&T Information Systems or AT&T-IS. AT&T-IS was forbidden from owning local exchange facilities or becoming involved in other monopoly areas, while AT&T's local operating companies were forbidden from providing enhanced services.

This was an innovative attempt to deal with the problems posed by the convergence of telecommunications and data processing, but it left many problems. Some were definitional, e.g., trying to decide what was a "basic" versus an "enhanced" service turned out to be more difficult than it might have seemed. Others involved the lost efficiencies resulting from the forced separation between provision of basic and enhanced services. For example, voice storage was designated an enhanced service because the Commission believed that competitive providers could provide it efficiently. It turned out, however, that only the network operator (that is, the telephone company) had access to sufficient economies of scope and scale to make voice mail worthwhile, meaning that consumers were denied the opportunity to obtain such services via the telephone network. Instead, they turned to a near-substitute, purchasing billions of dollars worth of telephone answering machines, virtually all imported from abroad, with predictable effects on the U.S. telecommunications trade balance.

This is just one example of the problems with *Computer II*. Overall, the result was that consumers were still missing out on the new products, services, and lower prices, that would have been available in a freer market. The U.S. trade balance suffered as well, as capabilities not available through the communications network were supplied instead by equipment bought by customers, usually from foreign firms, as in the case of the answering machines just mentioned.

The problems with *Computer II* might have been worked out, but before there was any opportunity to do so matters were disrupted by a bombshell from an unexpected quarter: the consent decree settling an antitrust suit brought against AT&T by the Department of Justice.[21] That decree, known as the Modified Final Judgment (MFJ) because it techni-

21. United States v. AT&T, 552 F.Supp. 131 (D.D.C. 1982), *aff'd sub nom.* Maryland v. United States, 460 U.S. 1001 (1983). For a thorough, if oddly titled, analysis of the MFJ and its impact see Dempsey, *Adam Smith Assaults Ma Bell With His Invisible Hands: Divestiture, Deregulation, and the Need for a New Telecommunications Policy,* 11 Hastings, Comm./Ent. L.J. 527 (1989).

cally constituted an alteration of the earlier 1956 consent decree, demolished the very underpinnings of the *Computer II* regime. The old integrated national telephone company controlled by AT&T and popularly known as the Bell System was shattered. The twenty two local telephone companies, known as Bell Operating Companies (BOCs) were separated from AT&T and placed under the control of seven newly-created Regional Holding Companies (RHC).[22] The newly-truncated AT&T retained the long-distance operations of the old Long Lines division and the manufacturing operations of Western Electric and retained title to AT&T-IS.

It was obvious that *Computer II* was poorly adapted to the new environment, in spite of frantic efforts by the Commission to adapt its rules. Thus, after some floundering the Commission developed a new approach, embodied in its *Computer III* proceeding.[23] With a candor unusual among administrative agencies, the Commission recognized that the *Computer II* regime had not worked.[24]

After extensive public comments, the Commission adopted a new regulatory structure that abandoned the separatist approach in favor of an integrated network subject to regulations designed to promote competition. Structural separation was replaced with a series of nonstructural safeguards (addressing cost allocation, protection of confidential customer information, technical disclosures, and nondiscriminatory installation and maintenance) together with both short term and long term changes in network architecture designed to address many of the problems previously experienced. The goal was to ensure that the telephone companies could not harm competitors by subjecting them to inferior-quality connections, poaching on their customers or overcharging them for services that could not be obtained elsewhere because of the monopoly character of the local telephone network.

For the short term, those changes involve Comparably Efficient Interconnection (CEI). The CEI requirement provides that AT&T and the BOCs, in order to be permitted to offer an enhanced service without using a separate subsidiary, must file a CEI plan for that service. The CEI plan ensures that CEI will be available to competing Enhanced Services Providers (ESPs) when the carrier begins offering its own enhanced service to the public and the ESPs will receive the same service as the carrier's subsidiaries. Thus, discrimination against competitors (who must make use of

22. These companies were American Information Technologies (Ameritech), Bell Atlantic, BellSouth, NYNEX, Pacific Telesis (PacTel), Southwestern Bell, and U.S. West.

23. Third Computer Inquiry, 104 F.C.C.2d 958 (1986).

24. *Id.* at 962.

the public telephone network and hence are vulnerable) is made much more difficult.

CEI, however, is a transitional step. For the long term the Commission has developed a structure known as Open Network Architecture (ONA). ONA is designed to extend to *all* services, whether or not offered by AT&T or the BOCs, the same safeguards that CEI imposes for individual services. Once ONA is implemented, both AT&T and the BOCs will be allowed to offer any enhanced service on an unseparated basis without the need to file a CEI plan.

ONA is designed to open the network architecture so that it is self-enforcing in preventing discrimination. When fully implemented, ONA will allow competitors access to the telephone network on a basis identical to that enjoyed by the network's operators. This will facilitate a transition to the expected "Intelligent Network" of the future,[25] in which capabilities are dispersed throughout the network according to demand and in which different parts of the network, even if controlled by different parties, function together seamlessly. For example, in an intelligent network, a new service might be located in a centralized processor (known as a "feature node") serving a broad area in order to concentrate demand, but might be "migrated downward" (toward users) to individual switches as demand picks up so as to minimize transport costs. With ONA fully implemented and supported by intelligent network architectures, this migration could be achieved even if the feature node and the switch were owned by different parties, and indeed might occur automatically as the network sensed changing demand patterns. The result would be an enormous gain in flexibility and efficiency, accompanied by greatly-reduced difficulties in

25. The term "Intelligent Network" refers to the sort of computing/communications blend described here. The term "Integrated Services Digital Network," or ISDN, is used to describe the means by which such an intelligent architecture would be implemented. The initial stage, or "basic" ISDN would consist of a customer interface (replacing the current single voice channel) made up of three channels: two "B" channels of voice grade (64,000 bits per second data rate) and one "D" channel of medium speed data grade (16,000 bits per second data rate). These three channels would all have the same address (phone number) but could be divided in a number of ways to allow voice, data, and network signalling to be sent simultaneously, thus supporting a wide variety of services. For example, the advanced signalling and addressing capabilities of ISDN would allow two attorneys in different cities to conduct a LEXIS or WESTLAW search together, with the result appearing on both of their screens, while discussing its progress over a voice connection. The exact contours of both Intelligent Network architectures and ISDN are still subject to considerable debate both in the United States and abroad. As is discussed *infra*, the nature of these contours has important strategic as well as technical ramifications, which is one of the main reasons for the debate. For a good survey of Intelligent Network thinking and of current plans for implementation, see TELECOMMUNICATIONS MANAGEMENT PLANNING: ISDN NETWORKS, PRODUCTS AND SERVICES (R. Heldman ed. 1987).

introducing new services.[26]

The above discussion traces the way in which telecommunications liberalization has progressed in the United States, and provides some sense of how that liberalization has been as much the result of technological and market imperatives as of regulatory philosophy. Despite all of its difficulties (particularly those stemming from the AT&T divestiture) the effort has largely been a success and has contributed to making the U.S. telecommunications sector one of the strongest and most vibrant in the world.

The Experience in Other Countries

The U.S. experience has begun to inspire other nations to emulate the U.S. approach, although to lesser degrees and in ways that reflect those nations' own unique histories and philosophies. For example, the prime goal of the British Telecommunications Act of 1984 was to "transfer the provision of telecommunications services to the private sector and subject it to forces of competition."[27] Under the Act, British Telecom's monopoly status was eliminated[28] and the initial steps were taken toward that company's privatization.[29] In addition, a competing public network, Mercury, was established, and numerous private networks were permitted, while many forms of resale and shared use that had previously been prohibited were now permitted.

Japan, too, has begun to liberalize its approach. It recently took action to separate its local carriers from long distance, much as was done in the AT&T divestiture. In addition, the opportunities for non-facilities-based competition by both Japanese and foreign companies have been expanded considerably, although "Type I" carriers (those which own their own facilities rather than leasing them from others) are still required to be Japanese-owned. Though many barriers still remain, the Japanese services market is far more open than it was only a few years ago, and far more open than the markets of most other countries.[30]

The European Community is also beginning to take steps to modernize its approach. In 1987, the European Commission released a "Green Paper" on telecommunications, recommending that the European PTTs drop their parochial methods and attempt to develop a truly European market in telecommunications goods and services so as to become competi-

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26. *Id.*

27. R. HAMILTON, THE TELECOMMUNICATIONS ACT OF 1984: A PRACTITIONER'S COMPANION 7 (1984).

28. Telecommunications Act 1984 § 2.

29. *Id.* at §§ 60-73.

30. ARONSON AND COWHEY, *supra* note 1, at 135-141.

tive with U.S. and Japanese companies.[31] The Commission recommended that the monopoly power of the PTTs be sharply limited, and that monopoly functions be separated from competitive functions in order to prevent discrimination and cross-subsidy that could impede competition.

Although there was considerable hostility to some of its recommendations from the PTTs, some parts of the Green Paper are already going into effect. A key recommendation of the Green Paper was the separation of regulatory functions from operational functions—without such a separation, the situation would resemble a baseball game in which the umpire both pitched and called strikes. This policy has been implemented in several European countries, and is under consideration elsewhere.

THE FUTURE OF TELECOMMUNICATIONS LIBERALIZATION

Having come this far, we are finally ready to discuss the central question of Aronson and Cowhey's book: is the current progress in opening telecommunications markets just the beginning, or will entrenched and still-powerful monopolistic forces succeed in stemming the tide? Aronson and Cowhey suggest ways in which those forces might try, and predict the likely outcomes. The following illustration explains why frustrating change for any substantial period will be difficult.

The most likely shape for efforts at repulsing competition will be that of PTT use of their standard-setting power to configure networks in ways that make competition difficult or impossible. Aronson and Cowhey describe the ways in which this might be done in some detail.[32] As they note, the European PTTs

> [a]re still a long way from renouncing the old system of national monopoly linked to an international cartel for services—a classic set of national mercantilistic policies. The PTTs adapted slowly and awkwardly to the merger of computers and communications. Most European PTTs continued to cling to their traditional postal, telephone, and telex monopolies. Some even hoped to expand the scope of their monopolies by extending the notion of technological "national champions" to the data communications network.[33]

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31. *See id.* at 182; Commission of the European Communities, Toward a Dynamic European Economy: Green Paper on the Development of a Common Market for Telecommunications Services and Equipment (June 30, 1987).

32. ARONSON AND COWHEY, *supra* note 1, at 177-213.

33. *Id.* at 178.

In pursuing these goals, the PTTs rely on their control of many aspects of the network and on use restrictions based more on PTT strategies than on user needs. For example, Aronson and Cowhey point out that the more aggressive PTTs have tended to:

- require local processing of some information, thus obstructing user efforts to achieve economies through the use of remote data processing networks;
- oppose the use of private leased lines (which are charged at a flat rate) in the hopes of forcing users onto the public switched network where they are charged on a volume-sensitive basis;
- forbid resale and shared use of leased lines, so that small communications users cannot combine to achieve economies by leaving the public switched network;
- prohibit the connection of private leased lines to the public switched network, making it impossible for competition to develop for switched long-distance services without the installation of costly parallel networks;
- ban the development of independent, non-PTT transmission facilities, making the development of such networks impossible;
- require that the "first telephone" on a line, or the modem on a data line, be purchased only from the PTT;
- make independent testing and "type certification" of customer premises equipment very difficult — ostensibly to "protect the network from technical harm" but with the actual effect of protecting PTT equipment sales from competition;
- forbid private parties from providing enhanced services to the public over leased lines;
- refuse to grant operating agreements to more than one international long distance carrier;
- discriminate in purchasing network equipment in favor of local suppliers regardless of whether they are competitive in terms of cost or quality.[34]

As should be obvious by comparison with the U.S. policies described earlier, the effect of these practices has been to restrict sharply the amount of competition available and to entrench the PTT monopolies. However, concerted pressure from the United States, Great Britain, and large users has begun to take its toll on these restrictions. The so-called Witte Commission report of 1987, for example, called for some liberalization of the

34. *Id.* at 178-80.

West German network, with abandonment of the "first telephone" requirement, competition in voice mail services, and possible abolition (in a few years) of the leased line monopoly involved. It is unclear, however, whether these recommendations will enter into effect.[35]

Similarly, the European Commission's Green Paper provides for some expansion of competition in Europe although it is far less ambitious than processes of liberalization underway in the United States, Great Britain, or (even) Japan. There are ten key positions within the Green paper, concisely summarized by Aronson and Cowhey as follows:

> 1. PTTs continue to control and operate the network infrastructure but competitive, two-way satellite systems are allowed on a case-by-case basis;
> 2. No new competition in the provision of voice telephone service;
> 3. All other services provided on an unrestricted basis within and between Member States (for own use, shared use, or provision to third parties);
> 4. Strict standards for network infrastructure and services for all service providers including PTTs;
> 5. By Community Directive, all requirements imposed by PTTs on providers of competitive services for use of the network to be clearly defined;
> 6. Unrestricted provision of terminal equipment including Receive Only [satellite] Earth Stations (Provision of the first telephone set could be excluded);
> 7. Separation of regulatory and operational activities of PTTs;
> 8. Strict continuous review of commercial activities of PTTs, particularly regarding cross-subsidization of services and manufacturing;
> 9. Strict continuous review of all private providers in newly opened sectors to avoid the abuse of dominant positions;
> 10. Full application of the Community's common commercial policy to telecommunications. Information to be provided to build up a consistent Community position for GATT negotiations and relations with Third Countries.[36]

The Green Paper thus trades off some significant liberalizations (e.g., unrestricted provision of non-voice services and separation of regulatory and operational activities by PTTs) for retention of substantial PTT control.

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35. *Id.* at 180-82.
36. *Id.* at 183.

The PTTs, for example, retain their voice monopoly (which accounts for about eighty-five percent of their revenues) and retain the prerogative of limiting outside access to leased lines and preventing resale of voice services.[37] Still, Aronson and Cowhey conclude (correctly, I believe) that the PTTs are losing the battle to retain uncontested control of their networks.[38] That battle is not the war, however.

The next stage of the struggle involves the introduction of intelligent network technology, discussed earlier in the context of the U.S. Open Network Architecture concept. The PTTs, however, favor a network architecture that would be far less open. Although the issues involved are often disguised as purely technical matters, the consequences for the market and for international trade in both services and equipment are substantial.

As was discussed earlier, the U.S. prohibition against telephone company provision of voice storage services (better known as "voice mail") led to a flood of foreign-made answering machines entering the U.S. market. This example was merely a specific and highly-visible case of a more general phenomenon: most information services can be provided in any one of three ways—via the telephone network, via customer-owned equipment, or via third-party providers accessed through the telephone network or other telecommunications means. Generally speaking, the nature of the service will dictate which approach is economically most appealing. For example, voice mail is most efficiently provided via the telephone network because of rather obvious economies of scope and scale. Specialized services like LEXIS or WESTLAW are more efficiently provided via third parties accessed remotely, since there is no reason to think that, e.g., Bell Atlantic or AT&T has either the expertise or the inclination to put together and market a legal database. And general computing services are usually most efficiently provided at the customer's premises, which is why this review was written on a personal computer and not on a terminal connected to a colossal mainframe computer located in some other state.

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37. *Id.* at 183-84.

38. *Id.* at 184. The United States, for example, has targeted the European Community for priority action under the telecommunications provisions of the Omnibus Trade and Competitiveness of 1988 Act, H.R. 4848, 100th Cong. 2d. Sess., P.L. 100-418, 102 Stat. 1107. That Act sets out a number of negotiating objectives that must be met within a fairly short time (one year, with the possibility of two one-year extensions by act of Congress); among those objectives are open access to leased lines, type certification, and nondiscriminatory tariffing and procurement. *Id.* § 1375. Not only will the rather stiff sanctions provided for under the Act provide a powerful impetus themselves, but they will also provide a useful bogeyman to strengthen the hands of European players anxious to promote liberalization themselves. For a discussion of earlier U.S. efforts to open foreign markets, see Howell, Benz & Wolff, *International Competition in the Information Technologies: Foreign Government Intervention and the U.S. Response*, 22 STAN. J. INT'L L. 215, 228-240 (1986).

In an ideally efficient network, these economic considerations would determine the way in which such services are provided. Those wishing to utilize another method of delivery would be free to try, but would likely pay the marketplace price for bucking economic realities. Telecommunications markets, however, are regulated and regulators do not always proceed in such a fashion. Sometimes this is because the regulators do not understand the situation; other times it is because regulators understand the situation all too well but have goals other than efficiency in mind.

Furthermore, those engaged in the design of networks have far more latitude than those simply engaged in the operation and regulation of networks already in existence. In many cases it is even possible to manipulate the economic efficiencies involved in order to favor or disfavor certain types of technologies. A network may be structured so as to make it easy for peripheral equipment and outside companies to offer services in competition with the network provider (as in the case of the Commission's Open Network Architecture), or it may be structured in order to place such competitors at a disadvantage. Aronson and Cowhey examine the likelihood that the European PTTs might combine behind a unified European network architecture that would in fact serve as a disguised industrial policy.

As the authors note, Europeans are concerned (with some basis) that they are "falling dangerously behind" in computer technology, and are particularly unhappy with the dominant role played by IBM in the European market. They consider Europe to be better positioned in telecommunications, but that position is made vulnerable by the problems of the computer industry given the convergence of the two technologies.

This being the case, Europeans are likely to be tempted to structure their implementation of advanced networks (known as Integrated Services Digital Networks or ISDNs)[39] in a way that will help shore up their deficiencies and protect their strengths. Aronson and Cowhey describe how this might be done. As they say,

> [a]n ISDN becomes mercantilist when its terms for entry, pricing, and systems architecture are designed to make sure that the PTT will be the dominant (not necessarily the sole) source and designer of value-added services. The PTT could discourage all independent provision of telecommunications facilities. . . . Special communication services, such as data bases or videotext, would be car-

39. *See* J. BELLAMY, DIGITAL TELEPHONY 404-412 (1982) (describing ISDNs); TELECOMMUNICATIONS MANAGEMENT PLANNING: ISDN NETWORKS, PRODUCTS AND SERVICES (R. Heldman ed. 1987); *see also supra* note 25 (describing ISDNs).

> ried (or supplied) by the PTT and be listed on a single public directory. By making the system as smart as possible, and by excluding alternative approaches to combining communications and data, the system pushes the PTT (and the communications system) to standardize much of the information industry. In short, the PTT would try to use its control over a vital part of the combined information and communications industries to set technical standards that would give it competitive leverage over the information industry.[40]

Manipulating ISDN in order to secure competitive advantage would take place through the relationship between a digital network and an international communications standard developed by the International Standards Organization. The standard is known as Open Systems Interconnection (OSI). Its purpose is to allow different systems to communicate with one another, so that any end user connected to an OSI-compatible system can interconnect with any other. OSI consists of seven layers or levels. The most basic levels deal with intra-network communications and have little to do with users; intermediate levels mediate between the network and users; and the highest levels define the way that the user's hardware will translate the communicated data into the project underway.[41] Layers one through three are well established, layer four is under discussion, but the higher levels are not yet defined.[42]

The key question is who controls the definition of the higher levels. *The more the PTT is able to control the higher levels of OSI as part of its implementation, the more it will be able to control markets for customer owned computer and communications equipment.* This control can be used to shape demand in ways that favor national or European producers at the expense of foreign companies. For example, if the upper layers of OSI are controlled by the PTTs and if their ISDN implementation is

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40. ARONSON AND COWHEY, *supra* note 1, at 190. The use of standards as a tool for competitive advantage is not limited to the telecommunications field, of course. Wrangling over standards, and attempts to manipulate them for competitive advantage, have characterized a number of high-technology fields, with the best-known example being the ongoing struggle over high-definition television (HDTV). *See, e.g.*, S. BESEN & L. JOHNSON, COMPATIBILITY STANDARDS, COMPETITION, AND INNOVATION IN THE BROADCASTING INDUSTRY 121-25 (RAND CORPORATION NO. R-3453-NSF, Nov. 1986).

41. ARONSON AND COWHEY, *supra* note 1, at 190-91.

42. *Id.* The levels are: (1) Physical; (2) Data Link; (3) Network; (4) Transport; (5) Session; (6) Presentation; and (7) Application. H. Gates, *Computer Networking and Data Communications*, in TELECOMMUNICATIONS: AN INTERDISCIPLINARY TEXT 380-86 (L. Lewin ed. 1984) (providing an excellent description of OSI).

designed to be incompatible with, e.g., IBM's own interconnection standard known as Systems Network Architecture (SNA), two things happen. First, customers are encouraged to purchase equipment designed to be more compatible—perhaps supplied by the PTT itself, or at least by a non-IBM producer native to Europe. Second, customers will be encouraged to purchase services over the network that are substituted for those provided by incompatible IBM equipment. Such services might be purchased from the PTT; they would at least be purchased through the PTT's network.[43] The difference in trade impact of such a regime as compared with the U.S. Open Network Architecture system should be obvious.

Aronson and Cowhey conclude, however, that such an approach, though obviously appealing to European regulators and monopolists, is unlikely to work. They give several reasons for this conclusion. First, standard-setting is a notoriously difficult business. Large players with substantial market shares and customer loyalties can sabotage standards simply by refusing to go along. IBM might well be able to accomplish this on its own—it has already made clear that higher levels of OSI will access its own system, SNA, through "gateways" that will serve as translators while leaving SNA itself untouched. This would probably keep OSI out of SNA's internal architecture entirely. IBM is counterattacking by developing systems that will make non-SNA systems more amenable to interaction with IBM products.[44]

In addition, large users with substantial, embedded bases of equipment are likely to resist ISDN implementations that would limit their purchasing options. "Moreover," as Aronson and Cowhey note, "to assure reliability and security, many large users insist on providing or duplicating functions at some OSI layers in their own system. They are not interested in an ISDN design that makes them pay twice."[45] Thus, efforts to manip-

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43. IBM is not above engaging in similar tactics to defend its own position in various markets. For example, it has been accused of embarking on a long-term effort to move users back to computer networks dominated by IBM equipment and away from stand-alone PCs which can more easily be "cloned" at IBM expense. *See* Dvorak, *Watch Out for Big Blue's Big Bang*, PC MAGAZINE, Mar. 28, 1989, at 73 ("[T]he main goal of IBM through 1996 is to stem the trend toward standalone computing." IBM's strategy "is to create a fancy environment of clustered coprocessing workstations working off a host. The heck with one computer/one person. . . . Long term, IBM's role as a leader in the industry, if it is to continue, will be oriented toward de-emphasizing the powerful single-user system. The fact is, the powerful single-user system is getting too powerful too fast!").

44. ARONSON AND COWHEY, *supra* note 1, at 193-96. For a description of SNA and its relationship to OSI see Gates, *supra* note 42, at 371-92. *See also* Korzeniowski, *IBM to Reach Beyond SNA*, COMMUNICATIONS WEEK, February 25, 1989, at 1 (describing IBM efforts to enable SNA penetration of other systems, including OSI).

45. ARONSON AND COWHEY, *supra* note 1, at 196-97.

ulate standards run the risk of duplicating the Commission's voice mail blunder: unable to get what they want through the public network, consumers will simply move to the next best alternative rather than docilely taking whatever the regulators want to dish out.

Finally, as one moves higher up the OSI ladder, the difficulties in securing cooperation grow greater and the benefits of doing so shrink. The higher levels are most implicated in new (and in many cases as yet poorly-defined) services. The nature of those services is constantly changing, new entrants are constantly appearing, and the technology behind the new services is evolving far more rapidly than is the underlying network technology. Thus, any efforts by PTTs to penetrate the upper levels of OSI are likely to run into much more difficult political and technical barriers.[46]

Aronson and Cowhey do not, however, mention the greatest barrier of all to a standards-manipulating approach: the fact that the regulators who implement it will probably not know what they are doing. Although the previous description of how standards might be manipulated illustrates the way in which successful manipulation of standards might substantially benefit national industries at the expense of foreign competitors, obtaining such success will depend on near-perfect knowledge not only of existing technology, but of technology likely to appear in coming years and of the economics of both. Given the rather dismal record of regulators (and just about everyone else) in anticipating and understanding technological change, it seems unlikely that a group of comfortable bureaucrats whose training and life experience stem from a monopoly industry will be up to the task.

Nonetheless, they are likely to try, and telecommunications competitors and customers would do well to be alert for such efforts. Simply because the regulators are doomed to fail in the long run does not mean that their actions will not be troublesome and costly for all concerned in the shorter run. Aronson and Cowhey's analysis, by making it easier for readers of both the policy and industry sectors to recognize and understand such efforts for what they are, is likely to prove very helpful in forestalling at least the most egregious gambits.

TELECOMMUNICATIONS LIBERALIZATION AND ITS EFFECT ON SOCIETY

Over the long run there will be a growing realization that in an economy dominated by services an open, flexible, and reasonably priced telecommunications network is essential for competitiveness. In the early days of railroads, various localities attempted to promote their own interests by

46. *Id.* at 196-98.

creating "gaps" in the railways that would result in boosted revenues for local hotels, drayage concerns, and so on. The folly of such efforts was satirized by one nineteenth century writer who facetiously proposed a "negative railway" consisting of nothing *but* gaps so as to enrich every town along its course.[47] Soon enough, railway gaps were recognized as simply a way for one sector of the economy to extract money from others while producing a net loss for the economy as a whole.

Given some time, people will recognize that obstructive and inefficient telecommunications regulations fall into the same category and that the maintenance of first-class telecommunications networks (free from burdensome mercantilist restrictions) is as crucial to national competitiveness in the services arena as the maintenance of first-class seaports, railroads and highways is to competitiveness in the sale of goods.[48] One flaw in Aronson and Cowhey's book is that they do not make this point forcefully enough; although it is implicit in their analysis and conclusion, they would have done their readers, and everyone else, a favor had they stated it more clearly up front.

Such a realization will have substantial political implications as well, though that too is an aspect of the issue that Aronson and Cowhey ignore. Information, more than most goods, is of considerable political importance, and governments since time immemorial have sought to control the flow of information (both among their citizens and between their countries and foreign lands) for political purposes. Until recently the exercise of such control was, in an economic sense, largely free. There were exceptions: for example, the initial English practice of licensing and closely controlling printers caused an enormous amount of that nation's publishing business to flow overseas, particularly to the Netherlands where printers labored under much lighter restrictions.[49] The value of printing to the seventeenth and eighteenth century British economy, however, was minor; information industries today are of considerably greater importance.

Already this effect is beginning to be felt in small ways. Even in the Soviet Union, where copy machines are supervised by the KGB and

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47. The satirist was French economist Frederic Bastiat. *See* R. HEILBRONER, THE WORLDLY PHILOSOPHERS 179-180 (6th ed. 1986) (describing Bastiat's "negative railway" proposal).

48. *See, e.g.*, G. REYNOLDS AND R. MERGES, OUTER SPACE: PROBLEMS OF LAW AND POLICY 225-26 (1989) (noting, in context of dispute over private international satellite communications services, that "the importance of information industries to the overall economy of a nation far exceeds their value in terms of the jobs and national income that they create directly on their own. . . . Thus, obstructionist telecommunications regulation intended to keep out foreign competition will [ultimately] be seen as the equivalent of destroying roads and harbors in order to reduce imports of foreign television sets—effective in a narrow sense, perhaps, but suicidal from a broader perspective.").

49. I. POOL, TECHNOLOGIES OF FREEDOM 15 (1983).

where even typewriters are licensed, we are beginning to see stirrings of reform.[50] Similarly, Chinese students in the United States and elsewhere outside of the People's Republic of China made use of facsimile machines, computer bulletin boards, and China's modern, automatic telephone system to send in uncensored news of the Beijing massacre in Tiananmen Square.[51] And in Panama, when the military government began censoring the news and barring the importation of foreign newspapers, news stories about the regime and its problems were sent via facsimile from foreign countries and photocopied for distribution.[52] Such happenings are odd enough to be newsworthy now, but they will soon become commonplace. As information-processing tools like computers, facsimile machines, laser printers, and electronic bulletin boards become more and more widespread, and more and more essential to the conducting of business, the ability of governments to limit their spread and use without bearing fearsome economic costs will be much less. Still more dramatic in its impact will be the spread (already imminent) of compact and inexpensive satellite up- and downlink equipment, which will make events in even the most remote regions fodder for worldwide television regardless of the efforts of governments to ensure otherwise.

I think that this is a good thing. While the spread of communications technologies and the accompanying growth in the ability of people to communicate despite the disapproval of their governments will not in themselves prevent tyranny and abuses of human rights, they will make both more difficult. And it is worth noting that writer Arthur C. Clarke whose reputation for accurate predictions is worthy of considerable respect,[53] sees the spread of communications technologies as the single thing most likely to prevent a nuclear war.[54] Regulatory policies that will promote this trend are good; those that retard it are not. Keeping this in mind provides a helpful standard for evaluating government actions. Although matters

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50. *See* Rogers and Bogert, *Red Hackers, Arise!,* NEWSWEEK, Mar. 20, 1989, at 58.

51. The Chinese government responded, *inter alia*, by posting armed guards at facsimile machines, an approach with obvious long-term problems. Aside from its inherent absurdity, this response allows a Chinese student in Iowa City equipped with a list of facsimile numbers to tie down dozens of security police by merely making phone calls. That is no way to suppress a revolution—particularly as it exposes security police, whose loyalty must be unquestionable, to graphic evidence of government lies and misconduct. *See China's Fax Invasion*, N.Y. Times, June 20, 1989, at A22, col. 1.

52. *See Panamanians Use Technology to Balk Censor*, N.Y. Times, Feb. 14, 1988, at 13, col. 1 (quoting one activist as saying, "The telefax and computers, they are death to dictators, because what can they do to stop transmission?"). From a long-term perspective, this may be true.

53. Clarke is, among other things, the inventor of the geosynchronous communications satellite, and he correctly forecast the impact of photographs of the earth on environmental consciousness as early as 1959.

54. A. CLARKE, 2061, at 18 (1987).

may vary with specifics, generally network architectures and regulatory structures that move computing and communicating power closer to individual users and farther from centralized control are to be promoted; those which move in the other direction are to be opposed. Fortunately, technological trends are on the side of the good guys and are likely to stay that way for some time.

CONCLUSION

If there is a major flaw in *When Countries Talk,* it is that the book does not make this connection between political and economic freedom. The communications field has been fortunate to attract a great deal of interest from a number of very smart people over the last decade or so; that interest, however, has largely appeared in two distinct areas, those of economic policy and individual liberties. What has been lacking is much scholarly interest in the way those areas overlap—and in the way that systems amenable to open communications among individuals also seem inevitably to make good economic sense. Since this flaw is one shared by virtually everyone in the field it is unfair to pillory Aronson and Cowhey for it, but the high quality of their economic analysis does lead one to wish that it were coupled with explicit arguments explaining the link, which they recognize implicitly, between individual freedom and economic growth.

Oh well. Making explicit things that are implicit is part of the reviewer's task, and I hope that I have served well enough. *When Countries Talk* is, within its self-imposed limits, an excellent piece of work, and it is certain to be useful to policymakers, businesspeople, and others who seek to understand the complex and rapidly changing field of international telecommunications services. And if its readers absorb (wittingly or unwittingly) its implicit message along with its text, so much the better.