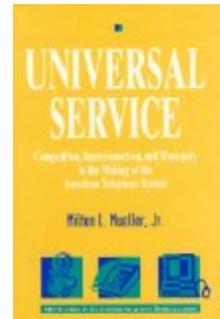


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Milton L. Mueller. *Universal Service: Competition, Interconnection and Monopoly in the Making of the American Telephone System*. Washington, D.C.: AEI Press, 1997. xiii + 213 pp. \$42.00 (cloth), ISBN 978-0-8447-4063-8.

Reviewed by Jeff Kraft (LECG, Emeryville, California)
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Milton L. Mueller's thoughtful, extensively-researched and at times controversial book should be required reading for public policy makers (regulators, legislators, and judges) as well as consultants (this author is one) who are grappling with the implementation of the Telecommunications Act of 1996 because it provides an unconventional analysis of the question at the heart of the debate surrounding the Act's local competition provisions: What are the appropriate interconnection and unbundling rules for promoting efficient competition and maintaining universal telephone service?

Mueller makes a strong argument that the current meaning of "universal service" is different from the original meaning of the term. Today, it means that regulators should implement public policies which provide all households with access to an affordable set of basic telecommunications services. As proposed by AT&T's Bell System in the early 1900s, universal service originally meant that competing local telephone providers should be consolidated into local monopolies. Between the end of the nineteenth and the first third of the twentieth centuries, a substantial proportion of the nation's population lived in areas where two competing local exchange companies (the Bell system and independents) offered local exchange service, a condition known as "dual service." In almost all instances, the competitors did not interconnect their networks. Universal service would allow all local subscribers in a given geographic area to call all other subscribers with a single subscription and was thus an antidote to the inefficiencies of dual service.

The book's chapters progress chronologically and weave together economic theory and the competitive, regulatory, and legal history of local telephone service

in the United States. Mueller's narrative moves from the early days of the Bell monopoly through the years of dual service competition between the Bell system and independents, the Kingsbury Commitment and the advent of state monopoly franchise regulation, and the consolidation of the Bell System to the Telecommunications Act of 1996. Mueller does a good job of clearly and concisely explaining economic concepts like demand side economies of scope and scale, network externalities, and natural monopoly, in the process making a strong case that local telephone service has never been a natural monopoly. Mueller traces the historical and legal roots of key regulatory debates such as the argument that mandatory interconnection requirements are unconstitutional because they amount to an appropriation of private property. This dispute remains at the heart of modern regulatory policy-making from the overturning of the FCC's initial expanded interconnection and physical collocation ruling (See *Bell Atlantic Telephone Companies v. FCC.*, 306 U.S. App. D.C. 333; 24 F.3d 1441; 1994) to the current legal challenges by incumbent local exchange carriers to the FCC's attempt to implement the local competition provisions of the Telecommunications Act of 1996.

The book builds on the work of Gerald Brock and others (see for example Gerald Brock, *The Telecommunications Industry: The Dynamics of Market Structure*, Harvard University Press, 1981), providing one of the most detailed early histories of telecommunications competition and regulation. The explanation and analysis of the Kingsbury Commitment, the 1913 compact between the Bell System and the federal government which called on Bell to slow down the acquisition of independent telcos and offer limited interconnection to competitors, is the most fully-documented interpretation of this seminal

event I have seen.

Throughout the book Mueller provides fascinating bits of economic history about local telephone service. For example, with early hand-operated and mechanical switches, average per unit costs actually increased with the number of subscribers served, meaning there were dis-economies of scale in large urban exchanges. Each additional subscriber led to a geometric increase in the physical complexity of the switching function. When these dis-economies of scale were combined with the fact that local political forces tended to favor the incumbent Bell companies, competitive local entry by independents became difficult in the largest urban areas. Mid-sized mid-western cities and more rural areas frequently had more competitive entry than the large cities on the East Coast. This is, of course, precisely the opposite of the situation today where economies of density and scale have made large urban business corridors the most lucrative places for competitive local exchange carriers to build competing fiber facilities. The economics of today's digital switching technologies make per unit costs unambiguously lower for larger urban exchanges.

One of Mueller's central ideas is that the period of dual service competition played a key role in the geographic expansion of local telephone infrastructure to near-ubiquitous coverage because competitors raced to acquire additional customers to increase the size of their subscriber bases and the scope of their service offerings. This massive geographic expansion would not have occurred if there was a single monopoly provider or if competitors were required to interconnect their networks in what would be called today "non-discriminatory and cost-based terms." Thus, the current conventional wisdom that a failure to interconnect is inherently anticompetitive is misguided. Mueller correctly points out that there are inherent contradictions within the Telecommunications Act of 1996, which on the one hand requires cost-based interconnection and extensive unbundling of incumbent's local networks that will ultimately lead to "radical deaveraging of rates," while on the other hand

calls for the continuation of universal service subsidies and geographic rate averaging.

Like any truly original scholarship, Mueller's work raises many important questions. Although having separate non-interconnected competitors clearly contributed to the development of the telecommunications industry during its start up years, it leads to serious inefficiencies in a mature industry because customers would be required to subscribe to multiple networks in order to reach all other local telephone users. Today, ubiquitous reachability is an implicit, yet paramount, goal for all communications networks. The whole concept of the Internet is based on the value of world wide reachability. When competition authorities at the European Union and the U.S. Department of Justice required either MCI or WorldCom to sell off their Internet assets in order to gain approval for their merger, it was because they were concerned that the combined company's backbone would carry such a large share of traffic that it might have incentives to bifurcate the Internet by reducing the quality of interconnection with other backbones. Thus, key but unanswered questions arising from Mueller's scholarship involve issues surrounding interconnection policy: When are mandatory interconnection rules an optimal public policy solution? At what stage in the development of a network industry do the benefits of ubiquitous reachability dominate the incentives for network expansion which come from having competing, non-interconnected networks? Should regulators require non-discriminatory and/or cost-based interconnection terms? These questions are relevant for public policy makers examining a wide range of digital-age products and services from basic local telephone service, to broad band services such as cable-modems and ADSL, to PC operating systems and applications software.

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