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INTRODUCTION

THIS BOOK IS AN ATTEMPT to change the way we think about competition, universal service, and interconnection in telecommunications. It does so by revisiting a critical period in the development of American telecommunications: the period of unbridled competition between the Bell system and independent telephone companies in the early 1900s.

Universal service as a term and a concept originated during that period. Since then, it has been one of the key touchstones of U.S. telecommunications policy. Although the meaning of the term has changed, its essential connotation is not hard to grasp: universal service means a telephone network that covers all of the country, is technologically integrated, and connects as many citizens as possible. The importance of rapid, widespread telecommunications to government, business, and society can scarcely be overstated. Telecommunications makes it possible to administer a national economy and maintain social bonds across great distances. Because communications infrastructure coordinates and unifies a country in countless ways, the universal service concept spans the realms of economic and social policy.

In recent decades policymakers have come to believe that universal telephone service was an historical achievement of regulated monopoly. Superficially, the fit between telephone monopolies and universal service objectives seemed a natural one. Monopoly organization simplified the process of standardization and so provided the basis for uniform nationwide connectivity. The absence of competition also made it easier for regulators to make telephone companies' rates conform to social policy goals. The use of long-distance revenues to subsidize local service, a practice common to telephone monopolies worldwide, found ready justification in the idea of making access to basic telephone service affordable to larger numbers of people.

The alleged historical link between the universality of the telephone and a monopolistic industry structure has set the stage for a momentous policy debate in contemporary telecommunications. The natural monopoly paradigm is eroding everywhere. Competition is spreading throughout the sector on a global basis. If, as the traditionalists claim, universal service was the *raison d'être* of regulated monopoly, what will become of it as competition proceeds to revolutionize the industry? Are competition and universal service compatible?

The importance and pervasiveness of that question has led to worldwide adoption of a peculiarly American phrase. A slogan coined by AT&T President Theodore Vail in 1907, "universal service" is now regularly invoked by telecommunications authorities from China¹ to Japan² to the British Commonwealth countries.³ Here in the United States, the federal government is concerned not only with the financing of universal service in a competitive environment, but also with the extension of universal service ideals from simple voice telephony to the new technologies of a "national information infrastructure."⁴

The reconciliation of universal service goals with the new market paradigm forms one of the central problems of contemporary policy. But the universal service issue is really a subset of a more fundamental problem posed by telecommunications competition, namely that of interconnecting competing networks. Few if any of the new, competing networks are stand-alone entities; they require access to the users of the established telephone network via interconnection arrangements. Those relations of interconnection have the power to virtually predetermine the winners and losers of competition. Overly restrictive interconnection arrangements may cripple new competitors. Overly liberal arrangements may undermine the incumbent and destroy universal service by allowing newcomers to "cream skim" the most profitable markets while leaving the costly services to the incumbent. Thus, without exception the countries that have introduced competition have been forced into long debates over the conditions and prices of interconnection, all the while looking over their shoulders at the universal service implications of their policies.

The essential issue in those debates is the impact of interconnection upon competition and universal service in telecommunications. This book attempts to illuminate that problem by conducting a detailed historical examination of early telephone competition in the United States. The prominence of competition, interconnection and universal service concerns today makes an accurate analysis of the early competitive period of telephone development in the United States of special relevance. From 1894 to about 1912 the telephone industry in the United States was open to practically unlimited entry. The Bell system was forced to compete with independent telephone companies in thousands of cities. More important still was the specific form that the competition took. Unlike today's telecommunications industry, the competing exchanges of the Bell and independent companies were not connected to each other. The companies conducted

¹ Hongmei Wang. Competition and Regulation of China's Telecommunications Industry, 7 World Telecommunications (Chinese language) 7-8 (Nov. 1994). See also He Fei Chang. Lian Tong: A Quantum Leap in the Reform of China's Telecommunications, 18 Telecommunication Policy 206, 208 (Apr. 1994).

² Koichiro Hayashi, Universal Service in Japan (Japanese language) (Chuokoron-Sha 1994).

³ The size and financing of "universal service obligations" (USOs) are being actively debated in Great Britain, Hong Kong, New Zealand, and Australia.

⁴ National Telecommunications and Information Administration, Inquiry on Universal Service and Open Access, Docket. No. 940955-4255 (Sept. 19, 1994).

their rivalry as separate systems. As such, the Bell-independent contest of the early 1900s provides an extended experiment with an essentially unregulated market for interconnection.

A historical analysis of that experiment challenges some of the most cherished tenets of contemporary telecommunications policy. Contrary to the prevailing mythology, it was that period of systems competition, not the ensuing period of regulated monopoly, which gave birth to both universal service as a policy prescription and the physical reality of a geographically ubiquitous telephone infrastructure. Moreover, the refusal of Bell and the independents to interconnect with each other actually promoted the rapid geographical extension of the network. Our understanding of the concept universal service is greatly enriched by reexamining the historical background. The policy first emerged in the thick of the competitive battle between Bell and the independents. The universality of telephone service became an issue at that time because of the fragmentation of telephone users into competing local exchanges. At that time, *universal service* did not mean a telephone in every home or rate subsidies to residential users, but the unification of the telephone system so that all users could call each other. In other words, the original universal service debate was about interconnection. The policy choice faced at that time may seem eerily familiar to modern observers of the telecommunications and computer industries. Like us, our predecessors in the early 1900s were confronted with a difficult choice between compatibility, uniformity, and monopoly on the one hand, and competition, fragmentation, incompatibility, and diversity on the other.

The book attempts to combine theory and history in a way that can make the historical data relevant to current policy problems. Chapter 2 provides a more thorough introduction to the historiographical issues addressed in the book. It shows that numerous misconceptions and myths have grown up around the subjects of universal service and early telephone history. Chapter 3 outlines the economic theories that are applied to the historical data. With the conceptual framework in place, chapters 4 through 11 constitute the historical narrative, which runs from the expiration of the Bell patents in 1894 to the final act of telephone service unification, the passage of the Willis-Graham Act of 1921. Chapter 12 provides a summary of the impact of early competition on telephone network scope and penetration. Chapters 13 and 14 move the discussion into the present. Chapter 13 shows how the politics of rate regulation from the 1930s to the 1970s led to an important and somewhat misleading change in the definition of the term universal service. Chapter 14 explains how the book's reinterpretation of the history of universal service, the economic effects of interconnection, and the origins of monopoly are relevant to current policy debates. The final chapter is a summary of the book's main points.