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Rationalization, Standardization, or Market Diversity?

*Station Networks and Market Structure in
U.S. Broadcasting, 1927–1950*

The “golden age” of radio broadcasting in the 1930s and 1940s was dominated by large, national broadcasting networks. The rise of these networks is thought to have been accompanied by a dramatic decline in the number of locally oriented stations in operation in the United States. However, this presumption contradicts the dynamics of concentration and organizational foundings in a variety of other industries. In this article I use comprehensive data on the vital rates of radio station founding, failure, and density to empirically test the popular claims of network dominance in the mid-century U.S. broadcasting industry. The results indicate that locally owned commercial stations were not eliminated by the rise of national broadcasting networks. In fact, concentration in the hands of the networks actually increased the viability of locally owned radio stations.

In the decades following the first radio broadcast in the United States, the radio broadcasting industry grew into a powerful economic and cultural force. Radio stations grew from amateur hobbies to large and powerful producers of news and entertainment. Radio programming evolved from a mixed bag of lectures, experimental programming, phonograph music, commercial advertisements, static, and dead air to a well-organized and standardized combination of popular entertainment programs, professional orchestras, and nationally broadcast news programs, and in the process the medium produced a

new batch of national celebrities. Perhaps most important, radio grew from the small-scale activities of amateurs, local entertainers, and hucksters to an industry dominated by broadcasting networks. A few decades after its emergence, broadcasting had grown into a national medium for culture, information, and entertainment that helped contribute to the “nationalization” of American culture in the decades before World War II (Cohen 1990).

According to many (e.g., Hilmes 1997; Bagdikian 2004), the broadcasting networks that arose and grew to positions of prominence shortly after the emergence of broadcasting in the 1920s led to a decline in diversity on the airwaves and were largely responsible for the growth of broadcasting and its homogenizing cultural effects in the United States. As large, network-owned and network-affiliated stations spread in the broadcasting industry, format diversity and locally owned and oriented stations began to disappear, according to this popular argument.¹ Networks did indeed emerge and diffuse rapidly in the broadcasting industry. The first system of station interconnection was developed by the American Telephone and Telegraph Company (AT&T), which used its existing phone lines to send programming from WEAJ in New York to WNAC in Boston as early as 1923 (Federal Communications Commission 1941).² When the Radio Corporation of America (RCA) bought WEAJ in 1925, it used these connections to create a network that in 1926 became the National Broadcasting Company (NBC). In 1927 RCA created a second network, known as NBC Blue, which later became the American Broadcasting Company (ABC). In addition, the 1920s and early 1930s saw the emergence of the Columbia Broadcasting System (CBS), the Mutual Broadcasting System (MBS), and a number of smaller, regional networks that all operated according to a similar structure. According to one account, 95 percent of commercial radio stations were affiliated with a national network by 1945 (Leblebici et al. 1991).

Surprisingly, the radio broadcasting industry has received comparatively little attention from sociologists of organizations, of industries, and of the media (but see Leblebici et al. 1991; Greve et al. 2006). In this article I address issues of organizational dynamics and industrial concentration in the U.S. radio broadcasting industry by using several theories of organizational diffusion to investigate the conditions under which the networks grew to such a prominent position in broadcasting in such a short period of time. In addition, I empirically test the effect that their growth had on the structure of the broadcasting industry. Often, and perhaps mistakenly, the power and

visibility of the networks during this time are taken as accurate measures of their dominance of the airwaves. Once networks entered broadcasting markets, it is thought, nonnetwork stations failed, which contributed to the ease with which the networks grew to prominence, and a vicious circle ensued. Because I use more comprehensive data than do any other existing studies, I can examine empirically the reach of radio networks in the “golden age” of radio broadcasting in the 1930s and 1940s and test the standard assumptions of network dominance in broadcasting markets.

While there is little doubt that radio broadcasting networks quickly became powerful and influential forces in the economic and cultural lives of the United States, much less is known about the extent to which the rise of the networks changed the composition of the airwaves and altered the organizational and ecological dynamics of the broadcasting industry in its golden age. Networks and their affiliated stations were powerful and highly visible actors in broadcasting, but most claims about their industry dominance and effect on nonnetwork competition remain empirically unfounded. This article contributes to our understanding of radio broadcasting in this era by investigating two related processes in radio broadcasting markets. The first is the effect that the presence of network stations in a broadcasting market had on vital rates (organizational foundings and failures) of nonnetwork stations in that market. Second, the article empirically tests the degree to which the emergence and spread of network stations actually lessened format diversity on the airwaves. Examining these questions in the context of the early broadcasting industry can shed valuable light on the organizational ecology of competition and stabilization in new and turbulent industries.

The network form of broadcasting represented an organizational innovation that had a profound effect on radio broadcasting and mass communications in the United States and across the world. In addition, it raised a controversy that has continued to the present day involving the role that radio broadcasting (and, later, television and other media) should play in balancing local and regional culture and identity with an increasingly national (and, more recently, global) orientation. In any event, and despite this controversy, network broadcasting quickly dominated radio broadcasting and helped usher in radio’s golden age. In addition, broadcasting networks have been, and largely remain, among the most important producers and distributors of mass culture in the United States. Fittingly, then, they have received intense scrutiny from scholars in a variety of disciplines. However, questions

of network proliferation and dominance have not been studied systematically. Therefore whether the rise of station networks actually squelched format diversity and the life chances of competing kinds of organizations is an important empirical question that remains unanswered by both organizational and media scholars.

The Emergence of Networks and the Transformation of Broadcasting

The interconnection of radio stations via telephone lines was pioneered by the telephone behemoth AT&T in 1923. However, when AT&T decided not to enter the radio broadcasting industry and instead to focus its attention on long-distance telephone service, it sold its stations and the rights to its telephone lines for networking purposes to the radio giant RCA. RCA's broadcasting arm, NBC, quickly spread to major metropolitan areas in the Northeast and the Midwest. NBC's main competitor, CBS, grew out of a merger between the floundering United Independent Broadcasters network and the Columbia Phonograph Company. In 1929 it was bought by William Paley, who turned its fortunes around and raised it to a place of national prominence (Paper 1987). After a few years of intense competition, NBC became known for developing talent and programming in entertainment, with the original "Red" network offering "elite" cultural programming and the spin-off "Blue" network offering popular entertainment.³ CBS flourished by focusing its energies on broadcast journalism and news (*ibid.*). In 1934 MBS became the third of the national broadcasting networks. The structure and organization of MBS differed from those of NBC and CBS. Member stations, which included WGN and WOR, produced and supplied programming to other member stations, creating a more decentralized network than those of NBC and CBS. The end result, however, was similar. Stations belonging to MBS received a significant portion of their programming from elsewhere, and programs produced by MBS affiliates were broadcast throughout the country. In addition to the major national networks, a number of regional networks were founded. Most regional networks were organized according to the same structure and logic as the national networks but with limited distribution areas and regionally based programming.

Broadcasting networks continued to further their interests in legislative circles by framing their service in the public interest, which allowed them

to maintain their significant influence in the regulatory process (Lippmann 2005). In 1923 Secretary of Commerce Herbert Hoover proposed that a series of frequencies be reserved for only one station, so that their more powerful signals could reach remote and rural listeners. However, this proposal was virtually meaningless without the effective enforcement mechanisms contained in the Federal Radio Act (FRA). As early as 1928, one year after the passage of the FRA, broadcasting networks began pushing for a series of “clear channel” frequencies, which would help them expand their station networks into nationwide systems (Foust 2000). By claiming to serve the interests of rural listeners, who often had access to few if any stations, large broadcasting corporations secured more than 40 clear channels, on which only one station in the entire country was permitted to broadcast.⁴ The clear channel frequencies quickly became occupied by large, commercial broadcasting organizations despite opposition from other broadcasters and some members of Congress worried about the threat of a broadcasting monopoly. They occupied the bulk of these stations for the remainder of radio’s heyday (*ibid.*).

The rise of network broadcasting represented a monumental change to the broadcasting industry, which had been developed in large part at the underground level by amateurs and marginalized entrepreneurs (Douglas 1984; Leblebici et al. 1991). Even during commercial broadcasting’s earliest years, stations were often small, and programming remained varied, with an overwhelmingly local orientation. Network broadcasting promised to change all of this. With the rise of broadcasting networks, broadcasting became big business with a national focus. According to the announcement introducing the new NBC:

National radio broadcasting with better programs [are] permanently assured by this important action of the Radio Corporation of America in the interests of the listening public. . . . The purpose of that company will be to provide the best programming available for broadcasting in the United States. . . . it is seeking . . . to provide machinery which will insure a national distribution of national programs, and a wider distribution of programs of the highest quality. (Quoted in Barnouw 1966: 187)

Many viewed the rise of the networks as a sign of a transformation from a culture characterized by local and regional variations to a more homogeneous national culture. Network broadcasting, in this view, had the power to

connect disparate groups in a large society and create new forms of national-level solidarity. According to historian Lizabeth Cohen (1990: 330), radio (and especially network radio) “not only . . . [gave] workers in the same work group, department, and factory more common cultural experiences, but also it made them feel part of a larger, citywide, and particularly national culture.” Robert S. Lynd and Helen M. Lynd (1937: 264), in their follow-up study to *Middletown*, noted a similar trend. Network broadcasting carried people “away from localism . . . [and gave them] direct access to the more popular stereotypes in the national life.”

Michele Hilmes (1997: 11), discussing this homogenizing process in programming content, notes that “at the very least, listeners tuning in by the tens of thousands to one specific program airing at a specific time created that shared simultaneity of experience crucial to [the] concept of the modern ‘imagined community’ of nationhood.” Radio, she argues, could unify disparate groups and regions of Americans by connecting them and spanning the great distances and divisions that local and parochial forms of mass media and communication (i.e., newspapers) reinforced. In her account, radio developed as a national medium, and the emergence and dominance of the networks helped break down geographic, cultural, and other barriers to create a common national identity: “The creation of national networks superseded local or more random organization [of the industry]. Sanctioned national culture glossed over the rough edges of local or regional difference” (ibid.: 16). Radio, according to this view, played a major role in the emergence of a unified American culture and through its technology helped assimilate immigrants, educate the uneducated, and entertain the masses.

While the rise of national networks offered new possibilities for interconnectedness and cultural diffusion, many feared that the rise of networks would lead inevitably to the decline of locally oriented broadcasting and felt that any material produced for a national audience would have to be watered-down, simple, and lacking educational, religious, cultural, or entertainment value. An influential group of critics during the Great Depression decried the effects that modern, network-based radio broadcasting would have on American culture more generally. These critics attacked radio broadcasting on two fronts. First, “they feared the dissemination of a uniform mass culture with its homogenizing influences. [Second,] they feared the concentration of social power in the hands of a few who controlled the centralized medium” (Lenthall 2002: 42).

William Orton (1933), an economist and leader of the radio critics, worried that the uniquely localized nature of U.S. culture would be lost through the ever-increasing imposition of New York-based culture (presumably urban, eastern, mass culture) across the radio waves into small towns and American homes. Others feared that the concentration of broadcasting power in the hands of a few capitalist organizations would threaten the potential of radio to become a new medium of communication and civil discourse with the power to enliven democracy. These critics worried that the major networks' control of the airwaves would be so complete that the diversity of opinion among Americans would not find its way into radio broadcasting; instead, network executives would homogenize broadcasting to increase their profits (Rorty 1932, 1934; Lenthall 2002).

Modern critical media theorists and historians echo these sentiments. Most agree that network radio had a homogenizing effect on broadcasting and on national culture. According to Douglas Kellner (1990: 34): "The United States . . . consisted of widely divergent regions and contained significant immigrant cultures. Radio provided the unifying voice of national culture, dominated by networks." Instead of praising radio's ability to unite, however, Kellner and others remain skeptical about the effects that the rise of networks had on broadcasting programming and content. Robert McChesney (1991, 1993) argued that the rise of commercial radio networks after the passage of the FRA and the Federal Communications Act squeezed alternative voices off the dial and led to standardized and watered-down broadcasting. Similar arguments have been made by many other prominent media scholars and critics (see Schiller 1971; Gerbner 2002; Bagdikian 2004). For better or worse, from the political Left or Right, there is an overarching consensus among both cultural critics of the day and contemporary media and cultural historians that the rise of broadcasting networks had a homogenizing effect on this new mass medium. Implicit in these criticisms are assumptions about the effects of network diffusion on the composition of the airwaves and the competitive dynamics in the broadcasting industry. Once a network started a new station or took over an existing one in a particular market, it is thought, the programming available to audiences in that market became identical to that available to other markets: broadcasting diversity declined.

These historical analyses of the broadcasting industry make assumptions about the nature of competition between organizations in the broadcasting industry. Organizational ecology (OE), a large body of theory and research

dealing with questions of organizational foundings, deaths, and competition, is aptly suited to helping us understand the nature of these dynamics, the logic underlying them, and indeed whether or not they are borne out by representative, empirical data. The basic tenets of the OE approach are that all organizations exist in a resource space, called a niche, and that organizations in the same niche compete for the resources in it (Hannan and Freeman 1989; Carroll and Hannan 2000). Over time, and assuming stable resource environments, rates of organizational founding and disbanding result in an organizational population in equilibrium with its environment (Aldrich and Ruef 2006).⁵

Situations similar to that in broadcasting, in which large organizations rose quickly to a place of industry dominance, have been found in various other settings. Industries as diverse as beer brewing, newspaper publishing, and automobile manufacturing have experienced high levels of industrial concentration (Carroll 1985; Swaminathan and Carroll 1995; Dobrev et al. 2001). Generalist organizations, which offer a wide variety of products and services, are more likely than specialists to appeal to a “common denominator” among consumers in a market—whether it is a common language, identity, or region. In addition, by offering a range of goods or services—or programs, in the case of radio broadcasting—generalists are more likely to appeal to a wider range of tastes in emerging markets where they are typically less developed and less clearly understood (Dobrev et al. 2001; Aldrich and Ruef 2006: chap. 10). Large generalists benefit further from economies of scale, which occur when marginal production costs decline with an increase in the volume of production (Swaminathan and Carroll 1995). As they outcompete smaller, more specialized organizations, they swallow up the resource spaces those organizations once occupied and control an increasing proportion of the industry, and concentration ensues. However, the story of industry evolution often does not stop there (Aldrich and Ruef 2006). In fact, generalist dominance can set in motion other industry-level processes. Studies of resource partitioning have found that high degrees of concentration in the hands of generalist organizations can actually *increase* the survival chances of smaller, specialist organizations at the market periphery (Carroll and Swaminathan 2000).

To date, few if any studies of the broadcasting industry have tested the ostensibly divergent views of generalist dominance versus specialist viability

in the industrial evolution of broadcasting. While many studies conducted by media scholars are exemplary, and there is little doubt that during the 1930s the large, national radio networks grew in size and in power, much of the scholarship on the culture and politics of broadcasting in that decade may be biased in a way that places disproportionate attention on large networks, because the bulk of the radio and programming archives available to researchers are maintained by these very organizations. Many major and influential cultural and political histories of broadcasting rely on archival sources to develop their narratives (McChesney 1993; Hilmes 1997; Starr 2004). The perceived dominance of large commercial networks may simply be a by-product of historical record keeping and the materials available to those scholars who wish to recount radio's history. According to Hilmes (1997: xvi): "Records and accounts of the larger and more successful stations, programs, and performers are more likely to survive than those that actually may be of more interest to the post-structuralist scholar: those small stations providing a different service to a more marginalized audience, those programs deemed of socialized interest or least appeal whose scripts and records have long been destroyed, [and] limited regional and local broadcasts." Because of this important fact, few if any studies of the early history of network broadcasting are suited to test the popular claim of network dominance. Because the present study uses comprehensive data on every station in existence in the largest radio markets, it can examine empirically what effect the rise and spread of radio networks had on broadcasting markets. While theories of corporate hegemony have received support in many circles, several theories of organizational and industrial evolution lead to different predictions regarding market diversity and the viability of competing organizational forms. Below, three theoretically informed possibilities are explored.

Understanding the Effect of Networks on Broadcasting and Broadcasting Organizations

Network Diffusion and the Rationalization of Broadcasting

The process through which organizational forms diffuse has received considerable scholarly attention (for a review, see Strang and Soule 1998). Through a variety of network and learning mechanisms, including institu-

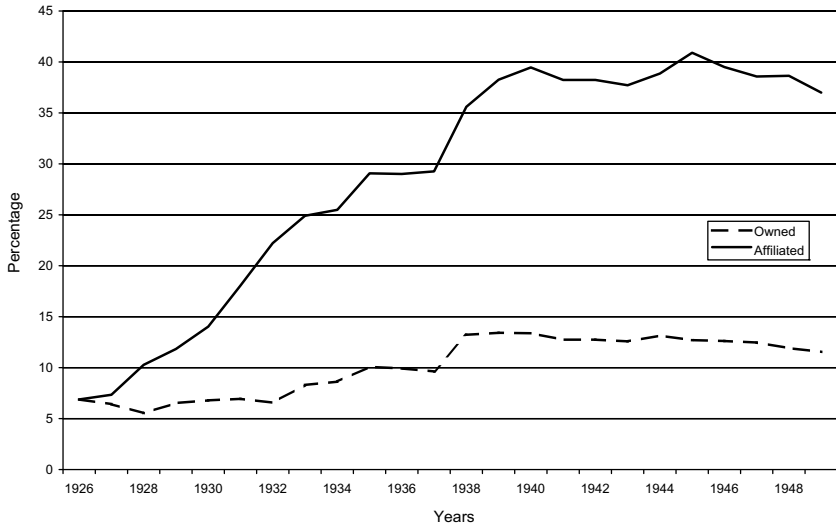


Figure 1 Percentage of stations owned by or affiliated with national networks, 1926–49

tional ties, mimicry, and normative prescriptions, some organizational forms can spread across geographic and social distances. The process of diffusion for broadcasting networks in and of itself was not problematic, for two reasons. First, by wielding significant influence on the federal regulatory process, the networks had largely secured their use of the clear channels that had been set aside for powerful 50,000-watt stations (Foust 2000; Lippmann 2005). Second, both NBC Red and NBC Blue benefited from RCA's agreement with AT&T, under which they leased the existing network of telephone lines to connect stations. Indeed, the proportions of all stations on the air either owned and operated by or affiliated with broadcasting networks grew in the 1930s and 1940s (figure 1).⁶

With the favorable political climate and technological infrastructure in place, the networks diffused across the country with relative ease. However, as the debates described above indicate, the effect that this diffusion had on the composition of the airwaves remains a source of debate. By most accounts, the spread of national networks homogenized radio programming and reduced local and regional variety in stations and program offerings. According to this argument, the FRA severely limited the number of non-profit and independently owned stations on the dial and led to the rise of the commercial broadcasting form. Many voices were therefore squeezed

off the dial even before the rise of network programming. Such a process could have occurred through two mechanisms. First, programming offered by network stations may have been of superior quality, and these stations may have simply outperformed locally owned stations. Second, networks may have used their influence on the Federal Radio Commission and the Federal Communications Commission to block local competitors. If the diffusion of broadcasting networks had this effect, we should see a concomitant decline in the number and viability of locally owned radio stations.

Hypothesis 1: The presence of a network-owned station in a market will increase the failure rate of locally owned stations in that market.

Hypothesis 2: The presence of a network-owned station in a market will reduce the founding rate of locally owned stations in that market.

Hypothesis 3: The presence of a network-affiliated station in a market will increase the failure rate of locally owned stations in that market.

Hypothesis 4: The presence of a network-affiliated station in a market will reduce the founding rate of locally owned stations in that market.

Furthermore, and more basically, the diversity of stations making up broadcasting markets should decrease over time if the rise of network stations had this effect. Figure 2 plots the Shannon-Weaver Diversity Index (Shannon and Weaver 1949), which measures the diversity among various station formats (commercial stations fully owned by networks, commercial stations affiliated with networks, independently owned and operated commercial stations, religious stations, and educational stations) in each broadcasting market from 1927 until 1949, the era commonly thought to be dominated by network broadcasters (Leblebici et al. 1991; Douglas 1999). The index measures diversity on a scale from 0, which indicates no diversity, to slightly over 1.6, which indicates perfect diversity, or an equal distribution of organizations among possible organizational forms. Because the index includes religious and educational stations, which were largely squeezed off the dial following the passage of the FRA in 1927, the overall market diversity is not great. However, after the effects of the FRA had passed and network stations began to increase in number, market diversity actually increased throughout the golden age of broadcasting, contrary to what many critical media historians and theorists argue.

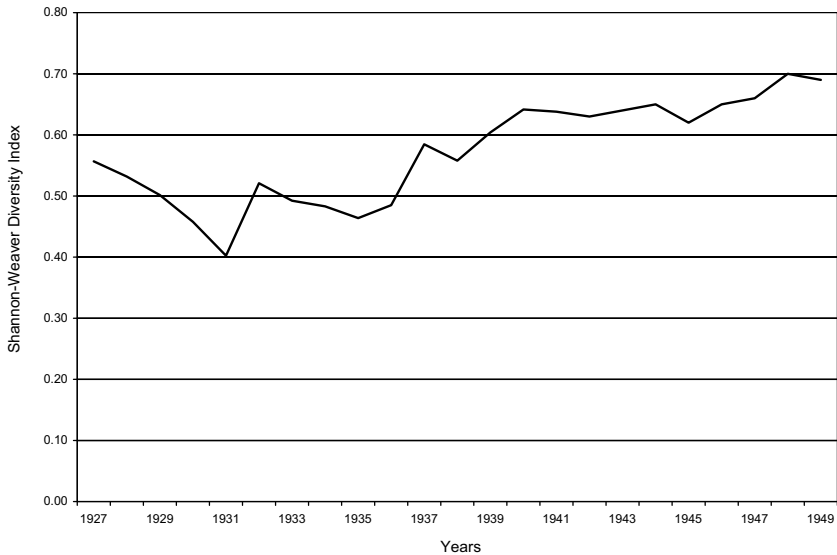


Figure 2 Market diversity, 1927–49

The Rise of Networks and Organizational Stability

While large, commercial broadcasters did have great power and influence in both the industry and related activities, the network forms of broadcasting organization may have had a largely unintended effect on radio broadcasting, broadcasting organizations, and broadcasting markets. Before the emergence of the large broadcasting networks, broadcast programming was a spotty endeavor in many areas. According to Susan Smulyan (1994: 94): “Early radio listeners . . . heard a somewhat chaotic jumble of different kinds of music, talk, children’s stories, plays, and sports. Many radio musicians showed little skill in their performances of traditional sentimental ballads.” While radio broadcasting gradually became a medium for broadcasting various forms of entertainment, few station operators or managers understood audience tastes well enough to offer quality programming, and because of the newness of the industry, they often had difficulty filling their broadcast time with anything. When they found programming, Susan J. Douglas (1999: 56) notes, “there was not a predictable program schedule. Instead, stories geared for children might be followed by a lecture on ‘hygiene of the mouth’ or ‘how to make a house a home,’ which would in turn be followed by phonograph music” or live opera broadcasts.

Radio broadcasting networks changed the nature of radio programming dramatically. Instead of offering a hodgepodge of programs at irregular intervals, the networks introduced regularly scheduled programming. Several network executives, including RCA's David Sarnoff and CBS's Paley, quickly realized that to hold listeners' interest for sustained periods of time and keep them coming back, they had to offer not only quality programming but predictable programming. Sarnoff introduced formal program schedules and distributed them with radio sets and in newspapers (Bilby 1986).

In addition, the national networks pioneered the practice of market research, which helped them and broadcasters in general understand audience tastes and preferences. In 1935 the psychologist Frank Stanton, who headed CBS's new "audience research department," collaborated with the survey research and public opinion research pioneer Paul Lazarsfeld on a series of studies that endeavored to determine systematically audience listening habits, tastes, and patterns (Douglas 1999). This early public opinion research on radio broadcasting and radio listening helped push the scientific study of listening habits forward for both scientific and commercial applications. The burgeoning market research industry helped broadcasters better gauge audience preferences and also pushed the commercialization of the airwaves as the sale of advertising time became standard practice.

Instead of simply homogenizing broadcast programming, national station networks may have increased the viability of locally owned stations and thus contributed to the increasing diversity on the airwaves we observe throughout the 1930s and 1940s. The rise of the networks, with their emphasis on quality, regularly scheduled, and predictable programming, may have helped stabilize the commercial, for-profit broadcasting industry for several reasons. By helping standardize programming, program scheduling on networks may have increased the predictability and accountability of commercial stations as the practice of regularly scheduled programming spread across the organizational landscape. As this practice spread, it may have increased organizational accountability and therefore the viability of radio stations (Hannan and Freeman 1984).

Also, regularly scheduled programming may have increased the cognitive legitimacy—or the general understanding, acceptance, and taken-for-grantedness—of commercial broadcasting to the listening public (Aldrich and Fiol 1994). Broadcasting had been wildly popular since its inception in the early 1920s. However, much of what counted as broadcasting then was

simply an extension of the technological tinkering that had taken place in amateurs' garages and on their rooftops since the 1910s. In the absence of market pressures, broadcasting quality was of little significance. With the rise of commercial broadcasting, however, the sale of advertising time hinged on a station's ability to attract an audience. As networks pioneered standardized broadcasting schedules, listeners may have accepted broadcasting as a regular part of their daily lives, much as it is today. It became therefore cognitively legitimate as listeners took it for granted (Aldrich and Fiol 1994; Douglas 1999). With the commercial form firmly in place, broadcasters may have been able to generate consistent revenue by using a more stable programming model adopted from the networks. Therefore:

Hypothesis 5: The presence of a network-owned station in a market decreases the failure rate of all stations in that market.

Network Dominance and Resource Partitioning

Researchers have discovered that when large, generalist organizations emerge in significant numbers and control a significant proportion of the market, the resulting concentration sets in motion an evolutionary dynamics termed "resource partitioning" (Carroll and Hannan 2000). Figure 3 shows the percentage of the total wattage controlled by network stations. Despite the prevalence of a significant number of locally owned and operated stations, it is clear that the size and scope of network broadcasters were large and growing after the passage of the FRA. By 1943 network stations accounted for 65 percent of the broadcasting capacity in the 100 largest broadcasting markets.

After 1943, however, the proportion of broadcasting capacity controlled by the networks and their affiliates began to drop. According to resource partitioning theory, market concentration in the hands of large generalists can trigger dynamics that actually increase the viability of smaller, more specialized organizations. Market concentration results in the presence of a few large organizations usually targeting the market center. The center of a market is typically the most resource rich, as it is the spatial representation of the average consumer taste or preference. For this reason, competition for these consumers and the resources they represent is intense, and market concentration is the result of such competition.

Resources at the market periphery often remain untapped when market control is concentrated in the hands of a few generalists targeting the



Figure 3 Percentage of broadcasting capacity controlled by networks and network affiliates in the 100 largest markets

market center. For example, heavy concentration in the hands of a few very large beer brewers in the mid-twentieth century led to mass-produced beer that some felt lacked color and flavor. Although the number of people interested in unique styles of beer and in the traditional production methods often associated with European beer grew, their tastes were ignored by mass-production breweries. So microbreweries and brewpubs arose to serve these consumer tastes and fill the more specialized niche of craft-brewed beers (Swaminathan and Carroll 1995; Carroll and Swaminathan 2000). The number of specialist organizations, which thrive by targeting narrow resource spaces often at the market periphery, frequently increases in highly concentrated markets because concentration leaves many niches open.

In broadcasting, network stations had a generalist orientation toward broadcasting, because they produced and broadcast a wide variety of programming, including educational, religious, news, and entertainment programs. To reach the widest possible audience, much of this programming steered away from regionalism, specific market segments, or controversy. In religious broadcasting, for example, networks adopted a “broad truths” approach that eschewed denominationalism and sectarianism and instead

emphasized religious values broadly interpreted. Most musical programming consisted of popular jazz and dance numbers and avoided classical and other music genres that appealed to a smaller market segment.

While there may have been a significant national demand for popular jazz performers and comedy programs produced in Chicago or New York, the debates described above indicate that there was a growing desire for locally or regionally based programming on the dial. According to a major study of attitudes toward radio conducted by Paul Lazarsfeld and Harry Field (1946), this demand went far beyond the highly visible and vocal critics. Lazarsfeld and Field found that fully 33 percent of their survey's respondents felt that radio provided insufficient coverage of "things around here": local news, events, and issues. This number compares to the 17 percent and 27 percent who reported insufficient coverage of other countries and the United States, respectively. It appears, then, that as the networks' control of the airwaves grew, the general public became more interested in specialized, local coverage. As networks grew in size and scope, and this demand for local programming also grew, we expect the following:

Hypothesis 6: The presence of network stations will be positively related to nonnetwork station foundings.

Hypothesis 7: The presence of network stations in a market will contribute to the diversity of that market.

Data and Methods

The analysis is limited to the 100 largest broadcasting markets for reasons both practical and substantive. Due to the nature of broadcasting, discrete market areas are difficult to construct. One large station's coverage area may overlap with several stations that are not in direct competition with one another. When this occurs across the entire population of radio stations, markets bleed into one another, and boundaries become virtually impossible to establish. Limiting the analysis to the 100 largest metropolitan areas in the United States in 1930 facilitated the establishment of discrete market boundaries.⁷ In addition, these markets contained the majority of stations, a large proportion of the country's population, and the most intense competition between stations. Many of the areas not included in the analysis had only one station in operation, a situation that would lead to an underestimate of the effects of competition on station survival and failure.

The data for the analysis come from annual station lists released by the U.S. Department of Commerce (1921–26), the Federal Radio Commission (1927–34), and the Federal Communications Commission (1935–49). These agencies were responsible for the regulation of radio broadcasting in the years listed, and their duties included maintaining and publishing annual comprehensive lists of commercial radio stations in operation in the United States. These lists provided station owner, type, size in wattage, location, operating restrictions, and other station information. From these annual lists, life histories of each station were assembled that included information on station ownership, the year of founding, the year of failure (if applicable), and annual measures of size. In the analyses that follow, I am interested in the dynamics of organizational entry and exit for nonnetwork stations and the effect that network stations had on those processes. In the analysis of organizational founding and disbanding therefore, the three station formats under investigation include those owned by networks, those affiliated with networks (which carried a combination of network and locally produced programming), and those independently owned and operated.

Disbandings

Organizational disbandings are analyzed using event history analysis (Allison 1995). Since these lists were released in yearly intervals and the exact date of founding or failure is not known, discrete time methods are used to model the effects of the discontinuous institutional change on radio stations' survival chances. Therefore the unit of analysis is the station year, so each station comprises a number of observations equivalent to the number of years it was on the air. Furthermore, the hypotheses predict nonnetwork station failure, so the data are restricted to these stations. For this reason the original set of stations was divided into a dataset containing 3,607 station years. This method is aptly suited to this analysis because it allows for the inclusion of time-varying covariates.

To explore the effects of the discontinuous institutional change, the probability of radio station death, denoted as P_{it} , is estimated as a function of the explanatory variables using a complementary log-log transformation. The complementary log-log model offers several advantages over logit models, traditionally used to predict the likelihood of an event when time is measured in discrete units (see Kraatz and Zajac 1996). Like the logit model,

the complementary log-log model predicts the log-odds that an event occurs at time t , given that it has not already occurred. Unlike the logit model, however, the complementary log-log model allows us to assume an underlying continuous-time distribution of events, which more accurately describes the dynamics of station exit. This model is more suitable to the data here because actual station deaths could occur at any time during the year, but they could be measured only in yearly intervals. The complementary log-log model also generates coefficients identical to those in the underlying proportional hazards model, and the model is invariant to the interval length at which time was measured. The basic model is

$$\log[-\log(1 - P_{it})] = \alpha + \mathbf{Mz}_{it},$$

where P_{it} is the probability of death for station i occurring at time t , given that station death has not already occurred, and \mathbf{Mz}_{it} is a vector of time-varying independent variables for each station i at each time t .

Dependent Variable. The dependent variable for the analysis is the station's survival status at the end of each station year. Stations were coded as failing at the end of the final year they appeared on the official commercial radio station lists.

Independent and Control Variables. *Age.* Organizational age has been found to affect fitness and survival chances in a variety of ways. Arthur L. Stinchcombe (1965), among others, argues that new organizations lack established routines and network ties and therefore experience an increased hazard of dissolution. James R. Ranger-Moore (1997) has found that older organizations experience such a hazard because of their structural inertia and their inability to respond rapidly to environmental changes. Others argue that organizations experience a "liability of adolescence" (Brüderl and Schüssler 1990), because new organizations can survive for some time on accumulated capital. Once this capital is exhausted, however, survival becomes more difficult. A measure of organizational age is included to control for these possible effects. Second-order effects are also included to control for possible nonlinear effects of age.

Size. To test for the effects of the "liability of smallness" (Aldrich and Auster 1986), station power serves as a proxy measure for station size because

radio station size is difficult to measure. Wattage indicates a station's coverage area and thus is a useful operationalization of organizational size in the broadcasting industry. Wattage is also a useful measure for station size because it is accurately measured in the station lists and is comparable across stations and over time.

Market Density. A measure of market density, obtained by dividing number of stations by market population, is included to control for the possible effects of competition on organizational failure. Also included is a second-order term to control for the U-shaped relationship between density and organizational failure found in many organizational populations due to legitimation and competition.

Form Density. Some models contain an alternative measure of density based on the number of stations of a similar format in the focal organization's market. According to recent research (Barnett and Woywode 2004), competition in organizational populations is most intense among similar organizations, because they vie for the same customers, draw on the same market resources, and make the same demands on the environment. Again, the models include a second-order term to control for possible nonlinear effects of density.

Network Affiliates and Network-Owned Stations. To capture the effects of network presence on nonnetwork survival rates, two variables are included: the number of stations affiliated with networks and the number of stations owned by networks.

Foundings

Organizational foundings are treated in the present study as the number of radio broadcasting organizations that entered the radio station population in a particular market in a given year. Therefore the unit of analysis for this section is the market year, or one observation per market per year. This allows us to investigate how a particular set of market characteristics and circumstances, including density and competitive forces, influenced the emergence of new organizations in that market. Given this framework and the count data it uses, Poisson regression is typically the methodology of choice. However, the variance often exceeds the mean in data on organizational foundings

(Ranger-Moore et al. 1991); as it does in the station data, this method can lead to overstatements of statistical significance. Instead, results from the negative binomial regression model are reported, which improves the fit of the model significantly over Poisson regression. The basic model is

$$\lambda_i = \exp(\pi'x_i)\varepsilon_i,$$

in which the presence of ε_i produces overdispersion.

Dependent Variable. The dependent variable in the negative binomial model is a count of nonnetwork radio station foundings in a given market area in a given year. Due to great variation and overlap in radio station markets (i.e., one large station may actually compete with stations from several markets that, in turn, do not compete with one another), it was virtually impossible to construct discrete market areas for every station on the dial. Therefore the analysis is limited to the largest 100 broadcasting markets in the United States, which allows for the construction of discrete competitive markets. These markets contained more than two-thirds of all stations in operation in the years under consideration, and many of the stations not included were the only ones in operation in a given area.

Independent and Control Variables. In addition to controls for competitive density described above, the negative binomial regression analysis of organizational foundings includes the control variable of form emergence. Early in an organizational population's existence, an increase in the number of stations being founded can signal the increasing legitimacy of the organizational form. This, in turn, can determine the ease with which new organizations are founded. To control for variations in the legitimacy of the organizational form from year to year, the number of radio stations that entered the market is controlled for, which is lagged one year.

Market Diversity

Dependent Variable. The dependent variable in this analysis is an index of ecological diversity called the Shannon-Weaver Diversity Index. This index, developed for use in communication studies and widely applied in ecological studies of biodiversity, measures the amount of species diversity in a given ecosystem. Applied to organizations, it measures the amount of

organizational diversity in a given market area. The index calculates market diversity using the equation

$$H = - \sum_{i=1}^S P_i (\ln (P_i)),$$

where H is market diversity and P_i is the proportion of stations in each market of format i . An index value of 0 indicates that every organization in a given market is of the same form, while a higher number indicates that the market has a more even distribution among the range of forms. Perfect diversity, measured by the index as the $-\ln(1/n)$, where n is the total number of possible forms (which in this case is 5, resulting in a measure of perfect diversity of slightly over 1.6), indicates that the stations in a given market are evenly distributed across the range of forms (Shannon and Weaver 1949; Krebs 1989).

Independent and Control Variables. Controls in the analysis of market diversity include counts of the total number of stations in a particular market, as a greater number of stations may offer more opportunities for variation, and counts of network stations to test hypothesis 7. Market size is measured by the population (transformed logarithmically to amend its skewed distribution) of each metropolitan area included in the analysis, because cities with larger populations are more likely to be able to support a variety of station types net of the ecological dynamics of interest in the analysis.

Results

Results for the analyses are presented in three steps. Table 1 gives the results of the event history analysis of nonnetwork station failure. Model 1 introduces organizational level controls. Odds ratios are reported for their ease of interpretation. Station size had a negative effect on the likelihood of organizational failure. The effects of age are not significant. Model 2 includes market characteristics. The effects of market density are significant and positive, indicating that there were competitive effects on nonnetwork stations after the passage of the FRA in 1927. To test hypotheses 1 and 3, variables measuring competitive pressure from network stations are included. As the total number of stations in a given market increased, nonnetwork stations were more likely to fail. The effect of the number of network-owned stations in a particular market is not significant. Therefore, contrary to many historians'

Table 1 Results from discrete time event history analysis of nonnetwork radio station failure using complementary log likelihood

Independent variable	Model 1			Model 2		
	Coefficient	Std. error	Odds ratio	Coefficient	Std. error	Odds ratio
Intercept	-0.388	(0.291)		-0.338	(0.336)	
Organizational characteristics						
Size(log)	-0.220**	(0.045)	0.803	-0.227**	(0.049)	0.797
Age	-0.082	(0.069)	0.921	-0.076	(0.086)	0.927
Age ²	-0.008	(0.006)	0.992	-0.004	(0.008)	1.008
Market characteristics						
Market density				0.038*	(0.018)	1.039
Network affiliates				-0.229*	(0.107)	0.795
Network-owned stations				0.064	(0.067)	1.066
Log <i>L</i>		-795.143			-646.829	
<i>N</i> = 3,607						

* $p < .05$. ** $p < .001$.

concerns, the growth of network-owned stations did not pose a significant competitive threat to the survival of locally owned and operated stations. Furthermore, the number of network-affiliated stations has a significant *negative* effect on the failure rate of nonnetwork stations. Network affiliates, with their mix of national and local programming, may have increased the demand for local programming and created more favorable conditions for those nonnetwork stations in operation in the same market. Thus hypotheses 1 and 3, derived from critical theories of broadcasting networks, are not supported. By contrast, hypothesis 5 receives support. It appears that the introduction of network programming and programming schedules helped stabilize broadcasting markets and increase the viability of locally and independently owned stations.

Table 2 presents the results of the negative binomial regression analysis of nonnetwork station foundings. Controls for the density-dependent processes of legitimation and competition are included at the market level in model 1 and the niche level in model 2. Using both measures, it is apparent that the emergence of nonnetwork stations was subject to density dependence. In both models, the market density of network-owned stations has a negative effect on the emergence of nonnetwork stations, indicating that

Table 2 Negative binomial model of nonnetwork radio station foundings

Independent variable	Model 1		Model 2	
	Coefficient	Std. error	Coefficient	Std. error
Intercept	-2.776	(0.157)	-2.378	(0.443)
Market density	0.486**	(0.123)	—	—
Market density ²	-0.010*	(0.005)	—	—
Nonnetwork density	—	—	0.464**	(0.117)
Nonnetwork density ²	—	—	-0.011	(0.006)
Lag form emergence	-0.023	(0.088)	-0.029	(0.087)
Network-affiliated competitors	-0.368*	(0.182)	-0.048	(0.178)
Network-owned competitors	-0.543**	(0.138)	-0.315**	(0.122)
α	0.246	(0.251)	0.206	(0.249)
Log L	-131.000		-131.178	
$N = 2,254$				

* $p < .05$. ** $p < .001$.

in markets with a heavy network presence it was more difficult to start new radio stations. Hypotheses 2 and 4, derived from the critical theories of network broadcasting, are supported. In markets with higher concentrations of network-owned stations, independent foundings were suppressed. In model 1, the same effect holds for network-affiliated stations. Markets with higher concentrations of affiliates had significantly less nonnetwork founding activity, contrary to one of the predictions of resource partitioning theory presented in hypothesis 6.

Table 3 presents the results of the ordinary least-squares (OLS) regression on market diversity as measured by the Shannon-Weaver Diversity Index. Model 1 includes controls for the number of stations in a given market and the size of the market as measured by population.⁸ Both of these controls are significant and positively related to market diversity. Model 2 includes a variable measuring network presence. It is also positive and significant, as predicted in hypothesis 7, indicating that the more network stations there were in a market, the *more* diverse it was. This is a crucial finding. First, it is contrary to the popular conception that the rise and diffusion of networks had a homogenizing effect on radio broadcasting in the United States. If anything, markets with a network presence were more diverse in terms of the kinds of stations on the air. Second, it lends support to the theory of resource partitioning in broadcasting. Taken in tandem with the previ-

Table 3 OLS models of broadcast market diversity

Independent variable	Model 1		Model 2	
	Coefficient	Std. error	Coefficient	Std. error
Intercept	-0.484*	(0.203)	-0.532**	(0.201)
Total stations	0.094***	(0.005)	0.075***	(0.006)
Market size (ln)	0.056**	(0.017)	0.060**	(0.017)
Total number of network stations			0.072***	(0.012)
R^2	0.464		0.479	
$N = 2,254$				

* $p < .05$. ** $p < .01$. *** $p < .001$.

ous findings, it suggests that, as networks grew in scope and in power, they increased the survival chances of independently owned and operated stations and helped contribute to diversity in broadcasting markets. Thus they may have increased rather than squelched the balance between national and local coverage.

This important finding makes considerably more sense when the demand for radio programming is taken into account. While the amateur ranks were large early on, several legislative defeats contributed to the declining popularity of broadcasting as a hobby (DeSoto 1936). Nevertheless, between 1930 and 1940 radio set ownership in the United States grew explosively (Craig 2004).⁹ In the markets included in the analysis, an average of 68 percent of households reported radio ownership in 1930, ranging from 26 percent in Memphis, Tennessee, to 74 percent in Chicago. By 1940 an average of 93 percent of the households in the markets included in the above analyses reported radio set ownership, ranging from 74 percent in Memphis to more than 97 percent in Milwaukee, Wisconsin (U.S. Census Bureau 1933, 1943). Given this tremendous growth in the number of people consuming radio programming, it makes considerable sense that, in markets with a strong network presence, increased demand for alternative programming offered by locally owned stations contributed to these stations' viability and an increase in overall market diversity.

Taken together, these results indicate that early- to midcentury broadcasting markets were more complicated than previously thought. It is true that the presence of network stations thwarted the founding of new nonnet-

work stations, as many critical media theorists and historians have argued. However, network stations also appear to have increased the survival chances among nonnetwork stations, which is contrary to popular arguments about network dominance in the golden age of radio broadcasting. In addition, markets with greater network presence had significantly higher diversity in ownership than did others. While these results do not completely contradict arguments about network dominance—indeed, they find some empirical support for them—they do indicate that the ecological dynamics of organizational founding and failure in broadcasting were complex, as they are in most industries. The rise of radio station networks did not inevitably lead to the concentration and homogenization of station ownership.

Discussion and Conclusion

The rise of broadcasting networks had profound effects on radio broadcasting and mass media in the United States. It was fueled by major corporate powers—including General Electric, Westinghouse, and RCA—and led to the creation of several others. NBC, CBS, and eventually Fox and a variety of cable networks were responsible for or were created as a result of the emergence of network programming. In addition to their economic clout, these organizations are responsible for significant cultural production and are among the most important ways that Americans get information. Broadcasting networks promised to eliminate the great distances among people, cities, groups, and regions in the United States; to create a genuinely pluralist culture; and to expose larger segments of the population to academic lectures, world-class operas, and other nationally distributed programming.

Because of the great popularity of broadcasting, the speed at which networks spread throughout the nation, and the economic and political power that the national broadcasting networks amassed, they created a considerable amount of controversy, which continues to this day. Critics worry that a few large media corporations monopolize cultural, intellectual, and educational programming and in doing so homogenize the material to which the general public has access. To date, however, few of the claims made by these critics and scholars have been systematically tested.

Based on comprehensive radio station data from the 100 largest broadcasting markets in the United States, the research discussed in the present

article empirically tested claims about increasing homogenization and the reach of network dominance in U.S. radio broadcasting during its golden age. In addition, it proposed and tested a competing set of hypotheses derived from organizational theories that deal with market concentration and the evolutionary dynamics that arise as a result. In many instances, concentration leads to the creation of alternative organizational forms, which lead to increasing diversity at the market and population levels.

This finding has important implications for organizational sociology and the sociology of industries. In developing industries, large organizations, while often dominant, can actually contribute to stabilization, reliability, and accountability throughout the industry. While these organizational-level features have been theorized to increase rates of organizational survival in certain circumstances (see Hannan and Freeman 1984), they have not been considered in the context of entire organizational populations and industries. The case of the radio broadcasting industry indicates that in new industries, where organizational practices are not well defined and organizational products are not well understood, large, resource-rich organizations may introduce stability into markets and help solidify consumers' understanding of organizations and the goods and services they offer. Of course, large size and resource endowment can also be sources of political influence and unfair advantage, and the proliferation of large organizations may lead, for reasons other than performance, to suboptimal market outcomes. Indeed, many studies have found that large stations' influence on the drafting of regulatory legislation explains their market dominance more than market competition (McChesney 1993; Lippmann 2005). Despite this and other examples of collusion and capture, however, large generalist organizations may help bring order to the chaos common in emerging industries.

It may be that the revenue generated by national advertising allowed network-owned and, to a lesser degree, network-affiliated stations to recruit the most talented or well-known entertainers and to produce the most comprehensive news programs (Shaked and Sutton 1987). Because these stations targeted the largest possible markets across the country, they may have attracted a growing group of listeners eager to tap into cosmopolitan cultural products. Such "vertical product differentiation," in which markets become segmented on the basis of product quality, has been found to decrease the likelihood of market concentration in markets with a variety of preferences (Lazersfeld and Field 1946; Sutton 1986).

There is evidence in the case of broadcasting that, despite the size, scope, and power of national networks, the industry evolved in a slightly more dynamic way than some scholars fear. In addition, media audiences and entrepreneurs were not passive agents eager to move out of the way as networks spread. Instead, the public often craved more locally oriented programming, and independent broadcasters kept their stations on the air. What is more, network stations may have had an overall stabilizing effect on broadcasting, as their presence decreased the local failure and founding rates. In addition, they appear to have contributed to market diversity instead of threatening it.

Of course, there are limits to the conclusions that can be drawn from this analysis. First, my data prevent me from exploring the program content offered by national networks and their independent, locally owned counterparts. Whether or not ownership patterns of radio stations are direct measures of diversity in programming content can be debated. Some critical media scholars, in addition to lamenting corporate control and concentration of the airwaves, have made specific arguments against the type of programming aired by network stations that targeted a “least common denominator.” While questions of program content are beyond the scope of this article, and possibly beyond the scope of any research, given the spotty records available from small stations in broadcasting’s earliest years, the fact remains that locally owned stations were excluded from airing network-produced programming. Thus they had to rely on local talent for entertainment programming and on local issues in their news programming (Smulyan 1994; Douglas 1999; Walker 2001).

Second, station existence and counts of station densities say nothing directly about listenership patterns. If audiences listened mainly to network stations, then the presence of nonnetwork stations matters little. Because of networks’ abilities to advertise more thoroughly and to broadcast at a higher wattage, on average, than nonnetwork stations, it is likely that a majority of radio listeners favored network broadcasting (Lippmann 2005). However, by the 1930s the airwaves had become fully commercialized and supported by advertising, and market pressures on stations had become significant. If stations could not attract listeners, they could not attract advertisers, and their likelihood of survival would be small. My results indicate that this was not entirely the case for locally owned stations. While nonnetwork stations were slightly more likely to fail in denser markets, their rates of failure were unaf-

fectured by competition from network stations. Furthermore, they continued to be founded throughout the entire period under investigation, indicating a demand for them.

This analysis should also not be interpreted to paint a picture of diverse airwaves on which many voices were heard. First, many alternative voices were squeezed off the dial in broadcasting's earliest years (McChesney 1993; Lippmann 2005). The potential for many nonprofit and noncommercial organizations to have their voices heard was lost by the time the first meaningful regulatory legislation was passed. Second, as demonstrated above, network stations did control a substantial proportion of the total station watts that comprised broadcasting. The presence of nonnetwork stations undoubtedly contributed to more station diversity than previously thought, but the networks were disproportionately large and powerful actors in the industry. This analysis should, however, help us better understand the nature of broadcasting markets and the organizational dynamics during the industry's golden age. Popular arguments about the unbridled dominance of network stations and their homogenizing effects on the broadcasting industry should be tempered by the findings presented here. While they did wield substantial power, these networks had effects far more complex and multifaceted than previously argued.

Notes

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- 1 Hereafter network-owned and network-affiliated stations are referred to simply as "network stations" for brevity's sake.
- 2 Shortly thereafter AT&T decided not to enter the broadcasting business and retained its focus on telephone communications and on communications infrastructure (Starr 2004).
- 3 The Blue network became ABC in October 1943 (Bilby 1986).
- 4 On other frequencies, up to 56 stations broadcast simultaneously. Their limited size and the distance between them permitted this situation, just as it does today.
- 5 Of course, environments are rarely stable, which gives the theory its dynamic character.
- 6 Network affiliates were owned and operated by independent stations but carried

some network programming. Network affiliations took a variety of forms, but the most common was sending programming from the network headquarters, typically in New York, to affiliates either for a fee or for free. The latter was known as sustaining time broadcasting.

- 7 Due to changes in the population, there was slight variation in the cities that made up the 100 largest markets from year to year. For consistency and manageability, I include the 100 largest markets in 1930 for the entire period of observation.
- 8 Market size is included instead of market density in this model, since size alone captures demand for different kinds of programming.
- 9 While some industry outlets attempted to record sales data, the U.S. census measured radio set ownership in detail in only 1930 and 1940. In 1920 the medium was not developed enough to warrant collection of such data. By 1950 the census had shifted its focus to television set ownership and did not collect detailed radio set ownership data. Given the sparse coverage of these data, they are not included in the formal analyses.

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