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As I wrap up my work on this book, two news items suggest contrary understandings of the role radio plays in American pop culture. The humbling piece of news was that the popular European streaming music service Spotify is entering the American market following successful rights negotiations with the record labels. The service allows instantaneous access to an immense catalog of songs, with the premium version of the service allowing listening on the go over a smart phone or MP3 player. This service joins a variety of other Internet-based music services, including Pandora Radio, Stitcher, Amazon Cloud Player, and Apple's iCloud. These services vary in their details, but all of them provide a more customized listening experience than traditional FM radio.

The other news item was a story from National Public Radio about the pop star Rihanna's single "Man Down."¹ NPR described how Rihanna's label assembled a dream team of songwriters, producers, vocal coaches, and song mixers at a cost of about \$78,000 per song. However, this considerable figure was dwarfed by the million dollars it cost to promote a song, about a third of which went to radio promotion. That is, record labels feel it is worth spending in excess of \$300,000 to get a song played on the radio. Or perhaps it is better to note that radio airplay is *still* this valuable, despite plummeting recording industry revenues and new media providing alternative avenues to radio's traditional role in making a song a hit.

Taken together, these stories illustrate how FM radio remains an important part of American popular culture even as it competes for listeners with new media. Arbitron's most recent estimates are that the average American over the age of 12 listens to the radio for about 15

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hours a week, with the vast majority of this listening being to radio stations that play music.² Although this is down considerably from listening rates in the 1990s, 15 hours a week is still a substantial amount of time. Moreover, as seen in the NPR story, this airplay still plays an important role in the broader ecology of pop culture.

The goal of this book is to understand how songs get on the radio. The book examines such issues as corporate radio chains, record label promotion, social networks among stations, and genre conventions. Some of these issues matter less than is commonly believed, others in subtle ways that are not generally understood. Some aspects of these processes are undoubtedly idiosyncratic to the nature of the medium as presently constituted, but others should be general to any process where music spreads through a curated listening experience. Thus, the conclusion of the book will bring us full circle to a consideration of how a better understanding of radio provides a basis for speculating about media that will follow it.

Sociology has approached arts and popular culture as the output of the specific conditions and processes of the culture industries ever since the 1970s.³ The central insight of this “production of culture” school was to study popular culture not from the perspective of what it means, but how it was made. This emphasis on process reveals the strong influences from and overlaps with economic sociology and organizational sociology. One of the school’s main empirical concerns has always been pop music, and in particular the nexus of record labels and radio stations. A central aspect of the process of the music industry is how songs get adopted by radio stations. This is a special case of the general issue of how ideas and practices spread through social fields, which suggests the broader theoretical concerns of the book.

1.1 The Diffusion of Innovation

This book’s substantive concern of how songs become hits on the radio is part of a more general class of problems in social science known as the diffusion of innovation. This literature covers a wide variety of substantive areas where actors within a population each decide if and when to adopt an innovation. The seminal studies in this field were about such eclectic phenomena as:

- farmers in Iowa planting a new kind of corn
- firms in heavy industry adopting various new production technologies
- small-town doctors prescribing the antibiotic tetracycline
- postwar households purchasing such appliances as televisions and washing machines⁴

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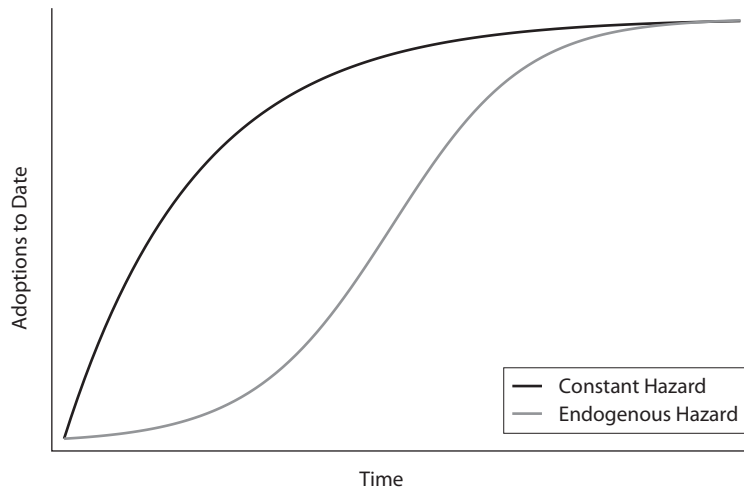


FIGURE 1.1. The Two Ideal Diffusion Curves

The innovations described in the literature range from drastic changes that reorder the actor's cultural and economic experience to fairly minor variations on incumbent practices for which "innovation" is perhaps too grandiose a term. In current sociology, one of the main applications of diffusion analysis is asking such questions as when firms adopt new business practices or how activists adopt new tactics.

At the most basic level, one can study diffusion simply by drawing a graph and looking at its shape to see whether it is more concave or more s-shaped. Figure 1.1 shows typical curves of each ideal type. The shape of the graph is informative because different processes create differently shaped graphs; thus, seeing the shape of the graph gives very strong clues as to the process that created it. In a diffusion graph the x -axis is time, which can be denominated in whatever unit is appropriate. Many of the canonical studies measure time in years, but tetracycline spread in a matter of months, and pop songs usually spread even faster. The y -axis is how popular the innovation is at a particular time. Usually the y -axis is cumulative, showing how many actors have adopted the innovation to date, though sometimes they are plotted as instantaneous, showing how many actors are adopting in each period.

This implies that diffusion is about seeing how many actors adopt the innovation in each period, and it is, but this can be misleading. The reason is that it's quite a different thing for a hundred out of a thousand to adopt than for a hundred out of a hundred. The number of actors who have yet to adopt as of a time is the "risk pool," and the

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proportion of the risk pool who adopt in a time interval is the “hazard” rate.⁵ For a given hazard, the raw number of adoptions decreases as the risk pool shrinks. This is a case of Zeno’s paradox, in which fleet-footed Achilles races a tortoise but allows the reptile a head start. If in each minute he closes half the remaining distance, then after the first minute he will have closed $1/2$ the distance, after the second minute, $3/4$ of the initial gap, then $7/8$, $15/16$, $31/32$, etc. Returning to diffusion, imagine that a thousand doctors have a hazard rate of 10 percent for adopting tetracycline.⁶ In the first month 100 doctors (a tenth of 1,000) will write their first prescriptions for tetracycline; in the second month 90 will adopt, for a total of 190 doctors prescribing it; in the third month 81 will adopt, for a total of 271, and so on. In this example the hazard remains constant at one-tenth per month. Therefore, the proportion of the risk pool converted in each period is the same, but the raw volume decreases rapidly. This results in the concave-shaped curve shown in figure 1.1 labeled as “constant hazard,” which shows rapid growth initially and asymptotically limited growth thereafter.

So far we have assumed that the hazard is constant. This may be warranted if we imagine that there is some constant force acting in the population and encouraging actors to adopt the innovation, such as a marketing campaign with a fixed budget. For this reason these curves are often known as “external influence” in that the innovation is being spread by something outside of the population adopting it.⁷ However, imagine that the innovation is spread as an endogenous process within the population, perhaps by word of mouth. This might be because there is no marketing budget or because the actors simply don’t trust advertisements or salesmen to provide impartial advice. For instance, imagine that farmers are deciding to plant a new type of maize that presents higher risk but offers higher reward.⁸ Most farmers are hesitant to make so radical a change, but one farmer is willing to experiment with the seed and, on seeing his higher crop yields, he tells two neighbors about his satisfactory experience and they try it. After their own satisfactory experiences they in turn each tell two others. If each person using the corn tells two new neighbors about it, then one farmer will plant it in the first year, three in the second, nine in the fourth, twenty-seven in the fifth, eighty-one in the sixth, and so on. This pattern shows slow diffusion at first, but follows exponential growth so that once the innovation reaches a critical mass of the population, it diffuses rapidly.

Of course there are a finite number of farmers, so the exponential growth cannot continue forever. Once the innovation starts to become popular, many of the people who one might tell about it are in fact already using it, placing exponential growth for the hazard in tension

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with Zeno's paradox for the risk pool. Contagious diffusion can only occur when someone who has experienced the innovation encounters someone who has not. Diffusion is slow early on because there are too few adopters who can promote the innovation (a low hazard), and it is slow later on because there are so few potential adopters remaining (a small risk pool), but in the middle lies a "tipping point" of intense diffusion where many people are promoting the innovation to many who have yet to adopt it (a high hazard and large risk pool). The resulting graph is the s-shaped curve shown in figure 1.1 and labeled as "endogenous hazard."

Although the example of internal influence described above relies on direct word-of-mouth contagion, the same implications apply to "threshold" or "cascade" models where potential adopters are aware of how many others have adopted the innovation but don't directly communicate with them.⁹ For instance, many people who don't make a habit of smashing property and assaulting people on the street will nonetheless join in a sufficiently large riot because safety in numbers means they need be much less afraid of punishment than if they were alone to misbehave. In this model it doesn't matter whether the rioters directly communicate with each other, only that potential rioters have a sense of how large the riot has become. Although in the riot example the potential rioter is directly estimating the size of the mob, this miasmic sort of diffusion is often mediated by things like best-seller lists or website download counts that aggregate and make salient information on popularity.¹⁰ So you may be more likely to buy a book when it becomes a best seller because the book's popularity gives it more conspicuous placement in bookstores, even if you don't personally know a single individual who has read the book or have even observed strangers reading the book in public.

Thus, we have two distinct patterns for how an innovation might diffuse across a population. In the second style, the proportion of holdouts who adopt in each period is determined by how many actors are already using the innovation. Because the hazard rate is a function of prior adoptions, this is an endogenous pattern or an "internal-influence" cycle.¹¹ In contrast, in the first style a constant proportion of holdouts adopt in every period. Because a constant proportion cannot be a function of how many people have already adopted, it can be interpreted as reflecting an "external-influence" on the system, or an "exogenous" pattern. Of course these patterns are ideal-typical and real cases can approximate one or the other or even a compromise between them. For instance, the diffusion of tetracycline was mostly exogenous, the diffusion of hybrid corn almost perfectly endogenous, and the diffusion of postwar consumer appliances a

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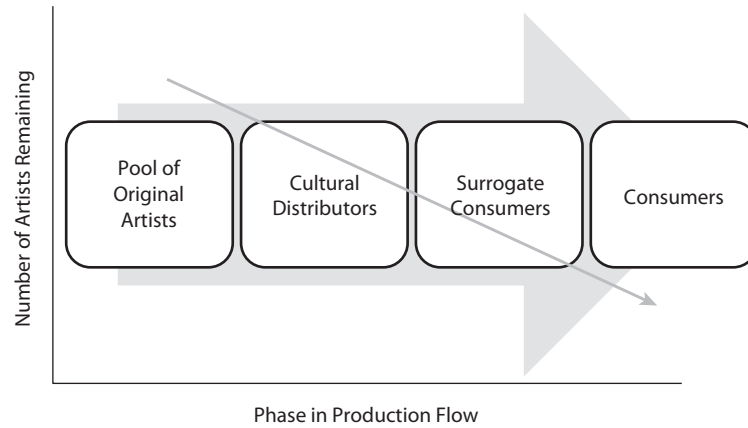


FIGURE 1.2. The Hirsch Gatekeeping Model

compromise between the two patterns.¹² Much of the literature brackets this issue of how different types of innovations spread and instead focus on a single innovation and then ask *which actors* adopted that innovation particularly early. However, in this book I emphasize the question of the nature of diffusion itself and focus on the question of under what circumstances songs follow the concave curve and under which circumstances they follow the s-curve. This is the type of question that cannot be answered by studying a single innovation's diffusion history, but only in comparing those of many innovations, and seeing under what circumstances an innovation's trajectory will follow one path or the other. Such an endeavor requires data on many innovations, and this is a role for which radio singles are well-suited for they occur in such numbers, spread so rapidly, and are so well-documented as to serve the purposes of sociology as admirably as the fruit fly does for those of genetics.

1.2 The Production of Culture

The fundamental model of the popular culture industry used in the production of culture approach was articulated in one of the paradigm's earliest publications, Paul Hirsch's (1972) article in the *American Journal of Sociology*, "Processing Fads and Fashions: An Organization-Set Analysis of Cultural Industry Systems." In figure 1.2, I have distilled Hirsch's model into a schematic. Hirsch saw popular culture as a flow process where cultural objects move downstream from the pool of original artists through cultural distributors and surrogate consumers

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before reaching the ultimate consumers. Cultural distributors are firms like record labels and book publishers that provide artists with the financing, technical collaborators, retail distribution networks, and other resources to produce their art and get it to market. Surrogate consumers are such actors as radio stations and book reviewers who do not produce art but draw attention to it.

Hirsch gives almost no attention to what goes on within each of these organization-sets, but only in the points of contact between them, an approach consistent with the open systems revolution that was then reshaping organizational theory.¹³ So, for example, a record label is most interesting for its A&R (artists and repertoire, i.e., talent scouts)—the point of contact upstream to original artists—and its radio promotion—the point of contact downstream with surrogate consumers.¹⁴ Interestingly, at each of these boundary points there are more failures than successes, which is why the model is described as “gatekeeping.” The downward sloping line in figure 1.2 illustrates this progressive winnowing as cultural products move downstream. Only a fraction of original artists find favor with cultural distributors; of those who find favor with distributors, only some are advocated by the surrogate consumers, and of these only some become big hits with consumers. Other early production of culture studies took a similar approach in emphasizing boundary points along the production flow. Most famously Peterson and Berger’s (1975) *American Sociological Review* article “Cycles in Symbol Production: The Case of Popular Music” explained the displacement of show tunes by rock and roll in the mid-1950s as being catalyzed by legal and technological shocks that disrupted the ability of cultural distributors (Tin Pan Alley) to co-opt surrogate consumers (radio and film musicals).

Note though that the progressive winnowing through the cultural system is in terms of the diminishing number of artists or titles that find success at each stage. However, through the wonders of electronic reproduction the total volume of fame does not diminish, but grows. That is, at each stage there are fewer successful artists, but those who are successful are so famous that the aggregate of fame increases as one moves downstream. Through the process there are fewer artists attaining more fame, a pattern of massive inequality nicknamed the “superstar effect” which is made possible by the introduction of electronic reproduction.¹⁵ Imagine a set of original artists entering the market, say aspiring musicians. These entrants would be numerous but alike in their obscurity. Only a few of these aspirants would get record contracts, but this alone would give them a modicum of fame. Of those with contracts, only some will gain fame through radio airplay, and of these fewer still will become superstars with the music-consuming public.

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As successful artists move through the gatekeeping process, their fame develops through a process of accumulation. Some aspects of this can be understood as diffusion of the artist's fame through a population of those at risk of acclaiming the artist. Although at the original artist to cultural distributor boundary there are usually bilateral contracts, surrogate and ultimate consumers are non-exclusive. An artist is only signed to one record company at a time, but a successful pop single will be played by many radio stations and then be purchased by many consumers. Similarly, an academic book only needs one university press (cultural distributor), but aspires to be reviewed in a dozen or so blogs and journal book review sections (surrogate consumers) and read by thousands of colleagues and students (consumers). That is, while the original artist to distributor boundary is a one-to-one issue of two actors signing a contract, the distributor-surrogate and surrogate-consumer boundaries are one-to-many issues of many actors each adopting a product. This of course is a diffusion process and can be modeled as such. Like much of the seminal production of culture literature discussed above, this book focuses especially on the boundary between cultural distributors and surrogate consumers and the nature of the relationship between them. Treating this issue as a diffusion process allows us to see how surrogate consumers collectively decide to pass a cultural object through their stage in the gatekeeping process. As discussed throughout this book, the surrogate consumers' criteria that underly this decision may include the influence of the upstream distributors, various peer dynamics among the surrogate consumers, political pressure, or genre conventions.

1.3 Organization of the Book

Throughout this book I discuss different aspects of radio airplay of pop music from the perspective of diffusion analysis. The central problem throughout these chapters is how songs become hits, and each chapter emphasizes a different aspect of this issue.

Chapter 2 shows that the number of stations that have played a pop song follows a pattern consistent with all of the radio stations reacting to something outside of their peer group. This implies a puzzle that if radio stations are not imitating one another, from whom exactly are they taking their cues? The rest of the chapter demonstrates that the stations are not reacting to the mere availability of a song when a record drops, nor are the much maligned radio chains coordinating the add dates of their properties.

Chapter 3 argues that this centralizing coordination comes from the promotional efforts of record labels, as seen in extreme form

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with payola. The chapter reviews all four payola scandals since 1960. Over the last 50 years, payola has involved greatly varying degrees of subtlety and tact but always involved various forms of cash or in-kind compensation being exchanged for airplay. Ironically, the most “professional” forms of payola are those where the exchange is elaborately obfuscated by being embedded in in-kind gift exchange. A time series of the estimated influence of record label influence over airplay during the most recent scandal and qualitative review of older scandals show how rapidly the payola exchange network reconstitutes itself after a disruption, and the chapter closes with a theoretical argument as to why payola is so robust.

Chapter 4 applies the “opinion leaders” hypothesis to radio—a field that has its own folk version of the theory. Opinion leadership is a special case of contagious diffusion in which actors at the center of a social network exert a special power to influence diffusion through the network. To test this idea I collected social network data in a survey of Top 40 stations. Consistent with the theory, I find that there are some particularly esteemed stations, but contrary to the theory there is nothing special about when they begin playing a song. The remainder of the chapter argues that peer group dynamics are a scope condition for opinion leadership, but even when this condition is met, we still fail to see a special opinion leadership role for the core stations.

Chapter 5 presents a case history of the Dixie Chicks radio boycott. Shortly before the start of the Iraq war, the Dixie Chicks were at the top of the charts in Country and Adult Contemporary. Then, after their lead singer insulted President George W. Bush, the band lost almost all of its airplay. Commentators at the time blamed large radio chains, but I show that the big chains were, if anything, slower to blacklist the musicians than were small radio companies. Rather, I find that the speed with which stations blacklisted the band was mostly a function of the political climate of the station’s locales and of country music as a genre.

Chapter 6 discusses the implications of the long-term trend for radio to be segmented into ever narrower formats as a special case of the general issue of art classification systems. A discussion of crossover between formats shows how diffusion patterns are qualitatively different for a song’s home format than for those formats to which it crosses over, with stations being much more hesitant and attentive to peer behavior when the genre fit is dubious. This of course raises the question of how genres emerge in the first place, an issue explored with a case study of the popularity of reggaetón and the associated rise of the “Hurban” radio format.

Finally, the conclusion to the book discusses the long-term relative decline and recent absolute decline of radio as a medium and the rise

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of the media that are replacing it. In order to extrapolate lessons to these emerging media, the conclusion reviews the findings of the rest of the book. By taking these findings and applying them to an emerging landscape, we cannot only understand the findings themselves better but also what the production of culture will look like once radio has been eclipsed.

A Note on Style

This book discusses both music genres and radio formats. Although in some cases (e.g., country) genre and format are nearly coterminous, in most cases a format is a blend of genres. As a stylistic convention borrowed from some of the radio literature, throughout the book I use lowercase whenever referring to music genres and uppercase whenever referring to radio formats. For instance, “Rhythmic stations mostly play hip-hop music” or “country music is played almost exclusively on Country stations.”