THE COMING OF SOUND

A HISTORY

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I helped Edward and his colleague, Chuck Wolfe, start the AFI readers. This has, over two decades, become an excellent series, and Edward always pestered me to edit one. I said "no thank you," and then said if you want one, I would do a collection of the essays I did on the coming of sound—many now hard to find. This proposal did not fit the AFI series concept, but Ed then put in a word with Bill Germano. I wrote a proposal and Bill Germano accepted it. Thanks, Bill.

These essays began their life based upon my Ph.D. dissertation: J. Douglas Gomery, "The Coming of Sound to the American Cinema: A History of the Transformation of an Industry" (University of Wisconsin–Madison, 1975), which was inspired by the work of David Bordwell and Eugene Smolensky—an odd couple, one of the world's foremost film theorists and a consummate public policy expert. I was lucky to find both at the University of Wisconsin at the same time. They taught me how to do research, and no words can ever thank them enough for offering to teach me that skill.

As I decided whether to publish my classic essays, I discovered James P. Kraft's "Stage to Studio: Musicians and the Sound Revolution, 1890–1950" in Johns Hopkins University Press's *Studies in Industry and Society* series. This splendid book analyzes the history of the American Federation of Musicians union. I looked to see what Kraft used as his sources for the musicians and their replacement by talkies. It was my dissertation!

Since then, Marilyn Moon and I sought jobs to maximize chances of getting tenure together, I had broken my dissertation into articles, and published a dozen. The strategy worked; we both went up for tenure the same year, the same day—and got it. But still scholars like Kraft were going back to the original. This is where I started again.

So when Bill Germano kindly offered to publish my "classic articles" (his term), I asked my RA Chunying Cai to scan them into Word Perfect 6.1—the greatest writing program ever invented. Then I did more research. Thus, while this book started out as essays, it has been revised to be read as a continuous whole. I redefined my arguments based on 20 more years of research.

Then Marilyn Moon again came to my rescue. She has long abandoned the academy, but is a skilled writer and researcher. (When someone you know is helped by Medicare, the world's largest health insurance program, say "Thank you, Marilyn.") Once I put together this new work, she looked at it again, and with much work, I revised it once more.

Thanks again, Marilyn—for saving those precious 10 Word Perfect disks, and, of course, for providing the day-to-day inspiration that only a consummate professional can provide. Howard Hawks would have understood no higher compliment can be paid.

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Preface

The Research Question, the Method, and the Data

The coming of sound in the late 1920s is a crucial segment in the history of film. In film production, important adjustments in directing and acting techniques occurred. Some significant film makers adapted easily; many others could not make the conversion. Significant new artists appeared and new genres evolved. Many aspects of film production had to be revitalized. Most film industries found it necessary to readjust patterns of distribution and exhibition. It became much more difficult to import and export films. In the silent era, retitling had made international exchange relatively easy, but with sound, dubbing and subtitling proved unsatisfactory substitutes.

Yet throughout the period of transition, the U.S. film industry retained its power. Hollywood films continued to dominate screen time in Western Europe and command a disproportionate share of the market in the rest of the world. For many reasons, American films sustained their popularity. When sound first came to the American cinema, its impact was felt not only in the United States, but throughout the world. The U.S. film companies adopted sound and then exported these new films to foreign countries. In response, foreign film makers had to add sound or be faced with almost total elimination from their potential markets.

Thus, an understanding of the conversion of the U.S. film industry to sound is basic to any understanding of this world-wide transformation. The U.S. film industry converted to sound primarily for economic considerations. Artistic, sociological, and psychological factors certainly affected the decision, but the arguments presented in this volume assume that the executives who controlled the U.S. motion picture industry were in busi-

ness primarily for one reason—to maximize the long run profits of their companies.

Long run profits are the residual share of the revenues from a film company after all payments to capital (interest), land (rent), and labor services, including management (wages).[1]

This is not the same as the accountant's broader definition of profit, usually defined as current revenues minus estimated current costs. Corporations, I posit, wish to make as much in the way of profits they can in the long run. For example, as will be seen with Warner Brothers in Chapter 3, the corporation may accept losses in the short run to maximize profits in the longer run.

Economists have developed a sophisticated set of tools for explaining the behavior of profit maximizing firms. One of these tools will be employed in this book: the theory of technological change. Here a company takes new knowledge and then brings it to the marketplace. It hopes that customers will prefer this new product to the current product, and then buy the new one. All this is done with the goal of increasing the profits of the corporation in the long term.

This study assumes that not only did the firms in the U.S. film industry try to maximize their profits, but so did the giant communication firms which developed the new technology, such as American Telephone and Telegraph (AT&T) and the Radio Corporation of America (RCA) with which the film industry dealt. These assumptions explain why all firms involved in the transformation acted as they did. It frees this study to concentrate on the who, what, where, and how of the change.[2]

Previous Studies

I hardly claim to be the first to take on the question of how, within five years, did the U.S. film industry so quickly transform from producing, distributing, and exhibiting silent film (with live sound accompaniment) to talkies with sound on film. Harry M. Geduld's *The Birth of the Talkies* (1975) seeks to cover what I call the invention and innovation stages—but hardly from an economic perspective. Rather, with what I call a technologist approach, Geduld starts with the invention of the phonograph and ends with the demise of the silent film in 1929. On page three he points out

> The story of the marriage of sound and film begins before cinema —with the invention of the phonograph. Though its original purposes were in no way associated with cinema, the talking machine, either Edison's or some variation on it, was to be used in most early attempts to provide sound accompaniment to motion pictures.

This is certainly the case, but to make a narrative out of it—rather than economic analysis—sweeps the industry away and makes it a tale of inventors as stars. I argue that the Hollywood studio system was, first and foremost, an industry.

In *The Sounds of Early Cinema*, Richard Abel and Rick Altman analyze the urge to marry sound and silent cinema. They describe over and over again the demand by the public for this technological innovation. It is no wonder when the successful innovation did take place in the late 1920s that it was so rapid. The demand has always been there, but a supplier was needed to transform the film industry.

David Bordwell, Janet Staiger, and Kristin Thompson in their *Classic Hollywood System* (1985) also deal with the transition to talkies, but as driven by the demand for new and complex ways to tell stories. Their analysis of narrative change also makes the point that the demand was there. The public embraced cinema with live sounds. In the late 1920s, the industry standardized this and set records for earnings. Although this is a side point for Bordwell and his co-authors, I argue a necessary condition was that the industry figure out a way to make this transition work—thereby achieving greater profits.[3]

James Lastra's *Sound Technology and the American Cinema* (2000) takes this demand to a new level, wrapping it in modernity. His book barely acknowledges that he is talking about an industry at all, but focuses instead on a new interpretation of technology. Although he claims he tracks the relations among financial capital, modern science, and cultural practice, he really just accepts an interpretation of capitalism which fits into his true interest—making a contribution about cultural practice.

This is fine, but accepting a certain form of capitalist analysis—without spelling it out to the reader—simply moves past the issues of economic change to assume that this industry operates like all other capitalist industries and is not worth a separate study as an industry. Lastra uses these assumptions to move to his interest in theoretical questions of representation. He is not an historian, but a theorist who accepts others views of the past so he can get onto what interests him.

In 1997, interest in the coming of sound intrigued two new authors. Scott Eyman's *The Speed of Sound: Hollywood and the Talkie Revolution* (1997) tried to make the transition into an exciting narrative, gripping enough to sell as a trade book. His tome contains no notes, only a list of books used. His is a book filled with victims and victors. He begins with *The Jazz Singer* and then after waxing nostalgically about the silent film era, he states that sound changed everything—for the worse. He then tells his story through vignettes of those left behind. This means tales of woe

spoken by aging silent stars whom wax on about the "good old days [of the silents]," lots of currying of previously published accounts, including mine. *The Jazz Singer* is at the centerpiece and he makes this the turning point of the narrative: "how could those pesky Warner brothers do it?" He has little about the moguls, save that they were dumb, as when a surprised Adolph Zukor was caught unaware when talkies proved so popular.

There exists no organizing principle but chronology, and within that, snippets of time. These become usually the interviews a journalist would do, here from memoirs, oral histories, and the rare survivor. That he would take the word (accusation?) of Jack Warner, Jr. that Western Electric's John Otterson was an anti-Semite. Even though it is a juicy bit of gossip, how does it help understand what motivated the entrepreneurs and scientists responsible for this industrial transformation? I cringe because, when he used my material it was always taken to add to the drama of his book, and performed no scholarly function. So we are to believe that the Schenck brothers were scamps, and had not made an agreement as teenaged immigrants to share all the money they made over the years, and that Nicholas Scchenck at Loew's single handedly started Twentieth Century Fox for his brother.[4]

The other myth that needed to be dispensed with was that Marcus Loew was running his Loew's/MGM empire until his death in September of 1924. Marcus Loew and Nick Schenck put MGM together, and the ever-growing sicker Loew elevated himself to figurehead CEO, while Schenck made all the key decisions after 1924. Zukor surely was the point person for the biggest companies, but Schenck, as always—until the end of his career in the middle 1950s—played best from behind the scenes.

Sadly, the standard scholarly work has become Donald Crafton's *The Talkies,* one of the Scribner's series of the *History of American Film* project, supervised by Charles Harpole. Indeed I admit part of my motivation to get my essays back in print was to counter the work of Crafton who—to differentiate from my dozen articles and 1975 Ph.D. dissertation—turned his history into a reception study. He states, after his review of the literature, including dismissing my dissertation, seemingly unaware of the articles they spawned, that one element missing is the audience, and then follows Rick Altman's theory of film reception analysis as his model, coupled with a chronology not unsimilar from Eyman.

His first chapter—on the inventions—might have been a rehash of technical accounts or manuscripts from AT&T's archives, but articles from Collier's, *The Ladies Home Journal*, and lots of citations from a single trade paper—*Film Daily*. Although its annual yearbooks contain scores of data, the Film Daily was a headline service, a *USA Today* for the film business.

Again he tells the usual tale of industrial change, and gets down what the goal of the book really is—how the new talkies were received.[5]

One might expect his book to end in 1931, as that is part of the "1926–1931" subtitle. Instead, his final chapter starts with a summary debunking the film *Singin' in the Rain* as the beginning of his conclusion. He then goes on to speculate how all of this affected the audiences of the day. Before the conclusion, we do not find a discussion of sound in 1931, but an analysis of *The Jazz Singer's* reception. This is a revision of previously published chapter, but assumes that the industrial corner was turned by release and reception of one film—*The Jazz Singer*. The box office record holder, *The Singing Fool,* is only noted for its bad acting, and not its record-setting revenues.

In the end, all these books contain useful information, but all start and end away from the movie business as an industry. Here is where one ought to start. This was an industrial change—with vast social, cultural, and aesthetic implications. It is only by looking at the industry as a set of profit seeking companies, that we can understand how the U.S. film industry changed. We know why—to make higher profits. Yet prior writers focus elsewhere—from making dramatic tales of chaos and woe to reception case studies. I want to begin where it is logical to begin: How did this industry change as a new technology was innovated?

Required Data

Past studies of the coming of sound not only lack a solid theoretical underpinning, but also have ignored original sources of data. Since this was, I assume, a financial and economic transformation, I look at the press not aimed at the film industry, but at investors who wanted information—as found in *Barrons*, *Fortune, Business Week*, and other publications—aimed at their gaming Wall Street. Here, *The New York Times* and *The Wall Street Journal* proved most helpful in covering economic change as the headquarters of the major film companies tended to be in New York City, not Hollywood.

I then surveyed issues of *Variety* and *Moving Picture World* between 1905 and 1941 in detail. (Unlike Crafton, I found that these trade papers lengthy accounts often, but not always, checked out with the primary documents I uncovered.) Year-end summaries in *The Film Daily Yearbook*, *The Motion Picture Almanac*, and *Moody's Manual of Industrials* also proved helpful.

Other sources were more direct. Many of the financial and legal records of the United Artists Corporation (UA) are on deposit at the Wisconsin Center for Theatre Research in Madison, Wisconsin. These documents, especially those of legal counsel, Dennis F. O'Brien, provide direct evidence

of one major firm's reaction to the coming of sound. Because the majors acted in concert and copied all-important documents to all companies, United Artists' files provide a record of this collective behavior during the diffusion and adaptation stages. And because UA lawyer Dennis O'Brien was copied on all legal conflicts, these documents take on an authenticity not found elsewhere. When I looked at the Warner's collection at U.S.C., I simply found the same documents.[6]

Just as important were official governmental sources, where if data was presented and falsified, would constitute a felony. Between 1935 and 1937, for example, the Federal Communications Commission (FCC) investigated AT&T. As part of that investigation, the FCC examined AT&T's activities in the motion picture industry. Past studies have included the congressional report that the FCC produced; this study employs the documents on which the staff report was based. These include corporate records, memos, and letters from Electrical Research Products Incorporated (ERPI), RCA, and many firms in the film industry. In addition, the FCC secured a large amount of direct testimony from film industry leaders.

The FCC was not the only government agency to investigate AT&T's tie to the film industry. In 1935, the House of Representatives Committee on Patents considered a bill providing for regulation of patent pools. AT&T's ability to provide the film industry its sound system depended on an important patent pool. This House Committee also secured testimony of motion picture executives, subpoenaed contracts and letters, and compiled financial data directly from the corporate records of the firms involved. The 3,000 pages of documents the House Committee collected are part of the public record.

The same can be said of the vast number of court records collected. These data are the product of the patent, anti-trust and contractual disputes concerning sound patent rights, exclusivity, and royalty fees. In the 1930s, AT&T, Warner Bros., and other members of the film industry initiated many suits over these rights. William Fox sued AT&T and the film industry over his Tri-Ergon patent rights. Warner Bros. sued AT&T for violation of antitrust laws in the sound field, and tangled with AT&T in a dispute concerning royalty payments. Even several major Warner Bros.' stockholders sued the corporation for stock fraud. In all the cases, the plaintiffs and defendants supplied testimony, letters, agreements, and financial data concerning the transition to sound. All these data are part of the public record. A check with the AT&T archives proved only redundancies.

It is with all these new primary and secondary sources, plus a new approach, that we can now write a more complete, systematic history of the transition of the U.S. film industry during this crucial period.

Government and court records have one great advantage. They are obtained under the authority of law. If one offers false documents, the offending party can be cited and sent to jail. Because of our system of governmental checks and balances, and an adversarial system of legal actions, no corporate lawyer would dare release false documents. She or he might advise a client to withhold information, but with hundreds of court cases, and dozens of vast governmental investigations, there was too much primary information, not too little.

The Economic Study

My study originated from the work of Industrial Organization economics, which I then adapted to historical analysis. I base this study upon the principles I laid out in "Toward a New Media Economics" found on pages 407–418 of David Bordwell and Noel Carroll's *Post-Theory: Reconstructing Film Studies* (1996). Following is a summary of these principles:

1. The Hollywood studio system is best understood as a part of mass media industries along with popular music, radio, and in the 1920s, vaudeville. These competed for the customer's dollar and all were dominated by profit-maximizing corporations. Profit = revenues − costs. Profit maximizing means trying to make this difference as large as possible, in other words, the monies that the owners get to keep.
2. The studio system, like the rest of corporate America, was not controlled by financial institutions, but operated as powerful corporate institutions. That is, the focus of this study is corporate change.
3. The primary locus of action was not Hollywood, but New York City where the headquarters of these corporations lay. Executives in New York made all the final decisions, and contrary to the auteur theory, finally approved all script decisions, all selection of footage to use, all final cuts, and all decisions of how to release the films.

The seeming chaos described over and over again by studio workers came from the strategic decisions from New York. To start any study of the coming of sound, we must first understand how these corporate strategies and decisions were made and instituted. Historians have too long been distracted by the supposed chaos on the studio lots and the tales of woe told by old timers. The heads of these corporations—led by Adolph Zukor—saw correctly the movie making process as one part of the system—which also included distribution and exhibition. To pretend that they did not allocate all corporate funds is to wipe away true analysis, so the historian can study what she or he loves—the films themselves.

Chapter 1 debunks the usual conclusions of chaos and disorder as best exemplified by Donald Crafton and Scott Eyman. It was not chaos or disorder, but a basic rational transition that should be appreciated and understood for its rapidness and completeness. The transition needed to be framed in the terms of industrial change. This is nothing new to economic historians. The economic theory that deals with the introduction of any new product or process is called the theory of technological innovation.[7]

Sound films can be treated as a new product, or a new, better way of making the old product. This theory posits that there are three stages in the introduction of any new product or process. In each stage, all firms involved try to maximize their long run profits. To see the effect of a new product, such as talkies, on an industry, one should first establish the basic structure, conduct, and performance of that industry before the change began. Thus, it is necessary to establish the basic conditions of supply and demand, the market structure and corporate conduct in 1925, prior to the coming of sound. Hollywood did little research so it is just as important to compile this same information and construct an analysis for the communication giants that supplied the necessary inventions—led by AT&T and RCA. To complete this baseline it is necessary to analyze the state in 1925 of competing industries: radio, music, and vaudeville industries. These industrial organization analyses are the subjects of Chapter 2. Finally, in Chapter 2, I also survey sound films' early failures—not as histories in themselves, but as examples of what was needed for a system to work as a mass medium.

The first stage in any technological innovation is the development of the necessary inventions. Edwin Mansfield, a noted authority on technological change, has defined an invention as "a prescription for a new product or process that was not obvious to one skilled in the relevant art at the time the idea was generated." This inventing was done outside the film industry and the sold to film corporations by AT&T, RCA, and many smaller corporations.[8]

Motion picture sound can be defined as a mechanical system of recording and reproducing clear synchronized sounds for broadcast with films in motion picture theaters. Sound reproduced under laboratory conditions provides no profit for motion picture producers, distributors, or exhibitors. Furthermore, sound recording and reproduction is, and always was, considered a system of inventions. Thus, the attempts to record and reproduce sound by simply linking up an acoustical phonograph never met the criteria in the definition. This primitive method could never be properly synchronized, or amplified for motion picture theaters. However, it is crucial to survey these early failures to understand the reluctant and rational behavior of the entrepreneurs of most motion picture companies in 1925.

The second and most crucial stage is innovation—covered in Warners' innovations (Chapter 3), and Fox's innovations (Chapter 4). These two companies brought the inventions to the market place as new products—first as partial talkies, and then complete films with all mechanical sound. This freed the theater owner from a significant cost—providing live sounds to accompany "silent" film presentation.[9]

An invention, when first adopted for practical use, is an innovation. The innovator is the first firm to employ the invention in the marketplace. A firm's leaders alter past methods because they determine that the adaptation of this invention is the potential investment with the highest expected rate of return. That is, this investment will add the most to the firm's long run profit for the least cost, worth more than one dollar in the future. Then, the entrepreneur would calculate a rate of return. He would eliminate any projects he did not think would return as much as the firm was currently making in normal operations, or could make by investing elsewhere. Finally the corporate leader would rank the expected profit, selecting for implementation those with the highest returns, given the firm's capital position.[10]

For any motion picture company, this decision rule involves a large number of difficult judgments. The firm must have the necessary managerial talent to organize and effect the change, and acquire the necessary financing to secure the new capital stock. On the supply side, many factors affect expected costs. These include the size of the investment, the new costs of production, distribution and exhibition, and the effects on costs of the firm's existing product. On the demand side, future and current pricing policies, the characteristics of the new product, and expected future sales all influence potential revenues. Moreover, there exists the risk factor, here included in the rate of time preference. Many factors determine which entrepreneurs are risk loving, or risk averse. Considerations of firm size, market structure, the state of the business cycle, and the manager's personality and previous experience are all important factors. Chapters 3 and 4 look at the two key innovators, the Warner Bros. and Fox corporations, determine the strategies to be used, and how best (that is, most profitably) add mechanical sound to motion pictures.

But Warners demonstrated the power of their innovation not with the first hit—*The Jazz Singer*—as historians have repeated over and over again. Instead it was Jolson's second effort—*The Singing Fool*—that proved that a feature all talkie could make far more profit than continuing to create and distribute silent films. Indeed the *Singing Fool* would set the record for film industry revenues in 1928 that would last a decade. This case study of the real economic key film in the innovation process is the subject of Chapter 5.

But the corporate powers of the movie business did not sit around ignoring the actions of the innovators. Chapter 6 examines the behavior of the then dominant corporations—Famous-Players–Lasky/Paramount and Loew's/MGM. The leaders of both decided to wait and not innovate. They would let Warner Bros. and Fox take the chances. In rational decision making, Adolph Zukor of Paramount and Nicholas Schenck of Loew's weighed the advantages and disadvantages of waiting. The advantages lay in the ability to acquire new information, and to benefit from any new improvements in the product or process. Moreover, they could gather valuable data concerning expected revenues by observing the actions of the innovator, and new information concerning costs from the inventor. They reasoned their considerable market power would protect them in the long run—and they were correct and all signed on May 11, 1928, with AT&T.

Next Chapter 7 deals with actions of the companies with sound technology who were unable to sign up Warner Bros. and Fox, or the other major companies. RCA had a sound-on-film system; others had versions of either sound on phonograph records (such as AT&T's Vitaphone) or sound-on-film (such as the AT&T modification done by Fox). But post May 11, 1928, they were shut out. RCA then decided to start its own film company so it would have at least one client to use its sound system—Radio-Keith-Orpheum (RKO). But to be complete I also deal with multiple failures of corporations unable to compete with AT&T or RCA. They simply went out of business—but not for the lack of trying.[11]

Wide-spread use came late in 1928 through 1930. This is called diffusion as the film corporations looked for the type of product the public most liked. Diffusion through the United States is the subject of Chapter 8; international diffusion is surveyed in Chapter 9.

This diffusion stage is concerned with learning about and deciding among various investment policies open to a firm. Rarely does an investment require a quantum leap. The firm's entrepreneurs can always alter the speed of adjustment as they take into account new information. At the same time, the firm can change, or improve the invention, adapting it to its particular production function. Early versions of an innovation often have serious technological and marketing shortcomings. It takes time to work out these problems. These improvements and alterations may turn out to be as important as the invention itself.

The diffusion process also involves a reallocation of resources on the part of the firm. The firm takes on new types of capital and labor to replace those in current use. For example, some workers lose their jobs, while the firm hires others with the appropriate skills. Since physical capital once constructed tends to be relatively inflexible, changes in its allocation take

place largely through the building of a new plant and equipment. Here is where Kraft's inspiration came in for the musician's union.

By 1930, the inventions of five years earlier had refined the film industry. Talkies were standard around the world. The process of technological change was complete. Yet the problems of adjustment for the U.S. film industry did not end as the implications—social and technological—played out. In Chapter 10, I analyze the continuation of the diffusion of sound—which lasted until 1941. In case after case, the collusive Hollywood studios stood together, and successfully faced down AT&T, William Fox, and a host of challengers.

Finally, I contrast my new history with the current literature in Chapter 11 and provide the basis for aesthetic sites. Indeed, an example of this can already be found in Janet Bergstrom's, "Murnau in America: Chronicle of Lost Films," published in *Film History*, volume 14, 2002, where she constructs, on her own and with my help, a new interpretation of the pioneering filmmaking of F. W. Murnau at Fox as the company was transforming itself. Janet used my articles and dissertation; today she simply could have used the book you have in your hands.