(week 9)

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Wiring the World: Acoustical Engineers and the Empire of Sound in the Motion Picture Industry, 1927–1930

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IN HEARING CULTURES: ESSAYS ON SOUND, LISTENING, AND MODERNITY, VEIT ERLMANN, ED. 2004, BERG

On 25 July 1930, the editors of the *New York Times* called attention to the fact that Americans were now "sound conscious" in a way they had never been before. The newspaper highlighted "the listening habit" as an important element of "modern life." The formation of this modern sound consciousness originated fifty years earlier, with the invention of the telephone and phonograph. Still, it was only at the close of the 1920s that auditors began to reflect self-consciously upon their new soundscape. A 1930 advertisement for Insulite Acoustile, a sound-absorbing building material, explained why this was so: "Especially since the advent of the 'talkies,'" the ad claimed, have people "become 'sound conscious.'" The technology of the talkies both culminated and celebrated the modern soundscape in ways that were impossible to ignore, for sound motion pictures gave voice, not just to the silent shadows on the silver screen, but to modernity itself (Branston 2000; Charney and Schwartz 1995; E. Thompson 2002).

This voice would ultimately reverberate around the world. Like the waves of sound broadcast from its loudspeakers, the new technology moved outward in all directions at once. From its technical origins circa 1926 in the American radio and telephone industries, the electroacoustic machinery moved into the realm of motion picture production and exhibition, until, within a few years, virtually every studio and theater in the United States was wired for sound. The expanding wave

migrated far beyond its country of origin, and the expansion did not stop until a global empire of sound was constructed. From Fiji to Spain, rural New Zealand to the streets of Tokyo and Calcutta, the arrival of talkie technology was heralded with banners, signs, and parades.[1]

The American engineers who led those parades perceived themselves to be on a technological mission. Their goal was to get the world "in sync" with the modern United States, and they thought they could accomplish this through their synchronous sound technology. While the engineers deployed military and moral rhetorics of colonialism to understand their role in this ambitious enterprise, the models they drew upon were about to become outdated, for the proliferation of sound film technology proved to be a catalyst in moving the world away from earlier models of colonial imperialism and toward something that would become, by the close of the twentieth century, a tangled set of often contradictory relationships known today as globalism.

American engineers (as well as filmmakers) saw the worldwide expansion of sound film as a broadcast enterprise—one in which American technologies, commodities, and culture would disseminate throughout the world, standardize it, and thereby make it modern. Those at the receiving end of this broadcast, however, chose not simply to accept the machines and messages that were sent their way. Instead, they quickly learned to use the technology to talk back, and what they had to say was not necessarily what the American engineers expected to hear. Sound motion pictures provided a new forum in which nations, and colonies struggling to become nations, could transmit messages of their own. The messages they sent, while certainly influenced by what they had heard from the United States, simultaneously reflected the unique circumstances of each country and colony. Sound movies provided a powerful new means by which to articulate national agendas, and the end result was not a single, standardized and unified modern voice but a cacophony of competing signals and messages.

The essay that follows is a very preliminary exploration of this complicated and wide-ranging story. I am not primarily concerned with the actual sound of sound motion pictures (for more on this, see Crafton 1997; Lastra 2000; E. Thompson 2002); instead, I examine the cultural meaning of the new technology to those who deployed it. I open with a brief survey of the technological development of sound motion pictures and then consider the experiences of the engineers who wired America's theaters for sound. I close by sketching the global dimensions of this story and considering how the engineers' optimistic vision was defeated by a diversity of sounds.

A Brief History of the Development of Sound Motion Pictures

Thomas Edison's earliest ideas for moving pictures had been stimulated by his invention of the phonograph, and he intended from the start to synchronize his images with recorded sounds.[2] Turning this idea into a working technology proved difficult, however, and only after years of work, with considerable input from his assistant William Dickson and with the abandonment of synchronized sound, was Edison able to making his pictures move. In April 1894, the world's first Kinetoscope Parlor opened in a former shoe store in New York. Each peep-show device contained a twenty-second loop of film that customers viewed individually for a nickel a shot. Strongman Eugene Sandow flexed his muscles in one machine; in others appeared a barber shaving a bearded customer, the contortions of Madame Bartholdi, and a pair of fighting roosters. Edison's Kinetoscope was a tremendous success, and exhibitors were soon placing the machines in bars, amusement parks, and arcades across the nation. Rival devices also appeared, and the public developed a voracious appetite for moving images. A new industry was born as producers photographed virtually anything that moved to meet the seemingly incessant demand.

Within a year, however, the novelty had worn off. Edison attempted to reinvigorate the business by returning to his idea of pairing the picture with sound. With the Kinetophone, a customer peered through the standard viewfinder and listened to the sound of an accompanying phonograph through a set of ear tubes. No synchronization was attempted, the sound consisted of little more than background music, and the public, not surprisingly, failed to respond with enthusiasm to the new device. The nascent industry was nonetheless rejuvenated, not by sound, but by projection. Moving images projected onto a large screen and viewed in the company of others left a far greater impression upon an audience than did the tiny, individually experienced peep shows, and with projection, a new and permanent class of popular entertainment was established.

With projection, the challenge of providing synchronized sound became even greater. Now, there was not only the difficulty of maintaining synchronization between sound and image but also the problem of providing sound loud enough for everyone in a large theater to hear—a real challenge in an era in which the only source of recorded sound, the acoustical phonograph, was non-electric and non-amplified. Numerous inventors in Europe and North America confronted the dual

challenges of synchronization and amplification, and a variety of sound motion picture systems appeared during the first two decades of the twentieth century. All suffered from a lack of sound volume and frequent loss of synchronization between sound and image, and none was commercially successful.

Edison himself tried one last time to marry his two inventions by tenuously linking a mechanically amplified, oversized phonograph to a projector via belts and pulleys. Although initially impressive, Edison's system ultimately proved as vulnerable as others to the loss of synchronization. At the Kinetophone's debut in February 1913, the audience was duly impressed, but subsequent screenings were far less successful. Synchronization came and went, the amplifier amplified the surface noise of the record as well as the voices recorded upon it, and within a month the Kinetophone had been branded a failure.

At this point, the motion picture industry basically gave up on the idea of synchronized sound. If Edison himself couldn't make the movies talk, who could? Besides, the public clamored for silent films; why change an already successful product? The impetus to continue experimenting now came, not from the industry itself, but from outsiders, electrical inventors and manufacturers who were not already benefiting from the success of silent films and who had not been discouraged by previous attempts to add sound to them. These men realized that vacuum-tube amplifiers and loudspeakers—innovations recently applied to the new electroacoustic technologies of long-distance telephony, radio, the electric phonograph, and public address systems—could also provide high-quality amplification of sound in a motion picture theater.

Even as Edison's Kinetophone was failing in 1913, the electrical inventor Lee de Forest, whose Audion vacuum tube was the basis for all forms of electroacoustic amplification, began experimenting with a means to record sound onto photographic film. The inventor Theodore Case improved upon de Forest's design and devised a method by which to reverse the process, thereby re-creating the sound that had originally been recorded on film. Case and de Forest ultimately created a system that provided synchronized and amplified sound, and the De Forest Phonofilm Corporation was formed in 1924, with Case as a partner. De Forest persuaded several dozen theater owners to install his equipment and to present the short sound films that Phonofilm produced. These films—typically musical numbers performed by vaudevillians—met with mixed reviews, but cranky critics were soon the least of the inventors' worries. De Forest pursued highly creative financial strategies to generate operating income for Phonofilm and soon ran afoul of the United States Justice Department. Case left the organization, taking with him the patents for his own contributions to the system. Although de Forest's American company went bankrupt in 1926, he had licensed numerous international subsidiaries that continued to promote his system, and many moviegoers around the world experienced their first tantalizing taste of synchronized sound film in the late 1920s via Phonofilm installations.

Back in the United States, AT&T and General Electric shared legal access with de Forest to the technologies of vacuum-tube amplification and broadcast loudspeakers, and these companies simultaneously began to explore the development of sound pictures. GE researcher Charles Hoxie devised his own version of an optical sound recording system and euphoniously dubbed it the Pallophotophone. When the Radio Corporation of America was created in 1919 by merging the radio-related resources of GE and Westinghouse, the Pallophotophone was put to use recording music and speech for delayed radio broadcast. The company chose not to pursue its application to motion pictures.

Unlike RCA, the telephone company was interested in moving into the movie business. Experiments were made with both sound-on-film and sound-on-disc, but the engineers at Western Electric (the manufacturing subsidiary of AT&T) chose to focus on discs, taking advantage of the recording skills they had recently developed when they electrified the phonograph. A means of maintaining synchronization between camera, phonograph, and projector was devised, and by 1924, telephone salesmen were demonstrating the system to Hollywood's biggest players. Almost no one was interested. Virtually all of the industry's leaders had long since dismissed the viability of sound pictures, and the phone company was not about to change their minds. But while Paramount, MGM, and other first-tier studios all closed their ears to the new technology, a second-class outfit run by four brothers named Warner chose to listen.

In 1924, Warner Bros was a small but ambitious studio whose biggest asset was the canine action hero Rin Tin Tin. The studio had, however, recently initiated an aggressive campaign to become a dominant player in the production, distribution, and exhibition of films. Sam Warner was intrigued by the Western Electric sound film system and convinced his brothers that this was how their studio could make a name for itself: Warner Bros could use recorded sound to replace the live music heard in their theaters. Short films of Broadway's best vaudevillians could replace the less-than-stellar local fare offered in provincial theaters, and recorded orchestral scores for feature films could similarly replace the

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variable quality of musical accompaniment that was rendered in each individual house. By offering a standardized and high-quality musical program, the Warner brothers could transform every Warner theater—no matter how small or remote—into the equivalent of a "first run" house.

Warner Bros and Western Electric joined forces in 1925 to form the Vitaphone Corporation, and on 6 August 1926, Vitaphone presented its first program at the Warner Theatre in New York. The program opened with a filmed and recorded address by motion picture czar Will Hays, and a series of "high-class" musical shorts followed. The New York Philharmonic played Wagner's overture to *Tannhäuser*, and numerous other stars performed on screen and synchronized disc for the audience. Best received by far was tenor Giovanni Martinelli's dynamic rendition of the aria "Vesti la Giubba" from Ruggiero Leoncavallo's opera *Pagliacci*. The Vitaphone shorts were followed by the feature attraction, John Barrymore's *Don Juan*, a silent swashbuckler that was accompanied by a recorded, synchronized score of symphonic music with sound effects.

Musical shorts followed by a sync-scored feature also made up the second Vitaphone program a few months later, and this time the recorded performances of vaudevillians George Jessel and Al Jolson stole the show. Warner's competitors took note of the success of these films, but most producers remained convinced that Vitaphone was nothing more than a fad. Al Jolson's subsequent Vitaphone feature, *The Jazz Singer* (1927), would lead them to reevaluate this opinion.

In *The Jazz Singer*, musical shorts by Jolson himself were effectively inserted into a nontalking, sync-scored melodramatic feature. But when Jolson's character briefly conversed with his mother before bursting into song in one such segment, the possibilities of truly talking films became clear. As Richard Koszarski has shown, the fictional narrative of the film itself reinforced its technologically revolutionary impact. Jolson's character, Jack, is a modern, jazz-loving musician. His father, a tradition-bound cantor, disowns his sacrilegious son, and the climactic scene of the film occurs when Jack—now a star about to debut on Broadway—returns home to reconcile with his parents. In the famous talking sequence, his mother embraces his return and he woos her with snappy conversation and a jazzy melody. When the father encounters their revelry, however, he indignantly cries out, "Silence!" and the soundtrack goes silent for several long seconds before the old-fashioned background music returns. The reversion to intertitles for dialogue and the now-mute mimings of Jack on screen as he pleads with his father profoundly underscored the message that sound was the future and silence an affliction of those who would remain entrenched in the past (Koszarski 1989). This message was heard, loud and clear, by the film's audiences as well as by rival film producers.

By 1928, Hollywood fully realized that this new sound technology would not fade away like its predecessors. RCA now offered a sound-on-film system called Photophone to compete with Western's sound-on-disc, and the producer William Fox was turning out newsreels and features with Movietone sound provided by Theodore Case. Production of talking films increased dramatically during 1928 as studios raced to build sound stages, install sound equipment, and learn how to operate it. The number of theaters wired for sound grew, too, for exhibitors were now eager to present the new films. By 1932, only 2 percent of America's theaters remained silent (Hochheiser 1989).

Western Electric emphasized the connection between sound pictures and its older electroacoustic technologies by proclaiming the new system "a product of the Telephone." RCA similarly designated its sound films as "Radio Pictures" to highlight their acoustical pedigree. But the transition to sound in the movies was strikingly abrupt, and it focused consumers' attention in ways that these earlier technologies had not. The celebratory publicity and intense competition surrounding the different systems led listeners to listen more closely than ever before. As the *New York Times* noted, audiences became "sound conscious" as they critically consumed the new aural commodities that defined "modern life."

Sound Engineers and the Wiring of America's Theaters

It was an exciting time to be a sound engineer amid this acoustically self-conscious culture, and new job opportunities beckoned to acoustically inclined young men. Many were hired by ERPI, Electrical Research Products, Inc. (the subsidiary established by AT&T to handle its motion picture business), or by RCA to install and service sound systems in America's theaters, and many more clearly aspired to these positions. In 1929, ERPI received almost eight thousand applications. Only 432 of those who applied were offered employment, and while many of those hired came from within the Bell System, many others came from a wide range of backgrounds in radio, telephone, or electric power systems. The men were given three weeks of training before they were put to work in the field. They were taught the technical intricacies of the equipment as well as the basics of architectural acoustics. They were

also taught to listen, and this "aural training," as it was called, enabled each engineer "to locate system troubles through his ability to recognize the lack of certain frequency ranges and to associate such disorders with equipment troubles which might cause them" (*Erpigram*, 1 May 1930, 5).

Upon completing his training and being sent into the field, the first thing an ERPI installation engineer did in converting a theater for sound reproduction was to perform an acoustical survey. He analyzed the auditorium's acoustical properties in order to recommend specific equipment for it and to suggest any architectural changes that might be required to ensure the quality of sound in the auditorium. The company newsletter, *Erpigram*, explained the procedure:

> In making the surveys, engineers are required to determine the exact volume and seating capacity, nature and thickness and amount of draping and decorating material used in the theatre, exact nature of all seats and furniture, etc. Also included is a noise survey and recommendations for eliminating all noises in the house. So complete is this survey, the report covers five pages and either accurate sketches or architects' drawings must be included in the survey reports. (15 December 1929, 3)

ERPI engineers were outfitted for this effort like big game hunters as they "went on the warpath with a full complement of weapons to banish the bogy Silence and his near relation, General Reverberation." "Each man," the *Erpigram* explained, "has been equipped with a large fibre knapsack in which to carry his equipment. Among other things, it contains a steel tape so that he may measure a house, and the structure with which he comes in contact will have to be analyzed for hidden horrors, such as 'plaster backed by brick.'" The kit also contained a cap pistol, to "hunt out Reverberation, and his Echoes, and banish him from the theater," so that the "T.I.," or Technical Inspector, could "leave the field a victor when the equipment is complete" (15 January 1930, 4). The ERPI engineers sent to inspect the Loew's Theatre in Canton, Ohio, might have felt as if they were truly on safari (20 July 1929, 5): the men heard a loud roar coming from the screen, and after "considerable time spent trying to trace the noise through the circuit" (as they had been trained), they discovered that it was coming from six caged lions that were being kept backstage!

By January 1929, more than 1,000 ERPI installations had been executed. At a rate of 250 more per month, the end of that year saw almost 4,000 total theater installations. The *Erpigram* noted, tongue-in-cheek, that the company was instituting a "humanitarian" policy of hiring only bachelors, in order to reduce the number of "ERPI widows." In fact, the majority of hires were young, single men, and the newsletter was filled with announcements of engagements, marriages, and births. The young men assigned to the Los Angeles area coveted the opportunity to work on private installations in the homes of movie stars like Douglas Fairbanks and Harold Lloyd, and they planned to hold a raffle to determine who would get the assignment if Clara Bow were to place an order for a system in her home (*Erpigram*, 20 March 1929, 2).

The work of the installation engineers was followed by that of the service engineers. Following the precedent of its handling of the telephone business, AT&T leased, rather than sold, its sound motion picture systems, and the follow-up service provided by the company was a strong selling point in the competitive market. Each service engineer was responsible for a geographic area and made regularly scheduled visits to each theater in his district, inspecting the equipment and correcting problems before they could interrupt a performance. William Schlasman covered the Albany–western Massachusetts–Connecticut district circa 1927–1928, and the care and enthusiasm with which he executed his work was remarkable. Although the historian steeped in twenty-first-century cynicism might tend to regard the hyperbolic rhetoric of a company organ like the *Erpigram* as little more than contrived corporate boosterism, Schlasman's papers indicate that such boosterism was, in fact, sincerely felt among the ranks of at least some ERPI engineers. It was clearly an exciting lifestyle for a young man—traveling constantly, staying in hotels, keeping in touch with headquarters through a stream of telegrams, and bringing the new technology to cities and towns that eagerly awaited its arrival. Schlasman telegraphed ahead to the manager of the Palace Theater in Fort Wayne, Indiana, prior to overseeing a Vitaphone opening there, with the announcement: "Will arrive Wednesday to help thrill invited guests with Vitaphone" (Schlasman, 12 April 1927).

Service engineers like Schlasman also handled technical emergencies, and the *Erpigram* is filled with dramatic stories of high-speed races and last-minute repairs to ensure that "The Show Might Go On." The ERPI men regularly suffered automobile accidents or were forced to talk their way out of speeding tickets with local police, and in special circumstances, parts and personnel were rushed in by boat, train, plane, or even dogsled, in the case of the engineer who covered the Alaska territory. The men were also responsible for following up on the instruction given to the projectionists who were in charge of operating the sound

equipment, and Schlasman found that he often had to remind them of proper procedures—particularly with respect to the maintenance of the large array of batteries that powered the machinery. In some cases, the projectionists clearly resented being subject to this new authority. A Mr. Jarvis, for example, undertook a "heated and vigorous denunciation" of Schlasman when the engineer informed him that his batteries were poorly maintained. Theater managers sided with the ERPI engineers, however, and instructed their operators to defer to this outside authority in all technical matters (Schlasman, 9 November 1927).

The ERPI engineers' technical expertise endowed them with exceptional power, commanding respect and even gaining them entrée to places they otherwise would never have visited. In Montgomery, Alabama, for example, service engineer J. W. Borland was the only white person allowed to enter the "all-negro" Pekin Theatre. The theater manager, G. I. English, was a black vaudevillian who had once performed before royalty in England, and the establishment—although owned by a presumably white family named Seligman—was "'of, by, and for' negroes only." The exception made for Borland highlights the fact that there were no black ERPI engineers and it was thus necessary to admit a white engineer to inspect the sound equipment. But the *Erpigram*'s account presented Borland's access as if it were a privilege, accorded him as a result of his technical expertise (20 July 1929, 8).

The technical prestige enjoyed by the ERPI men turned easily to hubris, particularly when they described the reception given their new technology by people who—due to race or nationality—were perceived to be technologically unsophisticated. For example, the *Erpigram*'s account of opening night at the New Frolic Theatre in Jacksonville, Mississippi, noted: "It is doubtful whether the crowded audience of Negroes gave any thought to the hidden mechanical system that purveyed to them their entertainment,—nor could they have known that the installation of the equipment . . . was considered one of the most difficult ever made in the south" (20 February 1929, 6). Another account told of the frightened response by an audience of Native Americans at a theater in Yuma, Arizona, when an engineering test film consisting of high-frequency squeals and pops was accidentally projected in place of the opening reel of the scheduled feature (1 June 1930, 2).

This sense of superiority was only heightened when ERPI engineers traveled abroad. As early as December 1928, ERPI men were at work not only in Europe but also in Australia, India, the West Indies, and Brazil. The fanfare with which they were greeted and the adventures they experienced in these far-flung lands fueled their perception of their work as a technological mission. By wiring the world for sound, they believed they were installing a conduit to modernization that would soon enable these seemingly backward peoples to become more like themselves.

Wiring the World

The sound engineers' attitude toward their global mission was both captured and promulgated in the poem "Erpilog," by Baden Backhouse (*Erpigram*, 20 July 1929, 9):

> From Hollywood to Albuquerque,
> From Juneau to New York,
> Where movies flick across a screen
> No longer are they merely seen—
> For ERPI makes 'em talk!
>
> The cities of Australia
> All know the thrill of sound,
> While 'cross the pond in gay Paree
> They've introduced the word "talkee"—
> So ERPI's Europe-bound!
>
> The Chinaman neglects his joss,
> The Jap his hari-kari
> Mahomet's stocks are wearing thin
> For ERPI is established in
> The Lands of Rice and Curry!
>
> Quite soon among the Eskimos
> The fetish will be known,
> While mid-equator cannibals
> Leave cooking pots and Anabelles
> To hear the white sheet groan!
>
> Where nations lack a common bond
> And hate grows like a cancer,
> Who'll banish ignorance and strife
> And give the world new lease of life?
> Why, ERPI—is the answer!

Backhouse's poem describes a world of diverse peoples uniformly and enthusiastically abandoning their heritage and traditions in favor of the ERPI-enabled entertainments of "the white sheet," to the betterment of themselves and the world at large. The actual sending-off of the sound engineers to the four corners of the globe to complete this poetic modern mission was described more prosaically but in ways that explicitly evoked an earlier American endeavor to rescue world civilization—the deployment of American troops during the Great War. When the first group of ERPI engineers set sail for England in the summer of 1929, they were designated the "American Expeditionary Force." Four waves of "shock troops" were sent abroad, and news of the activities of this "flying squadron" of fifty "skilled engineers" appeared regularly in the *Erpigram* over the summer (20 June 1929, 1). The arrival of the engineers was equally newsworthy in the countries that received them. For example, when the "American experts" arrived in Sydney, Australia, they were greeted at the dock by a (silent) newsreel team. By August 1929, with an installation in a Cairo theater now under way, the newsletter could report that "Africa Falls Under ERPI's Advance," and with this installation the company claimed the last of all inhabited continents "in the course of penetration" (15 August 1929, 1). The northernmost ERPI-equipped theater was within sixty miles of the Arctic Circle, and the southernmost was located on the southern tip of the South Island of New Zealand. One single system, installed on an ocean liner, had circumnavigated the globe by May 1930.

The glamour of this global adventure affected even those who remained rooted in the United States. The workers in the shipping department at the Western Electric Hawthorne plant outside of Chicago, for example, experienced vicariously the excitement associated with the travels of the company's engineers. The department was, according to the *Erpigram*, "a scene of bustling activity":

> At the left of the room are some offices through the partitions of which escape music from the operas . . . and the latest jazz. Not bad to pack to the accompaniment of music! It adds fire to the imaginations already set off by the destinations marked on the boxes. That one over there goes to Geisha-land. These others are marked for mysterious India—lovely France—Sweden, the Land of the Midnight Sun—Egypt—Argentina—Canada.
>
> Special care has to be taken with these export shipments. Certain South American countries will not allow cases to enter that are packed with hay. Some governments require that cases be striped with blue paint and others with gray paint. Dimensions and weights must be correct and there are other rules too numerous to mention. (1 April 1930, 2)

When the Western Electric equipment for Japan's first installation arrived on the docks in April 1929, a group of Japanese lawyers attempted to block its entry into the country. They argued to customs agents that the equipment violated patents held by a Japanese inventor, but their attempt to claim local technological sovereignty proved unsuccessful. ERPI engineer K. Kobayashi quickly and effectively disarmed their claims, and the equipment was soon on its way to an installation that would later be recognized by the emperor himself (*Erpigram*, 20 June 1929, 2).

The Japanese-born Kobayashi—the only non-Western ERPI engineer that I have encountered in the historical record—was clearly a valuable asset to the company. In most cases the company did not possess personnel with a native relationship to the destination country; instead, supervising engineers or agents who had at least some experience with the language or culture in each location were hired to assist the engineers. For example, ERPI engineer Pete Sheridan was accompanied on his trip to India by Colonel W. E. Dennis, who had previously spent several years there. Like Kobayashi, Dennis proved invaluable in moving the sound equipment through customs. Sheridan was also assisted in his technical and personal efforts by hired agents and by a personal servant named Sam (*Erpigram*, 20 December 1928, 1). It is also likely that the sound engineers worked with the agents for the various American film distribution companies that, by this time, had well-established foreign offices for arranging the exhibition of American films in theaters all over the world (Segrave 1997; K. Thompson 1985; Trumpbour 2002).

One can only assume that these agents and servants also served as translators, enabling the American engineers to instruct local electricians and carpenters how to install the equipment, as well as permitting them to teach local projectionists how to operate it. Sheridan learned at least how to swear in several Indian languages during his time abroad, but I have found no mention of any translation, by ERPI or Western Electric, of the English-language instruction manuals that were issued with the equipment. The goal was always to turn over all operations to the local theater staff as quickly as possible. In most cases, the Americans who were sent abroad spent no more than a week or so at any single location and returned to the United States after just a few months.

While away, however, these men wrote back with stories of the strange customs and habits of the people—theater workers and audiences—whom they met in their travels. Pete Sheridan, for example, noted the practice in India of "baptizing" the new equipment with coconut milk. This ceremony initially elicited his new vocabulary of Hindi profanities, but upon learning the intent of the ritual (and upon determining that the machinery was not damaged by it), he "fell thoroughly in love with the idea," because "it was meant to secure the propitious aid of the gods that the apparatus would operate properly" (*Erpigram*, 15 August 1929, 6).

The first showings of the new talking films were tremendously popular. Although the initial installations in many countries were generally made in theaters that catered, albeit not exclusively, to an expatriate European population, the crowds that gathered seeking admission on opening night proved far greater than this minority population alone would have generated. In Cali, Colombia, people were so eager to gain admission on opening night that a police force of thirty was unable to control them and they destroyed the theater's box office. "Such reception," noted the ERPI engineer who reported this story, "indicates that they like the talkies down here whether they can understand them or not" (*Erpigram*, 20 July 1929, 1). Though this sentiment proved true during the earliest days of sound motion pictures, it would not be long sustained. When audiences began to require from their talkies something more than the experience of an exciting new technology, the naïveté of the engineers' vision of one world, wired together in acoustical harmony and sociopolitical synchronization, was fully exposed. Indeed, before long, audiences around the world would be rioting against sound films, not for them.

For approximately the first year of global sound film, there were few alternatives to the American films that typically opened a newly wired house. The film industries in most European countries were still recovering from the devastations of the Great War, and most non-Western countries had yet to tool up for significant domestic film production. Many of these countries had exhibited primarily European films before the war. When hostilities shut down European production, American distributors took full advantage of the situation, enlisted the assistance of the federal government, and basically saturated the world market with the products of Hollywood (Jarvie 1992; Segrave 1997; K. Thompson 1985; Trumpbour 2002).

The emergence of sound film placed an additional financial burden upon European, Asian, and African producers struggling to compete,

and so, during 1929–1930, the hegemony of Hollywood on the world's screens was only reinforced. India was serenaded with Universal's *Melody of Love;* Fiji came out for *Abie's Irish Rose*, and Shanghai showed *Love Parade, Rio Rita,* and *Hollywood Revue.* The preponderance of musicals during this period helped minimize the language problem, and westerns also played well, because they "concentrate on action, which is easily understandable to peoples of all lands" (*Movie Show Annual 1930* [India], 45). English-language musicals and westerns could captivate international audiences for only so long, however, and exhibitors soon began to devise creative methods for dealing with the language barrier newly imposed by the sound technology.

During the silent film era, the universal language of pantomime had ensured that motion pictures easily enjoyed an international market—indeed, American and European producers had depended upon this market to cover their costs and increase profits. Textual intertitles in English, French, Italian, or German were simply replaced with titles in the language native to the place the film was being shown. Japan integrated silent film into its distinct theatrical tradition by employing *katsuben* or *benshi*, live narrators who commented to theater audiences upon the action taking place onscreen. With the introduction of sound, this valued tradition was initially maintained, although, as one ERPI engineer reported, it turned some shows into a battle of "ERPI vs. Benshi," as the narrator struggled to be heard over the music and English dialogue pouring forth from the loudspeakers (*Erpigram*, 15 September 1929, 2; Anderson 1992; Kenji 1992). At the New Helen Theater in Shanghai, the manager constructed a booth in the auditorium in which he placed six Chinese performers who watched the film and carefully practiced simultaneous dialogue dubbing in their native language. During performances, they spoke, live, into microphones, and their voices were amplified and broadcast over the theater's sound system on top of the film's original soundtrack of music and non-Chinese language (*Erpigram*, 15 July 1930, 3).

American producers also began to experiment with releasing foreign versions of their films with integrated dubbed soundtracks, but the state of sound-editing technology circa 1930 rendered this process difficult and not very satisfactory. Dialogue subtitles were also explored, as in Egypt, where subtitles generated from a separate reel of film were run along the side of the screen. For English-language films, the subtitles were presented in French and Arabic; once French talking films became available, theaters provided subtitles in English and Arabic (*Erpigram*, 1 October 1930, 8). But audiences came to talking pictures expecting

to listen, not to read, so subtitles—like dubbing—constituted a less than ideal solution to the language problem.

American producers—now fearful of the loss of their international market—briefly adopted the strategy of simultaneously producing multiple foreign-language versions of their feature films. Paramount dedicated a new studio at Joinville, France, to the production of these "multilinguals," and other studios brought French-, German-, and Spanish-speaking actors to Hollywood to re-create, scene for scene, the English-language features being produced there. These films, however, typically lacked the "star appeal" of the original productions, and they failed to generate the expected revenues abroad. By 1931, most studios had abandoned the practice as uneconomical (Durovicová 1992; Garncarz 1999; Vincendeau 1999). At this time, most European countries—and a few others, notably India—were able to offer their own domestic products to compete directly with the English-language American films.

In Europe, the sound film situation stimulated national governments to undertake action in support of the development of national film industries. Germany's courts successfully blocked both American sound systems and American sound films for over a year through the protection of rival sound-technology patents taken out by German engineers. Elsewhere, import quotas and taxes slowed the influx of American films, and laws were passed in France and Italy to protect both native workers and native speakers in the production of films within each country (Crafton 1997; Durovicová 1992; Gomery 1975; Higson and Maltby 1999; K. Thompson 1985).

Other countries now imported these films in addition to those from the United States, but they also began to produce their own. The film industry of India, in particular, began to flourish in the wake of the first Indian-produced talkie, *Alam Ara* (1931), and the production of this film was recalled with nationalistic pride upon its silver anniversary in 1956. "When I witnessed *Show Boat*," remembered director Shri Irani, "at the Excelsior [Theatre] in 1929, I was inspired to make a Talkie in India. . . . The project at first appeared too hazardous because in India we had absolutely no facilities, no equipment and no experience to start a sound film. But anyhow I decided to go ahead with the preparations as the temptation to make a picture in our own national language was simply irresistible" (*Indian Talkie 1931–1956*, 23).

Irani purchased a portable sound film recording setup, and he recalled that when this foreign equipment arrived at his Imperial Studios, "everyone felt that this was the dawn of a new age." Although he initially hired a foreign expert, Wilford Demming, to instruct him and his crew in the use of the sound system, by the time Irani was ready to shoot his film, Demming's expertise was no longer required, and *Alam Ara* was entirely and proudly the product of Indian labor. Its reception was tumultuous, and Indian film—particularly musicals like *Alam Ara*—was soon a vital and growing industry (Rajadhyaksha and Willemen 1999; Ramachandran 1985).

Within its boundaries, India reiterated the international language problem, because different populations spoke Hindi, Urdu, Telugu, and numerous other languages. Although sound films were produced in each of these many languages, one producer claimed that the growing prominence of Hindi films actually accomplished, within India, the ambitious international goal of unification that the ERPI engineers had projected. "The greatest achievement to the credit of our film industry," Shri Chandulal Shah claimed, "is the fact that the Talkie has been mainly responsible for spreading the Hindi language among the masses in every nook and corner of India. Provinces like Bengal and Madras were, literally speaking, taught Hindi through the Talkies" (*Indian Talkie 1931–1956*, 33–34).

Though I am not equipped to evaluate this claim, it is clear that talkie technology increasingly served the nationalistic agendas of numerous countries and colonies around the world over the course of the 1930s and beyond. Prem Chowdhry has characterized Indian cinema as a "nation space" that preceded the formation of the nation itself and has described how Indian films often explicitly challenged the views (and voices) of Indian colonials as presented in American and British films about "The Empire" (Chowdhry 1995: 11). In Greece, sound technology similarly proved a catalyst for the self-conscious creation of a definitively Greek cinema (Hess 2000). In Italy, Mussolini was one of the first to recognize the political usefulness of sound motion pictures, and the loudspeakers of Germany helped constitute National Socialism as they broadcast its messages to the German people. Non-Germans also reacted to the German voice as transmitted through sound picture technology. In Prague in 1930, German-language films instigated street demonstrations and the destruction of several theaters' interiors (Garncarz 1999: 255). French moviegoers reacted similarly against American English when the *Fox Movietone Follies of 1929* opened in Paris. There, too, displeasure at the sound of foreign dialogue filling a French theater precipitated protests that escalated into a mob riot and the destruction of the theater (Danan 1999: 230). Although the stars, stories, and songs of Hollywood—from Al Jolson and Gary Cooper to Humphrey Bogart

and Shirley Temple—would ultimately survive this wave of protest and maintain a global presence through another great war and beyond, it is nonetheless clear that, with the introduction of sound, the internationalism of silent film was quickly replaced by a diversified market of national products.

By this time, however, the ERPI engineers were long gone. Experiencing only the euphoric initial reception of their technology by the many different peoples of the world, they failed to appreciate the complicated legacy that technology left in its wake. In his study of technology and colonialism in French Guiana, Peter Redfield charts the transformation, over the course of the twentieth century, of the modern "era of empire" into the postmodern "age of global connection" (Redfield 2000: xv). ERPI engineers operated within an age of empire. They understood their work through a thoroughly modern mentality, even as their work played a critical role in transforming the world into a postmodern network of global connections. For that brief moment when they traveled the globe, the engineers' dream that their sound technology would render harmony 'round the world seemed almost attainable. The new technology itself, as well as the flappers, gangsters, and jazzy melodies of the films it brought to life, embodied an idea of innovative modernity whose appeal was perceived to be universal. "You bet the world has changed," asserted the newsletter for the newly wired Capitol Theatre in Sydney, Australia, "and the Capitol is a 1929 example of the 'new' world—always there with the latest" (*Capitol News*, 19 May 1929, 3). The far reaches of the globe, it appeared, might be brought closer together through the machinations of Western—or, rather, Western Electric—technology.

Ultimately, this vision proved to be a chimera. While the new sound systems indeed provided a common materiality and stimulated technological progress in this sector around the world, they simultaneously enabled filmmakers in each country and colony to articulate—literally, to give voice to—their unique and often competing national characters. In striving for a transcendent international standard but also in falling short of that goal and instead reinforcing increasingly nationalistic tendencies, the "groans of the white sheet" were truly those of the modern condition.

Notes

1. See *Erpigram*, 20 July 1929, 2 (Tokyo), and 15 May 1930, 8 (Bundaberg), for representative photos of these parades.

2. This brief survey is a condensed version of that found in E. Thompson 2002: 235–248. See that work for citation of the numerous sources from which the survey is derived.

References

Abu-Samak, Mustafa Ahmed. 1995. *Al-madkhal li-dirasat al-khataba wa turuq al-tabligh fi al-Islam* [Introduction to the study of sermon delivery and the paths of proselytization in Islam]. Cairo: Dar al-Saba al-Muhamidiyya.

Ackerman, Diane. 1990. *A Natural History of the Senses*. New York: Random House.

Adorno, Theodor W. 1974. *Minima Moralia: Reflections on a Damaged Life*. London: New Left Books.

——. 1991 [1928]. "On the Fetish Character in Music and the Regression of Listening." In *The Culture Industry: Selected Essays on Mass Culture*, by Theodor W. Adorno. London: Routledge.

Anderson, J. L. 1992. "Spoken Silents in the Japanese Cinema, or, Talking to Pictures: Essaying the *Katsuben*, Contextualizing the Texts." In *Reframing Japanese Cinema: Authorship, Genre, History*, edited by Arthur Nolletti Jr. and David Desser, 259–310. Bloomington: Indiana University Press.

Anzieu, Didier. 1989. *The Skin Ego*. New Haven, CT: Yale University Press.

Aristotle. 1984. *On the Heavens (De Caelo)*, translated by J. L. Stocks. In *The Complete Works of Aristotle*, edited by Jonathan Barnes. Princeton, NJ: Princeton University Press.

Artaud, Antonin. 1993. *Le theatre et son double*. Paris: Gallimard.

Asad, Muhammed. 1980. *The Message of the Qur'an*. Gibraltar: Dar al Andalus.

Augustine, Saint. 1973. *An Augustine Reader*. Edited by John J. O'Meara. New York: Image Books.

Austern, Linda Phyllis. 1989. "'Sing Againe Syren": The Female Musician and Sexual Enchantment in Elizabethan Life and Literature." *Renaissance Quarterly* 42: 420–448.

——. 2002. *Music, Sensation, and Sensuality*. New York: Routledge.

Bacon, Francis. 1626. *Sylva Sylvarum: Or, A Naturall Historie*. London: William Lee.

——. 2000 [1605]. *The Advancement of Learning.* Edited by Michael Kiernan. Oxford: Clarendon Press.

Badawi, Abdul Nazim. 1996. "Shurut al-intifa' bil-Qur'an" [Conditions for benefitting from the Qur'an]. *Al-Tauhid* 25 (4): 10–13.

Baggio, R. A. 1989. *The Shoe in My Cheese.* Melbourne: R. A. Baggio.

Barthes, Roland. 1985. "Listening." In *The Responsibility of Forms: Critical Essays on Music, Art, and Representation,* by Roland Barthes. Translated by Richard Howard. New York: Hill and Wang.

Barthes, Roland. 1991. *The Responsibility of Forms: Critical Essays on Music, Art, and Representation.* Translated by Richard Howard. Berkeley: University of California Press.

Baudrillard, Jean. 1993. *Symbolic Exchange and Death.* London: Sage.

Bauman, Zygmunt. 1993. *Postmodern Ethics.* Oxford: Blackwell.

Baumann, Max-Peter, and Linda Fujie, eds. 1999. "Hearing and Listening in Cultural Contexts." *The World of Music* 41, no. 1.

Beck, Guy L. 1995. *Sonic Theology: Hinduism and Sacred Sound.* Delhi: Motilal Banarsidass Publishers.

Beckett, Samuel. 1983. *Disjecta.* London: John Calder.

Beier, A. L., and Roger Finlay, eds. 1986. *London: The Making of the Metropolis 1500–1700.* London: Longman.

Benveniste, Emile. 1971. "Active and Middle Voice in the Verb." In *Problems in General Linguistics.* Translated by Mary Elizabeth Meek. Coral Gables, FL: University of Miami Press.

Berger, Anna Maria Busse. 1990. "Musical Proportions and Arithmetic in the Late Middle Ages and Renaissance." *Musica Disciplina* 44: 89–118.

Berger, John, and Jean Mohr. 1975. *A Seventh Man.* Harmondsworth: Penguin.

Bijsterveld, Karin. 2001. "The Diabolical Symphony of the Mechanical Age: Technology and Symbolism of Sound in European and North American Noise Abatement Campaigns, 1900–1940." *Social Studies of Science* 31 (1): 37–70.

Blacking, John. 1995. *Music, Culture, and Experience: Selected Papers of John Blacking.* Edited by Reginald Byron. Chicago: University of Chicago Press.

Blavatsky, H. P. 1971 [1888]. *The Secret Doctrine.* 6 vols. Adyar: Theosophical Publishing House.

Bloomfield-Moore, Clara. 1983. "Introduction." In *Keely and His Discoveries.* New York: Kegan Paul, Trench, Trübner.

Bohlman, Philip. 2000. "Composing the Cantorate: Westernizing Europe's Other Within." In *Western Music and Its Others: Difference, Representation, and Appropriation in Music,* edited by Georgina Born and David Hesmondhalgh, 187–212. Berkeley: University of California Press.

Bolinger, Dwight. 1986. *Intonation and Its Parts: Melody in Spoken English.* Stanford: Stanford University Press.

Brakhage, Stan. 1982. "Interview with Richard Grossinger." In *Brakhage Scrapbook: Collected Writings,* edited by R. A. Haller, 190–200. New Paltz, NY: Documentext.

Branston, Gill. 2000. *Cinema and Cultural Modernity.* Buckingham: Open University Press.

Breathnach, C. S. 1998. "Richard Brocklesby FRS FRCP (1722–1797): Physician and Friend." *Journal of Medical Biography* 6 (3): 125–127.

Bregman, Albert S. 1990. *Auditory Scene Analysis: The Perceptual Organisation of Sound.* Cambridge, MA: MIT Press.

Brocklesby, Richard. 1749. *Reflections on Antient and Modern Musick, with the Application to the Cure of Diseases. To Which Is Subjoined, an Essay to Solve the Question Wherein Consisted the Difference of Antient Musick, from That of Modern Times.* London: Cooper.

Brodsky, Warren. 2002. "The Effects of Music Tempo on Simulated Driving Performance and Vehicular Control." In *Transportational Research Part F,* 219–241. New York: Pergamon Press.

Browne, Richard. 1729. *Medicina Musica: A Mechanical Essay on Singing, Music and Dancing. Containing Their Uses and Abuses, and Demonstrating by Clear and Evident Reasons, the Alterations They Produce in a Human Body.* London.

Bull, Michael. 2000. *Sounding Out the City: Personal Stereos and the Management of Everyday Life.* Oxford: Berg.

——. 2001. "Soundscapes of the Car: A Critical Ethnography of Automobile Habitation." In *Car Cultures,* edited by D. Miller, 185–202. Oxford: Berg.

Burch, Kerry, T. 2000. *Eros as the Educational Principle of Democracy.* New York: Peter Lang.

Burnett, Charles. 2000. "Spiritual Medicine: Music and Healing in Islam and Its Influence in Western Medicine." In *Musical Healing in Cultural Contexts,* edited by Penelope Gouk, 85–91. Guildford: Ashgate.

Burnett, Charles, Michael Fend, and Penelope Gouk, eds. 1991. *The Second Sense: Studies in Hearing and Musical Judgement from Antiquity to the Seventeenth Century.* London: Warburg Institute.

Burton, Robert. 1621. *The Anatomy of Melancholy.* Oxford.

Busoni, Ferruccio. 1962 [1907]. *Sketch of a New Aesthetic of Music.* In *Three Classics in the Aesthetic of Music.* New York: Dover.

Cage, John. 1961. *Silence*. Middletown, CT: Wesleyan University Press.
Cage, John, and Daniel Charles. 1981. *For the Birds*. Boston: Marion Boyars.
Calverly, Edwin. 1943. "Doctrines of the Soul (*Nafs* and *Ruh*) in Islam." *The Moslem World* 33 (4): 254–264.
Cantor, G. N., and M. J. S. Hodge, eds. 1981. *Conceptions of Ether: Studies in the History of Ether Theories, 1740–1900*. Cambridge: Cambridge University Press.
The Capitol News. Vol. 2, no. 7 (19 May 1929). Sydney, Australia. AMPAS Margaret Herrick Library, Beverly Hills, California.
Carter, Paul. 1992. *The Sound In-Between*. Sydney: New Endeavour/University of New South Wales Press.
——. 1993. "The Native Informant." First broadcast on "The Listening Room," Australian Broadcasting Corporation FM-Radio, 29 July 1993. Citations from script (1–26) obtainable from author.
——. 1996. *The Lie of the Land*. London: Faber and Faber.
Chevrier, G. 1907. "Note sur les Gunas." *Transactions of the Second Annual Congress of the Federation of European Sections of the Theosophical Society, July 6–10, 1905*, 125–131. London: For the Council of the Federation.
Charney, Leo, and Vanessa Schwartz, eds. 1995. *Cinema and the Invention of Modern Life*. Berkeley: University of California Press.
Childs, G. Tucker. 1996. "Where Have All the Ideophones Gone? The Death of a Word Category in Zulu." *Toronto Working Papers in Linguistics* 15: 81–103.
Chittick, William C., ed. 1989. *The Sufi Path of Knowledge: Ibn al-'Arabi's Metaphysics of Imagination*. Albany: State University of New York Press.
Chou, Wen-Chung. 1971. "Asian Concepts and Twentieth-Century Composers." *Musical Quarterly* 53 (2): 211–229.
——. 1977. "Asian and Western Music: Influence or Confluence." *Asian Culture Quarterly* 5 (4): 60–66.
Chowdhry, Prem. 1995. *Colonial Cinema and the Making of Empire Cinema*. Manchester: Manchester University Press.
Christensen, Thomas. 1993. *Rameau and Musical Thought in the Enlightenment*. Cambridge: Cambridge University Press.
Classen, Constance. 1993. *Worlds of Sense: Exploring the Senses in History and across Cultures*. New York: Routledge.
——. 1997. "Foundation for an Anthropology of the Senses." *International Social Science Journal* 49: 401–412.
Clifford, James. 1986. "Introduction: Partial Truths." In *Writing Culture: The Poetics and Politics of Ethnography*, edited by James Clifford and George E. Marcus, 1–26. Berkeley: University of California Press.

Collingwood, R. G. 1976. *The Idea of Nature*. New York: Oxford University Press.
Columbus, Christopher. 1989. *The* Diario *of Christopher Columbus's First Voyage to America, 1492–1493*. Translated by O. Dunn and J. E. Kelley Jr. Norman: University of Oklahoma Press.
Connor, Steven. 1997. "Feel the Noise: Excess, Affect and the Acoustic." In *Emotion in Postmodernism*, edited by Gerhard Hoffmann and Alfred Hornung, 147–162. Heidelberg: Universitätsverlag Carl Winter.
——. 2000a. "Sounding Out Film." http://www.bbk.ac.uk/eh/eng/skc/soundingout/
——. 2000b. *Dumbstruck: A Cultural History of Ventriloquism*. Oxford: Oxford University Press.
Copenhaver, Brian. 1988. "Astrology and Magic." In *The Cambridge History of Renaissance Philosophy*, edited by Charles B. Schmitt, Quentin Skinner, and Jill Kraye, 264–300. Cambridge: Cambridge University Press.
Cowart, Georgia, ed. 1989. *French Musical Thought*. Ann Arbor, MI: U.M.I. Research Press.
Cowell, Henry. 1969 [1929]. *New Musical Resources*. New York: Something Else Press.
Crafton, Donald. 1997. *The Talkies: American Cinema's Transition to Sound, 1926–1931*. New York: Charles Scribner's Sons.
Crary, Jonathan. 1999. *Suspensions of Attention: Attention, Spectacle, and Modern Culture*. Cambridge, MA: MIT Press.
Crooke, Helkiah. 1616. *Microcosmographia: A Description of the Body of Man*. London: Jaggard.
Crosby, Alfred W. 1998. *The Measure of Reality: Quantification and Western Society, 1250–1600*. Cambridge: Cambridge University Press.
Dahl, Oywind. 1999. *Meanings in Madagascar: Cases of Intercultural Communication*. Westport, CT: Bergin and Garvey.
Danan, Martine. 1999. "Hollywood's Hegemonic Strategies: Overcoming French Nationalism with the Advent of Sound." In *"Film Europe" and "Film America": Cinema, Commerce and Cultural Exchange, 1920–1939*, edited by Andrew Higson and Richard Maltby, 225–248. Exeter: University of Exeter Press.
Danielson, Virginia. 1997. *The Voice of Egypt: Umm Kulthum, Arabic Song, and Egyptian Society in the Twentieth Century*. Chicago: University of Chicago Press.
Darrow, A. A., A. C. Gibbons, and G. N. Heller. 1985. "Music Therapy Past, Present, and Future." *American Music Teacher*, September–October: 18–20.
Debord, Guy. 1994. *Society of the Spectacle*. New York: Zone Books.

Denny, Frederick. 1980. "Exegesis and Recitation: Their Development as Classical Forms of Qur'anic Piety." In *Transitions and Transformations in the History of Religions*, edited by F. E. Reynolds and T. M. Ludwig, 91–123. Leiden: E. J. Brill.

DeNora, Tia. 2000. *Music in Everyday Life*. Cambridge: Cambridge University Press.

Denzin, Norman K. 1995. *The Cinematic Society*. London: Sage.

Derrida, Jacques. 1997. *Of Grammatology*. Baltimore, MD: Johns Hopkins University Press.

Descola, Philippe. 1994. *In the Society of Nature: A Native Ecology in Amazonia*. Cambridge: Cambridge University Press.

Drechsel, E. J. 1987. "Metacommunicative Functions of Mobilian Jargon, an American Pidgin of the Lower Mississippi River Region." In *Pidgin and Creole Languages*, edited by G. C. Gilbert, 433–444. Honolulu: University of Hawaii Press.

DuGay, Paul, Stuart Hall, and Hugh Mackay. 1997. *Doing Cultural Studies: The Story of the Sony Walkman*. London: Sage.

Dunn, Leslie C., and Nancy C. Jones, eds. 1994. *Embodied Voices: Representing Female Vocality in Western Culture*. Cambridge: Cambridge University Press.

During, Jean. 1997. "Hearing and Understanding in the Islamic Gnosis." *The World of Music* 39 (2): 127–137.

Durovicová, Natasa. 1992. "Translating America: The Hollywood Multilinguals, 1929–1933." In *Sound Theory/Sound Practice*, edited by Rick Altman, 138–153. New York: Routledge.

Earle, Peter. 1989. *The Making of the English Middle Class: Business, Society and Family Life in London, 1660–1730*. London: Methuen.

"Edison's Dream of a New Music." 1913. *Cosmopolitan* 54: 797–800.

Eliot, T. S. 1969. "The Family Reunion." In *The Complete Poems and Plays of T. S. Eliot*. London: Faber and Faber.

Ellis, Catherine. 1964. *Aboriginal Music Making: A Study of Central Australian Music*. Adelaide: Libraries Board of South Australia.

Erpigram. 1928–1932. Corporate newsletter of Electrical Research Products, Inc. AT&T Archives, Warren, NJ.

Fabian, Johannes. 1990. *Power and Performance: Ethnographic Explorations through Proverbial Wisdom and Theater in Shaba, Zaïre*. Madison: University of Wisconsin Press.

Feld, Steven. 1990. *Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression*. Chicago: University of Chicago Press.

——. 1991. *Voices of the Rainforest* (compact disc). Rykodisc.

——. 1996. "Waterfalls of Song: An Acoustemology of Place Resounding in Bosavi, Papua New Guinea." In *Senses of Place*, edited by Steven Feld and Keith H. Basso, 91–135. Santa Fe: School of American Research Press.

——. 2000. "The Poetics and Politics of Pygmy Pop." In *Western Music and Its Others: Difference, Representation, and Appropriation in Music*, edited by Georgina Born and David Hesmondhalgh, 254–279. Berkeley: University of California Press.

Fenlon, Iain, ed. 1989. *The Renaissance: From the 1470s to the End of the Sixteenth Century. Man and Music*. London: Macmillan.

Ficino, Marsilio. 1989. *Marsilio Ficino: Three Books on Life*. Edited by Carol V. Kaske and John R. Clark. Binghamton, NY: Medieval and Renaissance Texts and Studies.

Fiumara, Gemma Corradi. 1990. *The Other Side of Language: A Philosophy of Listening*. Translated by Charles Lambert. London: Routledge.

Flichy, Patrice. 1995. *Dynamics of Modern Communication: The Shaping and Impact of New Communication Technologies*. London: Sage.

Foucault, Michel. 1972 [1969]. *The Archaeology of Knowledge*. Translated by A. M. Sheridan-Smith. New York: Pantheon.

——. 1994. *The Order of Things*. New York: Vintage Books.

Fox, Adam. 2000. *Oral and Literature Culture in England 1500–1700*. Oxford: Clarendon Press.

Franklin, C. H. H. 1907. "Vibratory Capacity, the Key of Personality." *Transactions of the Second Annual Congress of the Federation of European Sections of the Theosophical Society, July 6–10, 1905*, 329–343. London: For the Council of the Federation.

Friedberg, Anne. 1993. *Window Shopping*. Berkeley: University of California Press.

Friedrich, Paul. 1991. "Polytropy." In *Beyond Metaphor: The Theory of Tropes in Anthropology*, edited by J. W. Fernandez, 17–55. Stanford, CA: Stanford University Press.

Friedson, Steven M. 1996. *Dancing Prophets: Musical Experience in Tumbuka Healing*. Chicago: University of Chicago Press.

Fubini, Enrico, ed. 1994. *Music and Culture in Eighteenth-Century Europe: A Source Book*. Chicago: University of Chicago Press.

Gaffney, Patrick D. 1991. "The Changing Voices of Islam: The Emergence of Professional Preachers in Contemporary Egypt." *The Muslim World* 81 (1): 27–47.

Garncarz, Joseph. 1999. "Made in Germany: Multiple-Language Versions and the Early German Sound Cinema." In *"Film Europe" and "Film America": Cinema, Commerce and Cultural Exchange, 1920–1939*, edited by Andrew Higson and Richard Maltby, 249–273. Exeter: University of Exeter Press.

Geurts, Kathryn Linn. 2002. *Culture and the Senses: Bodily Ways of Knowing in an African Community.* Berkeley: University of California Press.

Girard, René. 1976. *Deceit, Desire, and the Novel: Self and Other in Literary Structure.* Baltimore, MD: Johns Hopkins University Press.

Gitelman, Lisa. 1999. *Scripts, Grooves, and Writing Machines: Representing Technology in the Edison Era.* Stanford, CA: Stanford University Press.

Goffman, Erving. 1981. "Footing." In *Forms of Talk,* by Erving Goffman, 124–159. Philadelphia: University of Pennsylvania Press.

Gomery, Douglas. 1975. "The Coming of Sound to the American Cinema: A History of the Transformation of an Industry." Ph.D. dissertation, University of Wisconsin, Madison.

Gomi, Taro. 1989. *An Illustrated Dictionary of Japanese Onomatopoeic Expressions.* Translated by J. Turrent. Tokyo: Japan Times.

Gouk, Penelope. 1991. "Some English Theories of Hearing in the Seventeenth Century: Before and After Descartes." In *The Second Sense: Studies in Hearing and Musical Judgement from Antiquity to the Seventeenth Century,* edited by Charles Burnett, Michael Fend, and Penelope Gouk, 95–113. London: Warburg Institute.

——. 1999. *Music, Science, and Natural Magic in Seventeenth-Century England.* New Haven, CT: Yale University Press.

——. 2000a. "Sister Disciplines? Music and Medicine in Historical Perspective." In *Musical Healing in Cultural Contexts,* edited by Penelope Gouk, 171–196. Guildford: Ashgate.

——. 2000b. "Music, Melancholy and Medical Spirits in Early Modern Thought." In *Music as Medicine: The History of Music Therapy since Antiquity,* edited by Peregrine Horden, 173–194. Guildford: Ashgate.

——. 2000c. "Beyond Rationality? The Paradox of Writing about Non-Verbal Ways of Knowing." *Intellectual News* 8: 44–57.

Graham, William A. 1987. *Beyond the Written Word: Oral Aspects of Scripture in the History of Religion.* Cambridge: Cambridge University Press.

Greenblatt, Stephen. 1991. *Marvelous Possessions.* Chicago: University of Chicago Press.

Guerrini, Anita. 2000. *Obesity and Depression in the Enlightenment: The Life and Times of George Cheyne.* Norman: University of Oklahoma Press.

Hass, Robert. 1994. *The Essential Haiku: Versions of Basho, Buson, and Issa.* Hopewell, NJ: Ecco Press.

Heath, Shirley Brice. 1983. *Ways with Words.* New York: Cambridge University Press.

Henry, John. 1997. *The Scientific Revolution and the Origins of Modern Science.* London: Macmillan.

Hess, Franklin L. 2000. "Sound and the Nation: Rethinking the History of Early Greek Film Production." *Journal of Modern Greek Studies* 18: 13–36.

Heyd, Michael. 1984. "Robert Burton's Sources on Enthusiasm and Melancholy: From a Medical Tradition to Religious Controversy." *History of European Ideas* 5: 17–44.

Higson, Andrew, and Richard Maltby, eds. 1999. *"Film Europe" and "Film America": Cinema, Commerce and Cultural Exchange, 1920–1939.* Exeter: University of Exeter Press.

Hinde, Julia. 2001. "Big Man versus Big Bang Theory." *Times Higher Education Supplement,* 15 June, 20–21.

Hirschkind, Charles. 1995. "Heresy or Hermeneutics: The Case of Nasr Hamid Abu Zayd." *Stanford Humanities Review* 5 (1): 35–49.

——. 2001a. "The Ethics of Listening: Cassette-Sermon Audition in Contemporary Egypt." *American Ethnologist* 28 (3): 623–649.

——. 2001b. "Civic Virtue and Religious Reasoning: An Islamic Counter Public." *Cultural Anthropology* 16 (2): 3–34.

Hochheiser, Sheldon. 1989. "AT&T and the Development of Sound Motion-Picture Technology." In *The Dawn of Sound,* edited by Mary Lea Bandy, 23–33. New York: Museum of Modern Art.

Hollingshead, John. 1895. *My Lifetime.* 2 vols. London: Sampson, Low, Marston.

Honneth, Axel. 1993. *The Critique of Power.* Cambridge, MA: MIT Press.

——. 1995. *The Fragmented World of the Social: Essays in Social and Political Philosophy.* Albany: State University of New York Press.

Horden, Peregrine, ed. 2000. *Music as Medicine: The History of Music Therapy since Antiquity.* Guildford: Ashgate.

Horkheimer, Max, and Theodor W. Adorno. 1973. *The Dialectic of Enlightenment.* London: Penguin.

Howes, David. 2003. *Sensual Relations: Engaging the Senses in Culture and Social Theory.* Ann Arbor: University of Michigan Press.

Howes, David, ed. 1991. *The Varieties of Sense Experience: A Sourcebook in the Anthropology of the Senses.* Toronto: University of Toronto Press.

Hull, A. Eaglefield. 1916. "A Survey of the Pianoforte Works of Scriabin." *Musical Quarterly* 2: 601–614.

Ibn Khaldun. 1958. *The Muqaddimah.* Translated by F. Rosenthal. New York: Pantheon.

Indian Talkie 1931–1956: Silver Jubilee Program. 1956. Bombay: Film Federation of India. AMPAS Margaret Herrick Library, Beverly Hills, CA.

Inoue, Miyako. 2003. "The Listening Subject of Japanese Modernity and His Auditory Double: Citing, Sighting, and Siting the Modern Japanese Woman." *Cultural Anthropology* 18 (2): 156–193.

Isakower, Otto. 1939. "On the Exceptional Position of the Auditory Sphere." *International Journal of Psycho-Analysis* 20: 340–348.
Israel, Paul. 1998. *Edison: A Life of Invention.* Chichester: Wiley.
James, Jamie. 1993. *The Music of the Spheres: Music, Science and the Natural Order of the Universe.* London: Little, Brown.
James, William. 1974. *The Varieties of Mystical Experience.* New York: Collins.
Janzen, John. 2000. "Theories of Music in African *Ngoma* Healing." In *Musical Healing in Cultural Contexts,* edited by Penelope Gouk, 46–66. Guildford: Ashgate.
Jarvie, Ian. 1992. *Hollywood's Overseas Campaign: The North Atlantic Movie Trade, 1920–1950.* Cambridge: Cambridge University Press.
Jenks, C., ed. 1995. *Visual Culture.* London: Routledge.
Jóhanneson, Alexander. 1958. *How Did Homo Sapiens Express the Idea of Flat?* Reykjavik: Fylgirit Arbókar Háskólans.
Johnson, Mark. 1987. *The Body in the Mind: The Bodily Basis of Meaning, Imagination, and Reason.* Chicago: University of Chicago Press.
Kahn, Douglas. 1992. "Histories of Sound Once Removed." In *Wireless Imagination: Sound, Radio, and the Avant-Garde,* edited by Douglas Kahn and Gregory Whitehead. Cambridge, Mass.: MIT Press.
——. 1999. *Noise, Water, Meat: A History of Sound in the Arts.* Cambridge, MA: MIT Press.
Kahn, Douglas, and Gregory Whitehead, eds. 1992. *Wireless Imagination: Sound, Radio, and the Avant-Garde.* Cambridge, MA: MIT Press.
Kant, Immanuel. 1974. *Anthropology from a Pragmatic Point of View.* Translated by Mary J. Gregor. The Hague: Martinus Nijhoff.
Kantor, Tadeusz. 1993. *A Journey through Other Spaces: Essays and Manifestos, 1944–1990.* Edited and translated by M. Kobialka. Berkeley: University of California Press.
Kassabian, Anahid. 2001. *Hearing Film: Tracking Identifications in Contemporary Hollywood Film Music.* New York: Routledge.
Kassler, Jamie C. 1995. *Inner Music: Hobbes, Hooke and North on Internal Character.* London: Athlone Press.
Katz, James, and Mark Aakhus, eds. 2002. *Perpetual Contact: Mobile Communication, Private Talk, Public Performance.* Cambridge: Cambridge University Press.
Kefala, Antigone. 1984. *Alexia: A Tale of Two Cultures.* Sydney: John Ferguson.
Keifenheim, Barbara. 2000. *Wege der Sinne: Wahrnehmung und Kunst bei den Kashinawa-Indianern Amazoniens.* Frankfurt: Campus.
Kenji, Iwamoto. 1992. "Sound in the Early Japanese Talkies." In *Reframing Japanese Cinema: Authorship, Genre, History,* edited by Arthur Nolletti Jr. and David Desser, 311–327. Bloomington: Indiana University Press.

Kilian-Hatz, Christa. 2001. "Universality and Diversity: Ideophones from Baka and Kxoe." In *Ideophones,* edited by F. K. E. Voeltz and C. Kilian-Hatz, 155–163. Amsterdam: John Benjamins.
Kircher, Athanasius. 1650. *Musurgia universalis, sive ars magna consoni et dissone, in decem libros digesta.* 2 vols. Rome.
Kita, Sotaro. 1997. "Two-Dimensional Semantic Analysis of Japanese Mimetics." *Linguistics* 35: 379–415.
Kittler, Frederik. 1999. *Gramophone, Film, Typewriter.* Stanford, CA: Stanford University Press.
Koszarski, Richard. 1989. "On the Record: Seeing and Hearing the Vitaphone." In *The Dawn of Sound,* edited by Mary Lea Bandy, 15–22. New York: Museum of Modern Art.
Kozulin, Alex. 1986. "Vygotsky in Context." In *Thought and Language,* by Lev Vygotsky, xi–lxi. Cambridge, MA: MIT Press.
Kracauer, Siegfried. 1995. *The Mass Ornament: Weimar Essays.* Cambridge, MA: Harvard University Press.
Kumi, Shami Abdul-Aziz al-. 1992. *Al-sahafa al-Islamiyya fi Masr fi qarn al-tasi'a 'ashar* [Islamic journalism in Egypt in the nineteenth century]. Cairo: Dar al-Wafa'.
Kümmel, W. F. 1977. *Musik und Medizin: Ihre Wechselbeziehungen in Theorie und Praxis von 800 bis 1800.* Freiburg/München: Karl Alber.
Kunene, Daniel. 2001. "Speaking the Act: The Ideophone as a Linguistic Rebel." In *Ideophones,* edited by F. K. E. Voeltz and C. Kilian-Hatz, 183–191. Amsterdam: John Benjamins.
Lactantius. 1871. *The Works of Lactantius.* 2 vols. Ante-Nicene Christian Library, vols. 21 and 22. Translated by W. Fletcher. Edinburgh: T. and T. Clark.
Lakoff, George, and Mark Johnson. 1980. *Metaphors We Live By.* Chicago: University of Chicago Press.
Lane, E. W. 1984 [1863]. *Arabic-English Lexicon,* vols. 1 and 2. Cambridge: Islamic Texts Society.
Lastra, James. 2000. *Sound Technology and the American Cinema: Perception, Representation, Modernity.* New York: Columbia University Press.
Lawrence, Amy. 1991. *Echo and Nacissus: Women's Voices in Classical Hollywood Cinema.* Berkeley: University of California Press.
Lecourt, Edith. 1990. "The Musical Envelope." In *Psychic Envelopes,* edited by Didier Anzieu, translated by Daphne Briggs, 211–235. London: Karnac.
Levin, David Michael. 1993. *Modernity and the Hegemony of Vision.* Berkeley: University of California Press.

Lewin, Bertram D. 1946. "Sleep, the Mouth, and the Dream Screen." *Psychoanalytic Quarterly* 15: 419–434.

Linge, David E. 1977. "Editor's Introduction." In *Philosophical Hermeneutics,* by Hans-Georg Gadamer, xi–lviii. Berkeley: University of California Press.

Livingstone, Sonia M. 2002. *Young People and New Media: Childhood and the Changing Media Environment.* London: Sage.

Lockhart, James. 1994. "Sightings: Initial Nahua Reactions to Spanish Culture." In *Implicit Understandings: Observing, Reporting, and Reflecting on the Encounters between Europeans and Other Peoples in the Early Modern Era,* edited by S. B. Schwarz, 218–248. Cambridge: Cambridge University Press.

Lodge, Sir Oliver. 1909. *The Ether of Space.* New York: Harper and Brothers.

Lowe, Donald M. 1982. *The History of Bourgeois Perception.* Chicago: University of Chicago Press.

Lubet, Alex J. 1999. "Indeterminate Origins: A Cultural Theory of American Experimental Music." In *Perspectives on American Music since 1950,* edited by James R. Heintze, 95–140. New York: Garland.

Lull, James. 1990. *Inside Family Viewing.* London: Routledge.

MacDowell, Edward. 1912. *Critical and Historical Essays: Lectures Delivered at Columbia University.* Edited by W. J. Baltzell. Boston: Arthur P. Schmidt.

MacGaffey, Wyatt. 1994. "Dialogues of the Deaf: Europeans on the Atlantic Coast of Africa." In *Implicit Understandings: Observing, Reporting, and Reflecting on the Encounters between Europeans and Other Peoples in the Early Modern Era,* edited by S. B. Schwarz, 249–267. Cambridge: Cambridge University Press.

Madi, Jamal. 1995. *Al-da'wa al-mu'athira* [Effective preaching]. Mansura: Maktabat al-Wafa'.

Madigan, Daniel. 1995. Reflections on Some Current Directions in Qur'anic Studies. *The Muslim World* 85 (3–4): 345–362.

Madsen, Virginia. 1999. "The Call of the Wild." *In Uncertain Ground: Essays between Art and Nature,* edited by Martin Thomas, 29–49. Sydney: Art Gallery of New South Wales.

Mahfouz, Ali. 1979 [1952]. *Hidayat al-murshidin* [The guidance of the rightly guided]. Cairo: Dar al-A'itisam.

Majumdar, Barada Kanta. 1880. "Tantric Philosophy." *The Theosophist* 1 (7): 173–174.

Mannoni, O. 1956. *Prospero and Caliban: The Psychology of Colonisation.* Translated by P. Powesland. London: Methuen.

Mason, Herbert. 1986. *A Legend of Alexander* and *The Merchant and the Parrot.* Notre Dame, IN: University of Notre Dame Press.

McCarthy, Anna. 2001. *Ambient Television: Visual Culture and Public Space.* Durham, NC: Duke University Press.

McClary, Susan. 1995. "Music, the Pythagoreans, and the Body." In *Choreographing History,* edited by Susan Leigh Foster, 82–104. Bloomington: Indiana University Press.

McLuhan, Marshall. 1962. *The Gutenberg Galaxy.* Toronto: University of Toronto Press.

Merleau-Ponty, Maurice. 1962 [1945]. *The Phenomenology of Perception.* Translated by Colin Smith. London: Routledge.

Meyer-Baer, Kathi. 1984. *Music of the Spheres and the Dance of Death: Studies in Musical Iconology.* New York: Da Capo Press.

Meyer-Kalkus, Reinhart. 2000. *Stimme und Sprechkünste im 20. Jahrhundert.* Berlin: Akademie Verlag.

Moores, Shaun. 1993. *Interpreting Audiences: The Ethnography of Media Consumption.* London: Sage.

Morley, George. c. 1630. *MS Commonplace Book.* Westminster Abbey MS Dean and Chapter 41.

Movie Show Annual 1930. "India's National Guide to Motion Pictures." Vol. 2, no. 12 (April 1930). AMPAS Margaret Herrick Library, Beverly Hills, CA.

Mrazek, Rudolf. 2002. *Engineers of Happy Land: Technology and Nationalism in a Colony.* Princeton, NJ: Princeton University Press

Muhammed, Ali Rif'ai. 1972. *Kaifa takun khatib* [How to become a preacher]. Cairo: Maktabat wa Matbu'at Muhammed Ali.

Munrow, David. 1976. *Instruments of the Middle Ages and Renaissance.* Oxford: Oxford University Press.

Murdoch, Iris. 1977. *The Fire and the Sun: Why Plato Banished the Artists.* Oxford: Clarendon Press.

Niederland, William G. 1958. "Early Auditory Experiences, Beating Fantasies, and Primal Scene." *Psychoanalytic Study of the Child* 13: 471–504.

Noss, Phillip. 2001. "Ideas, Phones and Gbaya Verbal Art." In *Ideophones,* edited by F. K. E. Voeltz and C. Kilian-Hatz, 259–270. Amsterdam: John Benjamins.

Novaes, Sylvia Caiuby. 1997. *The Play of Mirrors: The Representation of Self as Mirrored in the Other.* Translated by I. M. Burbridge. Austin: University of Texas Press.

Nuckolls, Janis. 1993. "The Semantics of Certainty in Quechua and Its Implications for a Cultural Epistemology." *Language in Society* 22: 235–255.

——. 1995. "Quechua Texts of Perception." *Semiotica* 103 (1–2).
——. 1996. *Sounds Like Life: Sound-Symbolic Grammar, Performance, and Cognition in Pastaza Quechua.* New York: Oxford University Press.
——. 1999. "The Case for Sound Symbolism." *Annual Review of Anthropology* 28: 225–252.
——. 2001. "Ideophones in Pastaza Quechua." In *Ideophones,* edited by F. K. E. Voeltz and C. Kilian-Hatz, 271–285. Amsterdam: John Benjamins.
Oja, Carole J. 2000. *Making Music Modern: New York in the 1920s.* Oxford: Oxford University Press.
Ong, Walter J. 1958. *Ramus, Method, and the Decay of Dialogue.* Cambridge, MA: Harvard University Press.
——. 1965. "Oral Residue in Tudor Prose Style." *PMLA* 80 (3): 145–154.
——. 1970. *The Presence of the Word.* New York: Simon and Schuster.
——. 1981. *The Presence of the Word: Some Prolegomena for Religious and Cultural History.* Minneapolis: University of Minnesota Press.
Oresme, Nicole. 1968. *Le Livre du ciel et du monde.* Edited by Albert D. Menut and Alexander J. Denomy. Madison: University of Wisconsin Press.
Palisca, Claude V. 1985a. *Humanism in Italian Renaissance Musical Thought.* New Haven, CT: Yale University Press.
——. 1985b. "The Science of Sound and Musical Practice." In *Science and the Arts in the Renaissance,* edited by John W. Shirley and F. David Hoeniger, 59–73. Washington, DC: Folger Books.
——. 2000. "Moving the Affections through Music: Pre-Cartesian Psycho-Physiological Theories." In *Number to Sound: The Musical Way to the Scientific Revolution,* edited by Paolo Gozza, 289–308. Dordrecht: Kluwer.
Poole, Deborah. 1997. *Vision, Race, and Modernity: A Visual Economy of the Andean Image World.* Princeton, NJ: Princeton University Press.
Porush, David. 1993. "Voyage to Eudoxia: The Emergence of a Post-Rational Epistemology in Literature and Science." *SubStance* 22 (2–3): 38–49.
Prasad, Rama. 1894 [1889]. *Nature's Finer Forces: The Science of Breath and the Philosophy of the Tattvas.* Kila, MT: Kessinger Publishing.
Putnam, Robert. 2000. *Bowling Alone: The Collapse and Revival of American Community.* New York: Simon and Schuster.
"Quaere." 1866. "The Philosophy of Caning." *Notes and Queries* (3d series) 9 (April 14): 296.
Racy, Ali Jihad. 1998. "Improvisation, Ecstasy, and Performance Dynamics in Arabic Music." In *In the Course of Performance: Studies in the World of Musical Improvisation,* edited by B. Nettl and M. Russell, 95–112. Chicago: University of Chicago Press.

Rahman, Fazlur. 1979 [1966]. *Islam.* Chicago: University of Chicago Press.
Rajadhyaksha, Asish, and Paul Willemen. 1999. *Encyclopedia of Indian Cinema.* London: Fitzroy Dearborn Publishers.
Ramachandran, T. M., ed. 1985. *Seventy Years of Indian Cinema (1913–1983).* Bombay: Cinema India-International.
Rasmussen, David M. 1971. *Mythic-Symbolic Language and Philosophical Anthropology.* The Hague: Martinus Nijhoff.
Raylor, Timothy. 1993. *Cavaliers, Clubs, and Literary Culture.* Newark: University of Delaware Press.
Redfield, Peter. 2000. *Space in the Tropics: From Convicts to Rockets in French Guiana.* Berkeley: University of California Press.
Rée, Jonathan. 1999. *I See a Voice: Language, Deafness and the Senses. A Philosophical History.* London: HarperCollins.
Ricoeur, Paul. 1969. *The Symbolism of Evil.* Boston: Beacon Press.
Riskin, Jessica. 2002. *Science in the Age of Sensibility: The Sentimental Empiricists of the French Enlightenment.* Chicago: University of Chicago Press.
Roseman, Marina. 1993. *Healing Sounds from the Malaysian Rainforest: Teimar Music and Medicine.* Berkeley: University of California Press.
Rudhyar, Dane (Chennevière, Rudhyar D.). 1919. "The Two Trends of Modern Music in Stravinsky's Works." *Musical Quarterly* 5: 169–174.
——. 1922. "The Relativity of Our Musical Conceptions." *Musical Quarterly* 8 (January): 108–118.
——. 1930. "The Mystic's Living Tone." *Modern Music* 7 (3): 32–36.
——. 1931. *Liberation through Sound.* Brookline, MA: Hamsa Publications.
——. 1979 [1928]. *The Rebirth of Hindu Music.* New York: Samuel Weiser.
Russolo, Luigi. 1916. *L'Arte dei rumori.* Milan: Edizioni futuriste di "Poesia."
——. 1986 [1913]. "The Art of Noises Futurist Manifesto." In *The Art of Noises,* translated by Barclay Brown. New York: Pendragon Press.
Said, Edward. 1993. *Culture and Imperialism.* New York: Alfred A. Knopf.
Sandys, George. 1632. *Ovid's Metamorphosis Englished, Mythologized, and Represented in Figures.* Oxford: J. Lichfield.
Sawyer, Suzanne. 1997. "The 1992 Indian Mobilization in Lowland Ecuador." *Latin American Perspectives* 24 (3): 65–82.
Schafer, R. Murray. 1977. *The Tuning of the World.* New York: Knopf.
——. 1993. *The Soundscape: Our Sonic Environment and the Tuning of the World.* Rochester, VT: Inner Traditions International.

Schiesari, Juliana. 1992. *The Gendering of Melancholia: Feminism, Psychoanalysis, and the Symbolics of Loss in Renaissance Literature.* Ithaca, NY: Cornell University Press.

Schlasman, William H. 12 April 1927. Telegram. AT&T Archives, Warren, N.J., Western Electric Collection, Box 430, Location 100–09–01, Folder 3.

Schlasman, William H. 9 November 1927. Letter to R. M. Hatfield. AT&T Archives, Warren, N.J., Western Electric Collection, Box 430, Location 100–09–01, Folder 1.

Schmidt, Leigh Eric. 2000. *Hearing Things: Religion, Illusion, and the American Enlightenment.* Cambridge, MA: Harvard University Press.

Seeger, Anthony. 1981. *Nature and Society in Central Brazil: The Suyá Indians of Mato Grosso.* Cambridge, MA: Harvard University Press.

——. 2002. "Sounds, Social Organization, and Cosmology among the Suyá Indians of Mato Grosso, Brazil." Paper presented at the Wenner-Gren International Symposium "Hearing Culture: New Directions in the Anthropology of Sound."

Segrave, Kerry. 1997. *American Films Abroad: Hollywood's Domination of the World's Movie Screens from the 1890s to the Present.* Jefferson, NC: McFarland.

Sennett, Richard. 1990. *The Conscience of the Eye.* London: Faber.

Seremetakis, C. N. 1994. *The Senses Still: Memory and Perception as Material Culture in Modernity.* Chicago: University of Chicago Press.

Serres, Michel. 1997. *The Troubadour of Knowledge.* Translated by Sheila Faria Glaser with William Paulson. Ann Arbor: University of Michigan Press.

——. 1999. *Les cinq sens.* Paris: Hachette.

Al-Sha'b. 1995. "Mu'jazat al-Qur'an: Lafziyya aydan!" [The miracle of the Qur'an: Literal also!]. 21 February.

Shakespeare, William. 1988. *The Complete Works.* Edited by Stanley Wells and Gary Taylor. Oxford: Clarendon Press.

Shiloah, Amnon. 1963. *Characteristiques de l'art vocale arabe au moyen age.* Tel Aviv: Israeli Music Institute.

Silverstone, Roger. 1999. *Why Study the Media?* London: Sage.

Simmel, George. 1997. *Simmel on Culture.* London: Sage.

Siraisi, Nancy G. 1990. *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice.* Chicago: University of Chicago Press.

Sluga, Glenda. 1985. "Bonegilla Reception and Training Centre, 1947–1971." M.A. thesis, University of Melbourne.

Smart, Mary Ann, ed. 2000. *Siren Songs: Representations of Gender and Sexuality in Opera.* Princeton, NJ: Princeton University Press.

Smith, Bruce R. 1999. *The Acoustic World of Early Modern England: Attending to the O-Factor.* Chicago: University of Chicago Press.

Spitz, René. 1955. "The Primal Cavity: A Contribution to the Genesis of Perception." *Psychoanalytic Study of the Child* 10: 215–240.

Sterne, Jonathan. 2003. *The Audible Past: Cultural Origins of Sound Reproduction.* Durham, NC: Duke University Press.

Stobart, Henry. 2000. "Bodies of Sound and Landscapes of Music: A View from the Bolivian Andes." In *Musical Healing in Cultural Contexts,* edited by Penelope Gouk, 26–45. Guildford: Ashgate.

Stock, Brian. 1983. *The Implications of Literacy: Written Language and Models of Interpretation in the Eleventh and Twelfth Centuries.* Princeton, NJ: Princeton University Press.

Stoller, Paul. 1989. *The Taste of Ethnographic Things: The Senses in Anthropology.* Philadelphia: University of Pennsylvania Press.

Sutton, R. Anderson. 1996. "Interpreting Electronic Sound Technology in the Contemporary Javanese Soundscape." *Ethnomusicology* 40 (2): 249–268.

Szendy, Peter. 2001. *Écoute: Une histoire de nos oreilles.* Paris: Minuit.

Tatian. 1982. *Oratio ad Graecos* and *Fragments.* Edited and translated by Molly Whittaker. Oxford: Clarendon Press.

Taussig, Michael. 1993. *Mimesis and Alterity: A Particular History of the Senses.* New York: Routledge.

Thirsk, Joan. 1984. *The Rural Economy of England.* London: Hambledon.

Thomas, Keith. 1986. "The Meaning of Literacy in Early Modern England." In *The Written Word: Literacy in Transition.* Edited by Gerd Baumann. Oxford: Clarendon Press.

Thompson, Emily. 2002. *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900–1933.* Cambridge, MA: MIT Press.

Thompson, Kristin. 1985. *Exporting Entertainment: America in the World Film Market, 1907–1934.* London: BFI.

Todorov, Tzvetan. 1982. *Theories of the Symbol.* Translated by Catherine Porter. Ithaca, NY: Cornell University Press.

——. 1993. *On Human Diversity: Nationalism, Racism, and Exoticism in French Thought.* Cambridge, MA: Harvard University Press.

Tomas, David. 1990. "Collapsing Walls or Puffing, Smoking Sea Monsters? Ambient Sonic Spaces, Aural Cultures, Marginal Histories." *Public* 4–5: 125–140.

——. 1996. *Transcultural Space and Transcultural Beings.* Boulder, Colo.: Westview Press.

Tomlinson, Gary. 1993. *Music in Renaissance Magic: Toward a Historiography of Others*. Chicago: University of Chicago Press.
Trimbuk, Bulwant. 1879. "Hindu Music." *The Theosophist,* November, 46–50.
Truax, Barry. 1984. *Acoustic Communication.* Norwood, NJ: Ablex.
——. 1992. "Electroacoustic Music and the Soundscape: The Inner and Outer World." *In Companion to Contemporary Musical Thought,* vol. 2, edited by J. Paynter, R. Orton, P. Seymour, and T. Howell, 374–398. London: Routledge.
Trumpbour, John. 2002. *Selling Hollywood to the World: U.S. and European Struggles for Mastery of the Global Film Industry, 1920–1950.* Cambridge: Cambridge University Press.
Urry, John. 2000. *Sociology beyond Societies: Mobilities for the Twenty-first Century.* London: Routledge.
Vasse, Denis. 1974. *La Voix et l'ombilique.* Paris: Editions du Seuil.
Vincendeau, Ginette. 1999. "Hollywood Babel: The Coming of Sound and the Multiple-Language Version." In *"Film Europe" and "Film America": Cinema, Commerce and Cultural Exchange, 1920–1939,* edited by Andrew Higson and Richard Maltby, 207–224. Exeter: University of Exeter Press.
Viveiros de Castro, Eduardo. 1998. "Cosmological Deixis and Amerindian Perspectivism." *Journal of the Royal Anthropological Institute* (new series) 4: 469–488.
Voeltz, F. K. Erhard, and Christa Kilian-Hatz, eds. 2001. *Ideophones.* Typological Studies in Language 44. Amsterdam: John Benjamins.
Voss, Angela. 2000. "Marsilio Ficino, the second Orpheus." In *Music as Medicine: The History of Music Therapy since Antiquity,* edited by Peregrine Horden, 154–172. Guildford: Ashgate.
Wagner, Roy. 2001. *An Anthropology of the Subject: Holographic Worldview in New Guinea and Its Meaning and Significance for the World of Anthropology.* Berkeley: University of California Press.
Walker, D. P. 1958. *Spiritual and Demonic Magic from Ficino to Campanella.* London: Warburg Institute.
——. 1972. *The Ancient Theology: Studies in Christian Platonism from the Fifteenth to the Eighteenth Century.* London: Duckworth.
——. 1984. "Medical Spirits in Philosophy and Theology from Ficino to Newton." In *Arts du spectacle et histoire des ideés,* 287–300. Tours: Centre d'Etudes Supérieures de la Renaissance.
Webster, Charles. 1982. *From Paracelsus to Newton: Magic and the Making of Modern Science.* Cambridge: Cambridge University Press.
Wegman, Rob C. 1998a. "Music as Heard." *Musical Quarterly* (special issue) 83 (3–4).

——. 1998b. ""Das Musikalische Hören" in the Middle Ages and Renaissance: Perspectives from Pre-War Germany." *Musical Quarterly* (special issue) 82 (3–4): 434–454.
Wehr, Hans. 1980. *A Dictionary of Modern Written Arabic.* Beirut: Libraire du Liban.
Welsch, Wolfgang. 1997. *Undoing Aesthetics.* London: Routledge.
Wenzel, Horst. 1995. *Hören und Sehen, Schrift und Bild: Kultur und Gedächtnis im Mittelalter.* Munich: Beck.
Whalen, D. H. 1981. "The Native Speaker and Indeterminacy." In *A Festschrift for Native Speaker,* edited by F. Coulmas, 263–278. The Hague: Mouton.
Williams, Alfred. 1984. *Life in a Railway Factory.* Gloucester: Alan Sutton.
Williams, Raymond. 2003 [1977]. *Television: Technology and Cultural Form.* New York: Routledge.
Winternitz, Emmanuel. 1979. *Musical Instruments and Their Symbolism in Western Art: Studies in Musical Iconology.* 2d ed. New Haven, CT: Yale University Press.
Woodroffe, Sir John (Arthur Avalon). 1969 [1922]. *Garland of Letters.* Madras: Ganesh.
——. 1995 [1918]. *The Serpent Power.* Madras: Ganesh.
Wright, Thomas. 1604. *The Passions of the Minde in Generall, Corrected, Enlarged, and with Sundry New Discourse Augmented.* London.
——. 1986 [1604]. *The Passions of the Mind in General.* Edited by W. Webster Newbold. New York: Garland.
Zumthor, Paul. 1990. *Oral Poetry: An Introduction.* Minneapolis: University of Minnesota Press.