History of Communications Media

Class 6

History of Communications Media

- What We Will Cover Today
  - Motion Pictures
    - Origins of Motion Pictures
    - The Emergence of Hollywood
    - The Studio System
    - Some Effects of the Feature Film
  - Radio

Movies

- Motion pictures create the illusion of continuous motion through:
  - The persistence of vision – the brain retains images cast upon the retina for 1/20th to 1/5th of a second beyond their removal from the field of vision
  - The Phi phenomena – that which causes us to see the individual blades of a rotating fan as a unitary circular form
- Because of persistence of vision, we do not see the dark interface areas of a projection print as it moves through the projector

Motion pictures or the illusion of continuous motion are dependent on:
•The persistence of vision (a characteristic of human perception whereby the brain retains images cast upon the retina of the eye for approximately 1/20th to 1/5th of a second beyond their actual removal from the field of vision), and
•The Phi phenomena (the phenomenon which causes us to see the individual blades of a rotating fan as a unitary circular form or the different colors of a spinning color wheel as a single homogeneous color)

Persistence of vision prevents us from seeing the dark interface areas of a projection print and the phi phenomenon or “stroboscopic effect” creates apparent movement from frame to frame.

Movies

- Origins of Motion Pictures
  - Thomas Edison devised a kinetoscope that cast separate still photos on a screen one after the other so rapidly that the pictures seemed to be moving
    - Used the celluloid roll film produced by George Eastman in an endless loop
    - It was designed for its film to be viewed individually through the window of a cabinet housing its components

Edison' kinetoscope – Edison's kinetoscope was a device for viewing through a magnifying lens a sequence of pictures on an endless band of film moved continuously over a light source and a rapidly rotating shutter that creates an illusion of motion. It was designed for films to be viewed individually through the window of a cabinet housing its components.

Movies

- Origins of Motion Pictures
  - The Nickelodeon, as Edison's invention was known as, consisted of 15- to 20-minute programs consisting of a potpourri of unconnected scenes
    - The term, nickelodeon, was a combination of the initial price of admission with the Greek word for theater
  - These early films relied on the novelty effects of motion pictures to entertain viewers

Unconnected scenes – A program might include dancing women, a scene of a tourist attraction, a speeding locomotive, the raising of an American flag in Cuba during the Spanish-American War, and two lovers kissing.

Movies

- Origins of Motion Pictures
  - Thomas Armat and Charles Francis Jenkins invented the first film projector – the Vitascope
    - The Film Projector allowed motion picture film to be shown in a dark room to moderately large audience
      - This became the standard method by which people viewed motion pictures
    - The kinetoscope with its individual viewing largely survived not in theaters but in establishments that catered to persons interested in porn

Large screen - The transformation of these hole-in-the-corner affairs into large-screen exposures was the work, not of Edison, but of little-known inventor and realtor Thomas Armat of Washington. Edison's backers knew that the new invention would have more appeal to the public if it carried Edison's name. Accordingly, when the Amazing Vitascope was shown to the press on April 3, 1896, it was described as "Thomas A. Edison's latest marvel." Armat was initially quite content to forgo the credit and take the cash. This prototype of modern film projectors cast images onto a wall or screen for a moderately large audience. A renegade Edison associate, William Dickson, developed a camera taking pictures eight times larger than Edison's. He filmed the *Empire State Express,* and, when his show opened at Hammerstein's Theater on October 12., 1896, the sight of the great train hurtling along was so realistic that the alarmed audience stampeded for the exits

Movies

- Edison and other earlier pioneers such as the Lumiere brothers saw motion pictures as a documentary medium
  - They filmed actual scenes or events, recording noteworthy persons, scenes, and events
- George Meliès was the first to see that editing could manipulate time and space to make the MOPIC film a narrative or storytelling medium
  - Meliès originated the fade-in, fade-out, dissolve, and stop-motion shot, multiple exposure, and time-lapse shots
  - His most famous film was *A Trip to the Moon*

Melies - In 1902 he produced the influential 30-scene narrative *Le Voyage dans la lune* (*A Trip to the Moon*). Adapted from a novel by Jules Verne, it was nearly one reel in length (about 825 feet [251 metres], or 14 minutes). It was the first film to achieve international distribution (mainly through piracy), *Le Voyage dans la lune* was an enormous popular success. It helped to make Star Film one of the world's largest producers (an American branch was opened in 1903) and to establish the fiction film as the cinema's mainstream product. In both respects Méliès dethroned the Lumières' cinema of actuality. Despite his innovations, Méliès's productions remained essentially filmed stage plays. He conceived them quite literally as successions of living pictures or, as he termed them, "artificially arranged scenes." From his earliest trick films through his last successful fantasy, *La Conquête du pole* ("The Conquest of the Pole," 1912), Méliès treated the frame of the film as the proscenium arch of a theatre stage, never once moving his camera or changing its position within a scene.

Movies

- Edwin S. Porter in *The Great Train Robbery* originated the idea of combining stock footage from the Edison archives with staged scenes to create a uniquely cinematic form – a fiction constructed from recordings of empirically real events and the use of intercuts to depict parallel actions.
- D.W. Griffith in *Birth of a Nation* pioneered the full-length feature film and was the first to make use of the close-up, cutaways, parallel action shots, and the re-creation of historical events

Porter - The major problem for early filmmakers was the establishment of temporal continuity from one shot to the next. Porter's *The Great Train Robbery* (1903) is widely acknowledged to be the first narrative film to achieve such continuity of action. Comprised of 14 separate shots of noncontinuous, nonoverlapping action, the film contains an early example of parallel editing, two credible back, or rear, projections (the projection from the rear of previously filmed action or scenery onto a translucent screen to provide the background for new action filmed in front of the screen), two camera pans, and several shots composed diagonally and staged in depth—a major departure from the frontally composed, theatrical staging of Méliès. The industry's first spectacular box-office success, *The Great Train Robbery* is credited with establishing the realistic narrative, as opposed to Méliès-style fantasy, as the commercial cinema's dominant form. The film's popularity encouraged investors and led to the establishment of the first permanent film theatres, or nickelodeons, across the country. Running about 12 minutes, it also helped to boost standard film length toward one reel, or 1,000 feet (305 metres [about 16 minutes at the average silent speed])

Movies

- *Birth of a Nation* did the following:
  - Created the historical epic as a film genre
  - Established the motion picture as an artistic medium and inspired subsequent directors and filmmakers
  - Distorted history by providing a militantly white-supremacist perspective on the Civil War, Reconstruction, and African-Americans
    - Filled with factual distortions and racist stereotypes
    - Led to the origin and growth of the Ku Klux Klan

Moving images are as powerful as photos, if not more so. Like photographs, they appeal to emotion and can be read in competing ways. Yet moving images change so rapidly and so often that they arrest our attention and task the brain's ability to absorb what we are seeing. They are becoming a ubiquitous presence in public and private life—so much so that Camille Paglia, an astute critic of images, has called our world "a media starscape of explosive but evanescent images."

Movies - Emergence of Hollywood

- Prior to WWI, France and Italy regularly surpassed the U.S. in film exports
- WWI shut down the European film industry as celluloid film production was diverted to the production of explosives
- Hollywood emerged as the center of U.S. film production for two reasons
  - Sunny California climate
  - Lower wage rates in non-unionized LA
  - Desire of independent film producers to get away from the Motion Picture Patents Company

Pre-WWI film industry - Hollywood's ascendancy to domination of movie-making was not preordained. Before World War I, both the French and the Italian movie industries regularly surpassed the U.S. in film exports

WWI and European film - WWI destroyed the ability of European cinema to compete commercially with Hollywood. British, French, and Italian production was curtailed or suspended during the war; and post-war reconstruction demands left little money to finance large-scale moviemaking.

Emergence of Hollywood - Hollywood became the epicenter of U.S. film production for two major reasons -- the temperate sunny climate which permitted outside camera shooting throughout the year and the fact that Los Angeles, as the country's principal non-unionized city, had lower wage rates than East Coast cities. (p65) [Puttnam]

Movies – Emergence of Hollywood

- Motion Picture Patents Company ("Edison Trust")
  - Formed to resolve litigation over patents
    - Charged exhibitors a uniform price per foot of film shown
    - Limited its members to one- and two-reelers
    - Made Eastman Kodak the sole source of raw film with Kodak selling only to licensed members
  - Aim was to control competition and shift profits from the distributors and exhibitors back to the producers and patent holders

Motion Picture Patents Company - By 1908 there were about 20 motion-picture production companies operating in the United States. They were constantly at war with one another over business practices and patent rights, and they had begun to fear that their fragmentation would cause them to lose control of the industry to the two new sectors of distribution and exhibition. The most powerful among them—Edison, Biograph, Vitagraph, Essanay, Kalem, Selig Polyscope, Lubin, the American branches of the French Star Film and Pathé Frères, and Kleine Optical, the largest domestic distributor of foreign films—therefore entered into a collusive trade agreement to ensure their continued dominance. On September 9, 1908, these companies formed the Motion Picture Patents Company (MPPC), pooling the 16 most significant U.S. patents for motion-picture technology and entering into an exclusive contract with the Eastman Kodak Company for the supply of raw film stock. The MPPC, also known as the "Trust," sought to control every segment of the industry and therefore set up a licensing system for assessing royalties. The use of its patents was granted only to licensed equipment manufacturers; film stock could be sold only to licensed producers; licensed producers and importers were required to fix rental prices at a minimum level and to set quotas for foreign footage to reduce competition; Patents Company films could be sold only to licensed distributors, who could lease them only to licensed exhibitors; and only licensed exhibitors had the right to use Patents Company projectors and rent company films. To solidify its control, in 1910—the same year in which motion-picture attendance in the United States rose to 26 million persons a week—the MPPC formed the General Film Company, which integrated the licensed distributors into a single corporate entity. Although it was clearly monopolistic in practice and intent, the MPPC helped to stabilize the American film industry during a period of unprecedented growth and change by standardizing exhibition practice, increasing the efficiency of distribution, and regularizing pricing in all three sectors. Its collusive nature, however, provoked a reaction that ultimately destroyed it.

Movies – Emergence of Hollywood

- Precipitated a battle with independent producers and theater exhibitors
  - Led to a lot of litigation with many independents relocating to the West Coast
  - The Independents imported films from foreign producers excluded by the trust, obtained raw film stock from abroad, and made their own pictures.
    - By 1910, they made two-thirds as many reels of film as the trust's licensed companies and served 30% of the nation's 10,000 motion picture theaters.

Distributors & Exhibitors React - In a sense, the MPPC's ironclad efforts to eliminate competition merely fostered it. Almost from the outset there was widespread resistance to the Patents Company on the part of independent distributors (numbering 10 or more in early 1909) and exhibitors (estimated at 2,000 to 2,500); and in January 1909 they formed their own trade association, the Independent Film Protective Association—reorganized that fall as the National Independent Moving Picture Alliance—to provide financial and legal support against the Trust. A more effective and powerful anti-Trust organization was the Motion Picture Distributing and Sales Company, which began operation in May 1910 (three weeks after the inception of General Film) and which eventually came to serve 47 exchanges in 27 cities.

Movies – Emergence of Hollywood

- Edison Trust failed for two basic reasons:
  - It lost an anti-trust suit
  - It made some erroneous decisions and assumptions
    - Setting a uniform price per foot of film eliminated any incentive to invest in elaborate and costly productions
    - Limiting films to one- or two-reelers prevented trust producers from making "feature films" that appealed to upscale audiences
    - Trust members refused to publicize their stars

Anti-Trust Suit - In August 1912, the U.S. Justice Department brought suit against the MPPC for "restraint of trade" in violation of the Sherman Antitrust Act. Delayed by countersuits and by World War I, the government's case was eventually won and the MPPC formally dissolved in 1918.

Movies – Emergence of Hollywood

- Results – The independent opponents of the Trust (and Hollywood) won out
  - The independents went on to found the major Hollywood studios:
    - William Fox (20th Century Fox)
    - Carl Laemmle (Universal Pictures)
    - Adolph Zukor (Paramount)
  - Only one of the Edison Trust companies lasted beyond 1920
    - Vitagraph – died in 1925

Movies – Emergence of Hollywood

- Reasons –
  - The Motion Picture Patents group were people who either invented, modified, or bankrolled movie hardware – cameras, projectors, etc
  - The independents were people who either ran theaters or came from fashion-conscious industries
    - They had much better awareness of what the public wanted – Feature Films & Motion Picture Palaces

Feature Films - The multiple-reel film—which came to be called a "feature," in the vaudevillian sense of a headline attraction—achieved general acceptance with the smashing success of Louis Mercanton's three-and-one-half-reel *La Reine Elisabeth* (*Queen Elizabeth*, 1912), which starred Sarah Bernhardt and was imported by Zukor (who founded the independent Famous Players production company with its profits). In 1912 Enrico Guazzoni's nine-reel Italian superspectacle *Quo Vadis?* ("Whither Are You Going?") was road-shown in legitimate theatres across the country at a top admission price of one dollar, and the feature craze was on. Exhibitors quickly learned that features could command higher admission prices and longer runs; single-title packages were also cheaper and easier to advertise than programs of multiple titles. As for manufacturing, producers found that the higher expenditure for features was readily amortized by high volume sales to distributors, who in turn were eager to share in the higher admission returns from the theatres. The whole industry soon reorganized itself around the economics of the multiple-reel film, and the effects of this restructuring did much to give motion pictures their characteristic modern form.

Movies – Emergence of Hollywood

- The Feature Film revolutionized the movie industry
  - Allowed motion pictures to appeal to the middle class
    - Format was similar to that of the legitimate theater
    - Format allowed for adaptation of middle-class appealing novels and plays

Appeal of Feature Films - Feature films made motion pictures respectable for the middle class by providing a format that was analogous to that of the legitimate theatre and was suitable for the adaptation of middle-class novels and plays. This new audience had more demanding standards than the older working-class one, and producers readily increased their budgets to provide high technical quality and elaborate productions. The new viewers also had a more refined sense of comfort, which exhibitors quickly accommodated by replacing their storefronts with large, elegantly appointed new theatres in the major urban centres (one of the first was Mitchell L. Marks's 3,300-seat Strand, which opened in the Broadway district of Manhattan in 1914). Known as "dream palaces" because of the fantastic luxuriance of their interiors, these houses had to show features rather than a program of shorts to attract large audiences at premium prices. By 1916 there were more than 21,000 movie palaces in the United States. Their advent marked the end of the nickelodeon era and foretold the rise of the Hollywood studio system, which dominated urban exhibition from the 1920s to the '50s.

Movies – Emergence of Hollywood

- The Feature Film also:
  - Inspired exhibitors to replace storefronts with new movie palaces
  - Led producers to create and publicize stars in order to promote their films
- Result:
  - By the early 1920s, feature-length films, often accompanied by live vaudeville acts, had become a popular form of entertainment

Star System - Borrowed from the theatre industry, this system involves the creation and management of publicity about key performers, or stars, to stimulate demand for their films. Trust company producers used this kind of publicity, but they never exploited the technique as forcefully or as imaginatively as the independents did, when in 1910 Carl Laemmle of Independent Motion Pictures (IMP) promoted Florence Lawrence into national stardom through a series of media stunts in St. Louis, Missouri. Finally, and most decisively, in August 1912 the U.S. Justice Department brought suit against the MPPC for "restraint of trade" in violation of the Sherman Antitrust Act. Delayed by countersuits and by World War I, the government's case was eventually won and the MPPC formally dissolved in 1918

Movies – Emergence of Hollywood

- Movie Theaters
  - In 1923, there were 15,000 silent movie theaters in the U.S. with an average seating capacity of 507 and a weekly attendance of 50 million
    - About 1,000 of these were “motion picture palaces”
      - Large, elegantly-decorated, air-conditioned auditoriums located in urban centers which seated 1,500 or more people
      - Often had expansive lobbies, thick carpeting, paintings, and statues
      - Many had large Wurlitzer organs for musical accompaniment
    - These palaces appealed to a middle class willing to pay 30 cents or more to see a movie and live vaudeville acts

Anyone who has been to Radio City Music Hall to see the Rockettes has seen what the “motion picture palaces” were really like. When television hit the scene, most of these “motion picture palaces” closed, but a few, thanks to the efforts of film buffs and film archivists, have been lovingly restored.

Movies – Why Hollywood Won Out

- Why the Movie Makers Went to Hollywood
  - Large demand for films required that film production be put on a year-round schedule
  - Slow film speeds required that most shooting take place outdoors in available light
  - Hollywood had an average 320 days of sun a year, a temperate climate, and a wide range of topography within a 60-mile radius
  - It was far removed from MPPC headquarters in New York City

High Film Demand -As a result of the nickelodeon boom, exhibitors had begun to require as many as 20 to 30 new films per week, and it became necessary to put production on a systematic year-round schedule.

Slow Film Speeds - Because most films were still shot outdoors in available light, such schedules could not be maintained in the vicinity of New York City or Chicago, where the industry had originally located itself in order to take advantage of trained theatrical labour pools.

Why Hollywood - As early as 1907, production companies, such as Selig Polyscope, began to dispatch production units to warmer climates during winter. It was soon clear that what producers required was a new industrial centre—one with warm weather, a temperate climate, a variety of scenery, and other qualities (such as access to acting talent) essential to their highly unconventional form of manufacturing. By 1915 approximately 15,000 workers were employed by the motion-picture industry in Hollywood, and more than 60 percent of American production was centred there

Movies – A Note About European Film

- Before WWI, France and Italy dominated European film production
  - Meliès had made the movie a storytelling medium
  - Ferdinand Zecca at Pathe perfected the chase film, which inspired Mack Sennett's keystone comedies
  - Louis Feuillade created the serial, starting with *Fantômas* (1913–14), *Les Vampires* (1915–16), and *Judex* (1916).
  - Louis Maggi created the first historical spectaculars with casts of thousands

Sennett's Keystone comedies focused on a visual humor of pie-throwing, auto chases, cliff-hanging, things blowing up, and last-minute rescues. His flims launched the careers of Charlie Chaplin, Harry Langdon, Fatty Arbuckle, Mabel Normand, Ben Turpin, Gloria Swanson, Carole Lombard, Wallace Beery, Marie Dressler, W.C. Fields, George Stevens, and Frank Capra.

Costume spectaculars - His nine-reel *Quo Vadis?* ("Whither Are You Going?" 1912), with its huge three-dimensional sets recreating ancient Rome and 5,000 extras, established the standard for the superspectacle and briefly conquered the world market for Italian motion pictures. Its successor, the Italia company's 12-reel *Cabiria* (1914), was even more extravagant in its historical reconstruction of the Second Punic War, from the burning of the Roman fleet at Syracuse to Hannibal crossing the Alps and the sack of Carthage. The Italian superspectacle stimulated public demand for features and influenced such important directors as Cecil B. DeMille, Ernst Lubitsch, and especially D.W. Griffith.

Movies – The Effects of WWI

- Shut down European film production
  - By the end of the war, the U.S. dominated the international film market
    - In 1919, 90% of all films screened in Europe were American
  - Allowed the American film industry to grow and prosper
    - Stimulated Allied demand for American films
      - In some cases, Allied governments financed the making of anti-German films, such as D.W. Griffith's *Hearts of the World* (1918)

Shut down European production - During the war, however, European film production virtually ceased, in part because the same chemicals used in the production of celluloid were necessary for the manufacture of gunpowder. The American cinema, meanwhile, experienced a period of unprecedented prosperity and growth. By the end of the war, it exercised nearly total control of the international market: when the Treaty of Versailles was signed in 1919, 90 percent of all films screened in Europe, Africa, and Asia were American, and the figure for South America was (and remained through the 1950s) close to 100 percent. The main exception was Germany, which had been cut off from American films from 1914 until the end of the war.

Movies – Why Hollywood Won Out

- Why Hollywood Became the Center of World Feature Film Production
  - Large domestic audience and consequently larger profits to finance productions with lavish sets and expensive stars
  - Development of the Star system
  - Studio control over distribution networks
  - Heterogeneity of the American population
  - Dependency of American films on commercial success

Factors Favoring Hollywood - The existence of a large domestic audience in the U.S. enabled American studios to recover the cost of production and make a substantial profit on a movie before they ever turned to an international market. They, then, could charge lower rental fees overseas and undersell their European rivals. In addition, the devices of block booking, the imposition of tariffs on imported foreign films, the use of the star system to create 'brand names,' and studio control over distribution networks both protected the home market against European films and created a continued demand for Hollywood films. In addition, Hollywood simply made better movies with more luxurious sets and magnetic stars.

Heterogeneity - "the heterogeneity of the American population -- its ethnic, racial, class, and regional diversity -- forced the media to experiment with messages, images, and story lines that had a broad multicultural appeal, an appeal that turned out to be equally potent for multi-ethnic audiences abroad. ... In sum, the domestic market was a laboratory for and a microcosm of the world market." Europeans, operating in much smaller markets with homogeneous populations, had much less incentive to communicate with a multicultural audience and were thus ill-equipped to compete in the international arena.

Need for commercial success – In the words Richard Pells in his *Not Like Us*, "In the United States, moviemakers and television producers had to pay attention to the audience because if they did not, their films would quickly disappear from the theaters and their shows would be cancelled within weeks. The hunger for a hit and the fear of commercial failure gave American films and television programs ... their vitality, their emotional connection with viewers ..., and their immense global popularity. Not infrequently, the effort to enthrall an audience also resulted in works that were original and provocative. In fact, markets had always served as a stimulus for art: Shakespeare cared as much as Walt Disney about box office receipts."

Movies – The Result

- Effects of WWI and the emergence of Hollywood
  - By the mid-1920s, approximately 95% of the films shown in Great Britain, 85% in the Netherlands, 70% in France, 65% in Italy, and 60% in Germany were American films
  - The beginning of the "Americanization" of first European and then World popular culture

Through movies people became familiar with American products, lifestyles, patterns of behavior, and values. The opulence of the average Hollywood film made Europeans want to drive American cars, eat American foods, smoke American cigarettes, and wear American clothes. Even worse, according to some intellectuals, Europeans were losing respect for their native cultures and traditions."

Movies – Talking Pictures

- The idea of uniting motion pictures and sound actually began with Edison
  - Edison's associate, Dickson, synchronized Edison's kinetoscope with his phonograph & marketed the device as the Kinetophone
  - By the 1910s, producers regularly commissioned orchestral scores to accompany prestigious productions and accompanied their films with cue sheets for appropriate music during the exhibition

Pictures and Sound - The idea of combining motion pictures and sound had been around since the invention of the cinema itself: Edison had commissioned the Kinetograph to provide visual images for his phonograph, and Dickson had actually synchronized the two machines in a device briefly marketed in the 1890s as the Kinetophone. Léon Gaumont's Chronophone in France and Cecil Hepworth's Vivaphone system in England employed a similar technology, and each was used to produce hundreds of synchronized shorts between 1902 and 1912. In Germany, producer-director Oskar Messter began to release all of his films with recorded musical scores as early as 1908. By the time the feature had become the dominant film form in the West, producers regularly commissioned orchestral scores to accompany prestigious productions, and virtually all films were accompanied by cue sheets suggesting appropriate musical selections for performance during exhibition.

Movies – Talking Pictures

- Actual recorded sound required amplification
  - This became possible only after Lee De Forest's invention of the audion tube – a 3-element vacuum tube - in 1907 that amplified sound and drove it through the speakers
  - Lee de Forest invented an optical sound-on-film system but had trouble selling it to the studios who saw sound as having little profit but great expense

Movies – Talking Pictures

- Lee De Forest in 1919 invented an optical sound-on-film system which he tried to market to Hollywood
- Western Electric in 1925 invented a sound-on-disc system but was likewise rebuffed by Hollywood except for Warner Bros
  - Warner Bros bought the system and the rights to sublease it
  - Initially Warner Bros used it to produce films with musical accompaniment, starting with *Don Juan* in 1926

In 1919 De Forest developed an optical sound-on-film process patented as Phonofilm, and between 1923 and 1927 he made more than 1,000 synchronized sound shorts for release to specially wired theatres. The public was widely interested in these films, but the major Hollywood producers, to whom De Forest vainly tried to sell his system, were not: they viewed "talking pictures" as an expensive novelty with little potential return. In 1925, Western Electric, , the manufacturing subsidiary of American Telephone & Telegraph Company, had perfected a sophisticated sound-on-disc system called Vitaphone, which their representatives attempted to market to Hollywood. Like De Forest, they were rebuffed by the major studios, but Warner Brothers, then a minor studio in the midst of aggressive expansion, bought both the system and the right to sublease it to other producers

Movies – Talking Pictures

- In 1927, Warner Bros released *The Jazz Singer* which included dialog as well as music.
  - Its phenomenal success ensured the film industry's conversion to sound.
- The other studios decided to use a sound-on-film system
  - This enabled images and film to be recorded simultaneously on the same film medium, insuring automatic synchronization
  - As a result of competition between competing sound-on-film systems, RCA acquired the **Keith-Albee-Orpheum** vaudeville circuit and merged it with Joseph P. Kennedy's **Film Booking Offices of America (FBO)** to form **RKO Pictures**

Despite Warner Brothers' obvious success with sound films, film industry leaders were not eager to lease sound equipment from a direct competitor. They banded together, and Warner Brothers was forced to give up its rights to the Vitaphone system in exchange for a share in any new royalties earned. The major film companies then wasted no time. By May 1928 virtually every studio in Hollywood, major and minor, was licensed by Western Electric's newly created marketing subsidiary, Electrical Research Products, Incorporated (ERPI), to use Western Electric equipment with the Movietone sound-on-film recording system. ERPI's monopoly did not please the Radio Corporation of America (RCA), which had tried to market a sound-on-film system that had been developed in the laboratories of its parent company, General Electric, and had been patented in 1925 as RCA Photophone. In October 1928, RCA therefore acquired the Keith-Albee-Orpheum vaudeville circuit and merged it with Joseph P. Kennedy's Film Booking Offices of America (FBO) to form RKO Radio Pictures for the express purpose of producing sound films using the Photophone system (which ultimately became the industry standard).

Movies – Talking Pictures

- Talking Pictures' interesting consequences
  - Increased Hollywood's share of cinematic revenue
  - Meant the demise of many "Silent Era" film stars
  - Made Bank of America a major financial institution since they, unlike other banks, were willing to finance Hollywood productions
  - Led to the creation of distinct genres to facilitate marketing

Increased Hollywood's share of world cinema revenue - Counterintuitively, the onset of the sound era increased Holly-wood's share of world cinematic revenue. At the time of the transi-tion, equipping the theaters with sound and making movies with sound were costly. To recoup these costs, theaters sought out high-quality, high-expenditure productions for large audiences. The small, cheap, quick film became less profitable, given the suddenly higher fixed costs of production and presentation. This shift in emphasis favored Hollywood moviemakers over their foreign competitors. Also, The talkies, by introducing issues of translation, boosted the dominant world language of English and thus benefited Holly-wood. Given the growing importance of English as a world language, and the focal importance of the United States, European countries would sooner import films from Hollywood than from each other. A multiplicity of different cultures or languages often favors the relative position of the dominant one, which becomes es-tablished as a common standard of communication

Silent Film stars - Many silent film stars who had excellent acting and pantomime skills but thick foreign accents or voices maladapted to early sound equipment never made the transition to talking movies

Bank of America - A.P. Giannini and his Bank of America was the first banker to recognize the motion picture business as a legitimate industry. By the end of the 1930s, the Bank of America had pumped about $130,000,000 in loans into Hollywood. The Bank of America handled 70 per cent of film-making loans in the United States, advancing up to 80 or 90 per cent of the cost of making productions. As the Giannini's showed that it was possible to make a lot of money by financing a maverick industry, Otto Kahn of *Kuhn, Loeb, & Company* started the flow of Wall Street investment bank money into Hollywood and he was followed by others.

Creation of distinct genres - Another method of marketing films was to offer an increasingly clear cut variety of styles. The studios began to group their productions into standard narrative forms -- westerns, musicals, gangster films, horror films, screwball comedies, war films, detective or 'who done it?' films, etc. Thus, individual movies acquired a 'brand identity' which greatly facilitated their marketing and advertising, both at home and abroad

Movies – Talking Pictures

- Talking Pictures interesting consequences – 2
  - Led most theaters to drop the interspersing of vaudeville acts and live music with motion pictures
    - Resulted in the fading of vaudeville
  - Led to the dominance of the studio system
    - Studios that seized the opportunity to make talkies – Warner Bros, Fox, M-G-M, & Paramount - soon gained dominance
  - Altered the behavior of moviegoers
    - The talking audience for silent pictures became the silent audience for talking pictures

End of vaudeville - With the instant popularity of talking pictures, most theaters found they could drop the practice of interspersing vaudeville acts and live music with silent motion pictures. The grand picture palace, which had the upper hand as long as theaters presented a combination of film and live entertainment, lost its economic ad-vantage as full programs of sound motion pictures became available. A few vaudeville acts, such as the Three Stooges and the Marx Brothers, were able to transfer their style of entertainment to film, but for the most part vaudeville faded.

Studios - Studios quick to seize the opportunity to make "talkies"—Warner Bros., Fox, Metro-Goldwyn-Mayer, and Paramount—soon gained dominance in a movie industry

Behavior of Moviegoers - The rapid switch from silent to sound motion pictures altered the behavior of moviegoers, the historian Robert Sklar points out. It was considered quite acceptable for silent movie audiences to react out loud to what they saw on the screen. An ongoing series of comments could create a bond among members of an audience sitting in the dark, furthering a sense of community among those in a neighbor-hood or small-town theater or even creating one temporarily in an ur-ban picture palace. Talking by viewers made silent movie-going a shared experience and rendered each screening a unique and personal event. With talking pictures, however, audience conversation served to distract from the film dialogue, and audience members who spoke aloud were promptly hushed by ushers or fellow patrons. As Sklar observed, "The talking audience for silent pictures became a silent audience for talking pictures."[4] As a result, movie-going soon became a much more private and passive experience, even in a crowded theater.

Movies – Talking Pictures

- Talking Pictures' interesting consequences – 3
  - Sound gave filmmakers new ways to attract and excite audiences
    - Allowed films to become more fast paced and complex
    - Boosted ticket sales
      - In 1930, weekly movie attendance equaled 75% of the total American population
    - Boosted the popularity of war movies, horror movies, westerns, and films that depended on clever, fast-paced, and witty dialog

Movies – The Studios

- Paradoxically, the studio system originated in France with Charles Pathé
  - Involved actors under exclusive contract
  - Vertical integration – screenwriting, production, promotion, distribution & exhibition under one roof
  - Use of the profits of one film to fund the production of another

Charles Pathe - Charles Pathe adopted the regimented techniques of mass production to the business of film making, just as a few years later Henry Ford would apply them to the auto industry. Thus, Pathe, more than any of his American rivals, was able to guarantee a consistent supply of films. Pathe introduced the idea of employing a company of actors, anticipating the Hollywood studio system of putting leading actors and actresses under exclusive contracts. He also introduced the concept of vertical integration -- bringing the development, production, promotion, distribution, and screening of films together under one company roof. Pathe's vertical structure allowed him to minimize risks by using the profits generated by the distribution of his films to fund the production of new ones, thus spreading the risk across a number of films. "Pathe saw that in a market where the public was consistently clamoring for new films, power would inevitably accrue to anyone who could supply a consistly high output of quality product."

By 1908, Pathe's domination of world cinema was complete. He was selling twice as many films in the U.S. as all American companies put together. Pathe's success stemmed from two separate insights:

1. A recognition that the movie business had to be organized like other late-19th century mass production industries; and
2. An understanding (which eluded Edison and others) that the biggest profits lay not in manufacturing cameras, film projectors, or film stock, but in the production and distribution of movies themselves.

Movies – The Studios

- Some Notes About the Studio System
  - Reflected the ideas of Charles Pathé and Thomas Harper Ince. Ince at his studio in Inceville CA:
    - Functioned as the central authority over multiple production units, each headed by a director
    - Each director shot an assigned film according to a detailed continuity script, detailed budget, and tight schedule
    - Ince supervised the final cut

The growing industry was organized according to the studio system that, in many respects, the producer Thomas Harper Ince had developed between 1914 and 1918 at Inceville, his studio in the Santa Ynez Canyon near Hollywood. Ince functioned as the central authority over multiple production units, each headed by a director who was required to shoot an assigned film according to a detailed continuity script. Every project was carefully budgeted and tightly scheduled, and Ince himself supervised the final cut. This central producer system was the prototype for the studio system of the 1920s, and, with some modification, it prevailed as the dominant mode of Hollywood production for the next 40 years.

Movies – The Studios

- Emergence of the Hollywood Studios reflected:
  - The successes of Pathe and Ince and the adoption of their approach by American moviemakers
  - Oligopolistic success in a highly competitive industry
  - The need to finance ever increasing production costs and the conversion of theaters to sound
    - Required an ability to obtain bank loans and Wall Street investment bank financing

Hollywood Studios in the 1920s -The most powerful companies in the new film capital were the independents, who were flush with cash from their conversion to feature production. These included the Famous Players–Lasky Corporation (later Paramount Pictures, *c.* 1927), which was formed by a merger of Zukor's Famous Players Company, Jesse L. Lasky's Feature Play Company, and the Paramount distribution exchange in 1916; Universal Pictures, founded by Carl Laemmle in 1912 by merging IMP with Powers, Rex, Nestor, Champion, and Bison; Goldwyn Picture Corporation, founded in 1916 by Samuel Goldfish (later Goldwyn) and Edgar Selwyn; Metro Picture Corporation and Louis B. Mayer Pictures, founded by Louis B. Mayer in 1915 and 1917, respectively; and the Fox Film Corporation (later Twentieth Century–Fox, 1935), founded by William Fox in 1915. After World War I these companies were joined by Loew's, Inc. (parent corporation of MGM, created by the merger of Metro, Goldwyn, and Mayer companies cited above, 1924), a national exhibition chain organized by Marcus Loew and Nicholas Schenck in 1919; First National Pictures, Inc., a circuit of independent exhibitors who established their own production facilities in Burbank, California, in 1922; Warner Brothers Pictures, Inc., founded by Harry, Albert, Samuel, and Jack Warner in 1923; and Columbia Pictures, Inc., incorporated in 1924 by Harry and Jack Cohn.

Movies – The Studios

- By the mid-1930s, Hollywood was dominated by 8 studios – the Big 5 and the Little 3
  - Big 5 – Paramount, 20th Century Fox, Warner Bros, RKO, and M-G-M
  - Little 3 – Universal, Columbia, and United Artists
  - A few independents – Republic & Monogram
- This system dominated Hollywood until the early-1950s

Movies – Some Notes

- Movies initially appealed to a lower class (immigrants & working class) audience
  - Explains why we eat popcorn at the movies but not at plays or the opera
- Movies began to appeal to a middle class and upper class audience when:
  - Producers began to make and show feature films
  - "Motion Picture Palaces" began to replace storefront exhibition places

Lower class audience - The social origins of motion pictures were a critical early influence on their path of development. Whereas newspapers and magazines had begun among the elite and evolved in a more popular direction, movies acquired a lowbrow image at an early point in their history and faced a challenge in achieving respectability. According to an 1911 study of New York City moviegoers, 72% of the audience came from the lower class, *{25% from the middle class},* and only 3% from the leisure class. By comparison, the legitimate theater audience was only 2% working class, with 51% coming from the leisure class and 47% from the middle class. {Two factors that made the movies popular with immigrants were (1) they were cheap, and (2) as a purely visual entertainment medium before 'talkies,' they could be easily understood and appreciated by immigrants whose fluency in English was limited

Popcorn at the movies - As in the theater before the middle class began enforcing its protocols of passivity, working class patrons made a display of their lack of breeding -- members of the audience would neck during performances, munch peanuts or eat fruit, talk, wander, shout at the screen. Even today, the fact that one eats popcorn at the movies and would not think of doing so at the ballet, opera, or symphony, is a demarcation between low and high culture.

Respectability – Movie studios were quick to seek to appeal to a middle class audience by upgrading the sites where movies were shown. The movie palaces brought together regular patrons of the legitimate theater who paid $2.00 per ticket to see moving pictures in their first class playhouses, vaudeville customers, and nickelodeon and neighborhood theater regulars accustomed to paying a nickel or dime to see short films. Because the movies were so entertaining and so useful, they would rapidly grow in popularity, rapidly extending their power over the middle class and ultimately leaving the working class storefronts behind for capacious and often opulent uptown theaters. In 1922, average weekly movie attendance was 40 million with an average weekly household attendance of 1.56. This continued to grow until weekly attendance peaked out at 90 million in 1948 with an average weekly household attendance of 2.22.

Movies – Some Notes

- By the early 1920s, the movies had established the basic film genres that are still with us:
  - Crime story
  - Western
  - Historical costume drama
  - Domestic melodrama or romance
  - Comedy (often romantic)

Movies – Some Notes

- Movies and plays were both narrative and storytelling media but they differed in that:
  - Plays are always live performances; movies are not
  - Movies and plays treat time differently
  - Plays can have very sparse scenery; Movies require elaborate sets
  - Movies permit close-ups while plays, for most members of the audience, do not

Live performance – The fact that plays are live leads audiences to focus on the live actors and their interactions and dialog. In movies, the actors are two-dimensional figures and not live human beings so that our focus is more on the whole picture and somewhat less on the actors.

Time - Film treated time differently than does the stage. Movies can use flashbacks, split screens, and slow- or speeded up-motion to depicts past events, simultaneous events, or actions that take place rapidly or slowly over time: Plays have to handle such events differently

Scenery & Sets – Plays can get away with very sparse scenery and sets because audience attention is focused on the interaction and dialog of the live players. Movies require elaborate scenery and sets (and often costumes) because the audience at the movie is focused on the whole screen.

Close-ups - Just as radio helped bring back inflection in speech, so film and TV recovered gesture and facial awareness -- a rich colorful language, conveying moods and emotions, happenings and characters, even thoughts, none of which could be properly packaged in words."

Movies and the Great Depression

- Effects of the Great Depression on Movies
  - Popularized escapist as distinct from topical films
    - Historical or literary-based films
    - Animated films – Walt Disney
  - Led to various innovations as theater owners sought to attract customers
    - Drive-in movies
    - Serials
    - Double Features
    - Bank Nights and Giveaways

Drive-in movies - Drive-in movies - In 1933 Richard M. Hollinshead set up a l6-mm projector in front of his garage in Riverton, New Jersey, and then settled down to watch a movie. Recognizing a nation addicted to the motorcar when he saw one, Hollinshead and Willis Smith opened the world's first drive-in movie in a forty-car parking lot in Camden on June 6, 1933. Because drive-ins offered bargain-basement prices and double or triple bills, the theaters tended to favor movies that were either second-run or second-rate. Drive-in movies proved especially popular with two very diverse groups – one was parents with small children who could go to a movie without having to pay a babysitter, letting the kids sleep in the backseat of the station wagon while the parents watched the movies; the other was teen-agers who found the "passion pit" a very appealing place for a date. Pundits often commented that there was a better show in the cars than on the screen.[19] In the 1960s and 1970s the drive-in movie began to slip in popularity. Rising fuel costs and a season that lasted only six months contributed to the problem, but skyrocketing land values were the main factor. When drive-ins initially opened, they were mostly in the hinterlands. As subdivisions and shopping centers edged closer, it became more profitable to sell the land. Thus, by 1983, the more than 4,000 drive-ins of 1958 had dwindled to 2,935. What finally finished off the drive-in movie was the VCR.

Serials - To keep their patrons coming back, theaters re-turned to the silent-era practice of showing serials, short, intensely thrilling films that invariably left Flash Gordon or some other cen-tral character suspended in a perilous situation until the next episode a week later would produce an escape followed by entrapment in yet another predicament.

Double Features - Theater operators struggling to hold onto their audiences not only continued the practice of changing what they were showing one, two, or more times a week, they also began offering double features, two full-length films for the price of one. Producers and distributors disliked this latter practice but proved powerless to stop it. By the mid-1930s half the theaters in the United States were showing double features.

Bank Nights – Bank nights involved the drawing of lucky tickets stubs for cash prizes. These

Movies – What Hollywood Wrought

- Movies had the following effects:
  - Constituted a lifestyle classroom on a whole host of topics – clothes, hairstyles, social attitudes, behavior, and much else
  - Provided a set of shared experiences for almost the whole population
  - Affected people's concepts of historical fact
  - Served as a purveyor of a whole host of consumer goods
    - Fostered discontent in the Third World

Movies – What Hollywood Wrought

- Movies had the following effects – 2
  - Along with the automobile, led to the Drive-in movie
  - Initially supplemented and then supplanted lecture hall and vaudeville theater audiences
  - Brought the "Star" system to full fruition
    - Led to fan magazines and fan clubs
  - Played a major role in creating the myth of the "Wild West"

Drive-in movie - Drive-ins appealed to two distinct groups -- teenagers seeking a place where they and their dates could make-out and married couples with preteen kids who wanted to see a movie without having to having to pay a babysitter. To accommodate both, drive-in theater managers would show a G-rated film or films for the kids, sometimes followed either by a more adult-oriented film for the adults after the kids had fallen asleep or by a Grade B horror flick designed to scare teenage girls into the arms of their male dates.
Supplemented and supplanted audiences – The movies converted lecture hall audiences into motion picture show fans, the same process was taking place in the nation's vaudeville theaters. Screened projected films fit perfectly into the vaudeville program as opening and closing 'dumb' acts (along with animals, pantomimes, puppets, and magic lantern slides) that were silent and thus would not be disturbed by late arrivals or early departures.
Star system – While the star system had its origins in the 19th century with theater and sports stars whose performance tours were facilitated by the railroad and telegraph/telephone and whose images were displayed on posters and photographs, the star system reached its fruition with Hollywood. After some hesitation, the studios realized that promoting stars not only sold films to audiences, but also upgraded the image of the industry. With 'stars', the movie industry could separate itself further from its peep show past (there were no stars in the penny arcades) and connect itself with the legitimate theater (which gloried in its stars). Like the stars of live theater, movie stars were larger than life. Thus, it took only a few years for the MOPIC players to ascend from anonymity to omnipresence and their own kind of notoriety. A new institution, the fan magazine, was created to better acquaint audiences with their favorite stars. By 1911, movie stars were touring local theaters to promote their films, granting regular interviews, writing articles for newspapers and fan magazines, and distributing photographs of themselves to their admirers. !! The stars were worth the money because their appearance in a film boosted receipts and added a degree of predictability to the business -- a predictability welcomed by the banks and financiers that loaned money to the studios to pay their production costs. The stars not only brought new customers into the theaters but also incorporated a movie audience scattered over thousands of sites into a unified public that not only saw its favorite pictures and stars but also talked about them, read about them, collected pictures and posters, and bought fan magazines to learn more about the stars' personal lives and loves.
Wild West myth -

Movies – What Hollywood Wrought

- Movies had the following effects – 3
  - Films made cultural production a major economic force
  - Films made commercial entertainment a center of American social life
  - As noted earlier, films constituted a major force in Americanizing world popular culture
    - As a backlash, it also led both intellectuals and traditionalists to react against aspects of American culture deemed incompatible with traditional values

Film a major economic force - According to Jeremy Rifkin of *The Age of Access, "*it was the advent of films that established cultural production as a truly significant force in the capitalist marketplace and elevated commercial entertainment to the center of American social life. With film, high and pop culture became 'consumer culture,' and cultural capitalism was born."

Entertainment a social force - Movies were *the* preeminent form of popular culture in the 1930s. Almost everyone who could afford to (and millions who could not) went to the cinema frequently through-out the decade. During the depths of the Depression in the early thirties, an average of 60 million to 75 million movie tickets were purchased each week. Although part of this remarkable figure represented repeat customers, the number itself corresponds to more than 60 percent of the entire American population. In the 1970s, movie attendance was less than 10% of the population.

Americanization – Through movies, people became familiar with American products, lifestyles, patterns of behavior, and values. It made people throughout the world want to drive American cars, eat American foods, smoke American cigarettes, and wear American clothes.

Cultural backlash – One reason the Ayatollah Khomeini referred to America as the Great Satan" was that Satin in Islamic theology was seen as the great and subtle tempter and he saw American popular culture as depicted in the movies and TV as a temptation for people to abandon traditional Islam.

Movies – What Hollywood Wrought

- Movies had the following effects – 4
  - – Popularized air conditioning
    - Seeing movies in comfort on hot summer day fueled a desire for air conditioning in the home and office
  - – Gave us the animated feature cartoon
    - The marriage of the newspaper comic strip with the movie gave us the animated cartoon and feature film

Air Conditioning - In 1922 Carrier engineers built the first top-down, or bypass, cooling system for Grauman's Metropolitan Theater in Los Angeles. This is generally considered to be the birthplace of theater air conditioning, although the real test came three years later at the Rivoli Theater in New York. THE AIR-CONDITIONED Rivoli Theater opened Memorial Day weekend, 1925. After the show Adolph Zukor came downstairs and approached Carrier. The movie had been silent, but the studio chief was not. "Yes," he said, "the people are going to like it."

The box-office grosses at the Rivoli during the next three months proved Zukor correct: ticket sales were up $100,000 over the previous summer -- more than the cost of installation itself. During the next five years Carrier air-conditioned over three hundred theaters around the country. Not only had he saved Hollywood from its summer doldrums but, by introducing comfort cooling to the masses, he created a demand for air conditioning that carried his own company through the Depression.

Animation - Winsor McCay, the earliest animator, created *Little Nemo in Slumberland* in 1911, and then *Gertie the Trained Dinosaur* three years later. Gertie had charm and personality aplenty, a progenitor of Barney. The development of animation began to hit its stride in 1915-16, when Mutt and Jeff films achieved popularity. By the late teens most animated cartoons were adaptations of successful comic strips: "Bringing up Father," "The Katzenjammer Kids," and "Krazy Kat." "Felix the Cat," always outwitted by a mouse, made his first appearance in 1921. Created by Otto Messmer, Felix had a very distinctive personality which made him the greatest cartoon star of the silent era. Until 1928, all animated cartoons had been derived from New York-produced comic strips. But then came an unknown named Walt Disney from California with *Steamboat Willie,* a landmark her synchronized sound with the pictures. Next came Mickey Mouse and an amazing burst of creativity for Disney that endured without a break for more than a decade. The notion that make-believe cartoon characters could talk, sing, play instruments, and move to a musical beat seemed absolutely magical. *Snow White and the Seven Dwarfs* was a landmark in

Movies – What Hollywood Wrought

- Movies had the following effects - 5
  - Helped turn the American people against Prohibition
    - The urban jazz-age flapper and her boyfriend conveyed the impression that drinking was widespread and that violating Prohibition laws was socially respectable
  - Diverted artistic talent from other endeavors to the movies
    - People who formerly composed symphonies now wrote movie scores; persons who in the past wrote novels now wrote screenplays

Prohibition - In a representative sample of 115 films from 1930, liquor was referred to in 78 percent and drinking depicted in 66 percent. Further analysis of 40 of those films reveals that while only 13 percent of male villains and 8 percent of female villains could be seen consuming alcohol, no less than 43 percent of heroes and 23 percent of heroines were shown doing so.

Movies and Television

- What Television Did to the Movies
  - While the Studios initially saw television as a mortal threat, independent movie producers saw TV as an opportunity
    - The independents began making films – mostly crime dramas, westerns, and comedies – for television
      - Among the most successful was Desilu Productions
    - The success of Disneyland with the theme park, TV programs, and movies mutually promoting each other led studios to see television as a potential ally

Threat - When ABC President Robert Kintner tried to persuade Harry Cohn of Columbia Pictures to supply original programming, Cohn said, 'You dumb son of a bitch, you won't get any of my stars, you won't get any of my people -- you can't make films! People want the companionship of the theater, they want their movies the way they are -- not on TV.' **Opportunity –** The independents realized that *filmed drama could earn for its producers more money than live programming ever could. Under a practice known as syndication, a producer would sell rerun rights to the network and to groups of local stations*." From the late 1940s on, independent producers began setting up shop on lower Sunset Boulevard in Hollywood and started cranking out cut-rate price films (mostly crime dramas & westerns) for television***. Tempted by the huge profits that could be made, many Hollywood producers made the switch to independent television production. Among them were two former RKO contract players -- Lucille Ball and Desi Arnaz -- who formed Desilu Productions***. By 1955, they were turning out hundreds of hours of programming every year, including *I Love Lucy.*

Movies and Television

- What Television Did to the Movies
  - Movie studios began renting their archives of old productions to the networks
    - Feature films on television
    - Studios invest the archiving, preservation, and restoration of old feature films
    - Films made for television without exhibiting them in theaters beforehand

Movies and Television

- What Television Did to the Movies
  - Television changed the economics of the movie business
    - Before television, box office revenues were the source of movie profits
    - After television, it is primarily video (initially VCR tape and now DVD) rentals and sales that are the source of profit, followed by box office revenue and sales of exhibition rights to free and pay television. In some cases, there is additional revenue from product tie-ins.

In 1993, U.S. figures place pay and free television at 19 per-cent of cinematic revenues, movie theaters at 27 percent, and home video at 49 percent. Disney popularized the use of tie-in products with his movies – movie character dolls and figurines, photographs of stars, games based on the movie and/or movie characters. In 2003, they accounted for only 18% of the take. Instead, home entertainment provided 82% of the revenues. Further, print and advertising costs eat away most if not all of the theatrical revenues, but the studios retain most of the money from home entertainment. All of this has transformed the way Hollywood operates. Theatrical releases now serve essentially as launching platforms for videos, DVDs, network TV, pay TV, games, and a host of other products

Radio

- Origins of Radio
  - James Clerk Maxwell's theory had predicted the existence of electromagnetic waves that traveled through space at the speed of light
  - Heinrich Hertz in 1886 devised an experiment to detect such waves.
    - He connected two ends of a coil of wire to the opposite sides of a small gap and then shot a high-voltage spark across the gap. Hertz found that as the spark jumped the gap, a much smaller spark flowed between two other wires, similarly configured, on the other side of the room.

Hertz - Heinrich Hertz (1857-1894) deduced from James Clerk Maxwell's theory that electromagnetic waves, generated by a changing or oscillating electric current, traveled through space with the same velocity as light. This suggested an experiment. In 1886, Hertz invented a simple detector for high frequency oscillations. It consisted of an adjustable loop of wire with a small gap in it for sparks. If a detector was brought near an oscillating circuit, sparks would leap the small gap when the loop was held in the right position to obtain the maximum inductive linkage. The detector could be varied in size and so tuned to the frequency, or the wavelength, of the oscillator. With his simple apparatus, Hertz carried out a decisive series of experiments in 1888 and !! 1889. He measured the length of standing waves transmitted along a long open wire and showed how waves travelling along the wire interfered with vibrations in space from the same source. The wavelength as measured on the wire and the calculated frequency of the oscillator enabled him to calculate the velocity of the waves on the wire. From the interference pattern he was able to show that the velocity of the vibrations, or waves, in space was that of light. And he demonstrated that the waves could be reflected from the walls of a large room to give the effect of standing waves in space. The *experimentum crucis* had therefore decided in favour of Maxwell's theory and the reality of Maxwell-type electromagnetic waves in empty space had been established. Hertz went on to show that these waves had the same properties as the vibrations that caused the sensation and phenomena of light. They could be reflected and refracted; they were 'normally polarized' and could be made to display the characteristic phenomenon of interference. Hertz had enormously extended the spectrum, from visible light through radiant heat to the new Maxwell-type waves whose length, from crest to crest, was measured in metres, rather than in tiny fractions of a millimetre. Significantly, too. Hertz showed that the field strength of electromagnetic waves diminished much less rapidly with distance than did the field strength of Faraday-type induction. (p375-376} [Cardwell_Norton History of Technology]

Radio

- Origins of Radio – 2
  - By this and related experiments, Hertz showed that these waves conformed to Maxwell's theory and had many of the same properties as light except that the wave lengths were much longer than those of light – several meters as opposed to fractions of a millimeter.
  - Guglielmo Marconi had attended lectures on Maxwell's theory and read an account of Hertz's experiments

Although much work was being done on Hertzian waves, it was in physics and not technology. It was left to a wealthy young Italian, barely out of his teens, to convert these scientific developments into a revolutionary method of transmitting information. Guglielmo Marconi (1874-1937) had attended Augusto Righi's lectures at Bologna University on Maxwell's theory and on Hertz's experiments; and he had read Lodge's London lecture on Hertz's experiments. He could, he said later, hardly credit that the great men of science had not already seen the practical possibilities of Hertzian waves; but, as Lodge later confessed, they had not. ***Marconi, in short, was the typical outsider who, having no prior connection with an art or technology, revolutionizes it.***

Marconi's radio - After Hertz's death in 1894, Marconi replicated Hertz's experiment and then added to the smaller spark gap a Branly coherer [a tube invented by Edward Branly in 1891 with electrical contacts at either end and a metal dust suspended in the middle that was used as an amplifier of telegraph signals], attached the Branly coherer to a battery, and the battery to a Morse printer. Here in primitive form was a wireless telegraph, set to record messages in the dots and dashes of Morse code that were beamed electronically from a transmitter across the ether to a receiver.

Radio

- What Marconi accomplished
  - He devised a practical wireless telegraphy transmitter and receiver
  - He also visualized a market for the device
    - Navies and shipping companies that wanted to be able to communicate with their ships at sea
  - Marconi gradually improved his invention over time
    - In 1901 actually transmitted a message from Cornwall in England to Newfoundland
      - » This led to the discovery of the ionosphere since what Marconi accomplished was theoretically impossible if radio waves like light followed lines of sight.

Radio

- What Reginald Fessenden accomplished:
  - Fessenden and Ernst Alexanderson of GE developed a high-frequency alternator that allowed continuous wave transmission
  - This made possible voice and music radio transmission
    - On December 24, 1906, Fessenden began transmitting voice and music from his experimental radio station in Plymouth MA.

Radio

- What Lee De Forest accomplished:
  - Invented the audion tube, which permitted the detection and amplification of radio signals and sound
  - Started radio broadcasting of lectures and phonograph music in 1915
    - In 1916, he broadcast the Harvard-Yale football game and the 1916 Presidential election results, including the incorrect report that Woodrow Wilson had been defeated
    - In 1917, with the declaration of war, all amateur broadcasting was shut down
  - Invented the Phonophone sound-on-film method of recording talking pictures

Audion tube - Audion, a vacuum tube that takes relatively weak electrical signals and amplifies them. De Forest is one of the fathers of the "electronic age", as the Audion helped to usher in the widespread use of electronics.
De Forest's innovation was the insertion of a third electrode, the grid, in between the cathode (filament) and the anode (plate) of the previously invented diode. The resulting triode or three-electrode vacuum tube could be used as an amplifier for electrical signals, notably for radio reception. The Audion could also act as a fast (for its time) electronic switching element, later applicable in digital electronics (such as computers). The triode was vital in the development of long-distance (e.g. transcontinental) telephone communications, radio, and radar. The triode was an important innovation in electronics in the first half of the 20th century, between Nikola Tesla's and Guglielmo Marconi's progress in radio in the 1890s, and the 1948 invention of the transistor.
Phonophone - These lines photographically recorded electrical waveforms from a microphone, which were translated back into sound waves when the movie was projected. This system, which synchronized sound directly onto film, was used to record stage performances (such as in vaudeville), speeches, and musical acts. In November 1922, De Forest established his De Forest Phonofilm Company at 314 East 48th Street in New York City, but none of the Hollywood movie studios expressed any interest in his invention. De Forest also worked with Freeman Harrison Owens and Theodore Case, using Owens's and Case's work to perfect the Phonofilm system. However, DeForest had a falling out with both men. Case took his patents to studio head William Fox, owner of Fox Film Corporation, who then perfected the Fox Movietone process. Shortly before the Phonofilm Company filed for bankruptcy in September 1926, Hollywood introduced a new method for sound film, the sound-on-disc process developed by Warner Brothers as Vitaphone, with the John Barrymore film *Don Juan*, released 6 August 1926. In 1927 and 1928, Hollywood began to use sound-on-film systems, including Fox Movietone and RCA Photophone.

Radio

- Effects of World War I
  - Sparked a huge demand for both wireless equipment and trained radio operators
    - Trained thousands of radio operators and familiarized them with the latest developments in radio technology
    - Led many of these new radio operators to become postwar amateur radio operators or hams.
  - Wartime desire to intercept German radio communications inspired Edwin Armstrong in 1918 to invent the superheterodyne circuit
- WWI thus laid the groundwork for the 1920s boom in radio and radio broadcasting

Demand for radio equipment and operators - World War I sparked a huge demand for wireless equipment -- millions of vacuum tubes, thousands of transmitters, large numbers of receivers and head phones. These demands were met by General Electric, Westinghouse, and Western Electric (the manufacturing subsidiary of AT&T). Also, thousands were trained as radio operators. In January 1917, there were 970 Navy radiomen; on November 11, 1918, there were 6,700.

Superheterodyne circuit – The circuit was an effective tuning device for electromagnetic signals that remains to this day the central element in radio and television transmission at precise and differentiated frequencies. Prior to Armstrong's invention, each radio transmission covered a range of frequencies, thus hogging spectrum space and interfering with

Radio

- Frank Conrad
  - Was an amateur radio operator who was head of Westinghouse's radio operations
  - Regularly broadcast music from his home radio station
  - Joseph Horne Department Store Ad ran an ad on September 20, 1920 saying that their sets could receive Conrad's transmissions
  - The ad triggered an epiphany in Westinghouse VP Harry Davis
    - Radio was a broadcast medium
    - There was money to be made in selling receiving sets

When Harry P. Davis, a Westinghouse vice-president, saw the ad, he suddenly grasped that the company's concep-tion of the wireless market had been much too limited in scope. He realized that "the efforts that were then being made to develop radio telephony as a confidential means of communication were wrong, and that instead its field was really one of wide publicity, in fact, the only means of instantaneous communication ever devised." He now com-prehended that the amateurs did not represent a discrete market limited to technically inclined boys and men; rather, the amateurs were simply the forerunners of a much larger market for radio receivers. As Davis later remarked, "Here was an idea of limitless opportunity.

Radio

- Davis got Conrad to build a radio station at Westinghouse – KDKA – to transmit the 1920 election returns.
- Result – A splurge of radio broadcasting
- One broadcast that helped fuel the radio surge was the broadcast of the Dempsey-Carpentier heavyweight championship fight on July 2, 1921

Davis urged that Westinghouse authorize Conrad to build a more powerful transmitting station at the Westinghouse plant and that Conrad broadcast on an even more regular basis. These broadcasts, according to Davis's plan, would stimulate sales of radio receivers, and the profits from the sales would defray the cost of the station. Davis wanted the station completed by November 2, so Conrad could broadcast the presi-dential election returns. At 8:00 P.M. on November 2, 1920, the newly licensed station KDKA, operating at 360 meters, broadcast the election results. Amateurs listened enthusiastically, sometimes rigging up loud-speakers so friends and family members could listen, as well. To ensure that the broadcast had the right effect, both within and outside of the company, Davis provided Westinghouse officers with receiving sets, and also helped arrange for local department stores to have their radios tuned to Conrad's station. Newspapers in Pittsburgh and elsewhere took note of the event, but most newspapers and magazines ignored the broadcast. News of it was spread most rapidly and enthusiastically by word of mouth among amateurs and their families and friends. Over the next year and a half, the "broadcasting boom" swept the United States, beginning in the Northeast and moving south and west, reaching unprecedented levels of intensity by the spring of 1922

Radio

- Radio Sets
  - 1920 – Most radios were homemade crystal sets with earphones
  - 1922 – RCA Radiola – 6 tubes, amplifiers, and a superheterodyne tuner that required no external antenna and was simple to operate, but required a battery
  - 1928 – Console radio, fitted into a large wooden cabinet and sold as furniture, with plug-in circuitry and loudspeakers
  - 1930 – Relatively inexpensive table model radios

Radio

- Notes on Early Programming
  - Broadcasting of election returns, political party conventions, and major sports events
  - Music – both live performances and phonograph recordings – dominated programming
  - No regular news coverage
    - Newspapers refused to make wire service reports available to radio stations for broadcasting

From the outset, music filled much of radio's available broadcast time. Live performances of the parlor piano and vocal music of re-cent decades were most common at first, but classical music, espe-cially opera and orchestral performances, enjoyed frequent broadcast. While many Americans had joined in or at least heard the more popular music at home, in saloons and vaudeville theaters, or elsewhere, few had attended an opera or symphony concert. The au-dience that heard classical music with the low sound quality of early radio was soon eager for live performance. Between 1928 and 1939 the number of major professional symphony orchestras increased from 10 to 17; the total number of orchestras, including part-time less professional ones in smaller cities, grew from 60 to 286. Perhaps !! more significant, whereas musical instruction in public schools was almost unheard of in 1920, two decades later it was widespread. Thirty thousand school orchestras and 20,000 bands had sprung up. Radio was much more effective than the earlier technological in-novation, the phonograph, in building an audience for classical mu-sic. Until the long-playing record was developed in 1948, phonograph records could hold only about five minutes of music per side, creating difficulties in the presentation of all but the shortest classical works. Furthermore, by 1924 superheterodyne radios were producing better-quality sound than phonographs. Radio therefore I took the lead in presenting classical music. The phonograph indus-try went into a radio-induced slump that lasted through the 1930s. Radio also promoted the popularity of other forms of music. Both jazz and country music reached beyond the audiences they had known and evolved significantly as a result. Music that could be and often had been performed at home in the parlor included sentimen-tal songs, ballads, vaudeville and musical comedy tunes, and less-challenging operatic pieces. Such parlor music was familiar, traditional, and remained widely enjoyed by early radio audiences. The limitations of radio, however, reshaped this sort of music. Intense voices, especially high sopranos, had a tendency to blow out the tubes on radio transmitters. As a result, a number of singers developed a new soft, gentle style that came across well and soon became known as "crooning." Female singers such as Vaughn De Leath and Kate Smith as well as males such as Rudy Vallee and Bing Crosby built large and loyal audiences as they perfected the "croon-ing" style.

Radio

- A Note on Sports Broadcasting
  - The uncertainties of early radio required radio announcers who could fill airtime with a gift of gab if something went wrong
  - Since many radio announcers lacked an athletic background, the practice of having two or more announcers team up to report a game arose
    - One to describe the play-by-play action and the other to provide analysis, information on players, and 'color'.
    - With football, there was three announcers – one for play-by-play description, one for color, and a spotter to identify the large and constantly shifting cast of players on the field.

One early sports broadcaster was Ronald Reagan who broadcast baseball games by reading off the sports telegraph ticker and creating the impression he was broadcasting from the game. One time, he was broadcasting a baseball game when the sports ticker got interrupted. Reagan had the batter foul off pitch after pitch until the ticker resumed.

Radio

- In the 1920s, radio took on many of the characteristics that marked radio and later television during their heydays
  - Bandwidth allocations that favored well-heeled stations
  - Commercial advertising as a source of radio station revenue
  - Networks that provided programming to individual stations

Bandwidth - A major initial choice facing the FRC at its inception was the design of the spectrum -- how to divide the bandwidth allotted to broadcasting among different kinds of channels. Since broadcast channels needed to be 10 kHz apart, this meant that 96 channels could fit on the broadcasting band. Six of these were set aside for Canada. The number of stations that the remaining 90 channels could support depended on the location and power levels of broadcast transmitters. At a high power, only one station could occupy a channel; at moderate power, there could be several regional stations at the same frequency spread around the country; and at the lowest power level, many dispersed local stations could use the same wavelength. Thus, the greater the number of high-power or clear channels, the less the number of regional and local stations. Because clear channel stations required more expensive transmitting equipment, the interest in clear channels was greatest among the well-financed commercial broadcasters. !! Convincing the FRC to set aside clear channels was a high priority for the emerging national radio networks. Non-profit broadcasters, in contrast, preferred more affordable local stations. Since clear channels could reach rural listeners who otherwise might lack access to radio and also provide better reception for people with cheaper radios, there was a strong argument for clear channels

Commercial advertising & networks - Before 1927, stations were able to operate on minimal budgets. In 1925, the average station was on the air only five hours per week, most broadcasters operated at low frequency, and programming was inexpensive since many performers appeared for free and many stations paid no royalties to composers. By the late-1920s, regulatory and competitive pressures had sharply increased costs as stations moved to higher power levels, stricter engineering standards, and 17-hour daily broadcast schedules together with higher programming costs as listening audiences demanded higher quality programs and composers/musicians demanded payment of royalties. Without a license fee or tax support to bear its mounting cost, American radio was certain to be dominated by commercial broadcasters, and these broadcasters were bound to turn to networks to control programming costs and advertising to provide revenue,

Radio

- Networks
  - The 1920s and early-1930s saw the emergence of four networks – NBC Red (1926), NBC Blue (1928), CBS (1927), & Mutual (1934)
    - In 1943, NBC-Blue was sold off and became ABC
  - Networks gave advertisers access to a large national audience
  - Networks provided programming to the affiliated local stations
  - Programming was produced by the networks, individual sponsors, and increasingly over time by advertising agencies.

Networks gave advertisers of brand-name consumer products efficient access to a large national audience, and out of their advertising revenue they provided stations with a dependable stream of income to run the programs the advertisers sponsored. Networks also gave their affiliates a competitive advantage by supplying popular and high-quality programs at low or zero cost that unaffiliated stations in their local markets found it difficult to match. Networks had an economic logic, based on the relatively high cost of producing content (programming) compared to the costs of transmission and reproduction. The additional role of connecting national advertising and national audiences gave the networks an unbreakable hold on broadcasting. With advertisers came increasingly influential ad agencies. Although the agencies started out by preparing copy for the radio advertisements and negotiating with stations on behalf of sponsors, they quickly assumed the central role in program production. Increasingly, the agencies came up with the ideas for programs, wrote the scripts, hired the performers, found sponsors, and presented shows to the networks as a complete package. By 1929, advertising agencies were producing 33 percent of programs; individual sponsors, another 20 percent; the networks, 28 percent; and special program builders, 19 percent. !! Within a few years, the agencies took over virtually all but the sustaining programs the networks produced for use during unsold airtime.

Radio

- Notes on Programming
  - Initially limited to the evening hours
  - By the late-1920s, broadcasters realized that the right daytime programming might attract housewives
    - Result: serial romantic dramas, such as “Ma Perkins” and “The Romance of Helen Trent”
      - Termed soap operas because these programs were most often sponsored by laundry soap manufacturers

Radio

- Notes on Programming - 2
  - By the early 1930s, morning programming focused on weather reports, recorded music, and talk a la "Don McNeill's Breakfast Club"
  - By 1930, evening programming focused on the radio genres with mass appeal
    - Domestic sitcoms
    - Crime, mystery, & detective shows
    - Comedy/Variety shows
    - Radio versions of plays and movies

Domestic sitcoms – These combined comedy and drama, often in the form of a husband-and-wife sitcom. This genre included *Vic and Sade, The Aldrich Family, Fibber McGee and Molly, The Life of Riley, the Bickersons, The Great Gildersleeve,* and *The George Burns and Gracie Allen Show*

Crime-mystery-detective shows – These included *Mr. District Attorney; Mr. Keen, Tracer of Lost Persons; The Shadow; The Fat Man; The FBI in Peace and War; Candy Matson; Yours Truly, Johnny Dollar; The Adventures of Philip Marlowe; Richard Diamond*; and *The Adventures of Ellery Queen*

Comedy/Variety shows - comedy/variety shows included *The Jack Benny Program, The Edgar Bergen and Charlie McCarthy Show, Burns and Allen, The Fred Allen Show, The Bing Crosby Show,* and *The Bob Hope Show*

Radio Versions of Plays & Movies – Radio versions of films were done by *The Lux Radio Theater.* Radio versions of plays and novels were done by Orson Welles' *Mercury Theater of the Air*, and *The Hollywood Playhouse.*

Radio

- Notes on programming – 3
  - By the late 1930s, most of the programs that would occupy the top broadcast ratings slots until television (i.e. the next ten years) had made their debut on the air.
  - Only in the mid-1930s did radio networks begin to broadcast regular news programs
    - Prior to that, radio lacked the resources and incentive to gather news on its own
    - Rising international tensions made news programs popular
      - What Saddam Hussein did for CNN during the Gulf War, Adolf Hitler did for NBC and CBS News

Radio

- Radio quickly penetrated the American market
  - 1927 – 25% of all American households had a radio
  - 1929 - 1/3rd owned a radio
  - 1934 - 60% of all homes had a radio;
  - 1939 - 86% of all households owned at least one set. There were also 6.5 million radios in automobiles.

Radio

- Notes About the Radio Medium
  - With radio, the speaker addressed an audience that was invisible and unknown
  - Radio allowed millions to hear the same program at the same time
    - It provided a speaker with an audience that dwarfed any audience that could fit in an auditorium or theater
    - Along with the phonograph, it gave any song, symphony, or opera more listeners than every heard the work in a theater or symphony hall

Audience – With radio, the audience was invisible and unknown. The speaker or performer could not see facial responses or hear laughter, booing, or silence; nor was there applause. At the same time that the size of the speaker's audience had multiplied beyond anyone's calculation, his visual relationship with that audience was severed

Radio

- Notes About the Radio Medium
  - Radio leads people to create images in their mind to provide a picture background for the actions and dialog that they are hearing in the broadcast
  - Radio is a medium that allows people to do other things while they are listening
  - Radio fostered the creation of "imagined communities" of people who never met but of which we were a part – E.g. sports fans, Fred Allen fans, rock 'n' rollers, ham operators, Dittoheads

Radio imagery - There are compelling physiological reasons why people are so nostalgic for radio. "People loved radio -- and still do -- because as cognitive psychologists have shown, humans find it useful -- in fact, highly pleasurable -- to use our brains to create our own images. What we call our imagination is something the brain likes to feed by generating images almost constantly: that's what imagination is, the internal production of pictures, of images. Autobiographical accounts from great conceptual scientists like Michael Faraday, James Clerk Maxwell, or Albert Einstein describe a process in which they did their most creative work using visual imagery, which was later translated into equations and theorems" Dr Mark Tramo, a Harvard Medical School neurobiologist, emphasizes that when information comes solely through our auditory system, our mental imaging systems have freewheeling authority to generate whatever visuals they want. Anyone who has camped out in the woods at night, associating different night noises, with all kinds of soothing and dangerous possibilities, knows the power of sound. When sound is our only source of information, our imaginations milk it for all it's worth, creating detailed tableaux that images, of course, preempt.

Radio – a multi-tasking medium – With radio, you could do something else while listening, you didn't have to watch and you didn't have to concentrate, depending on what was on. Radio could adjust much more to physical circumstances -- cooking dinner, driving to work -- than any of the other media. We could 'continue with our lives' while listening. This meant that radio listening also became interwoven with the ritualized routines of everyday life -- reading the paper, eating meals.

Imagined communities – The concept of "imagined communities" derived from Benedict Anderson who asked how nationalism -- the notion of a country with a distinct identity, interests, and borders to which one belonged -- came to emerge so concretely by the end of the 18th century. He insisted that while political states had borders, leaders, and populations, nationality and nations are *imagined*, because most of the nation's members will never actually meet another, 'yet in the mind of each lives the image of their communion' -- a communion that transcends divisions based on class, race, and gender and which has both historical continuity and a future directed toward the realization of some larger, grander purpose. While Anderson saw nationally distributed newspapers and

Radio

- Notes About the Radio Medium
  - Before television, radio was a centralizing medium because of both its expense and its broadcasting nature
  - After television, radio became:
    - A narrowcasting medium that appealed to specific niches of listeners through specific types of content – specific forms of music, all news, conservative talk shows, etc., and/or
    - Audio wallpaper that served as background while doing other things at home or in the car

Audio wallpaper - TV replaced radio as the box families gathered around in their living rooms. As a result of TV, radio adopted shorter programming formats and became the background music and chat while people ride in cars or do other things at home — "audio wallpaper," as Paul Saffo, a technology forecaster in Silicon Valley, puts it

Radio

- Additional Notes About the Impact of TV:
  - Radio networks broke down and local stations found themselves on their own
    - Rise of music format stations with disc jockeys
    - Later AM radio became dominated by all news and talk/call-in shows as music migrated to FM
  - Decline of advertising on radio
    - From a high of $133 million in 1948, advertising time sales on network radio dropped to $35 million in 1960.

As radio waned as a national medium, networks broke down and local stations found themselves increasingly on their own. The rise of 'music format' radio made use of the newly 'discovered' FM band to encourage a new local approach to radio. As the disc jockey, previously featured in some local morning and late nighttime slots, slowly took over the entire radio schedule and network-distributed programs declined to virtually zero, in many cities a new 'black format' arose, pioneered in Chicago by Jack L. Cooper, and directed at black audiences. By 1948, Cooper was a successful radio entrepreneur with more than 40 hours of programs airing on four Chicago radio stations, grossing more than $185,000 annually.

Radio

- FM Radio
  - In 1933, Edwin Armstrong patented Frequency Modulation radio
    - Superior to AM since it eliminated static, provided a wider range of sound, and used spectrum more efficiently
  - FM did not take off until the late-1960s due largely to opposition from RCA
    - RCA saw FM as a rival to television for investment capital and available spectrum
    - FM threatened to undermine the position of its NBC subsidiary

Superiority of FM - FM sounds better than AM in part because it's in a portion of the spectrum less prone to natural interference, and because its channel width is 200 kilohertz -- twenty times the 10-kilohertz channel width of AM (of which only 5-kH actually contains information). Thus, FM has a rich sound modulation that AM simply can't achieve. FM, because it operates at higher frequencies than AM, is also slightly better at penetrating solids, like buildings.

Delayed takeoff of FM - There were two reasons for this. First, David Sarnoff, RCA president, saw television as the future and regarded FM as a rival for available spectrum as well as investment capital. Second, far from promising to improve RCA's profits, FM threatened to make many RCA patents obsolete and to undermine the position of its NBC subsidiary as the dominant radio network. Armstrong believed the long-delayed development of FM was the result of a conspiracy between big business and bureaucracy, but the chief reasons for FM's delayed success were the twin difficulties of introducing an alternative radio technology when AM was already well-entrenched and of obtaining spectrum and investment capital at the same time as television. *It was not really until the development of high-fidelity and later stereophonic music recording that FM began to come into its own since FM but not AM had the capability to broadcast high fidelity and stereophonic music.*

Radio

- FM Radio
  - After the mid-1960s, FM radio took off. There were several reasons for this:
    - FM radio offered a more lucrative investment opportunity than network-dominated TV and the overcrowded AM band
    - The arrival of stereo and high fidelity
    - Increased advertising on FM as advertisers discovered the quality of its listening demographics
    - AM-FM radio sets become commonplace
    - An FCC decision in 1964 that AM and FM stations owned by the same company could not duplicate more than 50% of their programs on both bands simultaneously

Takeoff of FM - In 1964, total net FM revenues were $19.7 million. Ten years later, the figure was $248.2 million. In 1962, there were, according to the FCC, 983 commercial FM stations on the air; by 1972, their number rose to 2,328. By 1976, there were nearly 3,700 FM stations on the air. By the 1970s, it was estimated that 95% of households had FM sets. Soon, more people were listening to FM than to AM.

Reasons for FM's takeoff - There were several reasons for this mush-rooming of FM broadcasting: (1) a better chance of success for investors than in network-dominated television and the badly overcrowded AM field; (2) an increased interest in cultural affairs and classical music; (3) the arrival of stereo and the high-fidelity industry, coinciding with this interest in better music; (4) various FCC decisions that helped give FM a separate identity from AM, its longtime subsidizer; (5) the driving away of some of the audience by the poor programming of television and AM; (6) the increasing use of FM by advertisers as the quality and quantity of its audience became known; and (7) the growing sales of FM sets, from 2 million a year in 1960 to 21 million in 1968. By the 1970s combined AM-FM sets were commonplace.

Non-duplication - Since the late 1940s many FM outlets owned by AM stations simply broadcast the same programming their AM parents did. But by the early 1960s FCC Commissioners Robert E. Lee and Kenneth Cox argued that frequencies had become so scarce in the face of increasing demand that duplication was "a luxury we can't afford." In 1962 the FCC had ordered a freeze on AM license applications while it tried to address the overcrowding in the spectrum. The solution it chose was to promote more aggressive commercial exploitation of the FM band. In May of 1964 the commission issued its non-duplication ruling, which was to take effect in January 1967. In cities of more than 100,000 people, radio stations with both AM and FM could not duplicate more than 50 percent of their programming on both bands simultaneously. Although the edict affected only 337 of the country's 1,560 commercial FM stations (and of these, 137 had already been programming separately), it nonetheless helped promote much more enterprising exploitation of the medium. Between 1964 and 1967, 500 new commercial FM stations and 60 educational stations took to the air

Radio

- Some Effects of the Radio
  - By broadcasting the same content to a vast audience at the same time for all, radio created a shared simultaneity and unity of experience
    - This led to both a standardization of culture and also of speech
  - It led people to focus on and become knowledgeable about what was happening at the national and international level as distinct from the local community level
    - Thanks to radio and later TV, we now have people who are well-informed about what is going on in Washington or in the Middle East, but who have no idea of who their local mayor or city council representative is

Standardization of Speech – Fully established networks and the advertisers who controlled much of the radio programming imposed standards of radio pronunciation. Diction contests set norms for announcers and listeners. Thus, announcers, newscasters, dramatic actors/actresses, and those who read the commercials spoke an 'official' English that was largely mid-Western in form.

Radio

- Some Effects of the Radio
  - Along with the movies, led to the rise of a popular entertainment industry geared to the mass market
    - Reduced traditional forms of high art to elite ghettos of the well-to-do and the highly educated
  - Radio made music a more integral, structuring part of everyday life and individual identity.
    - Fostered an interest in classical music – especially live performance due to the poor sound quality of early radio

Radio – Radio led to the rise of a revolutionary popular entertainment industry geared to the mass market which reduced traditional forms of high art to elite ghettoes inhabited by the well-to-do and the highly educated. Thus, the attendees of the theater and the opera, the visitors to the museums and the art galleries, and the readers of poetry and literary classics were increasingly among the educated elites while the common culture was based upon the mass entertainment industries -- cinema, radio, television, and pop music -- which the elite shared while the general public rarely encountered the traditional high arts
Music – Prior to the radio and the phonograph, people heard music only when in the presence of musicians. Now they could hear music whenever they wanted – by either putting a record on the phonograph, or tuning into the proper radio station. From the outset, music filled much of radio's available broadcast time. Live performances of the parlor piano and vocal music of recent decades were most common at first, but classical music, especially opera and orchestral performances, enjoyed frequent broadcast. While many Americans had joined in or at least heard the more popular music at home, in saloons and vaudeville theaters, or elsewhere, few had attended an opera or symphony concert. ***The audience that heard classical music with the low sound quality of early radio was soon eager for live performance. Between 1928 and 1939 the number of major professional symphony orchestras increased from 10 to 17; the total number of orchestras, including part-time less professional ones in smaller cities, grew from 60 to 286***. Perhaps !! more significant, whereas musical instruction in public schools was almost unheard of in 1920, two decades later it was widespread. Thirty thousand school orchestras and 20,000 bands had sprung up. Radio was much more effective than the earlier technological in-novation, the phonograph, in building an audience for classical music. Until the long-playing record was developed in 1948, phonograph records could hold only about five minutes of music per side, creating difficulties in the presentation of all but the shortest classical works. Furthermore, by 1924 superheterodyne radios were producing better-quality sound than phonographs. Radio therefore took the lead in

Radio

- Some Effects of the Radio
  - The concept of the audience led to the concept of the average American
    - This provoked an interest in ratings, audience demographics, and the tastes and attitudes of the presumed average America
      - What was the average American listening to? Or buying? Who was listening to *Our Miss Brooks* or *The Shadow*?
  - Radio adversely affected the advertising revenues of newspapers and magazines

Audience - The object of this scrutiny—the audience—was itself an invention, a construction that corralled a nation of individual listeners into a sometimes monolithic group that somehow knew what "it" wanted from broadcasting. But the most important thing to remember is something we now take totally for granted: how the audience spent its leisure time was up for study and study, in fact, became a hugely profitable industry. Beginning in the 1920s and continuing to today, the corporate obsession with the tastes and preferences of the broadcast audience has produced a nationwide, technologically instantaneous network of audience surveillance. Audience ratings got their start when Archibald Crossley developed a ratings service that relied on telephoning people and asking them what they had listened to the night before

Print advertising – Advertisers preferred radio over print media for the following reasons:

1. Like graphics, but unlike the printed word, radio could influence illiterates
2. Unlike newspaper and magazine ads, radio commercials could not be skipped over.
3. “Not only could one listen to radio while engaged in other activities, including reading, one could continue to listen long after becoming too tired to do anything else.”
4. Unlike print communication, radio could be received by groups of people -- a family in a living room, friends riding in a car,
5. Because radio carried the human voice, broadcasting seemed more personal and more intimate than print, and thus was more persuasive than print.

Radio

- Some Effects of the Radio
  - The technical limitations of early radio:
    - Precluded use of very high or very low frequency musical instruments – cello, oboe, violin
    - Favored use of certain musical instruments - piano, clarinet, and saxophone
    - Led to the use of crooning as a singing technique
    - Favored broadcasting of jazz despite its frequent association with prohibition-era speakeasies and its black roots

Crooning - *The limitations of radio, however, reshaped music.* ***Intense voices, especially high sopranos, had a tendency to blow out the tubes on radio transmitters. As a result, a number of singers developed a new soft, gentle style that came across well and soon became known as "crooning."*** Crooning was pioneered by Vaughn de Leith, "The First Lady of Radio' who performed frequently on WJZ in Newark in the early 1920s. De Leith developed a soft, cooing approach to her singing that was less stage oriented and more intimate, and that didn't do violence to transmitters.[14] This style was emulated with great success by other singers, most notably Rudy Vallee, Kate Smith, and Bing Crosby, who built large and loyal audiences as they perfected the 'crooning' style.

Jazz - Radio did not at first embrace jazz, a musical genre ripening rap-idly in the 1920s. Jazz had its origins in Dixieland, ragtime, blues, and other musical forms that had evolved in the pre-World War I urban South, particularly in the black community of New Orleans. | Jazz migrated along with its practitioners to Chicago and elsewhere during the war and enjoyed growing popularity throughout the ur-ban North in the 1920s. Since jazz was not considered altogether re-spectable, whether because of its black roots, its spontaneous,!! improvisational nature, its pulsating and often passionate style, or its frequent association with prohibition-era speakeasies, most radio stations were at first reluctant to broadcast it. Band leader Paul Whitman did a lot to change attitudes toward jazz, less because he was a classical-trained musician and actually wrote down parts for his musicians than because he favored a soft, sweet, and smooth style of jazz. When he commissioned composer George Gershwin to write a jazz composition for piano and orches-tra and first presented *Rhapsody in Blue* in February 1924, jazz ac-quired instant respectability. Whitman's orchestra and his style of jazz became a regular feature of radio music for the next quarter-century. Other bands led by Guy Lombardo, Ozzie Nelson, Rudy Vallee, Duke Ellington, Glenn Miller, and Tommy and Jimmy Dorsey followed in Whitman's path, helping to make jazz an impor-tant part of radio broadcasting, especially in the 1930s and 1940s.

Radio

- Some Effects of the Radio
  - Fostered the evolution and popularization of country music
  - Radio and WWI led to code encryption and code breaking
  - Radio paved the way for radar, TV, and cellular telephony
  - Radio made music an acceptable endeavor for men
  - Radio led people to match their personal schedules to the schedules of the broadcast day

Country music - Country music in the 1920s consisted of a range of non-professionalized, traditional folk music often referred to as "hill-billy." Early Southern radio stations experimented successfully with fiddle tunes, gospel songs, and other localized forms of folk music. In April 1924 the Sears, Roebuck station in Chicago (named WLS for World's Largest Store) began a fiddle and square dance music program called "The National Barn Dance." It was an instant hit. Nineteen months later, station WSM in Nashville, Tennessee, fol-lowed with a variety show named "The Grand Old Opry." Before long, the "Opry" had proved so popular that it was being broadcast four hours a night every Friday and Saturday. These programs, which could be heard throughout the South and Midwest, and a number of imitators called attention to country music and made celebrities of its best performers. Innovations in style, such as the combining of fiddle, guitar, mandolin, and banjo to make "bluegrass music," soon followed. Radio lifted country music from its highly localized roots and encouraged its evolution as widely popular and distinctive American music

Code encryption - Radio was an awkward instrument of war since radio messages could be heard by anyone listening in. This led governments to begin encrypting radio transmissions in code and subsequent attempts on the part of rival governments to break the codes. Thus, radio made code encryption and code breaking key elements of intelligence in war and diplomacy.

Set the stage for TV - Radio is arguably the most important electronic invention of the century. Cognitively, it revolutionized the perceptual habits of the nation. Technically, culturally, and economically, it set the stage for television. It forever blurred the boundaries between the private domestic sphere and public, commercial, and political life. It made listening to music a daily requirement for millions of Americans. For the entire span of the twentieth century, listening to radio— first introduced to America as "wireless telegraphy" in 1899—has been a major cultural pastime. Even with the advent of television, which was supposed to make radio obsolete, radio has remained a thriving cultural and political force. Today we have twice as many radios in America as we do people.

Men and Music – As Susan Douglas in *Listening . Radio and the American Imagination* noted, “radio—by making musical pleasure acceptable for men; by producing a fraternal