



Hollywood and the Dawn of Television

INVENTING TELEVISION

Scientists began experimenting with a form of mechanical image scanning in the first years of the twentieth century. By the twenties the term television was being applied to these inventions. No doubt the fledgling movie industry was giving some impetus to this endeavor. Early in the decade two very different inventors began to make major breakthroughs in the development of electronic image scanning, Philo T. Farnsworth and Vladimir Zworykin.

Farnsworth was a farm boy from Utah who had won his high school science fair with a diagram for an instrument he called an image dissector. Due to his father's early demise, Farnsworth was not able to complete his college studies. He was able to interest a few financial backers in supporting his research and opened a small laboratory in San Francisco in 1926. The following year he applied for a patent for his invention of a primitive television picture tube.

Zworykin was an important member of the Russian scientific community when the revolution broke out in 1917. He managed to escape to Paris and, in 1919, settled in Pittsburgh to work in the Westinghouse research laboratories. He was fascinated by the possibilities of television and worked after hours on his own experiments with electronic image scanning. By 1923 Zworykin's work was sufficiently advanced that he applied for a patent for a camera tube device he called the iconoscope. Westinghouse was not enthused about his work because television was not one of the company's research priorities but Zworykin continued to labor late into the night after completing his workday for the corporation. In 1929 he demonstrated an improved device, the kintoscope, to a major engineering convention and applied for a new patent. This prompted Westinghouse to arrange for his transfer to Radio Corporation of America (RCA) in New York which was operating a laboratory for the development of television. Happy in his new environment Zworykin completed work on a practical 230-line television system in 1933.

Along the way the RCA engineers and those of other members of the "television trust," General Electric and American Telephone & Telegraph, were stumped by the problem of getting their electron beams to properly scan images. RCA's

president, David Sarnoff, turned to the work of Farnsworth who had solved the scanning problem. He offered the young inventor a million dollars for his devices and patents. Farnsworth turned him down. Undeterred, RCA simply stole Farnsworth's work, setting off a patent lawsuit that lasted for years with the lone wolf inventor prevailing in the end.

Sarnoff correctly reasoned that the middle of the Great Depression was not a good time to be launching an expensive new home entertainment medium. He bided his time continuing to make improvements on the system and establishing a small network of experimental television

broadcast stations. 1939 was chosen as the launch year for television. A world's fair was planned for New York City and RCA built a monumental television pavilion to introduce their wondrous new technology to the world. President Franklin Roosevelt addressed the opening day throng of dignitaries, becoming the first head of state to appear on television. Of course only a few RCA executives had TV sets to view the broadcast from the company's experimental broadcast station, W2XBS.

In 1940 the Roosevelt administration threw a monkey wrench into Sarnoff's plans for a television launch when he was informed that RCA's and the other electronic manufacturing giants production capacity was being commandeered for weapons production. Sarnoff was a sincere patriot and immediately went to work on an array of inventions, including radar, sonar, and television-guided bombs. Many historians of World War II believe that these devices were determinative of the war's outcome. As a member of the Army Reserves since 1924 Sarnoff was both flattered and eager to serve when General Eisenhower asked him to return to active duty as a Brigadier General to oversee wartime communications in 1944. He left RCA to serve and resumed his duties as chairman and chief executive officer following the war's end.

In 1946 RCA produced its first post-war model television set but there were not many takers. By the end of the next year there were only 44,000 television sets in America while the country was still listening to its 40 million radio sets. In spite of such slow growth, NBC launched new TV programs such as the Howdy Doody children's show. 1948 was not much better for TV sales. At the year end there were

350,000 sets. The next year Americans decided that TV was going to be around for the long run. The country boasted of two million TVs. Seven hundred twenty thousand were in New York City alone. In 1950 the TV tsunami arrived. In April the TV total reached 5.3 million and in October it was 8 million. Hollywood was in danger of becoming swamped by the upstart new medium.

Very quickly the three television networks (NBC, CBS, and ABC) transformed their successful radio shows into television programs. Jack Benny, Burns and Allen, Amos and Andy, Lucille Ball, and Arthur Godfrey were some of the biggest shows in radio. Now they were removed from radio schedules and put on television. From outside the broadcast industry it looked like a huge gamble. But for people like Sarnoff and William S. Paley (chairman of CBS), it was a sure thing. They were hyper aware that America was about to undergo one of its biggest social and demographic revolutions since the opening of the frontier.

SOCIAL CHANGES

At the end of World War II President Truman was determined to make good on the country's debt of gratitude to the soldiers who fought the war. As an artillery captain in the First World War, he knew how badly his fellow veterans had been treated by their government which had promised repatriation bonuses, only to renege. As a result, many of those who fought in World War I returned to unemployment, poverty, and hopelessness. Truman made certain that the 12 million Americans who served in uniform would be treated better by instituting the GI (Government Issue) Bill of Rights. The Bill contained three promises: free college education, government-backed small-business loans, and government-backed home loans.

For a generation that had grown up during the Great Depression these promises were breathtaking. Before the war, the average American had an eighth grade education. Families simply could not afford to let children go to school when they could work. By 1960 the average American had two years of college. This incredible transformation had consequences for Hollywood. The audience was becoming more sophisticated. The old formulas and genres did not work any longer. The American dream of owning a home or a small business must have also been unbelievable to the Depression and war generation. Before the war their experience was foreclosure and dispossession. Now they were being handed their wildest dreams.

The war and its aftermath served to shift American demographics dramatically. There had not been much housing construction in America during the Great Depression. Suddenly there was an overwhelming demand for a lot of housing. Suburbs began to spring up around the American metropolises in places like Long Island in New York and Orange and Marin counties in California. Population was already shifting westward as a result of the Great Depression. After the war there was a mass exodus from the center of the country to its two coastlines. One reason

for this was cheap suburban land with expressways and freeways into the cities. Another reason was that everyone who fought in Europe or the Pacific or both left America through cities like New York, Boston, San Diego, Seattle, San Francisco, and Baltimore. For people who grew up on the farms of Nebraska, Kansas, and the Dakotas these brimming port cities seemed glamorous in comparison. For a young veteran who planned to open an auto garage or a construction company the prospects were much better in the new suburban America.

All of this migration away from the heartland of the country had a negative effect on the movie business. Small towns that had supported their local movie house since the twenties saw their theaters closed and boarded up. Big city theaters suffered too as people moved to the suburbs. One example was Los Angeles' glamorous movie district on Broadway. Picture palaces such as the Million Dollar Theater, the United Artists Theater, and the Los Angeles Theater that had served movie patrons since the twenties were reduced to all-night newsreel theaters where the homeless could sleep or swap meets full of trinkets. In 1950 there were over 19,000 theaters in America. In 1959 there were 16,000 theaters, and by 1963 the theater count bottomed out at less than 13,000.

The **Paramount Consent Decree of 1949** was another reason for the collapse of the theater industry. The major studios: Warner Brothers, Loews-MGM, Paramount, and Twentieth Century Fox had been forced to divest themselves of their theaters. This, in turn, relieved the studios of the necessity for making enough films each year to supply themselves. Consequently they reduced production. In 1951 644 films were released. By 1955 it was down to less than 400. Attendance had also taken a big hit. Between 1946 and 1949 average weekly ticket sales exceeded 90 million. By 1953 sales were down fifty percent and between 1958 and 1960 attendance bottomed out at forty million per week.

American lifestyles were changing. A baby boom had begun. In 1940 there were 2.5 million births. By 1950 the birth rate was 3.6 million. In 1955 over 4 million babies were born and the rate remained over 4 million until 1965. Returning veterans had wasted no time in starting their families and moving into their suburban tract homes. With a severe shortage of babysitters, people were staying at home instead of going out for a movie and a night on the town. The patio and the barbeque replaced restaurants and night clubs. Fraternal organizations like the American Legion and Elks provided a community refuge where veterans could share war stories and enjoy banquets and dances. Television became the new entertainment pastime.

HOLLYWOOD RESPONDS

The movie studios' first reaction to television was to dismiss it and fear it. MGM instituted a rule that TV sets would not be seen in their motion pictures. The rule was generally obeyed. During 1951 and 1952 four major strategies emerged.

TECHNOLOGICAL INNOVATION

One advantage the movies had over television was that TV broadcast standards were locked in by the National Television Standards Committee and to make changes was almost impossible. Additionally, the technology of the fifties was largely based on developments made in the thirties. The image was relatively low resolution with only 525 lines of information. The aspect ratio of the screen was 1 to 1.33, the same as 35mm film and the image was black and white. When primitive color television arrived in the late fifties, no further improvements were made in the technology for fear of making the millions of existing TV sets obsolete. For the studios, this presented an opportunity to transform motion pictures into something truly spectacular.

COLOR

Three-color Technicolor had been introduced in 1932. It was an excellent color system that employed a camera capable of exposing three strips of 35mm film simultaneously. Special optics separated the color spectrum so that the camera, combined with revolutionary film-processing technology, was capable of producing vivid color images. Initially there was a reluctance to embrace it because it was cumbersome and expensive and, during the Great Depression, movies were the only game in town. There was not much pressure to make the investment. As the economy came out of the doldrums in 1939, the studios began to lower their resistance to color and marvelous films like *Gone With the Wind* and *The Wizard of Oz* were the result. In the fifties TV provided the impetus for the studios to make a commitment to color. One problem with Technicolor was that the company was too small to keep up with the studios' demand for color. There were only enough cameras in existence to accommodate 15 productions at a time. This opened the door for other existing color processes such as Ansco, Cinecolor, and Trucolor. However, these alternative processes were all inferior to Technicolor.

The Eastman Kodak company realized the opportunity to capture the color motion picture market. It had released a single strip, "tri-pack" film stock called Eastmancolor in 1950. The film contained three separate layers of color dyes and was compatible with all existing 35mm cameras. The one drawback was that the quality was not as good as Technicolor. But Eastman Kodak was smart to license their "tri-pack" technology to other film manufacturers. This had the effect of swamping Technicolor with a variety of cheaper competing technologies. In 1954 Universal's film, *Foxfire*, was the last film that employed the three-strip Technicolor cameras and film. Thereafter, Technicolor concentrated on its laboratory business which was best processing facility in the motion picture industry. In 1959 Eastman Kodak introduced the legendary Eastmancolor 5250 film stock. It had all of the vividness of the three-strip color process and was much more light-sensitive than

its predecessors, thus streamlining the work of special lighting for color photography. Hollywood began to tout color as one aspect of the movie experience that was superior to television.

WIDESCREEN TECHNOLOGIES

In 1952 Merian C. Cooper, the man who made the 1933 spectacle, *King Kong*, introduced an amazing new movie format, Cinerama. The technology utilized three 35mm cameras harnessed together to produce an image that wrapped around the audience 120 degrees, filling the peripheral vision with movie images. This created the sensation of almost falling into the screen. The first release, *This is Cinerama*, had been a long time in the making. Fred Wall, head of special effects at Paramount, had been experimenting with multi-camera processes in his spare time since 1937. An early generation of the technology was demonstrated at the 1939 World's Fair. Another generation was employed for teaching aerial gunnery during World War II. Following the war Waller had several backers including Laurance Rockefeller, Time-Life magazines, and promoter Mike Todd. But Cooper, who had served as head of production at RKO, was John Ford's partner in Argosy Productions, and was an early proponent of color, had the perfect blend of technical knowledge and the heart of a visionary needed to bring Cinerama to the market. Cooper's creative partner in the enterprise was Lowell Thomas.

The film *This is Cinerama* opens with a spectacular sequence shot on the roller coaster at Coney Island and proceeds to present a pastiche of travelogue ideas. It ends with a patriotic rendition of "America the Beautiful" set to a coast-to-coast aerial montage of American monuments and natural wonders.

Converting a theater for Cinerama was an expensive proposition. The Stanley Warner theater company (formerly the Warner Brothers theater division) was one of the few companies with sufficient resources and theaters that were suitable for conversion. First a 120-degree wraparound screen needed to be installed. This meant removing the first several rows of seats and raising the floor at the front of the theater so that the seats could recline enough to

see the screen without neck strain. Three projection booths with, at least, two projectors each were installed and a sound booth was constructed. Stereophonic speakers were installed and a projection engineer's booth was constructed and equipped with controls for feathering and matching the edges of the projected images and for synchronizing the projectors. The stereo soundtrack was played from a separate 35mm sprocketed magnetic tape. The Warners' 2800-seat Hollywood theater was the first to be so equipped. In its first two years Cinerama made \$14 million in only 13 theaters. At its peak in 1959, 21 theaters around the world had been transformed for Cinerama. Only six films were made with the technology, *This Is Cinerama*, *Cinerama Holiday* (1955), *Seven Wonders of the World* (1956), *Search for Paradise* (1957), and *South Seas Adventure* (1958), all travelogues. One dramatic film was made with the technology, John Ford's epic western, *How the West Was Won* (1962). Thereafter, a new single-camera, single-projector Cinerama process was developed but it lacked the grandeur of its predecessor.

Cinemascope was a much more modest technology than Cinerama. It used special lenses to create widescreen images instead of a whole array of technologies. It was based on the work of French lens designer Henri Chrétien in the 1920s. The lenses were ground to be anamorphic. Camera lenses squeeze the width and stretch the height of the image. Projector lenses stretch the width and squeeze the height of the image. The result is a widescreen image that has been manipulated to fit standard 35mm film. Twentieth Century Fox's president, Spyros Skouras, purchased all of the rights for Chrétien's work in late 1952 and within nine months had enough of the lenses to accommodate every Fox production. Skouras also equipped all of his company's sound equipment to produce stereophonic sound. A demo reel was prepared for showing to theater owners to convince them to equip their theaters for the new technology.

The first two films made in Cinemascope were *The Robe* and *How to Marry a Millionaire* (both 1953). *The Robe* was a biblical epic about a soldier in the Roman army who takes part in the crucifixion of Christ and is so transformed by the experience that he becomes a Christian. It stars Richard Burton and Jean Simmons. It was by far the more successful of the two films. On a budget of \$4.5 million it grossed an astronomical \$30 million. *How to Marry a Millionaire* was also successful, taking in \$7.5 million. It featured a cast that was a mixture of old and new Hollywood: William Powell, Betty Grable, Lauren Bacall, and the rising star Marilyn Monroe. Fox was so pleased with the results that the company announced that all future films would be released in Cinemascope.

After Cinemascope came a flood of new screen formats. Paramount introduced VistaVision, a format in which the film travels through the camera horizontally rather than vertically. The advantage of this approach was that there was no limit to the width of the image and no loss of resolution as was the case with the anamorphic lenses of the Cinemascope system. VistaVision was expensive. The Mitchell Company that manufactured most of the cameras used in American motion picture production had to entirely re-design their cameras for the new format.

Laboratory and projection equipment also had to undergo costly modifications. The cost of film stock increased, on average 75,000 dollars per picture. But in the race to make movies bigger and more spectacular, VistaVision was an unqualified success.

White Christmas (1954) was the first film made in VistaVision. It was successful but not in the same league with *The Robe*. Paramount decided to fight fire with fire and began work on their own biblical epic, Cecil B. DeMille's remake of his 1923 epic *The Ten Commandments* (1954). The story of the life of Moses featured an all-star cast led by Charlton Heston. It recreates the building of the pyramids of Egypt, the parting of the Red Sea, the burning bush, and Moses receiving the Ten Commandments from God. With the exception of a few location scenes, it is shot almost entirely on the stages and back lots at Paramount. More costly than *The Robe*, DeMille's film grossed \$65 million domestically and many more millions abroad. The entire motion picture industry took note of the riches to be harvested from this bombastic style of motion picture. The one problem presented by this model is that a film like *The Ten Commandments* was so costly to make, failure at the box office could mean bankruptcy for the studio.

During the 1950s Paramount had Alfred Hitchcock, the great master of suspense, under contract. Hitchcock's style of directing was perfectly suited to the wide possibilities of VistaVision. A frustrated artist and complete control freak, he would create elaborate sketches for his camera crew to show them exactly what he wanted. *To Catch a Thief* (1955) was Hitchcock's first experience with the widescreen format. The film stars Cary Grant as a cat burglar on the French Riviera. Grace Kelly co-stars as his blonde love interest. Hitchcock exploits the format to capture the beauty of the location. His next widescreen film was a remake of his 1934 thriller, *The Man Who Knew Too Much* (1956). Shot on location in Marrakesh, it stars another Hitchcock favorite, James Stewart, with Doris Day playing the blonde. His last film at Paramount to be shot in VistaVision is *Vertigo* (1958), starring James Stewart and another blonde, Kim Novak. The film deals with one the director's favorite phobias, fear of heights, and uses the widescreen format to exaggerate the scariness of high places.

In 1959 Hitchcock moved to MGM to make the sensational *North By Northwest*. He took his VistaVision cameras with him. The film stars Cary Grant with the blonde role played by newcomer Eva Marie Saint. The film flawlessly combines studio trickery such as process shots, forced perspective sets, and enormous painted backgrounds with beautifully photographed second unit location work. Considered by many to be the first example of the action film, *North By Northwest* contains multiple chase scenes including an out of control sports car on a narrow mountainous road, a murderous bi-plane and a finale set on the faces of Mount Rushmore. The film was a critical and box office success earning over \$14 million in the United States on an investment of 4 million dollars. At the end of the fifties VistaVision was discarded in favor of new and better anamorphic technologies for lower-budget films and large-film formats.

Sixty-five millimeter film formats were experimented with in the late twenties and early thirties but the Great Depression made commercial use of the format impractical. In 1952, after leaving the Cinerama enterprise, the flamboyant Mike Todd walked into the offices of the American Optical Company, put a check for \$100,000 on the president's desk, and asked him to develop a lens that would create the 120-degree wraparound of Cinerama "out of one hole." Three years later the "bug eye" Todd-AO lens was married to a 65mm Mitchell camera and a new format was born. Twentieth Century Fox' adaptation of the successful Rogers and Hammerstein musical *Oklahoma* (1955) was the first film made with the majestic new technology. Since Todd-AO required theaters to install wraparound screens, the film was also shot in Cinemascope. In the ensuing years the format continued to thrive with many big budget films using Todd-AO including *Around the World in 80 Days* (1956 produced by Mike Todd), *South Pacific* (1958) and *Can-Can* (1959). In 1958 Mike Todd was killed in a plane crash and Fox took over stewardship of the format. In 1964 Todd-AO was modernized and renamed Dimension 150. Before his death Todd had consulted with legendary architects Buckminster Fuller and Frank Lloyd Wright to plan a domed theater design that would better accommodate the wrap-around screen. The Cinerama company embraced the idea and decided to drop the three-camera, three-projector process in favor of Dimension-150. Pacific Theaters, using a Fuller geodesic dome design, built the first Cinerama Dome in 1963. Because of the efficiency of the radical new architecture, construction took only sixteen weeks. Ironically, when the theater was restored as part of the ArcLight Cinemas complex in 2002, a second and third projection booth were added to accommodate the original Cinerama process.

In 1959 the last widescreen format was introduced by the Panavision camera company, Super Panavision 70. As its name implies, the technology employs 70mm film, with four times the frame area of 35mm film. It was capable of producing images with a five-to-nine aspect ratio. Super Panavision was embraced by the theater companies because it made very large images without the need for a wraparound screen. Disney's film, *The Big Fisherman* (1959), the story of St. Peter, was the first film made in the format. Big budget films that are shot on film still employ Super Panavision today.

3-D

Stereoscopic photos date back to the 1850s. They were a popular entertainment in the later half of the nineteenth century. The View-Master, a popular children's toy, was introduced in 1939. When Hollywood began its search for technologies that would trump television, 3-D was inevitable. In June, 1951 the Natural Vision Company demonstrated a practical 3-D process to the motion picture industry. The system used lenses and beam-splitting optics to photograph and print two stereoscopic images on a single strip of film. When viewed through special glasses developed by the Polaroid Company the picture had real depth and could be made to "jump off the screen." The studios were reluctant to adopt 3-D at first but after the

success of the low-budget independent feature *Bwana Devil* (1952), there was an industry-wide race to develop 3-D movies.

Warner Brothers was the first studio to sign an agreement with the Natural Vision Company in 1953. Their big-budget color spectacle, *The House of Wax* (1953), did huge business. Other companies were competing to get their 3-D films into production but Natural Vision miscalculated and had only built one camera. Until others could be built, the studios would have to wait in line. The problem was solved in a few months and, by the end of the year, RKO and Universal were busy making their own 3-D movies. Warner Brothers had made the biggest commitment, even releasing a version of Alfred Hitchcock's *Dial M for Murder* (1954) in 3-D. However, by the end of the year the novelty had worn off as the studios focused on the pursuit of big screen technologies.

Over the years 3-D has continued to be used as a marketing strategy. In 1983 *Jaws* (1975) was re-released using the technology as was the second *Spy Kid* movie, *Spy Kids 3-D: Game Over* (2003) and *Beowulf* (2007). In 2009 Hollywood rediscovered 3-D and titles including *Final Destination*, *Monsters vs. Aliens*, and director James Cameron's *Avatar* were released in improved three-dimensional formats.

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