The inspiration for electronic television came to Philo Farnsworth after he read about mechanical television at that time called “Radiovision.” To him, the large spinning discs used for both transmitting and receiving the picture of these mechanical systems were clumsy, inefficient, and potentially dangerous.

He had just learned about the electron, mighty midget at the heart of electric power. He had been amazed at its endless capabilities. He read that these (to him magical) particles could be diverted in a vacuum by a magnetic field. Also, that a stream of electrons striking a photo-sensitive surface would produce light. This led him to the conclusion that he could produce television with no moving parts by the use of manipulated electrons. This was the summer of 1920, radio was still in its infancy, and Philo Farnsworth was a farm-bred lad of thirteen.

For a year Philo studied everything he could find on electricity, magnetism, relativity, optics, and kindred subjects. By the following spring, his ideas were taking shape. One day, while operating a horse drawn disc-harrow, he looked back over the long even rows he had made with the harrow and, like a flash, everything fell into place.

He would scan the optical image row after row, from left to right, as you would read a page of print. This would be converted into an electron image. The charge of each spot would correspond to the light value of that particular part of the optical image. He became so excited he almost lost control of his team.

It was not until 1922 that Philo finally disclosed his television ideas. He approached his high school chemistry instructor, Justin Tolman, and drew a diagram of his complete television system on the blackboard, explaining it to his teacher. Mr. Tolman said it looked like a very good idea, but was a bit beyond his understanding. Philo then took a page from the small notebook he always carried and drew a sketch of his camera tube, later to be called the “Image Dissector.” (Mr. Tolman produced this very page five years later when he was called to testify for Philo in the now famous patent interference case with Dr. Van Rahen, Zworykin.)

The death of his father, in 1924, was a tremendous blow to the young man. Suddenly, the responsibility for his family’s welfare fell upon his shoulders. Seeking a solution, he enlisted in the Navy for a brief stint, but soon gained his release. Then, working as a part-time janitor, he returned to Brigham Young University.

It is here that we enter “Pem” Farnsworth’s memoir of her travels with Philo and their quest to develop the first all electronic television.
Mr. Everson had loaned Phil his Chandler roadster for the occasion. After driving me to Salt Lake and getting me settled in the hotel room he had reserved he went to return the car. We were to leave at six the next morning.

Left alone I was finally able to catch my breath and pinch myself to make sure it wasn't all a dream. One thing was certain, I was married to the most wonderful man in the world. Could it be true, that after all our sorrows and hard times, we were at last getting our big chance?

This elation began to wear thin as time went by and Phil still had not returned. My feelings of neglect had begun to give way to concern for his safety before I heard his key in the lock. He was very remissful at having to leave me so long. He explained that Mr. Everson had made many details he needed going over before Phil left, since they would be staying in Utah to finish up. I told him nothing mattered, now that we were together.

"Femme," Phil said seriously, "I have to tell you that there is another woman in my life." Seeing the hurt look in my eyes, he quickly added, "and her name is Television." As I see it, the only way we will have enough time together, is for you to have a part in my work. Together, no telling how far we will go... how about it?

"But Phil, I could never understand it," I protested.

"You can if you want to," Phil assured me, "because I'm going to help you." (This was the beginning of our forty-five years of close companionship.)

The next morning, amid tearful goodbyes and warnings of the sins of the big city from our parents who had come to see us off, we embarked on the exciting Pullman ride to Los Angeles.

In the first floor flat we rented in Hollywood to begin our work, we found it necessary to draw the blinders in order to test Phil's light relay set-up. This led to an LAPD raid and accusations of operating a liquor still. This was during prohibition days and such practices were very much frowned upon. Viewed from the neighbor's standpoint, it did look suspicious, especially with George Everson winding deflection coils in the backyard.

Soon it became apparent that more money was needed. While Phil was writing up a disclosure, Les, a graduate mechanical engineer, made finished drawings from his sketches. I picked up many pointers which were a big help because Phil quickly added, "and her name is 'Television.' As I see it, the only way we will have enough time together, is for you to have a part in my work. Together, no telling how far we will go... how about it?

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The next morning George left on his quest for backing. By the end of the week he had come to the end of what he thought were good prospects. These people had never heard of television. To them it was some nebulous, intangible sort of thing, much too far in the future to expect any reasonably immediate returns.

He finally went in search of Jesse B. McCargar, a vice president of the Crocker National Bank in San Francisco. They had worked together when George organized Californians, Inc. Disappointed to find him away on vacation, he turned to go but was stopped by J.J. Fagan, executive vice president of the bank. James “Daddy” Fagan was a crusty, colorful product of the money bags. To his offer of help, George told him it was nothing to do with regular banking. It was a wildcat sort of thing that would be of no interest to such an austerely banker as he was known to be.

This captured Mr. Fagan’s interest and he demanded to hear more. After George finished telling his story, Mr. Fagan spat tobacco juice with great accuracy at a gold spittoon in the corner. Then, leaning back in his chair, he put the tips of his fingers together in a reflective mood and moved a thought. Suddenly, he sat up and said, “It’s a damn fool idea, but somebody ought to try it. With this, Phil packed up his papers and picked up his hat, indicating to George the interview was over.

As they were leaving, Mr. Bishop asked them to wait a minute while he conferred with his friend. He then decided that they should look in at Ewing and Fargher, a leading law firm in San Francisco. After an hour or two, they went to Mr. Bishop’s office, where Phil answered all of their questions unhesitatingly. Finally, Mr. Bishop said it looked like a very good idea, but he doubted Phil’s ability to bring it to any kind of commercial reality. With this, Phil packed up his papers and

Phil arrived the next morning looking very much like the poor inventor that he was. George whisked him to the Knox Shop, one of San Francisco’s finest men’s outfitters. Then, at Phil’s suggestion, they went to George’s barber for a haircut. As George had planned, this added greatly to Phil’s self-confidence.

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Philco and set up his own lab. This became the eastern division of Farnsworth Television, Inc.

Phil had his first public showing at the Franklin Institute in Philadelphia in August, 1934. Since the Institute charged a fee to see it, you might say it was the first commercial television. These programs ran from 10:00 a.m. to 9:00 p.m. every day for two weeks. We got the first inkling of what it meant to fill the insatiable maw of television programming.

The Farnsworth receiving tube at that time gave a fifteen square inch picture of very good quality and the public flocked to see it. We had to refill the fifteenseat auditorium every fifteen minutes to accommodate the crowds.

Phil never lost sight of his goal of commercial television. But the FCC (Federal Communications Commission) refused to allot the necessary channels. He was denied the patent interference with Dr. Zworykin in 1934, because that gentleman had already begun to take the credit for inventing television. In order to sell licenses under his patents, it was necessary to clarify his position.

In a lengthy ruling, the patent examiners ruled that Farnsworth was the originator of Electronic Television because Zworykin’s tube was incapable of changing an optical image into an electrical image as claimed. In 1935, Zworykin appealed and the patent office upheld their 1934 ruling.

Farnsworth won over a dozen patent interference from Zworykin. In the case of the Image Orthicon which infringed on at least five Farnsworth patents, the patent examiners were losing patience with RCA’s unethical methods and not only awarded Farnsworth all the claims, but would rule given us the name as well, had it not been trademarked. This case caused RCA to throw in the towel and in 1938 they finally were forced to take a license from Farnsworth.

This was the first time they couldn’t buy, or obtain what they wanted by other means, and it was a bummer under Sarnoff’s saddle. In 1939, Farnsworth built a television broadcast studio and tower in Wyndmoor, a suburb of Philadelphia. They were issued an experimental license (W3XPF). They had a steady stream of visitors from this country and also from many other nations around the world. Hitler was poised for war and they wanted to see what we had before the threatened hostilities prevented them from coming. At this time, Phil had a 441 line, 30 frames per second capability. The public was crying for it.

The news media was keeping close track of Phil, but when he told them television was ready, radio sales fell off. This would bring denials from RCA and other radio manufacturers. The poor public didn’t know what to think.

The Federal Communication Commission finally issued an edict that the television industry must form a group and set standards, so that any receiver could receive any broadcast regardless of who made it. After many meetings, standards were finally decided upon, but the FCC still held up licenses for commercial broadcasting. The reason became obvious when the announcement was made that all research and development facilities were to be diverted to the defense of our Nation.

For fourteen years, Phil and his “Lab Gang” had worked long hours to gain and maintain their lead in electronic television. For the last four years, Phil’s health had begun to show the results of this strain. The FCC announcement was the last straw. He went into the office of E.A. Nicholas, then the president of the company, and said, “I’m going fishing.” We went to our summer place in Broomfield, where we stayed eight years.

Phil’s secret work for the Pentagon, his other war projects, their losses in the 1947 forest fire and ultimate revival to television and Fort Wayne, will be recounted in the forthcoming book by the author and her son, Phil T. Farnsworth, 3rd.

**TELEVISION AFTER GREEN STREET**

1927 Herbert Hoover, U.S. Sec. of Commerce, appears on first intercity television transmission, D.C. to New York (A.T. & T.)

1928 GE establishes experimental 3 day's a week WGY-TV in Schenectady, N.Y.; produces first live tv drama, The Queen’s Messenger (2 camera).

1932 CBS inaugurates first regular schedule of tv broadcasting, N.Y. Mayor Jimmy Walker officiates, Kate Smith sings When the Moon Comes Over the Mountain.

1933 NBC becomes wholly owned RCA subsidiary, begins broadcasting from Empire State Bldg. CBS provides first coverage of Presidential election.

1934 Congress passes Communications Act, RCA/Zworykin challenge Farnsworth patents; Farnsworth wins.


1936 NBC demonstrates television at World’s Fair, markets 12 inch screen with pricetag of $625.

1938 New Yorkers gather instore to watch NBC’s first televised prizefight (Lou Nova TKO’s Max Baer in 11th).

1939 CBS beams first color transmission from Crystal Bldg.

1940 First television commercial, for Bulova watch, airs over WBNJ-NY (ad cost: $9).

1945 Arthur C. Clarke postulates geo-synchronous orbit for satellites.


1948 Cable in use in rural Pennsylvania.

1950 CBS institutes loyalty oath.

1951 Edward R. Murrow hosts See It Now for CBS, premieres with split screen showing Brooklyn Bridge in New York and Golden Gate Bridge in San Francisco. Murrow states “For the first time in the history of mankind we are able to look out at the Pacific and mainland coast of this great country at the same time.”

1952 FCC reserves television channels for education.

1953 KTVE, first NET station, established in campus of USC.

1954 RCA introduces color tv sets.

1955 Pageant Movie “McCarthy” hearings carried live by ABC.

1956 Twenty-One/Charles Van Doren tv game show game scandal.

1957 FCC chairman Newton Minnow finds television “a vast wasteland.”

1958 Telestar provides first satellite relay of television pictures.

1959 Kennedy assassination rivets world through four days of coverage. Ernie Kovacs “Tuesdays at 4” in the ratings.

1960 “Instant Replay” added to sports cast.

1961 Faiz at Cafe Go-Go shows his first videotapes, made with prototype portapak purchased the day before.

1962 Early Bird geo-synchronous satellite premieres with one hour show seen by 30 million in Europe and the Americas.

1963 FCC assumes jurisdiction over cable television.

1964 Congress establishes PBS.

1965 Estimated 600 million in 49 countries watch live televised repeat of Neil Armstrong’s first step on the moon.

1966 Congress establishes public television.

1969 Sony markets first portable video recorders.

1971 Ban on cigarette advertising on tv.

1972 NBC’s Four More Years, first 1/2 inch portapack documentary broadcast (Group W).

1973 NEA establishes Artists’ Felicities in Video Electronic Arts Intermix.

1974 Televised Watergate hearings top summer daytime ratings.

1975 Nixon ends long tv career with resignation.

1978 Sony introduces Betamax home VCR.

1979 Coca Cola bottles-Off license.

1980 FCC rules receive-only dishes need not be licensed.

1981 John Bettes’s Channel 26 in Bemidji, Minnesota (pop. 11,000) is first Low Power (LP) TV with advertising revenues of $200 per high school football game.

1982 NHK develops Holographic vision.

1983 Sony markets Betacam 2” for 1st system.

1984 Sony markets Betacam 4” for 1st system.

1985 Sony markets Betacam 1” for 1st system.

1986 Sony introduces 1/2 inch color portapack.

1987 Sony introduces 1/2 inch color portapack.

1988 Sony establishes Television/Media Program.

1989 NBC establishes Television/Media Program.

1990 Radical Software begins publication.

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