



Introduction

Philo T. Farnsworth's Discontent

IN 1880, long before the story of this book officially begins, Jesse James and his gang tried to rob the First National Bank of Northfield, Minnesota. They failed. They were chased out of town by an enraged citizenry. Back to the drawing board. In the same year, Wyatt Earp spent a few months as deputy sheriff of Tombstone, Arizona, and 14-year-old Butch Cassidy, born Robert LeRoy Parker, committed what was probably the first crime of his life, stealing a pair of blue jeans and, out of either naïveté, braggadocio or some perversely twisted sense of honor, leaving behind an IOU that led to his capture.

In more cultured circles, Peter Tchaikovsky, Johannes Brahms, Franz Liszt, and Gilbert and Sullivan were still writing music, and Robert Louis Stevenson, Thomas Hardy, Henry James and Mark Twain were still turning out novels, although the latter had not yet gotten around to his masterpiece, *Huckleberry Finn*. Oscar Wilde and Henrik Ibsen were alive and well and writing plays, and William Butler Yeats and Robert Browning were still calling upon their muses for elegantly crafted poems. Van Gogh and John Singer Sargent painted; Rodin sculpted; and at the other extreme of artistic expression, P. T. Barnum staged circuses and freak shows for the less cultured sorts whom he believed were born every minute.

The first canned fruits and meats had just begun to appear on the shelves of grocery stores, but the country's first skyscraper, all of ten stories, was still three years away from looming over Chicago's business district. An act of Congress permitted female attorneys to argue before the Supreme Court, but there were so few such creatures at the time that it hardly mattered. The president of the United States was Rutherford B. Hayes, and there were thirty-eight stars on the flag. The principal means of employment for Americans was farming, the principal means of attire a shirt or skirt or pair of pants made by the womenfolk in the family, and the principal means of transportation the foot.

And yet in 1880, four years after he patented the telephone, Alexander Graham Bell took out the first patents for the device that would eventually become television. He thought of it, however, less as the medium we know today than as an improvement on his previous invention—a telephone that allowed a person not just to speak to another but to look at him in the process. Bell called his new brainchild a *photophone*, and it excited him so much that he would sometimes work on it all night, unable to sleep. “I have my periods of restlessness,” his wife-to-be quoted him as saying, “when my brain is crowded with ideas tingling in my fingertips when I am excited and cannot stop for anybody.”

And he did not stop, not until he had actually built a photophone, a clumsy looking machine that did not work, functioning neither as photo nor phone. But Bell did not expect it to; he knew the time was not yet right, the science not yet sufficiently advanced. The photophone would one day revolutionize the way people communicated with one another, of that he was certain, so certain that he donated his prototype to the Smithsonian Institution, wanting credit for the concept if not the execution. The Smithsonian accepted the gift. But it hung no banners to boast of the acquisition, and the device did not attract either publicity or crowds once it was displayed.

THE TELEPHONE, as it turned out, was indispensable to the development of television. It laid some of the conceptual groundwork for the later medium but, more importantly, it inspired men to imagine that if voices could travel across wires, so could pictures. They had not thought of such a thing before; they were thrilled, as was Bell, to think of it now.

In 1877, not long after Bell had begun discussing and writing about his photophone fantasies, a government official in Boston named George Carey

made sketches for something he referred to as a *selenium camera*, which would enable people to “see by electricity.” Other visionaries were doodling their own sketches for electrical sight, and were giving them such names as *telectroscopes* and *iconoscopes* and *electric telescopes* and *electric eyes* and *picture radios* and *radio visions*.

Also in 1877, the *New York Sun* published a letter to the editor that made the following claim:

An eminent scientist of this city . . . is said to be on the point of publishing a series of important discoveries, and exhibiting an instrument invented by him by means of which objects or persons standing or moving in any part of the world may be instantaneously seen anywhere and by anybody.

The report was premature. It was also startling, the stuff of fiction, the kind being written by the wildly imaginative Jules Verne, another of the era’s notable authors. But could it ever be the stuff of fact? Some of those who read the letter in the *Sun* that day in 1877 did so in the glow of a candle, others in the noxious fumes of gaslight. If they lived in the cities, horses clattered by their windows, pulling carriages and wagons along roads that were not paved. And yet one day pictures were to ride invisibly on the breezes until they landed on a screen of some sort, and in that instant become visible a thousand miles away from their origin?

It hardly seemed possible.

THE WORD “TELEVISION” does not seem to have been used until 1900, when a Russian scientist uttered it at the First International Congress of Electricity, part of the Paris World’s Fair. In 1907, it appeared in this country in *Scientific American*. Three years later, the *Kansas City Times*, as premature as the *New York Sun* had been, announced that “television [is] on the way.” Shortly afterward, other publications, for both scholarly and general audiences, began to employ the term, as did most of the men who were trying to make the gadget a reality.

Not, however, Philo T. Farnsworth. To him, television was an image dissector, and he had begun thinking about it as a freckle-faced, tousle-haired teenager. He was thinking other fantastic thoughts too, and despite his youth, had been doing so for several years. “At an age when most children

are still playing with building blocks,” wrote a journalist some time later, “[Farnsworth’s] special delights were a toy dynamo and a toy electric motor. He hooked up the dynamo to the flywheel of his mother’s sewing machine, thus generating enough current to run the motor, and by frequently taking apart and putting together all his apparatus he learned a good deal about the theory and practice of electrical machinery.”

He learned so much, in fact, that at the age of fourteen he figured out how to attach a battery to the family’s washing machine and convert it from a manual to an electric, the only one of its kind in Beaver, Utah, in 1920. His mother’s washday burden was lightened, as her sewing burden had previously been lightened. Neighbors came to see the new appliance, as they had previously come to see the sewing machine, and gaped as if it were one of those famed rural legends, the two-headed calf. Young Philo stood to the side and accepted congratulations modestly.

Then he turned his attention to more challenging matters, perhaps memorizing Einstein’s theory of photoelectrics, which he did at about this time. Like Einstein, Farnsworth wanted to be known for the brilliance of his ideas when he grew up—but even more, he wanted those ideas to have practical applications, to result in products that would cause the whole world to gape, making the marvelous a daily occurrence. Einstein was a hero to Farnsworth, but he had other heroes too, heroes of a more utilitarian bent: Edison and Morse and the Wright Brothers and, at the top of his list, Alexander Graham Bell.

Although no one person can be said to have invented television, Farnsworth comes the closest. In 1922, when he was sixteen, his chemistry teacher, Justin Tolman,

found the study-hall blackboard chalked from border to border with electrical circuit diagrams, on which Farnsworth was feverishly scrawling the finishing touches.

“What’s this got to do with chemistry?” Tolman asked.

“I told you I wanted to be an inventor, and this is my invention,” Farnsworth said. “I’ve got to tell you about it. You’re the only person I can make sense to.”

The electrical circuit diagrams were Farnsworth’s first sketches of an image dissector.

IN 1924, Farnsworth's father died, and Philo dropped out of college to support his mother and younger siblings. He would do so, he hoped, by forming his own company to manufacture image dissectors, although by this time, according to biographer George Everson, he too was using the term *television*, at least on occasion. Everson, who would eventually become Farnsworth's business partner as well as his chronicler, was, when the two of them met, the head of the local office of the Community Chest. Farnsworth had come to see him, and his partner Leslie Gorrell, in the hope of finding a job that would bankroll his dreams. Everson recalls:

I asked Phil [sic] if he planned to go on to school. "No," he said, "I can't afford it. I've been trying to find a way to finance an invention of mine but it's pretty tough. In fact, I'm so discouraged that I think I'll write up my idea for *Popular Science*. I imagine I could get a hundred dollars if I worked it right."

"What is your idea?" asked Gorrell.

"It's a television system."

"A television system! What's that?" I asked.

"Oh, it's a way of sending pictures through the air the same as we do sound," said Phil.

"Where did you get that idea?" I inquired.

"I thought of it when I was in high school. . . . Then when . . . I went to Brigham Young University I told a couple of the professors about it. They encouraged me and let me try out some things in the lab to prove it would work."

And work they did. Or soon would. A year later, Farnsworth, having finally built a working model of his image dissector, dissected two images, the first time anyone had ever accomplished such a feat. Since the images consisted of 54 horizontal lines, compared to the 480-plus lines that make up today's television pictures, or more than twice that number on high-definition sets, the images were not very clear. But the banker to whom Farnsworth showed them, applying for a loan to support further research, had no trouble making out what they were. The first was a horse that had been painted on a piece of glass. The second, more fittingly and more discernibly, was a dollar sign.

A few days afterward, Farnsworth impressed the banker even more by showing him a different kind of image, one that moved; a burning cigarette with trails of smoke flattening against the screen. The problem, as Michael Ritchie describes it in *Please Stand By*, his account of TV's beginnings, "was that the smoker had to stick his face so close to the transmitter tube that he blistered his nose on its hot lights."

Still, the banker gave Farnsworth the money he wanted. He could keep on dissecting images. There would be no more burn victims in the process.

MORE THAN TWO DECADES would pass before a dollar sign was an appropriate symbol of television's success. But that the medium could be more than a gimmick, that it could be an effective, if one-sided, means of communication, would be established quickly.

In fact, within weeks of Farnsworth's initial broadcasts in 1927, the American Telephone and Telegraph Company arranged for Secretary of Commerce Herbert Hoover to appear on the small screen. Very small. It measured two inches by three inches, about the same height, though not as long, as one of today's credit cards. But Hoover was the first government official ever to be captured within such boundaries. Positioning himself before a televisor, or transmitter tube, he began speaking in that stiff-collared way of his, which was even stiffer when the setting was a formal one.

"It is a matter of just pride to have a part in this historic occasion," Hoover said. "We have long been familiar with the electrical transmission of sound. Today we have, in a sense, the transmission of sight. . . . Human genius has now destroyed the impediment of distance in a new respect, and in a manner hitherto unknown." Hoover spoke in Washington, D.C. He was seen and heard more than 200 miles away in New York City.

When he finished his remarks, J. J. Carty, vice president of A.T.&T., sat before the televisor and said a few words about the communications breakthrough in equally stiff-collared fashion.

Then, as suddenly as if a switch had been thrown, which is precisely what had happened, the platitudes ended and the levity began. The engineers at A.T.&T. flipped off Washington and turned on their studio in Whippany, New Jersey—and in that instant, the *New York Times* reported, there materialized on the screen a fellow named A. Dolan, "a comedian, [who] first appeared before the audience as a stage Irishman, with side

whiskers and a broken pipe, and did a monologue in brogue. Then he made a quick change and came back in blackface with a new line of quips in Negro dialect.”

The *Times* was charmed. It thought Dolan “went over very well.” It also thought Hoover performed acceptably. With the technology, however, the *Times* was positively enraptured. It not only published a front-page story on what amounted to TV’s first variety show, but introduced the article with so many headlines that they piled up almost to the fold.

FAR-OFF SPEAKERS SEEN
AS WELL AS HEARD HERE
IN A TEST OF TELEVISION

And . . .

LIKE A PHOTO COME TO LIFE

And . . .

HOOVER’S FACE PLAINLY
IMAGED AS HE SPEAKS
IN WASHINGTON

And . . .

THE FIRST TIME IN HISTORY

And . . .

PICTURES ARE FLASHED BY WIRE
AND RADIO SYNCHRONIZING
WITH SPEAKER’S VOICE

And . . .

COMMERCIAL USE IN DOUBT

And . . .

BUT A.T. & T. HEAD SEES A NEW
STEP IN CONQUEST OF NATURE
AFTER YEARS OF RESEARCH

The story spilled from page one onto page twenty, where it appeared under yet another headline, the blackest, boldest yet:

TELEVISION TRIUMPHS IN ITS FIRST DEMONSTRATION
BETWEEN NEW YORK AND WASHINGTON

It is not known whether Philo T. Farnsworth saw the *New York Times* on April 8, 1927, the day of the eight headlines and the voluminous article under them. If he did, he would have wondered why his own accomplishments had not received similar attention, and might have begun to fear they never would. In fact, they never did, partly because after Hoover's appearance on TV, the medium began to grow so rapidly, with so many people now conducting experiments in so many different places and in so many different ways, that it became impossible to separate one individual's contributions from those of anyone else.

PHILO FARNSWORTH did not age gracefully. Neither circumstances nor his disposition would permit it. The older he got, the more time he spent with lawyers, the less with his image dissectors and vacuum tubes and electrical scanners and cathode-rays, all of which he invented and all of which helped improve the quality of both the picture and the sound of television. In fact, Farnsworth eventually would hold more than 160 patents relating to the medium, but they did not come easily; he had to fight off challengers for many of them, which is to say that he had to fight for his role as one of television's principal creators, both in the public eye and among his fellow scientists.

One of the men who wanted to deny him that role was Vladimir Zworykin, a Soviet physicist who came to the United States after the revolution of 1917 and, despite never losing his comically thick Russian accent, became the leading engineer for the Radio Corporation of America. Zworykin was himself responsible for a number of advances in television's development, including the use of an electron microscope and infrared image tubes.

But he could be as deceitful as he was ingenious, and on one occasion took his deceit to a scandalous extreme, visiting Farnsworth's lab, claiming to be an admirer when his real mission was espionage. Farnsworth, who had never heard of Zworykin, and was far too innocent for his own good, welcomed his guest, took him on a tour of the facilities, and showed him his image dissector. Zworykin picked it up and looked at it admiringly, examining it from all angles. He asked questions. What is this for? What does that do? Farnsworth answered Zworykin, expert to expert. "This is a beautiful instrument," the Russian said. "I wish I had invented it myself."

Whereupon he promptly started trying. He committed to memory as much of the dissector's design as possible while holding it in his hands. Then, after bidding Farnsworth farewell, took notes on the device and made drawings and, back in the RCA lab, worked with his staff to come up with his own version of an image dissector, which he would later try to pass off as his own work.

Farnsworth's principal adversary, however, was David Sarnoff, for whom Zworykin acted as henchman as well as chief engineer. Sarnoff wanted Farnsworth's patents, and he did not care whether he bought them, stole them, or simply got permission from a court to make use of them—although the latter two options, being cheaper, were his preference. Sarnoff and Farnsworth were at odds for many years, each suing the other, each accusing the other of all manner of duplicitous behavior, erroneous claims, and financial skulduggery.

It was Farnsworth who had the stronger case. Sarnoff, however, had more lawyers, and when the legal combat between the two men finally ended, it was quantity that mattered, not quality. Sarnoff got almost everything he desired, which, in simplest terms, meant the right to make a fortune from ideas and labors that were largely another's. Farnsworth amassed a smaller fortune of his own, as the court ruled that RCA had to pay him a variety of licensing fees and royalties. But it was Sarnoff's name that would henceforth be synonymous with television, not Farnsworth's. It was Sarnoff who founded an empire, Farnsworth a series of companies, some of which proved more of a burden than a boon.

And to make sure the general public knew of Sarnoff's court-appointed eminence, he took the extraordinary step of petitioning the Radio and Television Manufacturers Association to proclaim him "the Father of Television." It did. Also at Sarnoff's request, the group designated Zworykin "the Inventor of Television." Farnsworth was as hurt as he was enraged. He

believed that he had been cheated out of both money and renown. He was right on both counts, and never got over his bitterness.

FARNSWORTH had personal problems to contend with as well, more than any man should have to bear and more than any man could bear well. One of his children, a son, died of a throat infection before reaching his second birthday, and, in his sorrow, Farnsworth began to withdraw from his wife, sometimes not even talking to her or looking at her when they passed in the house or sat for a meal. She believed that he blamed her for their boy's death, although there is no record of his ever having said such a thing, and the two of them would never again be as close as they had been before the tragedy.

Some years later, Farnsworth's brother was killed in a private-plane crash. This time he *did* assign blame—to himself; it was Farnsworth who had encouraged his brother to take up aviation, cheering him when he got his pilot's license, delighting in the increasing amounts of time he spent in the skies, the same skies through which, in completely different form, Farnsworth's dissected-television images so effortlessly glided into their receivers.

For most of his adult life, Farnsworth was subject to a variety of maladies, most brought on by nervousness, fatigue, too much alcohol, and too much worrying about money. The latter was exacerbated shortly after his brother's death by a forest fire that destroyed some property he owned in Maine; he had planned, just two days later, to meet with his insurance agent to take out extra coverage on the land. Not long afterward, Farnsworth suffered a nervous breakdown; his weight dropped to a mere 105 pounds and he had to be hospitalized. As a result of his treatment, he developed a drug addiction, and was able to rid himself of it only after several years of tribulation.

FARNSWORTH DID NOT THINK that TV was aging gracefully, either. His wife told a newspaper reporter that there was a time when "he wouldn't even allow the word 'television' to be used in our home. When the *Encyclopedia Americana* asked him to do the article on television, he just threw the letter in the waste basket."

The problem with dissected images, Farnsworth believed, was not just that he had been denied the starring role in their inception. He also thought

the programs weren't very good. Nor were they sufficiently varied. There were too many cowboy shows being broadcast at the dinner hour, he told his family early in the fifties, and he did not want them wasting their time on such fare. Nor did he want them wasting their time on other kinds of shows at other hours on the device he had done so much to bring into being. "There's nothing on it worthwhile," his sons reported him as announcing to the family on one occasion, "and we're not going to watch it in this household, and I don't want it in your intellectual diet."

Farnsworth was not alone in proclaiming a lack of intellectual nutrition on television, which he thought of as yet another of his offspring. In fact, his was but one voice in a multitude that seemed to be growing as fast as the medium it denigrated.