

Tribute to a Commissioning Agent

Fred was born in English, Indiana, at the beginning of the twentieth century. His father, Lewis, had tuberculosis. To combat the disease, Lewis moved his family west to the warmer environment of Palo Alto, California, in 1910. Lewis was a noted scholar who studied child prodigies and helped to develop the Stanford–Binet IQ test. His son, Fred, was also very intelligent, but chose to pursue electrical engineering instead of the social sciences.

At fourteen, Fred and his good friend Herbert Hoover, Jr., became ham radio operators. This hobby stimulated a lifelong love affair with electronics and helped prepare him to write his textbook, *Radio Engineering*, some fifteen years later. He earned degrees at Stanford in chemistry and engineering before earning a Ph.D. in engineering from MIT in 1924. In those days, an eastern school was the place to go to polish one's education. Fred was Vannevar Bush's first graduate student. Bush later became the head of the Office of Scientific Development in charge of all U.S. civilian research, including the Manhattan project. Fred, who was an avid networker, remained connected to Dr. Bush throughout his career.

As he prepared to join the faculty of MIT in the fall of 1924, Fred contracted tuberculosis, the same disease that impaired his father. He followed his father's lead and moved back to Stanford for the sunny warm environment. During his convalescence, Fred accepted a position as a part-time instructor at Stanford. He was able to get out of bed for a few hours each day, just long enough to teach his classes. While in bed he studied, read, and wrote. He worked tirelessly, even when ill.

In 1927, his health improved and he accepted a position as an assistant professor at Stanford. Soon he published his book, *Radio Engineering*, used as the text for a graduate course that he taught.

In the fall of 1933, four men took Fred's graduate course. Fred invited one because he demonstrated academic prowess. The other, named Barney, applied and was contingently admitted, because his academic history was marginal. Barney was told that if he didn't make the highest grade on the first exam that he would be dismissed from the class. Not only did he make the highest grade, but he was also the best student in the class.

Barney and his three fellow students became fast friends. They shared a love for electrical engineering, and the professor recognized the foursome as an outstanding group of students with great potential.

Fred was an unusual professor in a number of ways. First, he disdained the lack of respect accorded western schools, such as Stanford, by the eastern schools; hence, he was determined to change that perspective. Since he subscribed to the theory that a school's success is defined by its graduates' success, he was determined to help as many promising students as possible. Second, he was chagrined at the entrepreneurs who were starting companies in the radio engineering industry. Most had minimal formal training. He felt that this field should be rife with opportunities for people with rigorous theoretical training. Third, Fred had a strong passion for radio engineering and made it a point to know virtually every significant person in the industry. Fourth, unlike most professors,

Fred understood the importance of networking. Throughout his life he connected people to facilitate the advancement of technology and the growth of technical companies.

Instinctively and strategically, Fred sought to identify the most promising students looking for both technical and business acumen. Fred identified the foursome who took his graduate course in the fall of 1933 as a very promising group. Fred encouraged these friends to open a business to manufacture electrical engineering products. Fred cast a vision that was both intriguing and infectious; the men eagerly embraced it.

Sadly though, when the four graduated in the spring of 1934, the depression held the country in bondage. Money and jobs were in short supply. The four men lacked the capital to open their own business. In fact, they needed to find work to support themselves, which they did. As a result they were scattered from the west coast to the east coast.

Despite the setback, Fred was not deterred. He continued to communicate with them and to encourage them to start their own business.

Three years later, in the summer of 1937, two of the men reunited in California for some fun and fellowship. They were drawn together by their mutual love of outdoor sports and desire to fulfill the vision cast by their professor. They conducted their first official business meeting on August 23, 1937. The notes from the meeting were titled “tentative organization plans, and a tentative work program for a proposed business venture.” At this organizational meeting, they discussed ideas regarding various electronic products, including the new invention known as television. The proposed name of the company was the Engineering Service Company. It would be January of 1939 before it was officially formed, but the vision that began in Fred’s class in the fall of 1933 was slowly becoming reality.

In the fall of 1937, the two men again went their separate ways. But the professor was hard at work seeking to help them form their company. He believed in them and felt strongly about their abilities as engineers and their potential as businessmen.

In the summer of 1938, the professor secured a fellowship for one of the men—Dave. The fellowship enabled Dave to return to California, albeit with a pay cut of more than 50 percent. At GE he was making ninety dollars per month. The fellowship paid forty-two dollars per month. The positive side of life during the depression was that a person could live on one dollar a day, and Dave had an able-bodied wife who could work as well.

To take the Stanford fellowship, Dave took a leave of absence from GE, with the blessing of his supervisor. Remaining with GE, though on unpaid sabbatical, provided him a sense of security that he would have a job when the fellowship was over. After returning to California, however, he decided that he would not return to GE. Dave submitted his resignation in June 1939.

The fellowship secured for Dave was to work with Russ Varian developing what would become the klystron tube—the heart of radar and particle accelerators. Dave needed equipment that was not available at Stanford, so the professor arranged for him to use Charlie Litton’s laboratory at Litton Engineering Laboratories.

The professor also secured an opportunity for Bill, one of the other foursome members, who now had a master’s degree in electrical engineering. Bill went to work for a San Francisco doctor developing medical equipment.

Working in the professor's laboratory in the spring of 1938, Bill developed an audio oscillator while experimenting with "negative feedback"—a theory proposed in 1927 by Harold Black, a Bell Lab scientist. The professor had simplified Black's equations so that they were easier to apply, which facilitated the practical application of the theory. Bill's oscillator became the seed of the Engineering Service Company's first product.

In the fall of 1938, Bill and Dave rented a house in Palo Alto and used the one-car garage for a workshop. They worked their day jobs and collaborated in the afternoons, evenings, and on the weekends.

The nascent Engineering Service Company didn't have a product line yet, so Bill and Dave did contract engineering. They worked on controls for air conditioning equipment, a bowling alley foul line indicator, a motor controller for an observatory, a tuner for harmonicas, and an exerciser that stimulated muscles with an electric current. All of these projects generated a modicum of income as they searched for a product.

Bill and Dave recognized that the audio oscillator Bill had developed was a low-cost high-quality method for producing audio frequencies. In November 1938, Bill took the audio oscillator to the Institute of Radio Engineers conference in Portland, Oregon. The response was encouraging and they decided to make the oscillator the first product of the Engineering Service Company.

Identifying the first product was great, but the struggling company needed sales. Again the professor stepped up to help. He provided names of twenty-five potential customers and allowed his lab to be used for development work. The Engineering Service Company sent out a mailer promoting their product to the twenty-five prospects. The marketing campaign worked. The company received several orders, some with checks. Perhaps the most significant order was from Disney who ordered eight units.

In January 1939, the company established a partnership. They decided to combine their surnames and rename the company; hence they flipped a coin to see whose name would be first. Bill won, so the company was named Hewlett Packard (HP).

Over the next few years, the other two members of the foursome, Ed Porter and Barney Oliver, joined HP. The dream birthed under the tutelage of the professor when the men were students at Stanford finally became a reality. The dream and its realization were largely due to the professor, Dr. Fred Terman. In all probability, without him there would never have been an HP. Dr. Terman played the role of a commissioning agent in the four men's lives, particularly Bill and Dave.

Commissioning agents recognize potential, impart vision, and remove obstacles. Dr. Terman did that for Bill and Dave. During their college days, he recognized their potential and began to encourage them. After they graduated and moved to different parts of the country, he worked to get them back together by finding them jobs in the Bay area. He helped them develop their first product by allowing the use of his university lab and simplified electrical theory to make it easier to apply to product development. After the men started their business, he provided sales leads and connected them with resources to help manufacture their products.

Professor Terman was a true commissioning agent. He worked tirelessly, not for his own gain, but for the good others, for the good of the industry, for the good of his employer, and for the good of his community. How many professors do this? Personally, I have never known anyone like Fred Terman—a man who worked not for

accolades, but to help others. His work was largely unnoticed, except by the people he helped.

In the first half of the twentieth century, quality education was the purview of eastern schools. Dr. Terman was determined to change this. He worked to develop a great faculty at Stanford and to help its graduates succeed. For him, universities should be measured by the success of their students; hence, career success for Stanford's students was very important to him. Therefore, he worked hard to help Stanford's graduates any way that he could to find great jobs and build world-class companies. His work was an enormous success, as many Stanford graduates have distinguished themselves. Now the institution enjoys the academic respect on par with the nation's top schools.

In working to build Stanford's reputation, he played a major role in transforming Palo Alto and the surrounding area from a sleepy farming community, to a technology powerhouse known as Silicon Valley. Many refer to him as the "father of Silicon Valley."

Fred Terman's impact was enormous—a selfless man who sought to help his employer and those whom his employer served. For Dr. Terman, life was not about himself, but about serving others. On his own, he took on the role of a commissioning agent and changed the world that he lived in, making it better for everyone. There is perhaps no greater work one can do than that of a commissioning agent.

Commissioning is a key role for every authority figure—parent, teacher, employer, spouse, and pastor. Commissioning is the external validation of one's calling. Without commissioning, people lack the confidence to persevere during tough times. Commissioning imparts a sense of trust and legitimacy to a person's calling. It breeds confidence and assurance that empowers people to overcome overwhelming obstacles. With commissioning, incredible things happen.

The biblical principle for hiring consists of four components that I call C4—calling, character, capability, and commissioning. Calling is the cry of one's heart, the passion of the soul. Character refers to one's worldview and value system. Capability describes one's skill and ability. Commissioning is the validation from authority figures that one is qualified to do the job.

Great workers have C4 to do their jobs. Such workers have commissioning agents, like Fred Terman, in their lives imparting critical commissioning validation needed to release them to great human achievement.

Bill Hewlett and Dave Packard were recipients of Fred Terman's commissioning. Fred not only validated the commissioning with words, but with actions as well. The result of his work was impressive. HP became one of the premier companies in the world. In Dave Packard's book, *The HP Way*, he repeatedly acknowledged Fred Terman's role in the inception and development of HP.

What a great model for us! If we simply follow Dr. Terman's example, we could release perhaps unprecedented blessing on the world by enabling people to better discover why God created them, and release them to fulfill their divinely ordained destiny.

I don't know if Fred Terman was a Christian. In my research, I have not found any clear evidence that he was. So I assume that he achieved his high level of excellence as a commissioning agent on his own, by virtue of the common grace of God. What

would it have been like if he were empowered by the Holy Spirit? Notwithstanding the phenomenal success that he enjoyed, one can only imagine how much more success he could have realized if he walked in the power of the Holy Spirit.

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