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By Tyler Ochoa,

*Sheldon Breiner is a man of ideas.*

Moreover, Sheldon Breiner is a man who knows how to put his ideas into practice. He has personally founded three corporations to develop his ideas. One wonders just how many more he would start if someone would only give him the time to do so.

Breiner, 45, is a 1959 Stanford graduate in geophysics, but to describe him as a geophysicist is an unjust understatement. He is a geophysicist, explorer, inventor and entrepreneur all rolled into one. He has molded an extraordinary career to fit his childhood dreams -- and has had a lot of fun doing it.

Sheldon Breiner is a friendly fellow, with a crinkled smile and brown eyes that make one feel right at home. He is balding in front, and his black hair is greying. His voice is soft but authoritative, and he is never at a loss for words

Breiner's parents, both Jewish immigrants, owned a small family bakery shop in St. Louis. All four of the Breiner children helped out at the bakery and, early on, were inculcated with a work ethic that young Sheldon would not soon forget. Because of the limited income provided by the bakery, it was clear that none of the children could attend college away from home without a scholarship. Bearing that in mind, Breiner applied to four schools. Stanford, he admits, was his fourth choice. However, Stanford awarded him a full-tuition-plus honors scholarship in geophysics.

What was his reaction?

"I quickly rushed to the dictionary to find out what geophysics was," laughs Breiner. Finding the description to his liking, he decided to attend school at The Farm.

Several of Breiner's professors remember him quite vividly:

"He was energetic, bright and feisty," says Dr. George Thompson, now head of the geophysics department. "He was just a bundle of energy in a quiet way."

"A very gregarious fellow, quite easygoing and personable," says Dr. Robert Kovach, an earthquake research specialist. "He had this extraordinary ability to organize and get things done."

After earning his B.S. degree in 1959, Breiner spent six months in the Reserve Army before returning to Stanford for his Masters work. Shortly thereafter, he met his wife-to-be, Mimi, who was an undergraduate majoring in art history. They were married in 1962.

For his Master's research, Breiner chose a project that centered around a geophysical instrument that would shape his career -- the magnetometer, a device that measures minute variations in the Earth's magnetic field. His idea was to fly helicopters equipped with these instruments, to take measurements over a large area.

Since he needed extremely sensitive instruments and a large amount of funds, Breiner decided to ask Varian Associates, a Palo Alto geophysics firm that manufactures magnetometers, to sponsor the project.

"I went to them with my proposal," recalls Breiner, " and they said great, they'd like me to work there to develop this idea; they'd get patents out of it, and I'd get my Master's research out of it."

After completing his Masters in 1962, Breiner stayed on at Varian, in what he describes as "the most fascinating job I think anyone could ever hope for. My job was to take the world's most sensitive magnetometer and find uses for it.

"I got involved with a whole variety of things which were just fascinating and fun....I had my own ideas how to use it (the magnetometer) and they had the instrument, so we made a very good team."

Ideas started flowing out of Breiner's facile mind. He used the magnetometer to aid in earthquake prediction, by measuring stress-related magnetic effects along the San Andreas Fault. (This work led to his Ph.D. thesis in 1967). He demonstrated how it could be used to measure the electric currents of the human heart, or to track migratory animals.

But Breiner's most significant (and productive) idea was an ingeniously simple one: he pioneered the use of the magnetometer to "see" where the human eye cannot -- underground or undersea, through foliage or clothing.

This led to an abundance of new applications. Breiner used magnetometers to find avalanche victims buried under the snow. He used them to search for sunken treasure. He became known as an expert at finding lost, hidden or buried things. People called him from around the world to ask for help in searching for everything from a 60-ton anchor and chain to a downed airplane's flight recorder.

Breiner was also frequently consulted by the government. He helped the Navy locate two lost nuclear submarines, the Thresher in 1963 and the Scorpion in 1968. He helped the Air Force find a hydrogen bomb lost off the coast of Spain when a B-52 bomber crashed in 1966.

Shortly after Robert Kennedy was shot in 1968, Breiner was called to the White House to help devise a way to protect public officials at political rallies. The result was the first of the magnetic search systems now used in airports throughout the world.

Breiner got involved with using magnetometers for archaeological exploration in 1965. Working in conjunction with scientists from the University of Pennsylvania, he helped locate the lost Greek city of Sybaris in southern Italy.

Excavation at Sybaris was greatly complicated by a water table only two to three feet beneath the ground. Powerful pumps had to be used to keep each site free of water.

"It was all buried under 20 feet of mud," remembers Breiner. "Our job was to map the whole area -- everything -- without having to excavate, so at least we knew the extent of the city.... It was a lot of fun."

One of Breiner's most significant archaeological achievements was the magnetic exploration of San Lorenzo, in the Veracruz region of Mexico. San Lorenzo was the home of the Olmec civilization, making it one of the oldest inhabited sites in the Western Hemisphere.

Breiner calls the San Lorenzo project "the most exciting archaeological expedition that I've ever been involved in," -- and no wonder. Some of the scenes he describes are reminiscent of scenes from the movie "Raiders of the Lost Ark."

The expedition requires a six-hour journey upriver, through dense tropical jungle, in an old rusty boat. Monkeys and exotic birds screech overhead. A bent stick protruding from the river bank marks the place where the explorers land. From there it is three more hours through the jungle on horseback to San Lorenzo.

In addition to hiding Olmec treasures, this plateau is the home of the fer-de-lance, one of the deadliest snakes on Earth. The nearest doctor is six hours away. Breiner is prepared to do all of his work on horseback, but he quickly changes his mind.

"It turned out that the local Indians who were helping us were walking around barefoot, or in sandals. I figured 'If they're not going to get bit, I'm not,' so I got down off the horse."

San Lorenzo was particularly well-suited to magnetic exploration, because the artifacts were carved from volcanic rock brought in from 50 miles away. Volcanic rock is highly magnetic because small magnetic particles align with each other when the molten rock cools. The soil at San Lorenzo is non-magnetic; therefore, nearly all magnetic anomalies were significant.

During his first hour at the site, Breiner located an object that was later described as "the most valuable Pre-Columbian art ever found." It was a four-foot statue of the chief rain god of the Olmec, a snarling, half-man, half-jaguar figure.

Breiner and his colleagues made 80,000 individual measurements over a three-year period. These data points were analyzed with the aid of a computer, which drew contour maps and three-dimensional perspective views of the magnetic features. Breiner then interpreted the drawings, estimating the location and depth of 100 significant objects. Due to lack of funds, only 20 selected sites were excavated.

Among the artifacts uncovered by the team were two colossal stone heads, presumably depictions of Olmec rulers. One, found 16 feet below the surface, is the most perfectly preserved of the Olmec heads yet found.

For Breiner, archaeological exploration was the fulfillment of a childhood dream. He had always wanted to be an explorer. Now he was traveling around the world, doing one of the things he loved most -- and getting paid for it.

After eight years at Varian, however, Breiner "thought it was time to move on to a new set of experiences."

While employed at Varian, he had invented several new techniques related to the principal application of magnetometers petroleum and mineral exploration. In 1969 Breiner took those ideas to various investors and raised one million dollars to found his own company, Geometrics, Inc.

"I always wanted to start and run a company -- I didn't care what it was," explains Breiner. "I just have a feeling of wanting to do something under my own control and establish my own fate and destiny."

Today the Sunnyvale-based firm is one of the most successful manufacturers of geophysical instruments in the world. The company also conducts airborne geophysical surveys around the world with its own fleet of light airplanes and helicopters. For a typical survey, highly sensitive instruments will be mounted on the aircraft, which then flies systematically over the survey area in a series of long, parallel lines. The aircraft must be flown at a constant relative altitude above the terrain, often as low as 200 feet.

After the survey is completed, the data is processed by a computer (GeoMetrics has special facilities in both Sunnyvale and Australia), which generates maps and profiles of the entire area. Using these maps, trained experts can pinpoint the location of major geologic features and determine where valuable mineral resources can be found. Geometrics' largest survey flown to date took place in Zambia, where two aircraft flew more than 400,000 miles over the African country. One of the aircraft was shot down by terrorists during the survey -- a problem that has occurred with alarming frequency.

One of the keys to GeoMetrics' success has been Breiner's emphasis on international marketing. GeoMetrics' products and services have been sold in over 100 countries worldwide. Surveys are frequently conducted for the governments of developing nations.

One of GeoMetrics' biggest customers is the People's Republic of China, where Breiner has been instrumental in strengthening scientific ties with the United States. He has visited China five times, more than once as a V.I.P. guest of the Chinese government.

In 1976, GeoMetrics was sold to EG&G, a Massachusetts high-technology firm, for stock now worth \$25 million. Breiner is still the president and driving force of the company, traveling over 100,000 miles each year in connection with the firm's business overseas.

Other successes soon followed. In 1978 Breiner helped found Fracture Technology, Inc., a firm that helped develop a technique to monitor an oil-production process called hydraulic fracturing. In hydraulic fracturing, special fluids are pumped into the ground at high pressure in order to crack rocks and allow the oil to flow to the surface.

Breiner is a director of two high technology companies. and just last October, founded another company, Syntelligence, devoted to finding applications for research in artificial intelligence. Breiner is currently, in his words, "president, chairman and sole employee"

He is active in community affairs. He is a founding trustee of the Peninsula Open Space Trust and a director of the Resource Center for Women. He plays in a local soccer league and enjoys vigorous outdoors activities, including backpacking and skiing.

Breiner also runs marathons. Last year he realized yet another ambition by qualifying to run in the Boston Marathon. Today, Breiner and his wife Mimi make their home in Portola Valley, California. They have two children: David, 18, a Stanford freshman, and Michelle, 13.

Breiner still maintains close ties with Stanford, and has been a member of several Stanford fund-raising programs.

Furthermore, the sale of GeoMetrics enabled Breiner and his wife to endow a scholarship fund at Stanford in 1963: Breiner asked that it be named for Dr. Joshua L. Soske, Breiner's undergraduate advisor and mentor. In a letter accompanying the gift, Breiner explained that he wanted "to give others the chance that I had."

The scholarship is a fitting tribute to the late Dr. Soske, who once wrote these words about his enterprising student: "His strongest point is that ideas come to him with apparently no effort. To me that characteristic places Sheldon in a separate group of 'idea men'."

Perhaps those words come closest to capturing the essence of Sheldon Breiner.