

Profiles in Leadership #5

Herbert A. Wertheim: Bettering the World

Herbert A. Wertheim, O.D., D.Sc., Florida Beta '62, was a physically abused truant who couldn't read. He went on to found the world's largest manufacturer of optical hemicals and measuring instruments and became a philanthropist.

by Trudy E. Bell © 2014 Trudy E. Bell

“I

KEPT RUNNING AWAY because I didn't want to get beaten by my father,” Herbert Wertheim stated flatly.

After his Jewish parents escaped from Hitler's Germany in 1936, they fled to New York City and then Philadelphia, where Herbie was born in 1939.

After moving to South Florida, the family was so poor that the boy had to share a bed with his two younger brothers above the bakery his father opened.

By high school, Herbie was adept in art and in wood and metal shop and was “pretty good” with numbers, but he still could not read well: words seemed to jump around the page or appear backwards. “I didn't realize I was dyslexic,” Wertheim recalled. “Those days [early 1950s], everyone just thought I was dumb or wasn't trying hard enough. I cut school because I could not be successful and was made fun of” and ran away to avoid his father's strap or broomstick.

Odd Jobs

He hitchhiked throughout South Florida, feeding himself by odd jobs: putting up umbrellas on Miami Beach, selling newspapers, or collecting pop bottles and redeeming them for the deposit.

Often he lived with Seminole Indians in the Everglades, catching frogs to sell to seafood restaurants. Other times, he slept on the

What does it mean to be a leader? In this series “Profiles in Leadership,” Tau Beta Pi is exploring that essential question through the lives of member engineers who attained leadership positions in their fields. The first four profiles were of Maria Klawe, President of Harvey Mudd College; Norman R. Augustine, former President and CEO of Lockheed Martin Corp.; Bonnie J. Dunbar, five-time NASA Space Shuttle astronaut; and Hector de J. Ruiz, former CEO of AMD.

floor of the Pompano Farmers Market while waiting to load and unload produce trucks. In May and June, he joined migrant workers picking oranges, grapefruit, and tangerines, earning up to \$8 per day—paying a dollar a day at the bunkhouse for three meals and a cot.

“I must have run away 12 or 14 times,” Wertheim recalled, but was often caught by the police or a truant officer and returned home. “At 16, I was apprehended in the Everglades and sent to Miami Youth Hall for several

weeks.” There, a compassionate judge declared: “You're a smart kid. Either you pass a test to get into a special Navy program, or you go directly to Marietta state reform school (North Florida Youth Development Center, now closed).”



Wertheim wears the Horatio Alger Award—given to outstanding Americans who have achieved despite great adversity—which had just been presented by Supreme Court Justice Clarence Thomas, shown at right, in 2011.

Wertheim chose the Navy test. Fortunately, it involved symbols, drawings, and math more than reading. Wertheim scored well above 90 and was accepted into the U.S. Navy for a “minority cruise” (a program dedicated to saving youth, in which he had to stay until turning 21) and shipped off to boot camp in San Diego. He was trained in physics, mathematics, chemistry, electronics, and avionics, and became a naval aviator. Ultimately, in August 1958, Wertheim headed off to sea for Project Argus, sailing to Antarctica aboard the World War II aircraft carrier *USS Tarawa* and

the guided missile ship *USS Norton Sound*. There he helped align the guidance platforms of missiles whose atomic warheads exploded in the outer atmosphere—perhaps one of the most dangerous nuclear tests ever conducted.

The Navy transformed Herbie's life: "I had shoes and clothes. People helped me learn to read. I learned how to disarm nuclear weapons and fly helicopters. I excelled, and that gave me confidence to do other things." The material contrast between the officers and everyone else also did not escape him: "They had people to make their beds, nicer uniforms, better-looking girlfriends, and nicer cars. And the only difference between them and me was that they went to college. So I determined then, 'Damn, I'm going to college!'"

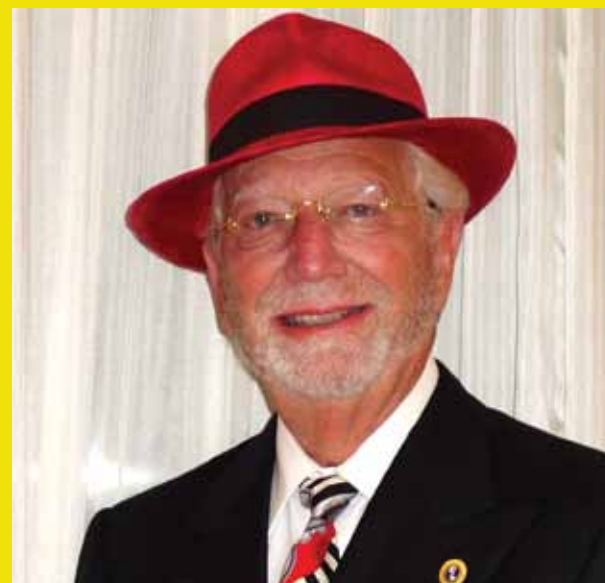
From College to Entrepreneur

At age 21 (1960), after Wertheim was discharged from the Navy, he couldn't land a job, so he sold sets of Collier's Encyclopedia door to door and lived on commissions. Several months later, a friend alerted him to an opportunity to work nights for General Dynamics at Cape Canaveral for the two-year-old National Aeronautics and Space Administration (NASA). By day, Wertheim enrolled in engineering classes at the brand new Brevard Junior College, receiving his associate's degree as part of Brevard's first graduating class. After nearly completing a degree in optical engineering at University of Florida, he was offered multiple scholarships to go to optometry school, eventually choosing Southern College in Memphis, Tennessee. During summer break after his first year, Wertheim programmed IBM 1401 and 1410 computers and eventually the largest IBM 360-67 mainframe at the University of Tennessee medical computer center, ultimately becoming the center's director while still a student.

Upon receiving his O.D. (doctor of optometry) degree in 1967, Wertheim passed state licensing and became an adjunct professor and a fellow at the Baskin-Palmer Eye Institute at the University of Miami School of Medicine. There he joined two major researchers working with kittens to seek a cure for childhood "lazy eye" (amblyopia), in which an underdeveloped eye has very low visual acuity. Ultimately, they recommended a technique (still widely used) of patching the good eye to force the weaker eye to develop. In conducting the research, Wertheim noticed that the kittens, whose eyes were repeatedly exposed to ultraviolet (UV) light, developed cataracts. "I thought, 'I bet I can make a UV filter by dipping a plastic lens into a solution' to protect the kittens' eyes," he recalled. The UV filter nearly quadrupled the useful time of the kittens' eyes. In short order, he realized his discovery had wider significance for protecting human eyes.

Long Career of Invention

Thus began Wertheim's long career of invention. "I adapted what other scientists had previously discovered," he explained. "I was the first to publicize others' work showing that UV light was also dangerous to human eyes." Glass eyeglass lenses used at that time blocked some UV, but plastic lenses did not. In his own optometry practice, Wertheim sought to prescribe only plastic lenses, which



This Leader In Brief

Full professional name: Herbert ("Herbie") A. Wertheim

Current position: Founding Chairman, Herbert Wertheim College of Medicine, Florida International University (FIU), Miami; Brain Power Inc. (BPI).

Birthplace: Philadelphia, PA, 1939

Highest degrees: O.D., Southern College of Optometry, Memphis, TN, 1967; D.Sc. FIU, 1997.

Major career highlights: Trained in inertial guidance systems, U.S. Navy, 1956-60. Instrumental technologist (nights), General Dynamics, 1960-61 and engineering technologist (nights), NASA Cape Canaveral 1961-63. In clinical practice in optometry and visual neurology at the University Eye and Medical Center, Coral Gables, FL 1967-82. Founded Universal Laboratories, 1969. Fellow, Basin-Palmer Eye Institute, 1972-74. Founded Brain Power Inc. (BPI), 1971. Secured over 100 patents and trademarks.

Board memberships: chairman and board member, FIU Foundation, 1988-2001; founding member, FIU Board of Trustees, 2000; board member, La Jolla Institute of Allergies and Immunology 2013; Served on boards of charitable organizations including the American Heart Association, Boy Scouts of America, and Lighthouse for the Blind.

Honors: Doctor of Science, FIU, 2008; Doctor of Medicine, FIU 2013; Honoris Causa; Horatio Alger Medal, 2011; member, Order of the Engineer; Trustee Emeritus of Florida International University; Distinguished Alumni, University of Florida College of Engineering.

Greatest accomplishment: "Forty-five years of marriage to my wonderful wife Nicole, and having a wonderful family with two daughters, Erica and Vanessa, and our four grandchildren."

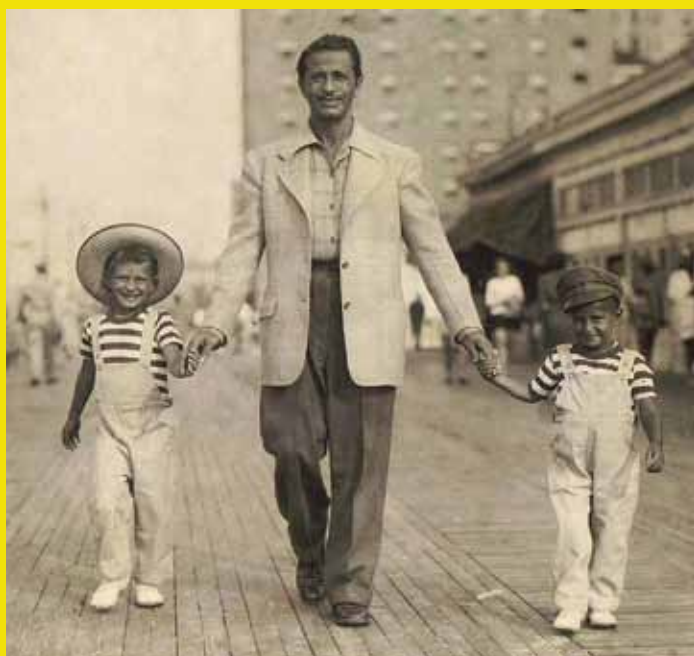
Leader most admired: Admiral Hyman G. Rickover, known as the Father of the Nuclear Navy. "He was a scientist first and an admiral second. And because he was Jewish, he had to be made admiral by an act of Congress because the Navy Department wouldn't do it."

Hobbies: "I like to fly, fish, paint portraits, cook, travel, do research, and read patents."

Favorite books: "The One-Minute Manager by Ken Blanchard; (all the) *How to Win Friends and Influence People* books by Dale Carnegie; *The Autobiography of Benjamin Franklin*; Franklin is one of my heroes.

If you could do one thing over: "No regrets. I can't think of a single thing. I've loved everything."

Wertheim



ABOVE: Wertheim at age 6, at left, with his father and 4-year-old brother Raymond on the boardwalk of Atlantic City, NJ, in 1946. RIGHT: Wertheim in his U.S. Navy dress whites at age 18 around 1957. BELOW: Wertheim and wife Nicole are seen during a 1985 vacation in Scotland.



were just beginning to be offered as an alternative to glass lenses: “Plastic was half the weight of glass, so people did not develop sores on their noses or behind their ears from eyeglass frames,” he pointed out. Soon, he also realized that plastics offered the option of coloring individual lenses to order for sunglasses “so optometrists didn’t need to have a lot of inventory on the shelf.”

Developing New Technology

In 1969, he founded Universal Laboratories to develop lens coloring processes and dyes and eventually instruments. The next year, he sold it for a lump sum and future royalties. Soon after, he created Brain Power Inc. (BPI), initially a consulting company to help investors evaluate high-tech opportunities. When royalties were not paid as agreed, however, Wertheim turned BPI into an R&D company developing new optical technology to compete with his older ideas.

After four decades of growth, BPI is now the world’s largest manufacturer of ophthalmic supplies and instruments, selling over 4,000 products in more than 100 countries. In BPI’s 85,000-square-foot R&D and manufacturing facility near the University of Miami and its 35,000-square-foot facility in Rugby, England, “we make the lens coloring and UV chemistry for almost every optical laboratory and virtually every major sunglasses manufacturer, including Bausch & Lomb/Ray-Ban, Maui Jim, Oakley, and Polaroid.”

Moreover, BPI’s plastics-dyeing business grew far beyond eyeglasses. BPI provides the tints for the LEDs used for cabin lighting on Boeing’s 787 and 777 commercial aircraft, as well as for broad-spectrum protective coatings for astronaut helmets, ski goggles, and motorcycle helmets. “Over half of camera filters worldwide use BPI’s unique tinting technology,” Wertheim added. In the past, BPI also produced advanced ultrasonic and robotic cleaning and etching systems used by IBM in making computer read-write disk drive heads and by NASA to clean and process space shuttle parts.

Giving Back

In a highly personal quest, Wertheim and his BPI scientists have developed a series of lenses designed to quiet the visual systems of many dyslexics, helping them to see words in their exact form, and better learn to read and comprehend. “The bottom quartile of children struggling in school, who are often labeled as bad kids, may actually have some neurological condition preventing them from learning,” Wertheim declared with passion. “If with the help of special devices those children can acquire new learning skills to compensate for their disadvantages, many will be able to excel beyond ordinary people who have not developed those compensating skills.”

Wertheim’s business successes have put him in a position to help others—and he has shared the wealth time and again. In Miami, FL, and in Eagle and Vail, CO, where he loves to ski, the Dr. Herbert and Nicole Wertheim Family Foundation has been a major funder of programming on both public television and radio stations for almost 40 years. The Wertheim Family Foundation also helped build a plant

conservatory and a 1,000-seat concert hall and theater at Florida International University (FIU) in Miami, a public university with 60,000-plus students and 4000 faculty and staff; the concert hall houses one of the largest concert organs in the southern United States. The foundation also annually provides some 35 graduate fellowships and scholarships for education in medicine and the performing arts. As chair of the Wertheim led a that raised over the university. on.

Wertheim's ambitious project establish the heim College of Nicole Wertheim ing and Health Specifically, the school to train a ily physician and ist, dedicated to preventive medicine and public health initiatives; a further emphasis is on serving indigenous and underserved populations, including providing care via mobile clinics in local neighborhoods. "Our goal is to keep people healthy," he explained. "The most important thing we can achieve is making our communities healthier and thus more productive. Prevention is, and always will be, the best medicine."

'Eat More Dirt'

Wertheim's advice to today's young people: "Eat more dirt," he states bluntly. Medically, he explains, "that is what helps our immune system fight off disease and inflammation." Metaphorically, he means "try to build your human experience by understanding a task at the most basic level. Don't feel so good or high about yourself that you avoid doing the dirty work with your own hands.

"I love people of the earth, such as Doctors Without Borders and the migrants who pick the produce or milk the cows morning and night," he continues. "Living with the people who created things or gave of themselves every day gave me so much respect for their dedication and great perseverance and professionalism. Working with them made me determined to make the finest and most advanced products in the world, no matter the cost of effort. I never set out to be wealthy. The monetary rewards have always been secondary to doing my part to make the world a better place."

Trudy E. Bell, M.A., (t.e.bell@ieee.org, www.trudyebell.com, and [@trudyebell](https://twitter.com/trudyebell)), is senior writer for the University of California High-Performance AstroComputing Center (<http://hipacc.ucsc.edu>) and a contributing editor for *Sky & Telescope* magazine. A former editor for *Scientific American* and *IEEE Spectrum* magazines, she has written a dozen books and over 500 articles, 19 of which have won top journalism awards. This profile is her 23rd feature for *The Bent*.

"I never set out to be wealthy. The monetary rewards have always been secondary to doing my part to make the world a better place."

FIU Foundation, capital campaign \$200 million for And the list goes

latest and most ect has been to Herbert Wert-Medicine and the College of Nurs-Care at FIU. vision is for the new kind of fam-medical special-



ABOVE: Wertheim using a computerized dummy to teach second-year medical students at Florida International University Herbert Wertheim Medical School in 2012.

RIGHT: Wertheim shows a 65-pound halibut he caught off Alaska in 2005. BELOW: Wertheim with his wife Nicole, center, and daughters Erica, left, and Vanessa, far right, at the 35th anniversary of the Dr. Herbert and Nicole Wertheim Family Foundation.

