

Consumer Electronics



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CONSUMER ELECTRONICS ASSOCIATION www.CE.org



*Hall of Fame* **2004**

**CEA Dinner Honoring the 2004 Inductees  
into the CE Hall of Fame**

**Tuesday, October 19, 2004**

**The Fairmont San Francisco**

**Grand Ballroom**

**Dinner Program**

*7:00 pm*

**Singing of the Star Spangled Banner** ★★

*Featuring:* Jenni Soto

Consumer Electronics Association

*7:00 pm – 8:00 pm*

**Dinner Service**

**Menu**

Napa Valley Mixed Greens

With Diced English Cucumber, Crumbled Bleu Cheese,  
Candied Walnut, Cabernet Poached Pears and Citrus Vinaigrette

Grilled Filet of Beef with Truffle Sauce,  
Herb Pomme Duchesse and Seasonal Vegetables

*8:00 pm – 9:00 pm*

**Presentation of Inductees**

**Master of Ceremonies**

Gary Shapiro

*President and CEO*

Consumer Electronics Association

*9:00 pm – 10:00 pm*

**Buffet of Assorted Desserts**

*Sponsored by*

**TWICE**  
THIS WEEK IN CONSUMER ELECTRONICS



In 2004, the U.S. consumer technology industry will pump \$100 billion of innovative products and services into the market. The industry is vast: audio, digital imaging, gaming, home networking, home theater, video and wireless technologies – changing the way we interact with each other in business and in our personal lives.

This industry grew on a foundation laid by the world's innovators. These people were able to think of an idea that would change the world and then make it happen. To honor these individuals, in 2000 CEA created the CE Hall of Fame. As Ralph Waldo Emerson said, "To be yourself in a world that is constantly trying to make you something else is the greatest accomplishment."

For example, look at Steve Wozniak, one of the 11 inductees into the 2004 CE Hall of Fame. He is the engineering genius who developed the first recognizable personal computer, the Apple I, followed by the first mass market PC, the Apple II. This revolutionary idea changed the world.

Similarly, Dr. Woo Paik's insights brought us digital HDTV. While developing methods for scrambling digital cable signals for transmission over satellite

TV systems, Dr. Paik developed a way to compress a high-resolution digital television signal so that it could be transmitted over thin television broadcast channels. Again, the hallmark of a creative thinker, his idea is transforming our culture.

Without Alan Dower Blumlein, there would be no audio business, as we know it. From 1925 to 1942, Blumlein registered 128 patents. But his most influential patent was for "binaural audio output" better known as stereo. Another audio notable is Paul Klipsch who developed the Klipschorn loudspeaker, the longest continuously manufactured speaker in the world. And if it were not for Joel Engel and Richard Frenkiel, we would not be talking on our wireless phones today. Inducted as a wireless "team" the duo co-developed the cellular phone system architecture and jointly received the National Medal of Technology in 1994 from President Clinton.

But not all visionaries are inventors – some are sales, marketing and corporate executives who grow the industry through their leadership. Take Ken Kai, founder of U.S. Pioneer, who built the U.S. market for Japanese CE companies with high-fidelity products and introduced optical disc

technology with the laserdisc. Jerry Kalov also shaped the industry as a CE executive, a retail entrepreneur, a consultant and a leader of CEA. Likewise, Norio Ohga during his 44 years at Sony, guided adoption of the compact cassette, CD, MiniDisc and PlayStation formats and facilitated Sony's purchase of CBS Records and Columbia Pictures.

Robert Gerson's contributions to the industry as a respected trade journalist and founding editor of *This Week In Consumer Electronics (TWICE)* secured his spot as a progressive thinker. Likewise, Henry Brief was a journalist but also served the industry as an association executive. All of these inductees have influenced the CE industry – and the world – in a positive way.

## Building the Industry

Now in its fifth year, the CE Hall of Fame honors the visionaries that have made the consumer electronics industry what it is today. Leadership, resourcefulness and vision are among the qualities that the inductees to the CE Hall of Fame possess. The program serves as a bridge from the past to the present, enabling younger generations to build on

the groundwork laid by their colleagues before them. The CE Hall of Fame pays tribute to those who individually, and in some cases together, made significant contributions to the development of consumer electronics products and thus our culture and our world.

To choose the 2004 class, a panel of 17 consumer electronics media and industry leaders judged the nominations that were submitted by manufacturers, retailers and industry journalists. The judges used the democratic process of the majority votes to determine the 11 new honorees. Their collective industry experience is invaluable in judging the hundreds of nominations that are sent to CEA. We thank the following journalists and industry professionals for volunteering their time to participate in the 2004 CE Hall of Fame program:

- |                       |                        |
|-----------------------|------------------------|
| <i>Jim Barry</i>      | <i>Bill Pritchard</i>  |
| <i>Bob Borchardt</i>  | <i>Thomas Rhee</i>     |
| <i>Rick Clancy</i>    | <i>John Shalam</i>     |
| <i>Grant Clauser</i>  | <i>Richard Sherwin</i> |
| <i>Marge Costello</i> | <i>Steve Smith</i>     |
| <i>Brian Fenton</i>   | <i>John Taylor</i>     |
| <i>Howard Geltzer</i> | <i>Stewart Wolpin</i>  |
| <i>Joe Palenchar</i>  | <i>Jack Wayman</i>     |

The 2004 class stands on the shoulders of such industry giants as Edwin Armstrong, Paul Galvin, Ray Gates, Dr. Sidney Harman, Bill Kasuga, Henry Kloss, David Sarnoff and Shizuo Takano. The CE Hall of Fame showcases the progressive thinking of those whose ideas have directly affected consumer electronics technology and are responsible for enhancing consumers' lifestyles. Future leaders will build on these ideas and produce new CE products that we can't even imagine today.

*CEA represents more than 1,700 corporate members involved in the design, development, manufacturing, distribution and integration of audio, video, mobile electronics, wireless and landline communications, information technology, home networking, multimedia and accessory products, as well as related services that are sold through consumer channels. Combined, CEA's members account for \$100 billion in annual sales.*



Gary Shapiro  
CEA President and CEO



Judging for the 2005 CE Hall of Fame will take place on November 9, 2004 in New York.

For more information on the program visit [www.CE.org](http://www.CE.org).



## *Congratulations*

*Vision magazine congratulates the new inductees to the CE Hall of Fame. We thank you for your contribution to the advancement of the electronics industry.*





## 2003 Inductees

2003

Borchardt, Herbert  
Feldman, Leonard  
Immink, Kees A. Schouhammer  
Kasuga, William  
Kent, Atwater  
Steinberg, Jules  
Takayanagi, Kenjiro  
Tushinsky, Joseph  
Wurtzel, Alan

## 2002 Inductees

2002

Alexanderson, Ernst F.W.  
Appel, Bernard  
Baker, W.G.B.  
Boss, William E.  
Ekstract, Richard  
Fisher, Walter  
Gates, Raymond  
Lear, William Powell  
Polk, Sol  
Sauter, Jack K.

## 2001 Inductees

2001

Berliner, Emil  
Fleming, Sir John Ambrose  
Gernsback, Hugo  
Jensen, Peter Laurits  
Muntz, Earl

Poulsen, Valdemar  
Westinghouse, George

## 2000 Inductees

2000

Abrams, Benjamin  
Adler, Robert  
Armstrong, Edwin  
Baird, John Logie  
Balderston, William  
Bardeen, John  
Bell, Alexander Graham  
Blay, Andre  
Brattain, Walter  
Braun, Karl Ferdinand  
Bushnell, Nolan  
Crosley Jr., Powel  
DeForest, Lee  
Dolby, Ray  
DuMont, Allen  
Edison, Thomas  
Eilers, Carl  
Farnsworth, Philo T.  
Fessenden, Reginald Aubrey  
Fisher, Avery  
Freimann, Frank  
Galvin, Paul  
Ginsberg, Charles  
Goldmark, Peter

Harman, Dr. Sidney  
Hertz, Heinrich  
Ibuka, Masaru  
Johnson, Eldridge  
Kilby, Jack  
Kloss, Henry  
Koss Sr., John  
Lachenbruch, David  
Lansing, James B.  
Marantz, Saul  
Marconi, Guglielmo  
Matsushita, Konosuke  
McDonald Jr., Cmdr. Eugene  
Morita, Akio  
Noyce, Robert  
Poniatoff, Alexander M.  
Roberts, Ed  
Sarnoff, David  
Scott, Hermon Hosmer  
Shiraishi, Yuma  
Shockley, William  
Siragusa Sr., Ross  
Takano, Shizuo  
Tesla, Nikola  
Wayman, Jack  
Zworykin, Vladimir



## Alan Dower Blumlein



(1903-1942)

- Invented stereo
- Led development of BBC TV standard
- Registered 128 patents

Without Alan Dower Blumlein, there would be no audio business, as we know it. During a prolific period from 1925 to 1942, Blumlein, working primarily for EMI in London, registered 128 patents, mostly in audio engineering, television and radar. But his most influential patent was one for "binaural audio output," better known as stereo.

Blumlein began his career at Standard Telephones & Cables, during which he applied for the first of his 128 patents. In early 1929, he joined The Columbia Graphophone Company, where he developed a system for audio recording and reproduction that broke a Bell Labs monopoly and provided large earnings for Columbia.

At the movies in early 1931 with his fiancé,

Blumlein realized that the sound from the screen only came from one place. He remarked to his future wife, "I have a way of making the voice follow the person." Back at Columbia, now EMI thanks to a merger with HMV, Blumlein began work on his binaural sound system. His idea was to create a system that used multiple microphones and multiple speakers that would allow sound to follow an actor as he or she moved across the screen. Blumlein's patent for Binaural Sound was awarded on June 14, 1933. Between 1931 and 1935, Blumlein made the first stereo recordings and the first stereo films.

But Blumlein's bosses at EMI couldn't see stereo's potential, and Blumlein was forced to shelve his research. Blumlein instead led an EMI team developing an all-electronic TV system. More than half of Blumlein's 128 patents were critical to the 405-line system adopted by the BBC in 1937 over a mechanical system proposed by John Logie Baird. It wouldn't be until "Ben-Hur" in 1959 that stereo would be used in a commercial film.

A brilliant mathematician and engineer, Blumlein did not learn to read or write until the age of 13. He published few articles in technical journals, pri-

marily because the process was difficult for him. One reason for Blumlein's anonymity could be his premature and tragic death. Blumlein was the leader of a top-secret British army team developing a radar-guided bomb targeting technology called H2S that incorporated concepts used in his binaural sound system. H2S allowed British bomber navigators to target and bomb intended targets with a never-before achievable accuracy. In June 1942, Blumlein, along with 10 others, were killed when the plane carrying the first prototype of the H2S system crashed during a test flight.

Because the wartime project was shrouded in secrecy, there was no obituary or tributes to the brilliant engineer. Although his work on the radar guidance system helped shorten the war, Blumlein's role faded. As a result of this secrecy, his dearth of published material, and the 25 years it took stereo to become commercialized, Blumlein's name was known only to a few electronics enthusiasts, mostly in Britain. But his electronic circuits are fundamental to the functioning of modern consumer electronics.

## Henry Brief



(1925-1998)

- Spent 15 years at the International Recording Media Association
- Served as executive director of the Recording Industry Association of America

Known throughout the recording industry as a man of wit and charisma, Henry Brief played a key role in providing a forum for the discussion of new technologies and marketing strategies over a 40-plus-year career as leader of the two largest trade associations in the recording and blank media industries. Brief served nearly 20 years from 1960 to 1979 as executive director of the Recording Industry of America (RIAA), and the next 15 years as executive vice president of the International Tape Association (ITA), now known as the International Recording Media Association (IRMA).

After spending two years as a feature writer for *Overseas News* and another two years as a radio news announcer at WEOK in Poughkeepsie, N.Y., Brief began his career in the consumer electronics

business in 1952 as the TV/radio/hi-fi editor at *Home Furnishings Daily*. After eight years as a journalist at *HFD*, Brief switched to the other side of the interview when he joined the RIAA. According to *TWICE* magazine, under his later leadership of ITA, the association's spring conferences "became key news-making events. The conferences became venues for leading executives to share views on today's technology and to be prepared for the future."

Colleagues cited Brief's charm and his ability to reach consensus on sensitive and controversial issues. Thanks to his booming voice, he also was an entertaining public speaker. As one industry veteran noted, "Henry was a mensch. He knew everyone in the business and knew how to get things done."

Following his retirement from ITA at the end of 1994, Brief received the first Lifetime Achievement Award from the Vision Fund of America, honoring a career that left an important impact on many professionals in the recording media industry. In 1995, after retiring as executive vice president of ITA, Brief spent three years as general counsel to the industry association and as consulting editor

for the trade magazine *Replication News*. In 1996, *TWICE* awarded him its distinguished achievement award.





## Dr. Joel S. Engel



(1936 -)

Engel earned his Bachelor's degree in Electrical Engineering from the City College of New York in 1957. He received his master's degree from the Massachusetts Institute of Technology (MIT) in 1959, and then joined Bell Labs while working toward his PhD from the Polytechnic Institute of Brooklyn. Frenkiel earned a bachelor's degree in engineering from Tufts University and joined Bell Labs while completing his master's degree at Rutgers University. In 1962, both engineers were working together at Bell Labs in New Jersey.

earlier work done at Bell Labs over the previous 40 years, divided cities up into small coverage areas called cells, each with its own land-based antenna array. Their system, could seamlessly handoff calls as a vehicle moved from one cell to the next, and most uniquely, reuse the limited number of frequencies.

AT&T proposed this new system dubbed AMPS (Advanced Mobile Phone Service) to the FCC in December 1971. The proposal instigated a furious debate and product development, largely at Motorola, that resulted in the first handheld cellular phone in April 1973. The first commercial cell phone service using AMPS was initiated in Chicago in October 1983.

No one envisioned that the cellular system would attract consumers. But AMPS, combined with Motorola's handheld phones could accommodate millions of simultaneous users. AMPS continues to be the cornerstone of today's digital cellular system. In 1987, Engel, Frenkiel and their colleague William C. Jakes, Jr., were co-recipients of the IEEE's Alexander Graham Bell Medal and in 1994, President Clinton jointly awarded the National Medal of Technology to Engel and Frenkiel.

## Richard H. Frenkiel



(1943 -)

At the time, wireless "car" phones used IMTS (Improved Mobile Telephone Service), which allowed for only 44 voice channels. With service limited to less than 1,000 customers, only a handful of calls could be made at once. FCC frequency allocations to the land mobile frequencies expanded frequency and channels, but did not address channel capacity or such issues as call-handoffs.

In 1968, the FCC opened up new frequencies for land-mobile communication, setting off technical and legal efforts to take advantage of the new spectrum. Engel and Frenkiel, and nearly 200 engineers, began research to increase the capacity of each channel a thousand-fold. Their system, based on

- Co-developed the cellular phone system architecture
- Jointly received the National Medal of Technology

More than 150 million cell phone users in the U.S. need to place a call to Joel Engel and Richard Frenkiel, two New York City native Bell Labs engineers who, in the mid-1960s, led the development of the cellular phone network.

## Robert E. Gerson



(1933- )

- Respected consumer electronics journalist and editor
- Founding editor of *TWICE* magazine
- Writer and editor at *TV Digest*

Bob Gerson has been a respected consumer electronics trade journalist for more than 25 years. As founding editor, he helped established *This Week In Consumer Electronics (TWICE)* making it a leading trade publication in the industry. Gerson, a former newspaper editor and Congressional aide, entered the consumer electronics industry in 1961 as the marketing coordinator for the New York office of the Electronics Industry Association of Japan.

Gerson worked on increasing U.S. consumer acceptance of Japanese electronics and helped Japanese manufacturers establish themselves and their brands in the U.S. In 1964-65, he actively cooperated with the EIA Consumer Electronics Division (the forerunner of the Consumer

Electronics Association) to encourage Japanese manufacturers and U.S. importers to participate in the first Consumer Electronics Show.

In 1967, Gerson went back to being a journalist, joining David Lachenbruch at *TV Digest*. As managing editor at the influential industry newsletter, Gerson developed a reputation for accurate and responsible journalism, and became an influential voice in the industry. Gerson also was a frequent contributor to other publications such as *Consumer Electronics Monthly*, *Autosound & Communications*, *Video Review* and *Economic Salon*. He also authored two supplements on consumer electronics for *Time* magazine and made a number of network and local TV and radio presentations on the industry.

Gerson's reputation and influence grew when he joined publisher Richard Ekstract to launch *TWICE* in 1985. Because his training was as a reporter, *TWICE*'s emphasis was heavy on news, industry statistics, financials and brevity. Gerson also made sure that *TWICE*'s reporters were not desk-bound, but active in the field. His insightful and unflinching viewpoint editorials became must reading throughout the industry and contributed

to *TWICE*'s authority and growth. Around the *TWICE* offices, he was known as a tinkerer, always attempting fax and copy machine repairs, or lending a hand at scanning pictures or doing layouts according to one co-worker. He remained *TWICE*'s editor-in-chief until he retired on March 31, 2000.

"I think with a degree of justification that I can be proud of the position of editorial leadership and industry-wide respect *TWICE* has earned since its launch," Gerson wrote in December 1999. "But I think what makes me proudest of all are the successful careers in and out of journalism achieved by many of the former editors who occupied desks here over those years."

Gerson received CEA's first Lifetime Achievement Award and the same award from *TWICE*, both in 2000, the S. David Feir Humanitarian Award from the Anti-Defamation League, the RCA Color TV Pioneer Award, a Trade Publication Impact Award from GERS Retail Systems and is an original member of the Academy of Digital Television Pioneers.

## Ken Kai



(1939–)

- Founded U.S. Pioneer America and Pioneer Video
- Spearheaded development of the laserdisc

It is not an exaggeration to say that Ken Kai built Pioneer in America from almost nothing into one of the leading and most respected audio and video manufacturers in the world. In so doing, he built the U.S. market for Japanese consumer electronics companies with high-fidelity products along with the introduction of optical disc technology with the laserdisc.

Kai joined Pioneer on April 1, 1963 fresh out of Kyoto University of foreign studies. At the time, Pioneer sold less than \$10 million worldwide, but was the largest speaker manufacturer in Japan. Kai was placed in charge of all Pioneer sales in Africa, Asia, Australia, the Middle East, New Zealand and the U.S. – a department that consisted of just 15 people.

Pioneer had no branded products in the U.S. when Kai arrived in New York in early 1964, his first overseas trip. His job was to represent Pioneer in an OEM deal with ITT. At the time, Pioneer was making speakers for GE, RCA and Zenith. After facing a product return debacle from a local distributor, Kai rented an office in the Empire State Building in New York and proceeded to sell the returned gear to salesmen who inevitably came to call on him.

In 1966, Japanese companies were just beginning to make an impact in the U.S. electronics market. Kai convinced Pioneer leadership in Japan to make a \$50,000 investment in U.S. Pioneer. Kai started out selling to 15 retailers in Manhattan, handling almost all the paperwork himself and often driving the delivery truck. He expanded Pioneer's line beyond speakers to a mid-fi line including stereo receivers, tuners, amplifiers, turntables, headphones and cassette decks. By 1968, U.S. Pioneer was generating \$34 million in sales.

Kai then turned his attention to the counter-culture. Kai started college-based hi-fi shows and an advertising blitz in mainstream magazines such as *Newsweek* and *Playboy*, utilizing celebrities like Blood, Sweat and Tears; Andy Warhol; Sonny

Rollins; Walt Frager; and Elton John aimed at bringing mid- to low-cost audio gear to the college market. By 1977, Pioneer was generating a quarter-million dollars in sales and had become the number one hi-fi company in America. In many ways, Kai was responsible for bringing hi-fi to the masses.

But Kai wasn't satisfied with just audio products. In 1978, Kai again convinced Pioneer Japan to make an investment, this time \$20 million to establish Pioneer Video to help develop, promote and sell the new laserdisc format. In the face of the VCR revolution, Kai began signing up Hollywood studios and other video music content suppliers, and in addition to bringing the first laserdisc players to market in June 1980, brought projection TVs, component TVs and home theater systems to market as well.

In 1984, Kai was inducted into the Video Hall of Fame under the aptly named "Pioneer in Home Video" category.

## Jerry Kalov



(1936- )

- President and CEO of Cobra Electronics
- President and COO of Harman International Industries and President and CEO of JBL
- Chairman of CEA /Chairman of EIA

For more than 46 years, Jerry Kalov has been an influential and respected figure in the consumer electronics business as an executive with several major product and distribution companies, as a retail entrepreneur, as a management consultant, and as a leader and advisor to numerous electronics industry associations.

Originally from Chicago, Kalov received an education in electronics while serving in the Air Force. After returning to Chicago in 1958, he worked as a manufacturers representative for a number of hi-fi parts and test equipment manufacturers. By 1960, with the hi-fi revolution in full steam, Kalov joined the Akron, Ohio-based Olson Electronics, one of the era's leading retailers. Kalov started out behind

the counter, but within six months was promoted and asked to expand the number of stores in the Chicago area.

The entrepreneurial bug bit Kalov in 1964, creating one of, if not the, first mall-based hi-fi and TV stores, United Audio Center, which grew to five stores. In 1969, after developing a computer-based inventory control system, Kalov sold his interest in United Audio and launched Business Solutions Inc., which provided retailers with computer-based inventory and accounts receivable management services.

In 1970, Kalov sold Business Solutions and joined Jensen, initially as the vice president of marketing but quickly became president and finally CEO. While at Jensen, he led the creation of a state-of-the-art "tri-axial" car speaker, which helped to create the modern car stereo business. He would spend the next 28 years running some of the largest companies in the CE business.

After 10 years at Jensen, Kalov joined Harman International, first as president and CEO of its JBL subsidiary, then as president and COO of the parent company. In 1983, he left Harman and founded

Kalov Associates, a management-consulting firm focused on the venture capital community. But in 1985, he returned to active management when he took the job of president and CEO of Cobra Electronics. For the next 13 years, Kalov championed a number of communications business initiatives, including family radio service (FRS).

Kalov also served as president of the Institute of High Fidelity Manufacturers, chairman of the Audio Components Division of the Electronics Industries Association, chairman of CEA in 1992 and 1993 and chairman of the Electronic Industries Alliance (EIA) in 1996 and 1997, and currently serves on EIA's Board of Governors and executive committee. Since 1998, he has served as CEA's industry executive advisor. He also has served as president of the Northridge California Hospital Development Association and has participated in numerous charitable and industry involvements.

Kalov is currently a director of Wells-Gardner Electronics Corp., a member of the board of directors of the Infant Welfare Society of Chicago, a trustee of EIA's NSTEP, a frequent industry speaker and is president of Kay Associates, a Chicago-based consulting firm.

## Paul W. Klipsch



(1904-2002)

- Developed the Klipschorn loudspeaker, the longest continuously manufactured speaker
- “A Legend in Sound”
- Founder of Klipsch & Associates

Paul Wilbur Klipsch born March 9, 1904 was so fascinated with acoustics he built a radio receiver a year before the first radio broadcast. In 1926 he graduated from New Mexico A&M, now New Mexico State University, with a bachelor’s degree in Electrical Engineering. Klipsch was an accomplished coronet player, a member of the championship ROTC rifle team and a charter member of the Mu Phi Pi honorary engineering fraternity.

Following school, he was employed by General Electric in the field of radio and then went to work for General Electric in Chile supervising the maintenance of electric locomotives from 1928-1931. From 1931 through 1941 Klipsch was employed in Houston, Tex. in oil exploration. His first patent application for a new horn design was rejected but he continued his quest for the ideal speaker. In

1941 Klipsch was drafted into the Army and stationed in Hope, Arkansas. He was discharged with a rank of major and later promoted to Lt. Colonel in the reserves in 1953. Klipsch remained in Hope to build his speakers. He started his factory in a “tin” shed behind a cleaning shop for \$10 a month. Klipsch and Associates was registered in 1946 although his first employee was not hired until 1948. In 1950 Klipsch also became a licensed pilot.

Klipsch held three patents in ballistics, eight in geophysics and 12 in acoustics. His insight led to the design and production of the Heritage line of loudspeakers including the Klipschorn, Cornwall, Belle, LaScala and the Heresy. Klipsch refined his horn design that acoustically couples the air vibrating within a speaker’s enclosure with the air on the outside. This results in an enormous speaker but he discovered that a horn folded into segments would work and thus his design shrunk the size to make them suitable for home use. His speakers provided premium sound with no compromise on quality sound reproduction. In 1998 Klipsch completed the Jubilee series of loudspeakers to celebrate the 50-year anniversary of Klipsch & Associates.

Numerous honors awarded to Klipsch include: he was a fellow of the Institute of Electrical and Electronics Engineers Inc. (IEEE), the Audio

Engineering Society (AES), the Acoustical Society of America (ACA) and is listed in *Who’s Who in Engineering* and *Who’s Who in Electronics*. In 1993, 1994 and 1995, he saw the dedication of the Paul W. Klipsch Lecture Hall, the dedication of the Paul W. Klipsch Department of Electrical and Computer Engineering and the Klipsch School of Electrical Engineering all at New Mexico State University. In 1997, Klipsch was inducted into the Engineering and Science Hall of Fame. In 2004, the Paul W. Klipsch Museum opened in Hope.

Klipsch was a 33rd Degree Mason, a member of the Rotary Club and a benefactor of the Klipsch School of Electrical and Computer Engineering. Klipsch and his wife gave scholarship funds to engineering students at New Mexico State University and were honored with the Circle of Excellence Gold award.

Many have described Klipsch as raw, straightforward, controversial and extraordinary. His eccentricities included wearing four watches, “little black/brown books” with secret codes and a button bearing an Olde English Script with the word “Bulls\*\*\*.” Klipsch also was a deeply religious man and lived according to the highest moral and ethical standards. He is survived by his wife, Valerie.

# Norio Ohga



(1930- )

- Served as president, chairman and CEO of Sony Corp.
- Shepherded adoption of the compact cassette, CD, MiniDisc and PlayStation
- Facilitated Sony's purchase of CBS Records (now Sony Music) and Columbia Pictures (now Sony Pictures)

During his 44 years at Sony, including stints as the company's President, Chairman and CEO, Norio Ohga played key roles in most of the company's major technological and business achievements.

Ohga's love of music led him to technology. At five, he began to teach himself the piano. When he was 13, he became the protégé of a neighbor who taught him math, science and how to read electrical diagrams and music scores. After WWII, Ohga studied singing and, in March 1949, entered the new Tokyo National University of Fine Arts and Music, where he studied music. It was during this time that Ohga met Masaru Ibuka, who had just

founded Tokyo Tsushin Kogyo (Tokyo Telecommunications Engineering Corporation), shortened to Totsuko, with Akio Morita. Ohga suggested improvements to the company's first tape recorder, and after graduation, joined the company as a consultant. In 1954, Ohga trained as a singer at the Hochschule fuer Musik in Munich. He graduated from The Berlin University of the Arts in 1957, returned to Japan and gave a number of opera performances. Morita convinced Ohga to wear two hats of singing and working but, soon after, the situation forced him to become a full-time executive with the company that was renamed Sony in 1959.

Ohga was charged with the broadcast equipment division and was later named general manager of Sony's tape recorder division. He simultaneously headed the company's product planning division, its industrial design effort and its advertising efforts. The jobs were coordinated to make Sony a modern company and bring well-designed products to the masses. In 1966, Ohga chose the Philips compact cassette format and convinced both Philips and Sony to make the technology available free to manufacturers worldwide to make the compact cassette a global standard. This resulted in the introduction of the Walkman in 1979 while Ohga was in charge of Sony audio.

In 1968, Ohga was appointed senior managing director and representative director of the joint venture between CBS Records and Sony, which became Japan's largest record company. Ohga became president of Sony in 1982. Ohga facilitated the company's acquisition of CBS Records in 1988 and Columbia Pictures Entertainment the following year, to create a total entertainment company.

Ohga also played a key role in the development of the CD, in partnership with Philips, in 1982, and MiniDisc in 1992. In 1993, Ohga established Sony Computer Entertainment Inc. (SCE), which developed the PlayStation and PlayStation 2. He was made chairman and CEO of Sony Corp. in 1995. Ohga has served as a guest conductor of orchestras worldwide, including, the Tokyo Symphony, the Tokyo Philharmonic, the Boston Symphony in performances at Tanglewood, the Pittsburgh Symphony, the Israeli Philharmonic and the Metropolitan Opera Orchestra. In 1999, the Audio Engineering Society (AES) awarded Ohga an honorary membership to recognize his lifetime contributions to the audio industry. In 2000, Ohga received an honorary membership from the IEEE. Ohga retired from the Board of Sony in January 2003, when he was named honorary chairman.

## Dr. Woo Paik



(1948- )

- Invented the digital video compression technology adopted by The HDTV Grand Alliance
- Led development of DigiCipher, the digital compression technology that is the basis for DTV broadcasting
- Led development of VideoCipher, the defacto standard for distribution of scrambled cable channels over satellite

Without Woo Paik, there would be no digital HDTV. While developing methods for scrambling digital cable signals for transmission over satellite TV systems, Dr. Paik developed a way to compress a high-resolution digital television signal so that it could be transmitted over thin television broadcast channels.

Currently President and Chief Technology Officer (CTO) of LG Electronics Inc., Dr. Paik was born in

Seoul, South Korea, and earned his bachelor's and master's degrees in electrical engineering at Seoul National University. On a student visa, he enrolled at MIT in 1974. Dr. Paik was on his way to a Ph.D in electrical engineering and computer science in 1978 when he wrangled a job with a San Diego-based company called Linkabit. As director of engineering, Dr. Paik worked on a military communications modem.

In December 1982, Dr. Paik began working on a satellite scrambling system for HBO in response to the cable channel's call for proposals. Working toward a deadline only three weeks away, Dr. Paik designed an innovative coded digital system. It took three years for Dr. Paik to create the hardware, and HBO began scrambling their signal using Dr. Paik's system in January 1986. Set-top boxes called VideoCipher I and VideoCipher II were introduced in April 1986. In the fall, Paik's work resulted in a technical Emmy, and by year end, General Instrument (GI) purchased the small company.

In 1987, now director of advanced development, Paik began to research digital HDTV, specifically, in a 35mm film to fit into the small 6 MHz bandwidth of broadcast television. Working with Ed

Krauss, Paik worked by trial and error to gradually compress the digital signal without creating artifacts and distortion. By 1990, Dr. Paik began public demonstrations of the GI all-digital HDTV system. While developing digital HDTV, Dr. Paik also had managed the easier task of digitally compressing scrambled cable channels. This resulted in the DigiCipher set-top box for satellite systems in 1990. Paik returned to the development of digital HDTV in early 1991, finishing the prototype by November.

Dr. Paik's compression system was adopted as a cornerstone of the new digital HDTV format when the Digital HDTV Grand Alliance was organized in May 1993. The FCC adopted the ATSC DTV standard, based on the Grand Alliance system, in December 1996. Two months earlier, Dr. Paik had joined LG Electronics as executive vice president and CTO, advancing to his current position of LGE president and CTO in 1998.

A member of the Academy of Digital Television Pioneers, Dr. Paik's numerous honors include the Matti S. Siukola Memorial Award from the IEEE Broadcast Technology Society in 1991 a Primetime Emmy Award for development of the DigiCipher Digital Television System in 1996 and in 1999, an Arthur C. Clark Award from the U.S. SBCA.

# Steve Wozniak



(1950- )

- Designed and built the first commercially successful consumer PCs, the Apple I, Apple II and Apple IIe
- Co-founded the Electronic Frontier Foundation

Together with buddy Steve Jobs, Steve Wozniak invented the personal computer business. Literally working in a garage, Wozniak was the engineering genius that developed the first recognizable PC, the Apple I, followed by the first mass market PC, the Apple II, that started the PC revolution.

Wozniak was an electronics wiz at an early age. He got his ham radio license when he was in the sixth grade. In the early 1970s, he attended the University of Colorado and U.C. Berkeley, but dropped out. He continued to teach himself electronics and computer design when he managed to talk himself into a job at Hewlett-Packard as a calculator designer. Wozniak was a member of the legendary Stanford Homebrew Computer Club in what became known as Silicon Valley. While work-

ing at HP, he independently developed a computer motherboard over a four-month period. HP declined to buy the design, but gave Wozniak a legal release, giving him ownership. Wozniak showed off the motherboard to fellow Homebrew member Jobs and they set up shop in Jobs' parents garage in Los Altos.

The pair found a customer for 50 of the motherboards. Jobs sold his VW minibus and Wozniak his desktop scientific calculator to buy parts. They manufactured 50 motherboards in a month, which they sold for \$500 each. In April 1976, Beatles fan Jobs decided to name their company Apple and their first motherboard the Apple I. Apple Computers was incorporated in January 1977.

Over the next year, Wozniak worked on creating a full-blown computer with a keyboard, a power supply and graphics capabilities becoming the first PC encased in a single, attractive box. The Apple II was unveiled at the West Coast Computer Faire in April 1978. Sales of the popular device propelled Apple into the Fortune 500 faster than any company in history. Apple's IPO in 1980 made Jobs and Wozniak multi-millionaires. The Apple II generated \$300 million in sales over five years, and inspired dozens of competitors, including the IBM PC in 1981.

After adding graphics, sound, and a low-cost disk drive, Wozniak helped design the Apple IIe, followed by the Lisa, the first PC with a graphic user interface (GUI), which led to the development of the Macintosh. In 1985, Wozniak was awarded the National Medal of Technology from President Reagan, then left Apple. He received his bachelor's degree in electrical engineering and computer science from U.C. Berkeley in 1987. He then began to pursue philanthropic projects combining his two passions, computers and education.

In 1990, Wozniak sponsored a program to put computers in schools in the Soviet Union. In 1996, he began his computer support for the Los Gatos school district, designing, installing, training and teaching. He has provided hundreds of laptops and AOL accounts for students and teachers. Wozniak also co-founded the Electronic Frontier Foundation in 1990, and was the founding sponsor of the Tech Museum, the Silicon Valley Ballet and the Children's Discovery Museum of San Jose. Wozniak was inducted into the Inventors Hall of Fame and was awarded the prestigious Heinz Award for Technology, the Economy and Employment.





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