

PIONEERS IN VIRTUAL REALITY

From Ancient Pompeii to Modern Baseball

By **DR. JAYME A.
SOKOLOW**

Virtual reality is a cutting-edge technology that gives participants the feeling they are immersed in a seemingly real world that is actually synthetic and artificial.

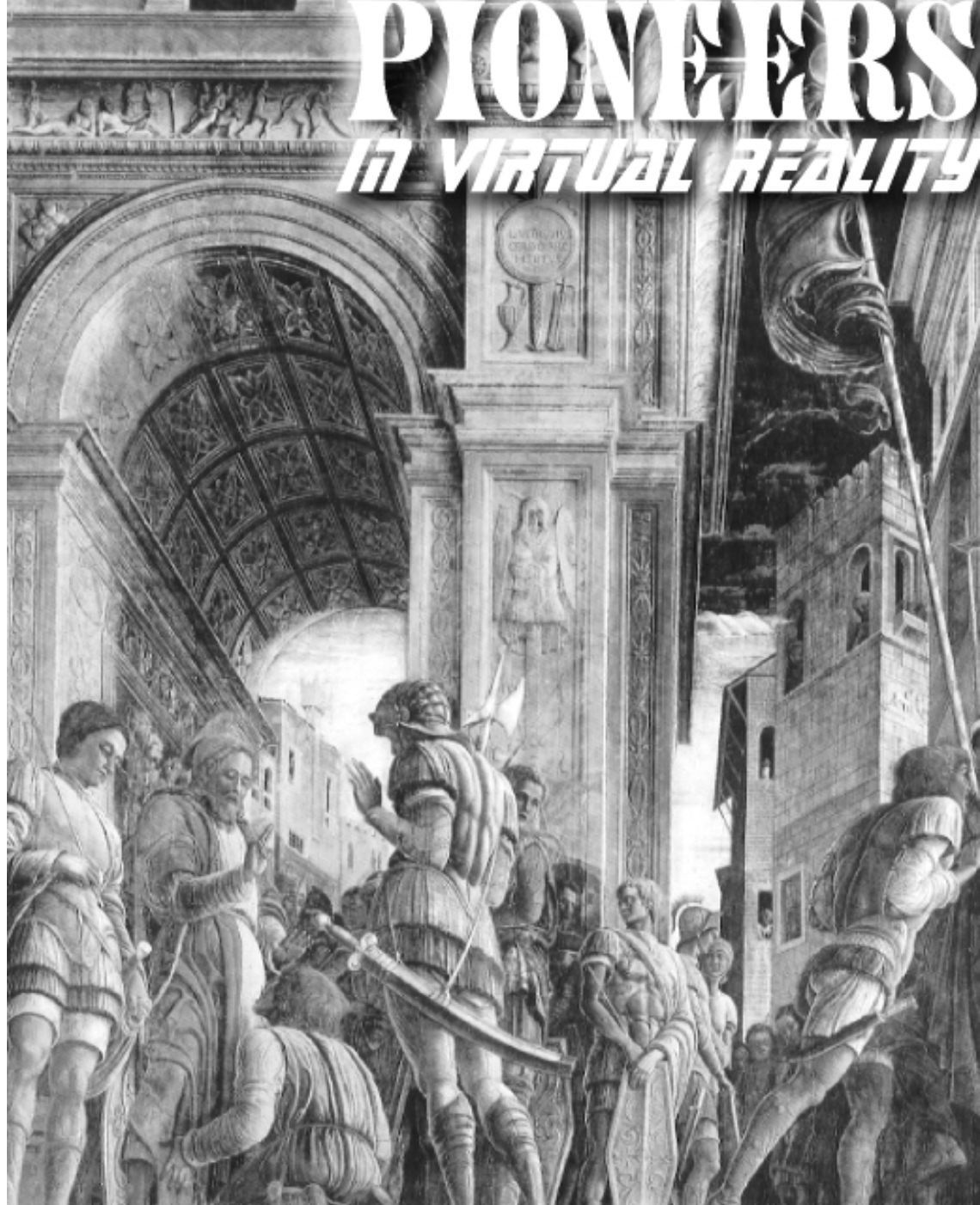
Virtual reality concepts and techniques, however, have been around a long time, and have appeared in many unusual guises, from the frescos of ancient Pompeii to signs used in modern baseball.

Virtual reality is a computer-generated interactive environment that ranges from text-oriented online chat rooms to complex simulations with audio, video, animation, and three-dimensional graphics. Virtual reality systems include video arcade games, flight simulators for training airplane pilots and astronauts, and modeling programs for architecture, industrial design, medicine, and art. The goal is to give participants the

feeling of being immersed in a real environment without the associated logistical problems, expense, or danger.

Today, the word “virtual” has become so fashionable that it often used as a prefix to mean “without boundaries or constraints.” We now have virtual communities, virtual compa-

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A fifteenth-century Italian artist, Andrea Mantegna, used a realistic urban landscape to create the illusion of three-dimensional people and buildings in this vivid example of trompe l'oeil painting.

nies, virtual circuits, virtual libraries, and virtual desktops. A recent anthropological study of the Everest region in Nepal even refers to virtual Sherpas! Virtual reality, however, is not a 20th century phenomenon. Both fictional and real virtual reality systems have been widely used from time immemorial. With a large dose of levity and an even bigger suspension of disbelief, the following examples could qualify as some of the many precursors to today's virtual reality.

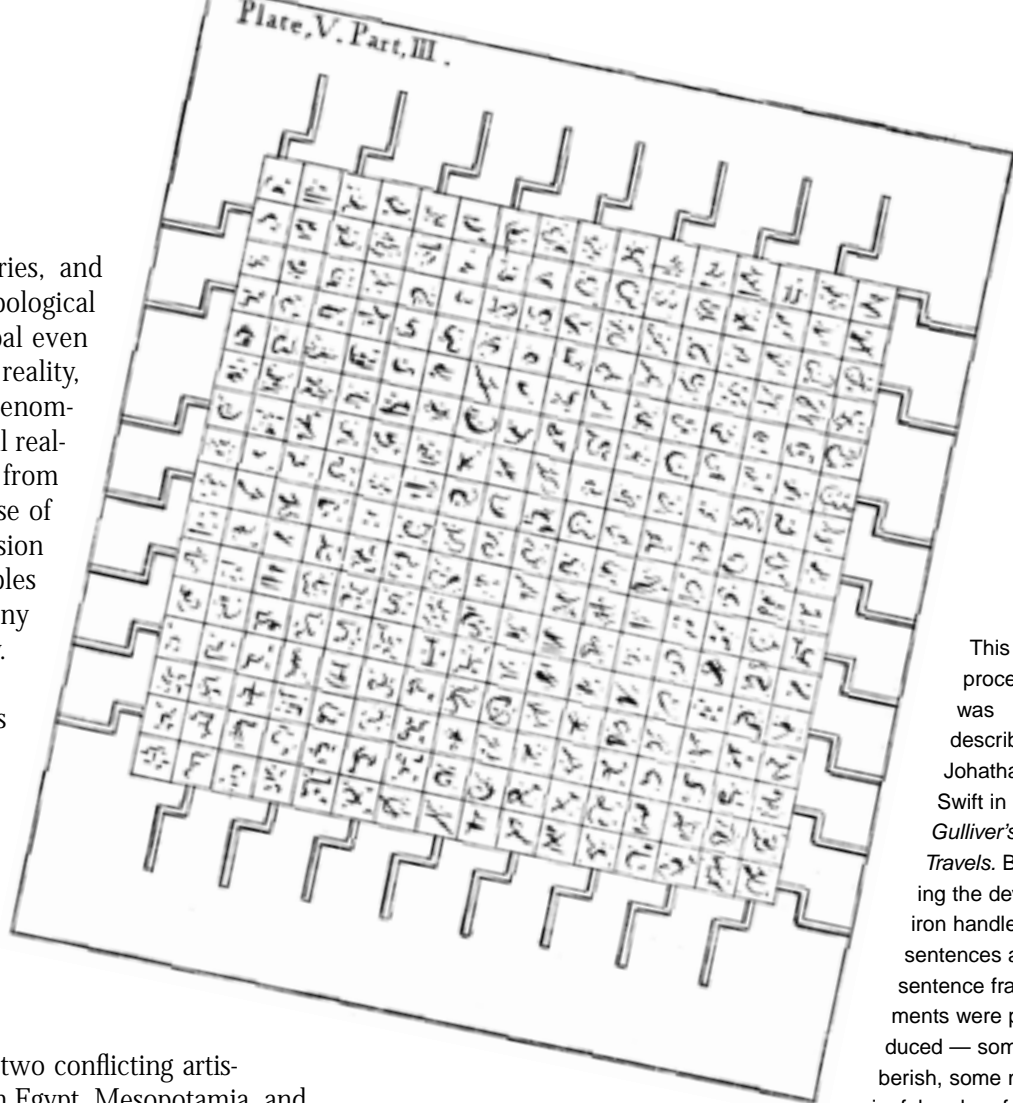
The First 3-D. *Trompe l'oeil* is a French term meaning "deception of the eye" and is used to describe paintings that are so lifelike as to appear real. More than 2,000 years before the development of three-dimensional computer graphics, *trompe l'oeil* produced the illusion that flat surfaces actually had depth.

Trompe l'oeil developed out of two conflicting artistic impulses in the ancient world. In Egypt, Mesopotamia, and Crete, artists cultivated flat surfaces and linear design, using shading and modeling to create a sense of relief and depth. In ancient Greece and Rome, on the other hand, artists tried to represent volume and the three dimensions by using *trompe l'oeil* effects. Frescos preserved in the volcanic debris of Pompeii are the first evidence of attempts to overcome the limitations of two-dimensional wall space by painting illusory landscapes and buildings.

In 14th century Italy and Flanders, *trompe l'oeil* appeared again as artists such as Giotto and Klaus Sluter tried to represent solidity and contours by imitating statuary in their paintings. In the next century, artists painted picture frames with hands, feet, or heads protruding, or put convex mirrors into their interiors that reflected objects in the foreground of their paintings.

Trompe l'oeil flourished in Renaissance and Baroque art because of a growing interest in perspective and the artistry of ancient Greece. Artists used this technique in villas, palaces, and grand theaters, especially in northern Italy, to create the illusion of outdoor scenery on interior walls. Although *trompe l'oeil* declined as an artistic technique by the end of the 18th century, there are still some American and European artists who paint in this style.

In 1700, Andrea Pozzo, who had decorated the interior of a Venetian church with numerous illusory effects, summed up the



This word processor was described by Johathan Swift in *Gulliver's Travels*. By turning the device's iron handles, sentences and sentence fragments were produced — some gibberish, some meaningful and profound.

enduring appeal of *trompe l'oeil* when he wrote that people enjoyed this technique because it was intended to "deceive the eye. . . I even remember having seen people who set out to climb a staircase, and only realized their mistake when they laid a hand upon it." This was nearly 300 years before the invention of computer-generated 3-D data gloves and stereoscopic goggles!

The Quest for Artificial Intelligence. According to Jonathan Swift, in 1707 Lemuel Gulliver was attacked by pirates on his way to the East Indies and set adrift in a small canoe with paddles, a sail, and meager provisions. Five days later, he came ashore on the small flying island of Laputa and later visited the Grand Academy of Lagado on the nearby island of Balnibarbi.

Here he observed diligent scholars extracting sunbeams from cucumbers, turning human excrement back into its original food, building houses "by beginning at the roof and working downwards to the foundation," and curing flatulence with a large ivory-tipped bellows. Gulliver was most impressed, however, by a remarkable device invented to improve "speculative knowledge by practical and mechanical operations."

It operated in a very simple manner. The professor's pupils stood around the device—a 20 square foot wooden frame

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with 31 iron handles. Inside the frame were 256 small pieces of wood (16 on each side) linked by wires with paper pasted on all sides of the wooden squares. Each piece of paper had “all the words of their language in their several moods, tenses, and declensions, but without any order.” At the professor’s command, his pupils quickly turned the iron handles and then quietly read the sentences produced by the device. Not surprisingly, almost all of them were complete gibberish.

But when the pupils found three or four words that made sense together, they recorded them. By operating his machine six hours a day, the professor had already been able to write several volumes of broken sentences, which, when pieced together, would eventually “give the world a complete body of all arts and sciences.”

According to the enthusiastic professor, his invention was designed to solve a very old and pressing problem—gross stupidity. Since it was so difficult

and time-consuming to become learned, his device would enable ignorant people to easily produce profound studies in philosophy, literature, law, politics, theology, and mathematics “without the least assistance from genius or study.”

Gulliver was so impressed by this word processor that he drew a picture of it and assured its creator that he would acknowledge the professor “as the sole inventor of this wonderful machine,” despite the fact that “it was the custom of our learned in Europe to steal inventions from each other.” For all we know, efforts to recreate the machine began after Gulliver’s return to England and may still be underway.

Fox Signals. Do you yearn to communicate with the next world but still prefer to remain among the living? The Fox sisters became infamous for their solution to this conundrum in 19th century America.

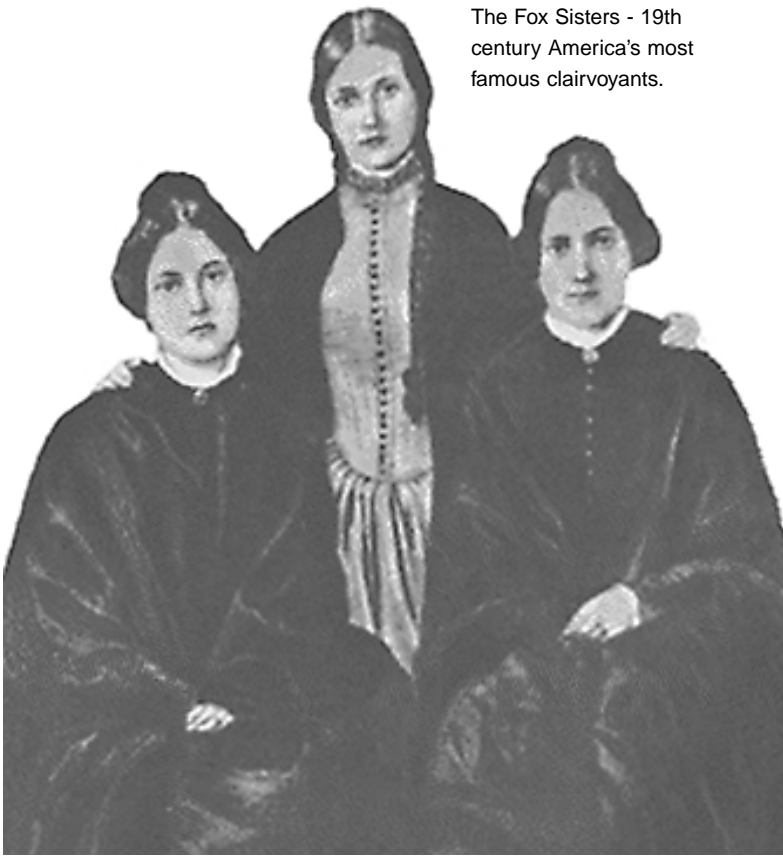
In 1847, the Fox family moved into a wooden cottage in the small town of Hydesville, outside Rochester, New York. The father was a devout farmer. His oldest daughter, Leah, taught music in Rochester while his two younger daughters, Margaretta and Katie, aged 15 and 12, lived at home with their superstitious mother.

In March 1848, the family was frequently awakened by unearthly noises. Margaretta and Katie discovered that they could communicate with the restless spirit, who claimed to be a murdered peddler buried in the cellar of their home. By mysteriously creating rapping sounds for the words “yes” and “no,” the two sisters were able to coax him into identifying the location of his pitiful remains.

After hundreds of people were attracted to the Fox house, Margaretta and Katie began producing rapping sounds wherever they went. With Leah as director, her sisters’ public seances became a sensation in Rochester and Albany. Some of their supporters also communicated with the dead, spoke in strange tongues, levitated tables, and played musical instruments without ever touching them. After the Fox sisters gave a public demonstration of their powers in New York City, Horace Greeley’s *New York*

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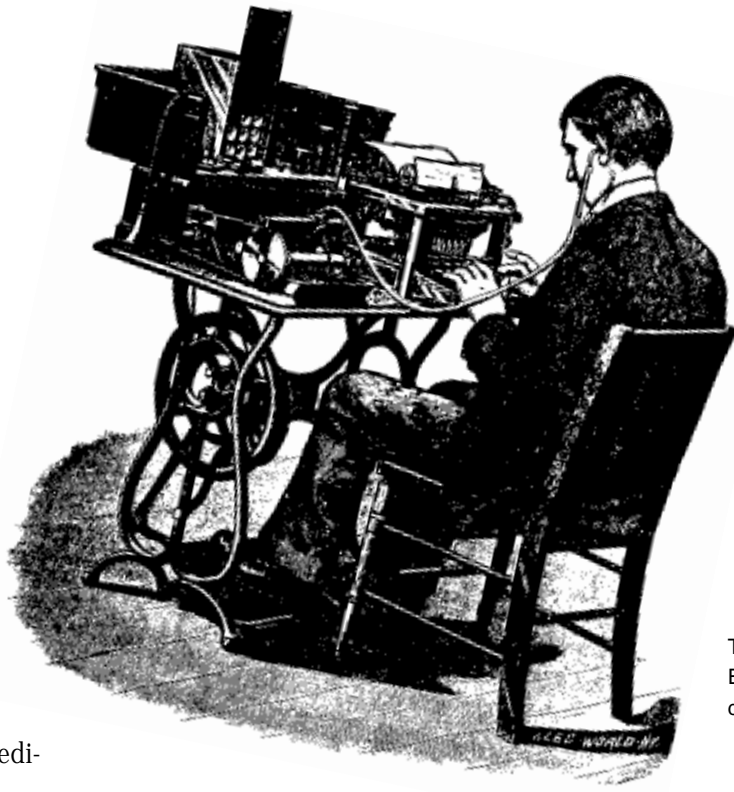
The Fox Sisters - 19th century America's most famous clairvoyants.



Tribune gave them favorable publicity and they toured the Northeast to demonstrate their remarkable abilities.

Opinion differed as to the girls' purported ability to converse with the dead. An investigative committee in Buffalo claimed that the girls produced the strange rapping noises with their toe joints. Margaretta and Katie vehemently denied this. Meanwhile, John Worth Edmonds, a judge of the Supreme Court of New York, investigated the Fox sisters and concluded that they were authentic seers. He felt so strongly about their powers that he resigned from the Supreme Court and became a medium, as did his daughter.

The Fox sisters' spectacular success launched the American spiritualist movement. Many newspapers devoted to occultism appeared, spiritualist camp meetings were held throughout the Northeast and Midwest, and adherents estimated that up to two million Americans supported spiritualist principles. Most of them were well-educated Anglo-Saxon middle- and upper-class



Thomas Edison's dictaphone.

men and women who rejected religious orthodoxy and yearned for "sights and sounds of ultramundane origin."

The stress and strain on the country's most famous mediums eventually took its toll. In 1857, Leah retired from the spiritualist circuit and married a wealthy businessman. Margaretta and Katie became alcoholics and later confessed to being frauds.

Despite their shocking admissions, spiritualism became a respectable alternative to mainstream Protestantism in Victorian America. Today, as occultism grows in popularity in the shadow of the millennium, numerous books and Web sites honor the Fox sisters for their remarkable occult powers.

Thomas Alva Edison's Digital Technology.

Thomas Alva Edison (1847-1931) was the greatest inventor the United States ever produced. He patented more than 1,000 inventions, including the carbon microphone (1877), record player (1878), and kinoscope, or motion picture projector (1891). Edison developed the first useful incandescent electric light bulb in 1879, and the first sound motion pictures in 1913. His workshops in Menlo Park, Newark, and West Orange, New Jersey were pioneering industrial research laboratories that specialized in the rapid invention and commercialization of products.

Edison's many inventions had a profound effect on the development of modern society. Few people realize, however, that Edison's 1871 courtship of Mary Stilwell, his first wife, also made him a pioneer in digital communication.



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In April 1871, Edison returned from his mother's funeral in Michigan. The budding inventor was a shy 25-year-old bachelor still living in a rented room in Newark, New Jersey, where he designed and manufactured products for automatic telegraphy.

Three weeks after the funeral, Edison's widowed father (in his seventies) married his 16-year-old former housekeeper and later sired three children. That fall, Edison began seriously courting a pretty 16-year-old telegraph tape perforator, Mary Stilwell, who worked in one of his Newark factories, the News Reporting Telegraph Company. Edison, who was slightly deaf, enjoyed "standing nearby observing her as she drove down one key after another with her plump fingers" until he summoned the courage to talk to her.

One day he asked her, "what do you think of me, little girl, do you like me?" Ms. Stilwell was frightened and could hardly reply. "Don't be in a hurry about telling me," Edison said reassuringly. "It doesn't matter much, unless you would like to marry me. Oh, I mean it," he continued. "Think it over, talk to your mother about it and let me know as soon as convenient; Tuesday, say. Next week, Tuesday, I mean."

In the courtship that followed, Edison considered his growing deafness an asset rather than a liability. "It excused me for getting quite a little closer to her than I would have dared in order to hear her," he said. "If something had not overcome my natural bashfulness, I might have been too faint of heart to win. And after things were going nicely, I found hearing unnecessary."

How does this awkward love story relate to digital technology? While Thomas and Mary sat together courting in the parlor under the watchful eyes of her parents, they developed a way to communicate privately without talking or writing to each other! Although Edison was mildly interested in spiritualism as a young man, his strongest beliefs involved telegraphy, not telepathy. As a result, he taught his fiancée Morse code and tapped out messages on the palm of her hand with a silver coin.

On December 25, 1871, Mary Stilwell and Thomas Alva Edison were married. Their courtship was the happiest time of their lives together. Edison was a compulsive inventor who spent little time at home, leaving his wife feeling lonely, unloved, and neglected.

Signals and Relays. Long before digital technology, signals used around the world for long-distance communication included smoke signals, drumming, and semaphores. Today, perhaps the most unusual of these signals are baseball signs.

Any Yankee fan will tell you that baseball originated in New York City in the decades before the Civil War when teams developed a new game that they called "base" and later "baseball."

The first professional league was established in 1871. Within two decades, the first salary cap (\$2,500 a year) appeared because owners claimed their teams faced bankruptcy. To help meet the payroll, poorly paid players sold tickets and cleaned the ballpark to earn their keep.

As the game became more professional and sophisticated, players pioneered in the development of signals and relays. Today, baseball signals are an important, if little understood, aspect of the game because they allow players to coordinate their field activities without giving away their intentions to the opposition. There are many different kinds of baseball signaling systems. The best ones are consistent and easy to understand, at least for the teams using them.

Third Base Coach to Batter and Runners. The manager in the dugout relays signals to the third base coach, who then signals the batters and runners to

- Take the pitch
- Hit-and-run
- Steal
- Double steal
- Fake bunt and full swing
- Squeeze bunt
- Sacrifice bunt.

Third base coaches use an indicator sign, saying that the next sign will be the right signal. They usually go through many body gyrations before giving

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the indicator sign so that opposing players cannot decode their instructions. The indicator might involve touching the left elbow with the right hand or touching the chin. Then the coach signals the play. Touching the cap may mean a bunt while touching the right shoe may signify a steal.

Third base coaches also use a wipe-off sign to indicate they have made a mistake or are changing the previous signal. Often it involves literally wiping the hand across the chest or down the arm.

Batter and Runners to Third Base Coach. The batter and runners then use a subtle gesture to show that the sign was understood or that the coach should signal again. Interestingly, there seems to be a universal sign for failure to understand—rubbing your hand across the letters of your shirt. As the great Yankee catcher and philosopher Yogi Berra pointed out, “you can’t hit and think at the same time.”

Pitcher to Catcher in Warm-ups. When pitchers enter a game or start an inning, they get eight warm-up pitches. Pitchers use five signals to tell the catcher what to expect:

- *Fastball:* put palm toward the ground with a take-off motion.
- *Breaking ball:* twist arm or wrist in counterclockwise motion.
- *Change-up:* extend arm with the ball and pull it toward chest.
- *Knuckleball:* extend and wiggle arm with the ball.
- *I’m finishing warming up after this pitch:* put glove hand over shoulder.

Catcher to Pitcher. Catchers tell the pitcher what to throw by signaling with their fingers between their thighs so opposing teams cannot read the signs. With no runners on base, signs are very straightforward. One finger might signify a fastball while two fingers indicate a curve. Catchers may also signal where they want the pitch thrown (low outside or high inside the batter, for example). With runners on base, signaling becomes more complicated.

Pitcher to Catcher. The pitcher can either accept the catcher’s sign or ask for another one. Pitchers may subtly nod or just pitch if they agree with the catcher’s sign. They usually indicate disagreement by slightly shaking their heads or flicking their gloves.

Pitching is a fine art. As Robert Frost once said, “nothing flatters me more than to have it assumed that I could write prose—unless it be to have it assumed that I once pitched baseball with distinction.”

It may be true, in the immortal words of Yogi Berra, that “in baseball, nobody knows nothing.” Nonetheless, baseball’s

unique signals and relays make it possible for everyone to understand and play the game a little better.

Conclusion

From the frescos of ancient Pompeii to the World Series, virtual communication has always been with us. Computer-generated interactive environments may be realistic and exciting to use, but can they provide the joy that comes from seeing a fine *trompe l’oeil* painting, cleverly conducting a romance, or watching a third base coach give a batter the squeeze bunt sign in the bottom of the ninth inning with the score tied? If art, memory, courting, sports, and the pursuit of knowledge can be so richly virtual, then virtual reality is not just digital technology. It is far more.

References

- Adams, Vincanne. *Tigers of the Snow and Other Virtual Sherpas: An Ethnography of Himalayan Encounters*. Princeton, NJ: Princeton University, 1996.
- Baldwin, Neil. *Edison: Inventing the Century*. New York: Hyperion, 1995.
- Bakalar, Nick. *The Baseball Fan’s Companion: How to Watch the Game Like an Expert*. New York: Macmillan, 1996.
- Cross, Whitney R. *The Burned-Over District: The Social and Intellectual History of Enthusiastic Religion in Western New York, 1800-1850*. New York: Harper & Row, 1965.
- Helyar, John. *Lords of the Realm: The Real History of Baseball*. New York: Villard books, 1994.
- Josephson, Matthew. *Edison: A Biography*. New York: John Wiley & Sons, 1959.
- Larousse Encyclopedia of Renaissance & Baroque Art*, trans. Emily Evershed, Hugh Newberry, Ralph de Saram, and Katherine Watson. New York: Excalibur Books, 1981.
- Lopez, Andy. *Coaching Baseball Successfully*. Champaign, IL: Human Kinetics, 1996.
- Moore, R. Laurence. *In Search of White Crows: Spiritualism, Parapsychology, and American Culture*. New York: Oxford University, 1977.
- Swift, Jonathan. *Gulliver’s Travels and Other Writings*, ed. Louis A. Landa. Boston: Houghton Mifflin, 1960.

Jayme A. Sokolow, Ph.D., is founder and president of The Development Source, Inc., a proposal services company located in Silver Spring, Maryland, that works both with businesses and nonprofit organizations. He is also Chair of the Editorial Advisory Board of Proposal Management. He can be reached at JSoko12481@aol.com.