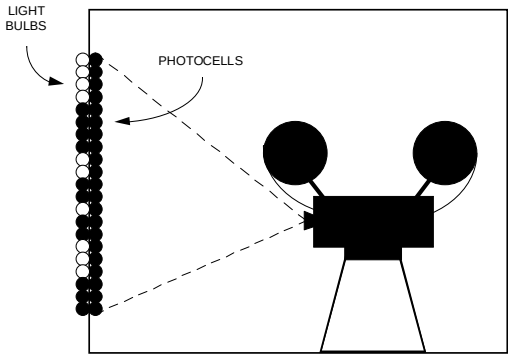
Holophoto™ 3-D Advertising
by Stanley H. Kremen

Accutron Moving Picture Signage on Broadway, New York City (Circa. 1960)

Early in the Twentieth Century, movie theaters used flashing lights on marquees to attract patrons. Eventually, the lighted signs were programmed so that groups of light bulbs flashed on and off in a given sequence. This gave the impression of motion. Soon, moving colored light signs illuminated the busy streets of large cities. The New York Times tower in Times Square flashed the latest news headlines, where the letters appeared to move from left to right across the sign. In time, Times Square was lit at night with spectacular multi-colored signage.

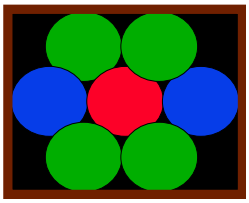
Sometime around 1960, a moving picture sign appeared on a building billboard that advertised Accutron watches. The sign displayed the correct time on the bottom, but the largest section of the sign showed a black-and-white silhouette movie telling a story of a man who had a watch that did not display the correct time. The movie was displayed using a matrix array of incandescent light bulbs that flashed on and off. Photographs of the Accutron sign are shown above.

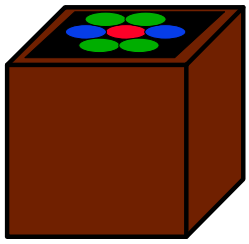


The Accutron sign was an analog display. Each light bulb was a pixel. The viewers were far enough away so that they would see a coherent picture. The back side of every light bulb in the matrix was connected to a photocell. If light would shine on the photocell, the bulb would light up. Otherwise, it would remain dark. The sign was mounted on the wall of the building where the light bulbs faced the street, and the matrix of photocells appeared on the exterior wall of a room. A movie projector in the room ran an endless film strip of the Accutron movie. The projector shone the movie on the photocell matrix. The light bulbs on the other side of the photocells would light up when a white part of the movie frame

would shine on them. The other light bulbs would not be lit. Passers by would often stare at the sign for the entire duration of the movie.

Today, for obvious reasons, advertising signage no longer uses light bulbs. Instead, signs use colored **light emitting diodes** or LED's. The matrix of LED's serve the same function as the light bulbs of the Accutron sign, but LED's have many advantages over light bulbs. They have a much longer lifetime, are easier to maintain, and they light up using electronic signals from a digital computer rather than from a projected picture.





LED's are very small compared to light bulbs. A pixel is not constructed of a single LED, but rather from a cluster of LED's. One such pixel is shown above. The total diameter of the pixel is about six millimeters or slightly less than a quarter of an inch. The pixel shown above consists of seven LED's that form a closely-packed hexagon configuration. Each pixel consists of one red LED, two blue LED's, and four green LED's. This arrangement of LED's makes it easier to control brightness for a particular color. A pixel comes packaged in a removable housing with electrical leads that plug into a socket. Each pixel receives its signals from a digital computer. Often, each pixel has its own microprocessor, which acts in parallel with the microprocessors of all the other pixels. The sign acts very much like a color computer monitor. As with the Accutron sign, a viewer situated far away is not able to visually resolve the individual pixels in the picture.

Today, LED matrix panels are frequently used in advertising signage. LED billboards, such as those shown above, are gradually replacing more conventional ones. Sign painting is becoming an obsolete profession. These signs shine brightly in broad daylight as well as at night. Because they are controlled digitally, their messages can change dynamically. The same sign

can alternately display the basketball event “classic,” shown above and the Coca Cola Zero display. LED billboards now appear on sides of highways to attract motorists.

These billboard signs can also show television pictures, either those that are broadcast video or from closed circuit TV. When a person passing by the sign looks at it, he sees a movie that is visible in broad daylight. That movie can carry any desired message.

The signs are often mobile. They are often placed on the sides of vehicles, such as trucks or busses.

However, the most spectacular application of LED display signage is that the walls of buildings are becoming giant television screens that continuously advertise products and services.

Most of these signs show movies that capture the attention of viewers as never before possible.

In 1970, a dramatic experiment was tried in Boston. An advertising agency purchased space on a handful of billboards throughout the Boston metropolitan area. Sign painters placed the following message on each of the signs: “**Calvin Coolidge Was Our 30th President**.” The signs remained for an entire month, after which they were painted over with other commercial messages. After the messages were taken down, individuals hired by the

agency stood on street corners. They stopped pedestrians randomly and asked them, “Who was our 30th president?” Virtually all of them answered, “Calvin Coolidge.”

People notice signs. When the message or display is unusual, they remember the message. I will never forget who was our thirtieth president. More importantly, people notice dynamic signage on buildings. In 1964, Marshall McLuhan said, “the medium is the message.” In his pioneering study, he proposed that the media themselves, not the content they carry, should be the focus of study.

Traditionally, appliance stores placed multiple television sets in there storefront windows. These sets played broadcast programs. More recently, businesses have placed a single large screen television in their windows, and these TV sets direct messages at pedestrians walking by the stores. One such display showed a cartoon character whose movements were controlled in real time by someone inside the store. The controller could see the people walking by the store. Using a microphone, the controller would address individual pedestrians. “Hey you with the red dress,” or “You sir, with the green umbrella.” People would come over to the television screen, and the controller would speak to them individually. These people were fascinated by the fact that a cartoon character was talking to them personally. More often than not, they became customers.

Sale of 3-D television sets is on the rise, and many cable companies have at least one 3-D TV channel. 3-D DVD’s may be purchased for use on these sets. However, all of these television sets require viewers to wear special electronic glasses. Therefore, they are unsuitable for advertising signage. But, imagine if the displays would be able to show three-dimensional moving images without glasses.

Quantum Optics Holophoto™ 3-dimensional screens can show three-dimensional moving images in broad daylight or at night, and viewers do not need glasses. Imagine true 3-dimensional moving hologram-type images shown on storefront televisions, kiosks, bus stop enclosures, and screens on building walls. Objects may appear either in front of the screen or behind the screen. The advertising movie can be displayed where every viewer sees the same scene from every angle. Alternatively, it can be displayed where each viewer sees the scene differently depending on where she stands. She can look around objects to see what is behind. A viewer would not be able to perform any visual test to determine what is real. This new technology extends advertising signage to a new level. Here, the medium really is the message.