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Encyclopedia of Science, Technology and Society

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HISTORY OF MOTION PICTURES

The technology that made possible the projection and exhibition of photographed moving images is just 100 years old. In 1895 in Europe and North America the moment was ripe for a diverse group of engineers, scientists, eccentrics and inventors to nearly simultaneously create cameras and projectors capable of photographing and displaying motion pictures.

Yet this invention ----the technology itself---is not equivalent to "The Movies." Cinema as we know it is an economically, socially and culturally defined mass entertainment. An interest in projected entertainments was not solely a Western one. For example, (puppet) shadow theater is common to many traditions including Turkey, Java, India and China. [Illustration]

The technological roots of moving pictures can be traced to the camera obscura---a roomsize pinhole camera which projects an upside-down view of an exterior scene on an opposite interior wall. [Illustration] The principles of this device were first recorded in the 11th century in Egypt by Ibn al Haitam. The magic lantern --- essentially a slide projector---was in use in Europe as early as 1646. By the 1790's Etienne Gaspard Robertson shocked and confounded Parisian audiences with his Fantasmagorie. He used magic lanterns to (rear) project images of the dead onto smoke in the darkened chapel of an abandoned monastery.

The principles of photography were well established by Niepce and Daguerre by the 1830's. And the 19th century gave rise to a seemingly endless stream of Greek and Latin named inventions designed to simulate the appearance of motion in a series of still drawings and eventually photographs. This illusion of motion from a series of still images was originally conceptualized as based on "persistence of vision" ---that images passively accumulate on the retina. Today the literature of perception characterizes the

"motion" of motion pictures as a phenomenon of "short-range apparent motion." Our perception of short-range apparent motion—for example the appearance of continuous movement when a light is flashed sequentially between closely spaced dots—is believed to involve a mechanism identical to our apprehension of real motion. It is thought that both short-range apparent motion and real motion stimulate low-level neural motion detectors in a similar fashion. As viewers we process the motion in a motion picture in the same way as we process motion in the real world.

The "archaeology of the motion picture" includes the Thaumatrope, Plateau's Phenakistoscope, the Zoetrope, the Zooscope, the Stroboscope, the Phatascope, the Phantasmoscope, the Phenakistiscope, the Choreutoscope, Emil Reynaud's Praxinoscope, the Stereothaumatrope, the Chromascope, the Eidotrope, the Kinestiscope, the Tachyscope, the Phosmatrope and Muybridge's Zoopraxiscope.

The Thaumatrope was a simple circle attached to twisted strings. On one side, for example, there was an image of a bird, and on the other a cage. Pulling on the strings spun the circle creating the image of the bird in the cage. [Illustration]

The Phenakistiscope, the first device to animate a series of drawings, is commonly considered the most important invention of pre-cinema technology. It was created almost simultaneously by Joseph Plateau in Brussels and Simon Stampfer in Vienna in 1832. The Phenakistiscope (to trick and to look in the Greek) consisted of a slotted disc spun before a mirror. On the backside of the disc was a series of drawings—each one only slightly changed in position from the next. The slots served as shutters, and peering at the images reflected in the mirror resulted in the perception of their apparent movement. [Illustration]

The Zoetrope, the wheel of life invented by William Horner in 1834 was among the most popular of the early animated amusements. It consisted of an upright, slotted, topless drum in which the viewer placed a circular strip of drawings. As the drum spun a viewer looking through the slots would see the drawings as a simple animation. [Illustration] These strips of drawings anticipated the frames in strips of film, each with a single image,

slightly varied. Jules Etienne Marey, a French physiologist, was interested in scientifically analyzing motion. His photographic gun was capable of recording the motion of a bird in flight. [Illustration] His techniques included multiple exposures on a rotating dry plate (1882) as well as superimposing motion on a single stationary plate.

Muybridge definitively captured the process of human and animal locomotion using banks of stationary cameras. His Zoopraxinoscope projected these photographs using the principles of the Phenakistiscope. In 1893 at the Chicago World's Fair Muybridge exhibited 20,000 of his still images in the Zoopraxographical Hall.

Designed as parlor amusements, children's toys or scientific experiments, the content of the technology reflected the social and cultural values of its times. Although Victorian inventors assumed that technology would lead inevitably to social improvement, the Viviscope, for example, included animated drawings of a "country-darkie" eating watermelon. The history of motion pictures is replete with examples of racist caricatures.

Scientists and engineers in Britain, Germany, France and the United States independently designed components of the motion picture camera and projector: a flexible transparent film base, photo emulsions with a fast exposure time, a suitable transport mechanism and a reliable shutter. Thomas Edison and William Kennedy Laurie Dickson in the U.S. and August and Louis Lumiere in France are generally credited as the "inventors of motion pictures." On Dec. 28, 1895 the Lumiere brothers' Cinematographe projected 10 short films in the basement of the Grand Cafe in Paris to a paying audience of thirty-five. Edison originally had Dickson design his Kinetoscope as a peep show. It wasn't until April 23, 1896 that "Edison's" Vitascope (a projector invented by Jenkins and Armat) premiered at Koster and Bial's Music Hall in New York screening scenes of ocean waves, dancing girls, prizefighters and excerpts from the Broadway hit A Milk White Flag,

The rise of the movies in America corresponded with the decline of Victorianism--new roles for women, changes in morality and sexual behavior, new patterns of work and consumption and a great influx of newly arriving immigrants. Thirteen million immigrants

from southern and eastern Europe flooded into U.S. urban areas between 1900–1914. These newcomers and their children soon comprised a majority in many urban areas.

Movies which began as peep shows, quickly achieved economic success in vaudeville. In the 1895–'96 season the movies were usually one of nine 10–20 minute acts---generally unrelated in form and content. This was the primary form of distribution until the rise of the nickelodeon (storefront theaters) in 1906. Scientific American claimed that by 1910 there were 20,000 nickelodeons in northern cities. This was the entertainment of urban workers, immigrants and the poor. Short, silent films were relatively inexpensive and accessible to illiterate, newly arrived immigrants. They served as models for Americanization ---- teaching new customs, values and habits of consumption.

The fruits of technology are often put to uses unimagined by their creators. (For example, early entrepreneurs originally sold films by the foot, regardless of content. They were interested in selling machines, not telling stories.) Born of scientific inquiry, motion pictures soon became an instrument of mass culture and popular entertainment. From about 1904 until the present the fictional narrative has been the most prominent form of motion picture. All the subsequent technical improvement of motion pictures: sound, color, wide screen, video, and "virtual reality" have not been the result of a search for scientific truths, but rather were driven by commercial imperatives---creating and fulfilling audience demand for ever more compelling images of fantasy and escape.

The history of motion pictures is in large measure the history of an industrial, capital dependent, consumer driven, dream factory. Perhaps now that video cameras are nearly as available as pens, the future will offer the possibility of new kinds of personal expression too rarely seen in the first century of motion pictures.