

BROOKLYN RAIL

Notes on Science and Film

by Sonia Shechet Epstein



Still from Teknolust (directed by Lynn Hershman Leeson), courtesy Lynn Hershman Leeson.

1.

Once it was engineered by Thomas Edison at the turn of the 19th century, moving image technology was modified by research scientists to observe what the eye could not. In the French production company Pathé's studio, Dr. Jean Comandon affixed a camera to a microscope and filmed bacteria. The spirochete bacteria that causes syphilis squiggles while it moves; in 1909, examining this with his camera, the doctor was able to establish a means of verifiably diagnosing the disease even in an asymptomatic patient. "Dr. Comandon photographs and reproduces a scene in a blood vessel," Edfrid Bingham wrote in *The Technical World Magazine* in 1910, "just as the showman photographs and reproduces a dog-fight, a comical domestic quarrel, a shipwreck or the flight of an aeroplane."

2.

Science is a means of uncovering facts about the world. Film is a practice of seeing the world. A good science film is one that advances both disciplines.

3.

After a male seahorse births its young, gaseous secretions cause contractions: the seahorse hops with every poof, and its tail twitches. “The seahorse was for me a splendid way of promoting the kindness and virtue of the father,” Jean Painlevé, the French filmmaker and inventor of one of the first underwater cameras, wrote about his 1933 film *L’Hippocampe*. His film was one of the first to show the reproductive biology of seahorses. Painlevé anthropomorphized his subjects (as Jane Goodall would do in the 1960s, giving chimpanzees human names instead of numbers, thereby ascribing character), allowing him to comment on society—in the case of the seahorse he challenged traditional gender roles. Isabella Rossellini, in her more recent “Green Porno” series, molts from a male shrimp to a female shrimp sporting a pink bodysuit and red silk bra.

4.

Together with scientists, filmmakers can create work that could not be realized otherwise. Isabella Rossellini collaborated with a conservation biologist on “Green Porno” to ensure scientific accuracy, as well as to capture footage from fisheries inaccessible to the public.

Making some of the first films using the computer as a tool to generate imagery, cinema pioneer Stan VanDerBeek collaborated with computer scientist Kenneth Knowlton on an eight-part series. To make the Poemfield films roughly between 1966 and 1971, Knowlton wrote a computer code that VanDerBeek programmed into an IBM desktop computer; the visual output, words radiating geometric shapes that stiltedly move about the frame, was recorded. The two practitioners were paired through the organization Experiments in Art and Technology (E.A.T.), which was founded in 1966 by Robert Rauschenberg and Robert Whitman along with engineers Fred Waldhauer and Billy Klüver.

A meaningful convergence of film and science needs to work both ways. “Engineers making themselves available to artists,” Klüver wrote for a 2001 exhibit “The Story of E.A.T.,” would allow artists to work within the relevant forces that shape society—i.e. the materials of technology—and engineers would come to see their work from the perspective of society and culture, which might influence its future development. This is a standard that early collaborators, such as Pathé and Dr. Comandon, meet.

5.

Films that engage scientists or scientific ideas enhance public understanding of subjects fundamental to human progress. Enhancing public understanding can advance science by informing what questions are asked, which can affect the direction of research. Lynn Hershman Leeson’s film *Teknolust* (2002)—starring Tilda Swinton as three distinct replicants created by a biogeneticist named Rosetta Stone, who communicates with them through a microwave, was always amazing but is newly relevant now that the human genome has been sequenced and CRISPR-Cas9 gene editing can alter it. This technology is as capable of creating—without sexual reproduction—new organisms, as it is of curing illnesses. Public understanding can help to establish moral and ethical usage guidelines.

6.

Film, arguably the most widely accessible medium, can bring science to the public. Jean Painlevé produced three versions of many of his films: one for the scientific community for research purposes, one for education, and one for public entertainment. Mark Levinson’s *Particle Fever* (2014), filmed over five years, features physicists working on a massive machine, the large Hadron Collider, designed to smash microscopic particles together for the sake of learning what would happen. When science filmmakers ask audiences to care about science as much as their characters do, cultural and political attitudes towards science can shift.

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