Alternative Lighting Technologies

In theatre, lighting is often used to achieve effects that would otherwise be difficult to accomplish. Recently, the ability to sculpt light has become useful to designers and directors.

Neon Lighting: We are all familiar with neon signs which spell out decorative advertising messages. These lights use a glass tube filled with neon or another fluorescent gas. Electricity is passed through this gas, which gives it an excess of energy. This excess is released in the form of light.

Neon signage can be colored by adding impurities to the fluorescent gas. They can be formed to any shape. They are also extremely bright. Neon lights are also dimmable, to an extent. Once light output is reduced to approximately 15% of full, there is no longer enough energy to maintain fluorescence, and the light 'snaps' out. A smooth fade out is impossible.

Neon signs require the use of a special transformer for power. This transformer takes the typical 120vac and steps it up to several thousand volts (obviously at lower amperage.)

Neon lighting is the most brilliant of the sculpted lighting technologies. However, it is also the most delicate, the most difficult to work with, and often the most expensive. Creating custom neon lights requires specialty tools such as glass tubing cutters, vacuum pumps, gas valves, glass bending vices, and torches. Preparing a shop to work with neon costs thousands of dollars. Custom neon signs start at several hundred dollars.

"The Laramie Project" used a 20' long neon tube in the center of the floor.

Electroluminescent materials: Electroluminescants, or EL, are very versatile. EL material can be purchased as a wire of varying diameters, as a tape of various widths, and in sheets of different sizes. Like Neon, EL fluoresces when excited by electricity. However, the EL coatings are solid and plastic-like, making them much more durable than glass fluorescent tubes. Also, EL products are very flexible. Various colors are available.

Related to its power consumption, EL products are extremely bright. A power supply is required, as EL products operate at very high frequencies. 800 Hz at 100v is typical. Power supplies range from tiny devices powered by 9v batteries up to large AC powered transformers.

EL products are easy to work with. Wire can be cut to any length, and the internal leads soldered to the power supply or to other EL devices. EL tape, again, can be cut and spliced with scissors and conductive tape. EL sheet can be cut to any shape. Leads are soldered to small tabs, and connected to the power supply.

Electroluminescent wire was used to construct the swan costume in "The Swan."

EL Sources:
www.glowire.com
www.coolight.com
www.elwire.com

Fiberoptics: Fiberoptic products are glass or plastic strands which transmit light from one point to another. Fiberoptic strands require a light source, as they do not produce light on their own. Light boxes specifically designed for various fiberoptic applications are available, but any light can be shined into the end of a strand. Heat can often be a problem, as plastic fibers will melt when subjected to high temperatures.

There are two basic types of fiber: endglow and sideglow. Endglow fibers are used in applications such as star drops, where a single point of light is required. Light is passed from one end to the other with very little loss. Sideglow fibers emit light along their entire length, similar to neon or to electroluminescent wire.

A benefit of fiberoptics over the other technologies has to do with the fact that an external light is used. This allows you to change the color and intensity of the fiber on the fly.

Both endglow and sideglow cables are available in a variety of diameters, which relates to their light output. Fibers can also be purchased bundled as cables, which is usefully and economical when you need either a brighter glow, or multiple points of lights.

Endglow fiber was used in the star curtain for "The Laramie Project." Sideglow fiber was used to construct the window for "The Swan."

Fiber sources:
http://www.fiberopticproducts.com/ (also has some EL)
http://www.thefiberopticstore.com/ (with tech notes)