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THE THEATRE OF PERFORMING LIGHTS

By Louis M. Brill
Producer/Director,
Theatre of Performing Lights

Wavefronts, Theatre of Performing Lights, is a multi-media organization involved in the educational, artistic and entertainment uses of lasers and holography. Our multi-media techniques are directed to developing special lighting effects of 'kinetic light/sound environments' for museum exhibitions, interior design, theatrical backgrounds and light shows. This article will discuss the latter two categories and the lighting design concepts of white light projections and laser effects Wavefronts has organized for stage and screen presentations.

Our lighting system incorporates a laser light projector, slide projectors with dissolve capabilities and visual special effects. The combined multi-media imaging forms "illuminating environments" and is represented as a series of theatrical light shows. These shows integrate live action performance (dance, mime) and multi-media light shows to create an experimental 'optical-dance theatre' as a new form of entertainment for the public.

As in any performance situation, the combined efforts of many people and ma-

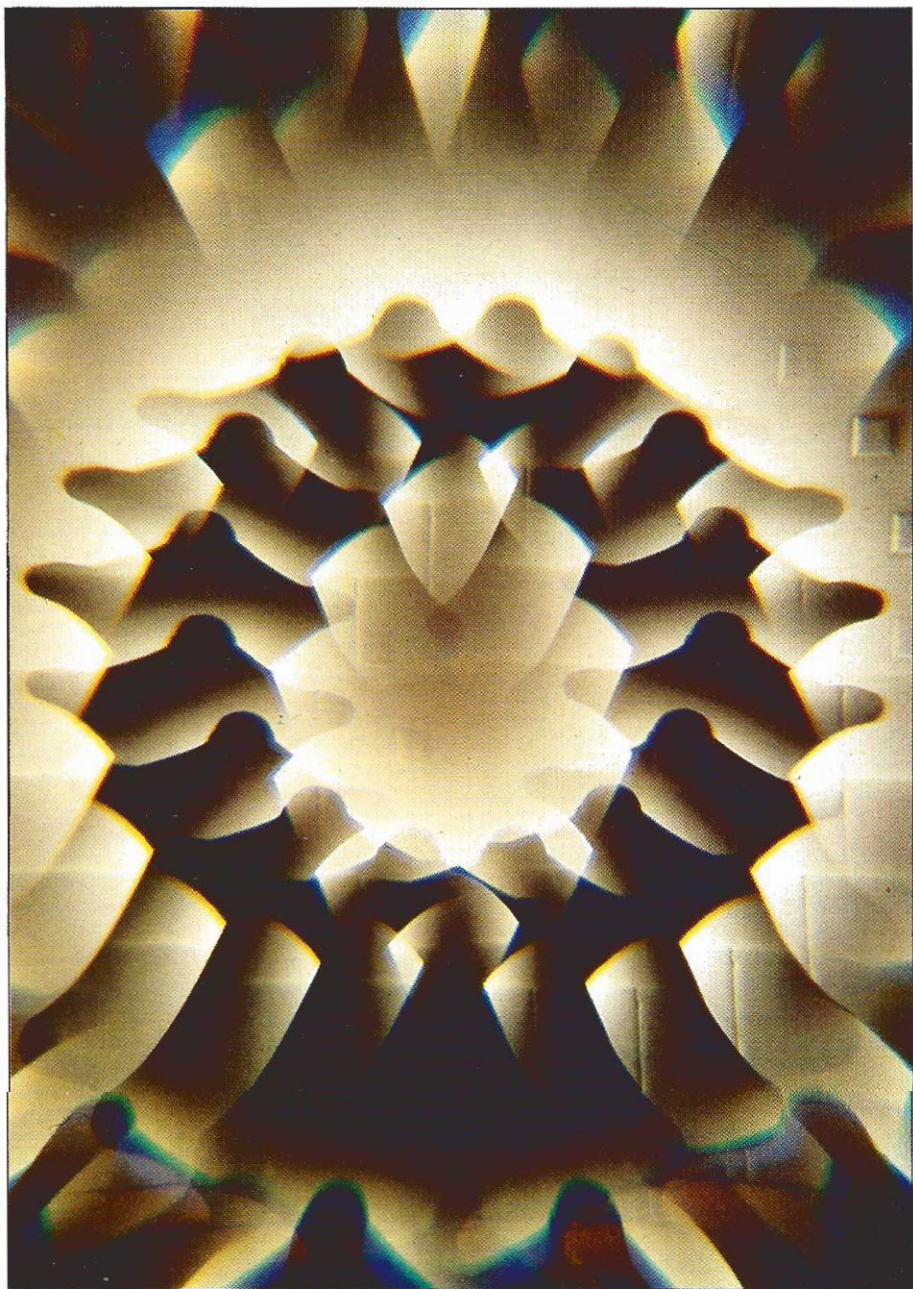
chines are brought together to create a production team. The team's end goal is to create a dance/theatre performance with visual special effects of a light show which includes the efforts of talented artists in electronics, stage design, music and costume design. The electronics efforts include the design of various original circuits including miniature spotlights, lighting dimming circuits, a specialized synthesizer for the laser light scanner, and several custom-built light projectors. The staging includes theatrical emphasis on dance costumes and specially prepared viewing screens. Music for the shows are original and combine traditional instruments with synthesizer to create musical tracks with special effects supportive of the show's particular storyline.

Visual Special Effects

Our visual special effects include a series of lighting projectors, each presenting a specific lighting effect with both dimming capability and the ability to change size and shape. These lighting ef-

fects, both reflective and transmitting, project abstract images of crystal patterns, mirror ball patterns, cloud-like patterns, rainbow swirls, and shimmering membrane effects. These effects are referred to as our "white light" projectors and are combined with the laser lighting effects, a double dissolve slide projector system, musical sound tracks, special effects and a narrative story line.

These lighting projectors are all of original design and are custom-built for the Theatre of Performing Lights. The visual effects from our white light projectors are achieved with the use of miniature spotlights which are aimed through various mediums to create these 'illuminated forms of movement.' The resulting effect is a series of abstract light patterns which we refer to as 'images.' They are then 'optically choreographed' to fade, dissolve or overlap each other creating visuals which blend in with the slide projectors and laser effects. The optical effects also correspond to both sound volume and intensity of the musical sound track. These composite images are then combined



Crystallized image of dancer Alice Farley is created on 35mm slide and then used as a lighting effects slide for Wavefronts lightshow. Photos: Bill Kaunitz, Foreign Embassy Productions.

with the dancers, building elements of drama and adventure to complete the light show with as much of a visual panorama effect as we can create. Thus our lighting environments strive to create visual special effects of an original nature to increase the entertainment value of the performance.

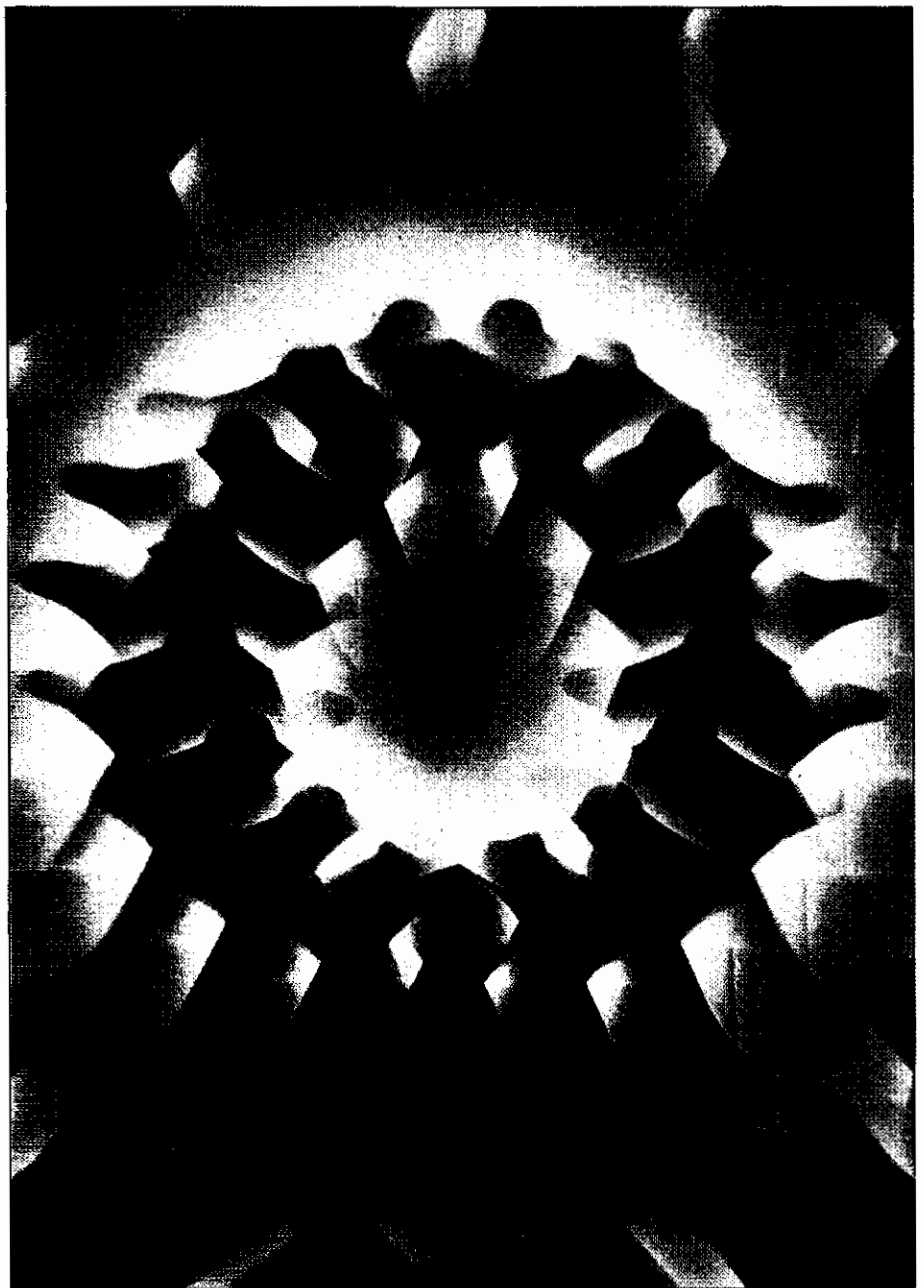
An Optical Opera

The multimedia aspect becomes a 'trees vs. forest' situation as our efforts are to develop the forest (show concept) over any trees (individual lighting concepts). The show concept is defined by the theatrical presence of live action performing and voice-over narratives enhancing the performance as it unfolds before the audience. The days of the 1960's psychedelic light shows are over, having been absorbed into cinematographic special effects such as stargate corridors (*2001*), computer graphic read-outs, or unusual weather effects (*Damnation Alley*). Thus the groundwork for a good show is not so much the lighting, but the overall package 'design,' which is lighting integrated with dancers, and a well-defined narrative, a sort of 'optical opera.'

Dancers participate in our lightshows as a balance to the lighting effects and to help dramatize the storyline within a show. To heighten the visual 'illusions' within the performances, the dancers are costumed in extending tube or winglike material which permits them to become 'dancing screens.' The screens are used to capture the images and to create an expanded projecting surface from the flat screen literally giving the light show depth and movement in space. The tube-like dance movements are integrated with the music and lighting effects as an 'optical choreograph' which becomes part of a greater whole; that is the live interaction between the dancers, the visual special effects and the audience. Our entertainment process is still being defined and is thought of as both a dance piece as well as a type of lighting environment.

Audio Effects

Our most important electronic effect is not illuminating but acoustical. Synthesizers provide tremendous possibilities for the show with music, audio special effects and laser light scanning possibilities. We have incorporated all three possibilities into our performances. Our best acoustical effect is our completed sound track. Music and audio effects are the basic foundation from which the light imaging is created and the dance



Crystallized image of dancer Alice Farley is created on 35mm slide and then used as a lighting effects slide for Wavefronts lightshow. Photos: Bill Kaunitz, Foreign Embassy Productions.

pieces are choreographed accordingly.

The Theatre of Performing Lights' resident musician, Douglas McKechnie, is a specialist on the moog synthesizer, having provided sound tracks for several past planetarium light shows including Rainbow Jam (Salt Lake City, 1970-1971, Hansen Planetarium), Vortex (San Francisco, 1974 Morrison Planetarium) and soundtracked the movie *Spaceborn*, a 1978 academy award nominee for short subjects, is now providing a wealth of synthesizer possibilities with music and audio effects, for the Theatre of Performing Lights.

Douglas McKechnie's music is uniquely

suited for our shows because its ethereal presence of sound has theatrical elements to it that are visually interpretive, both in color and shape. The melodies are 'spacey' and tend to acoustically pulse within its rhythms and provide lots of maneuvering room for the various lighting effects and dancers. Utilizing the synthesizer in both capacities, McKechnie not only creates melodies but also acoustical special effects drawing upon the familiar sound of wind storms, crickets chirping, starships landing, and explosions — then embellishing them with little 'twists' to stir the imagination creating the feeling that you're right in the

Performing Lights...

middle of whatever it is you hear, whether it's a windstorm or a flying saucer blasting off.

Modular Scanning Projector

One of the central effects in our multimedia light show is the laser light projector. The scanning projector is a series of electronic & electro-mechanical modules custom designed and modularly connected through a central control board and an audio switching system. The laser unit (5 mW Helium-Neon) is aimed into an X-Y scanning mechanism that directs the laser beam to move simultaneously in both horizontal and vertical directions. The result is a series of egg-shaped oscilloscope-type lines which form mandala-like images known as lissajous patterns. These patterns originate from two independent sources, either the musical sound track or a miniature synthesizer. The synthesizer and the X-Y scanning mechanism are module components created for the Theatre of Performing Lights by a custom design electronics center, Synthemuse Technology of San Francisco. The synthesizer or pattern generator small enough to hold in one hand, generates harmonically tuned signals which are multiplexed between the X-Y channels of the scanner. Individual patterns are pre-set with a keyboard component and can be cued up as the sound track requires them.

With a simple mixing system, one can alternate between the music and the pattern generator or use both devices at the same time to create a series of complex lissajous patterns resembling flower petals, computer graphics, or spinning donuts.

Keyboard Concept

The Synthemuse synthesizer can also supply signals to a separate channel of a multi-track tape recorder. The completed laser display can be combined along with the soundtrack and accompany the audio portion of the program with complementary laser images.

The other half of the laser scanner includes a second pattern keyboard that projects transmitted images of laser patterns shaped by various textured translucent plexiglass or regular glass materials. Each key represents a strikingly different shaped pattern and can be cued independently of the other images or laser lissajou patterns. This keyboard concept is not unlike a piano keyboard. In this case, each key is a laser image which corresponds to the music or audio special effects on the sound track.

The system is designed so that all laser patterns exit from the scanner onto a directional front silvered mirror and aimed towards the central viewing screen of the

light show. All laser beams are diffuse enough so that dancers moving into the beams are not bothered by the potential intensity of the beam as they capture the laser images with their screen-like costumes.

Our system uses a He-Ne (5mW) laser but can be adopted for any visible color laser unit. Although our laser effects are quite spectacular they are not the primary emphasis of our show but more like the icing on the cake. The laser's effectiveness is enhanced by showing it as little as possible and only at the appropriate moments in the show and by blending it within the other optical effects.

Our lighting is not designed to spotlight and illuminate the stage, but the exact opposite — to hide it and project lighting effects that act as "images." Our best lighting effect is reducing the house to pitch black. It is this darkness that enhances the image quality of the light projectors and adds to the overall composition of blending the various lighting effects against the dancers. It also has the psychological advantage of literally keeping the audience in its place and its attention focused upon the performance.

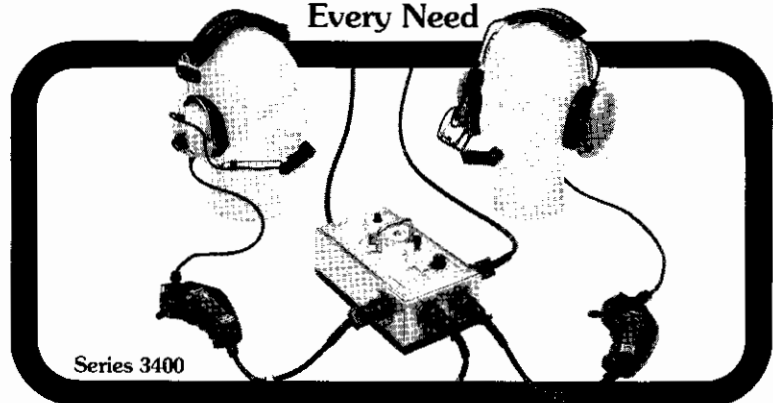
Combining the lighting effects with a slide show and dancers we are striving to create theatrical environments where the 'actors' are various lighting effects dramatically organized to create involved

About the Author

Louis M. Brill has been involved with lasers and holography since 1971. Having worked with other companies in this area as a media consultant, he recently formed Wavefronts, Theatre of Performing Lights to develop original lighting concepts for theatrical productions. Mr. Brill designs the lighting effects and directs the theatre's light show. For performance schedule and information, please contact: Louis M. Brill c/o Wavefronts, P.O. Box 31252, San Francisco, Calif. 94131.

moods of suspense or adventure for the audience to watch. Thus through 'image lighting' and 'optical theatrics' we are developing new concepts for theatre backdrops, dance environments, and unusual performance situations combining these various art forms. While the concept of light shows is nothing new — what is new is the electronic and mechanical techniques of creating the images. The Theatre of Performing Lights is establishing a lighting dimension of entertainment halfway between the environments of disco, planetariums and theatrically staged events, such as live action performing, multiple mirror screens and visual special effects. □

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