ART AND TV©
by ROBERT KRAGEN

Because television is both an audio and visual medium it is natural for the artist working with television to want to create with the interplay of sound and light. Ordinary TV programming fits this framework in that linear thematic and informational material is presented in a form which is an extension of theater techniques. An alternative use of the medium would be one where the elements of sound and light would be used as non-linear creative elements in a new form of art.

While this is a very wide area in which to work, a beginning could be made by seeking the basic relationships between the elements of sound and light. In sound the variables of pitch, volume, note sequence and harmonic content can be isolated as creative elements. These techniques have already been highly developed for use in the creation of electronic music. In light, patterns, hue, contrast, saturation and pattern sequence can be isolated as working elements. These elements are controlled in color TV, special effects generators, and in color correction film duplicators in the movie industry. By use of sensing devices and a real time computer it is possible to relate light variables to sound variables or vice versa. This could be done in three ways. Use light as an input to create sounds; use sound as an input to create light; or use modulated feedback to have a work spontaneously generate itself. In the third case the reaction could be stimulated either externally by the artist, or internally by random amplification of system noise. The speed of reaction would be one of the variables controlled.

I will now give simple examples of what the elemental relationships in each of these three cases could consist of. In a work where light would create sounds, an electronic sensor would translate the variables of light into electronic information. This information would be input to another translating device which would change hue into pitch, saturation into volume, contrast into harmonic content, patterns into chordal formation, and pattern sequence into chordal sequence. These are the most obvious relationships, but may not be the most effective. By reversing the relationships, sound may be changed into light. By adding feedback the elements may be made to interact; hue creates pitch, creates hue, creates pitch, etc. Feedback may be positive or negative. Positive feedback would raise the system's energy level, while negative feedback would decrease it. Positive feedback, if fully utilized, would cause the system to remain in the lowest energy state for that system. Both of these ultimate states are static. Therefore, if feedback were used to produce dynamic displays, it would have to be modulated along with the other creative elements. Unmodualted feedback could be used to freeze any instant of a dynamic effect. This would allow a better understanding of the dynamic process, and could also be used as an artistic effect in itself.

For an artist to begin a creation within this framework, he must have equipment which will give him control over the system elements. As most of this equipment is both expensive and technically complex, the ideal artist in this field must have an independent income, while also being a genius in the sciences of electronics, physics, optics, sound, mechanics, and psychology of perception. Failing this, it helps to have friends at E.A.T.

When I initially approached E.A.T. with the idea of working with television as an art form, they immediately referred me to Mr. Irv Rosner of Rosner Television System. Mr. Rosner, an electronics engineer with much experience in television systems, turned out to be just the man I was looking for. Out of a combination of his technical expertise and financial backing, and my interest in the artistic possibilities of television, we were able to produce, *Come Near Unto Me*, for the E.A.T. show at the Brooklyn Museum. This piece utilized a color television to produce dynamic organic patterns of light from the movement of people around the set. The set could also display stereo music.

The next two paragraphs are an explanation of the technical aspects of this work. Please skip them if technical jargon leaves you cold.
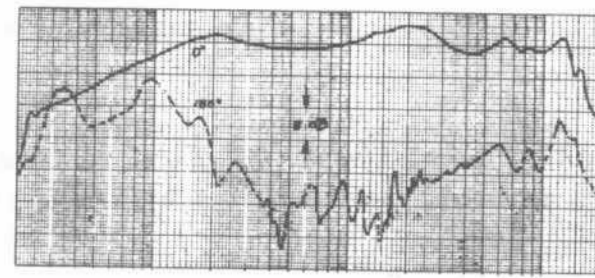
To make a large screen oscilloscope from a color TV set is fairly straight forward and uncomplicated if you have some background in electronics. We chose the Zenith 20Y1C38 because the handwiring simplified the ease of modification. The steps of modification are as follows: remove the input signal from the IF section by unplugging the shielded cable from the output of the tuner box; remove the plug from the dynamic convergence assembly; remove the vertical output tube; locate the pairs of wires to the verticle and horizontal section of the deflection yoke; cut each pair and bring the ends from the yoke out of the set—these are your inputs; if any resistors exist between sections of the yoke windings, they must be shorted; connect each pair of wires from the deflection yoke to the 8 ohm outputs of at least a 50 watt stereo amplifier. Any audio fed into the amplifier will now cause a deflection of the static dots which will appear when the set is turned on. It may be necessary to adjust the brightness and G-2 levels to get a good trace. By adjusting the static convergence magnets, the red, green, and blue dots may be separated to give a three color trace.

In order to make the patterns produced more interesting, we decided to effect intensity modulation by replacing the input to the push-pull B-Y, and R-Y sections with universal output transformers. The high impedence side of each transformer was connected to the injection points, and the low impedence side was connected to the output of 1 20 watt channel of a stereo amplifier. Back to back 75 volt zener diodes may be used across the high impedence side of each transformer as a clipping network to limit overdriving of the color grids. Both stereo amplifiers were driven from a common feed. Separate tone and volume controls on each amplifier enabled variation of pattern size, shape, and color intensity. When properly adjusted, the screen would be black, when no signal was applied to the audio amplifiers. As the input signals were increased, a Lissajous figure of growing intensity to expand from the center of the picture. Volume determines size, intensity, and hue, while frequency determines pattern shape. Any stereo music makes an ideal audio input, because each type of music causes an entirely different visual effect.

The first time I had everything working was about eight o'clock in the evening. The rest of the night was tyring out a lot of records to see what the different sounds would look like. The Cream produced a wavy forest that constantly changed, causing a kind of hypnotic effect. Beethoven's *Eroica* Symphony was a universe expanding and contracting. The close harmonies of the Pennywhistlers produced dancing orbs.

This was all very well, but we wanted a device that would react with the viewer. To this end, we incorporated a stereo theremin, which was connected to give an audio output which would change in pitch and volume with the movement of people near its antennae. Hence the name, *"Come Near Unto Me"*. Physically, this antennae took the form of a stainless steel rim which surrounded a seven-sided plexiglass sheet. The plexiglass was painted black, except for an area the size of the picture tube face. The TV set was placed on a frame on its back. The plexiglass was placed on the TV and centered over the picture tube base. The sides were enclosed with a black velvet drape which followed the shape of the plexiglass.

"Come Near Unto Me" was exhibited at the E.A.T. show, the Newark College of Engineering Light as Art show, and at the 1968 audio engineers convention. Where do we go from here?

"We no longer have the one-to-one velocity and frequency correspondence between stimulation and response that we had in the early formative days of the U.S.A. We now have enormous numbers of stimulations and no way to say effectively what we think about them or what we would like to do about each of them"
R. BUCKMINSTER FULLER, *Education Automation*, p. 40

IS EVR A GOOD OR BAD THING?©

Q: Is EVR a good or bad thing?

A: It is a deceptive thing.

Q: A bad thing then?

A: EVR is an incomplete loop. It is a one-way, centrally controlled, non-interactive *film*.

Q: Film?

A: Yes, EVR is film in drag.

Q: Why?

A: Ostensibly, CBS has fused a film cartridge and television monitor for purposes best rationalized by image resolution and the range of information already committed to available film . . . This is a flimsy excuse. The research time and money represented by EVR would have equally sufficed to develop and perfect a tape system subsuming EVR's picture resolution and information access while also having a *record* made compatible with most TV cameras. Excepting time-choice, EVR does not alter the general complexion of television viewing.

Q: What difference does it make?

A. Like, the difference it makes is a matter of alternate television.

Q: How?

A: EVR is an *extension* of the CBS network—a tautological tool—not a tool for creating a new variety of network. It fails to put the "consumer" in direct contact with the processes directing the information he receives—his information continues to be directed exclusively by external sources.

Q: What do you mean by "external sources?"

A: Those which he has zero realization of . . . that is, in terms of origins and *information structure*, or how and why it is generated.

Q: Come again?

A: In another way. EVR limits the interactive options. An equivalent videotape cartridge system with a *record* mode encourages the potential for information generated by the "consumer"—a subsequent potential (a re-patterning) lies in the choice of a multiplicity of sources of information to draw upon . . . Including sources organic to his own (the "consumer's") network or karass.

Q: Hence?

A: If we happen to be correct, networks will develop based upon natural *information structures*. The nascent information—creating processes in specific and generalized social networks, groups, communes and other arbitrary and not so arbitrary collections of people—will be rendered explicit and totally re-configure—i.e. revolutionalize the society's sense of relevant *news*.

Q: And if you are incorrect?

A: Our—particularly American—social alienation is largely the product of predominantly synthetic information structures—that is, hierarchies of data the "consumer" has no position or contact in generating. These synthetic structures have conjured a pseudo-reality that may yet kill us all as "consumers" . . . if our observations prove inaccurate.

Q: What is the critical distinction then?

A: It is this: EVR would—in the most sophisticated sense—extend the parameters of an anti-ecological pseudo-("consumer") reality—what must clearly be developed are high-variety information technologies that accurately reflect the ecological realities and stabilities necessary for survival. Data and congealed information no longer be limited to an understanding for which would prohibit *complete access* to all who need and use it. Information, its quality and access, is thus central if the future is to come to pass.

FRANK GILLETTE