

To: E.M. Roschke  
From: Stephen C. Beck  
Re: Proposal for investigating new uses of color television

Introduction:

Since the beginning of September I have been experimenting with new applications of color television using a large screen color television which Zenith donated to the University of Illinois. In the course of my experiments it has become apparent to me that there are many possible uses of a color television display system in capacities other than image reproduction. The following is a description of my ideas and a proposal for pursuing further research.

Present Progress:

Perhaps the most dramatic application which I constructed so far is the "color sound" display in which audio information from stereophonic recordings and prepared electronic music tapes is presented on the picture tube. It was this display which I showed to Bob Kallas in November and which apparently triggered Zenith's interest in the display. The present system is quite simple with the audio signals being used to modulate the color difference amplifiers directly. However, there are other display configurations which should be investigated so as to present the audio information in such a way that an optimum amount of information is presented to the viewer in an aesthetically pleasing way. Such a display could

be incorporated into presently manufactured color television-stereo high fidelity combination consoles to add a new dimension in home electronic entertainment.

I have also been experimenting with a spot addressable comparator circuit which would allow voltage controlled access to individual locations on the CRT. General display units could incorporate such circuitry. Finally, I have been designing digital circuits which produce various abstract patterns on the CRT screen as an experiment in developing a new type of visual art.

Product Applications:

In the area of product development the following devices seem to warrant further investigation:

- 1) Entertainment display. Presently marketed stereo - color television systems could be modified to contain "color sound" circuitry for display of the audio signals being reproduced through the high fidelity portion of the console. Additional entertainment possibilities include the development of an "electronic coloring board" which would enable an individual to create various patterns and colors on the screen of his television set. Such a device would augment future applications of the color television as a chief source of visual information in the home. Systems integrating film and slide display, personal interaction ( the coloring board ), and image reproduction from cable or wireless broadcasters could serve as

the core of visual education and entertainment in the home.

2) Measurement systems. The nature of the scanned raster display makes it possible to inspect time relationships between periodic signals by examining the relationships of the beats in a geometric frame of reference on the picture screen. By shifting from a time reference to a geometric reference it might be possible to gain additional information about a particular signal than if one were to inspect the time reference only. Other measurement applications include low cost graphic display units which make use of the comparator and digital techniques which I have been experimenting with.

3) Educational uses. Small, color display units capable of presenting information in the form of graphs which are easily adjusted by personal manipulation of a few controls rather than being computer controlled might be of valuable use at all levels of education. Such devices, because of the aesthetic appeal of color, would help to enhance student interest and motivation in scientific and mathematical subjects at the primary and secondary educational levels as well as at more advanced educational stages. Considering the versatility and aesthetic appeal of the color display applications in the area of art instruction as well as physiological and psychological therapy might be discovered.

4) Film and video tape editing. The increasing popularity of video tape as a visual medium indicates that much of the work presently being done with film may well be done with video tape in the future. The modification of recorded video images with electronic circuits would replace the present need for sending film to an optical laboratory for processing and special effects. The application here is the development of a versatile video tape editing and special effects unit which would be of interest to film makers and film production companies.

Applications in advertising and public relations:

Uses for my developments in areas other than product research could be found in advertising. "electronic" commercials enhancing the technical aspects and creativity of Zenith could be accented with electronic images produced by my digital display controls. Many manufacturers of electronic equipment ( such as General Telephone, Bell Systems ) are using such approaches in there television advertising, achieving admirable results in my opinion.

Based on my intial experiments with the color display system under the control of various types of circuits it seems as if television art, as it might be called, is a legitamate art form which is evolving from the combination of art and science. In the interest of not alienating the public from

technology it seems important to me that the artistic area of development should be explored. An investment in this direction would result in creating a favorable attitude towards new technical products. Furthermore, inspection of the development of electronic music will show that there is a substantial and growing market for electronic music equipment which could certainly be duplicated by a similar growth of video aesthetics.

Presently I envision producing a collection of television sculptures which could be presented in various modern art galleries around the country. (Not to be ruled out would be a special showing of these sculptures in the Zenith Display Salons.)

Furthermore, considering the nature of the broadcasting industry and its ability to <sup>transmit images at</sup> communicate to a large group of people simultaneously, the visual art as developed in my research could be presented via video tape and presented as an aesthetic experiment over network television.

Other opportunities for exposing Zenith products to the public include the performing arts. I have been asked to perform electronic visual pieces with Salvatore Martirano, noted composer and member of the faculty of the School of Music here at the University of Illinois. Martirano performs electronic music which is generated by digital computer techniques. We have performance

offers from the Art Institute in Chicago and a tentative performance at the Depot theatre in Urbana, Illinois.

Reactions:

So that you may better evaluate the potential of my research let me mention some of the reactions which I have received from visitors and friends who have seen my work so far. Mr. Allan Sutcliffe of London, England, who has organized the Computer Arts Society in England viewed some of my electronic music tapes and had valuable comments regarding the information content of the display. Mr. Sutcliffe also mentioned that the displays which I showed him were by far more advanced aesthetically than any other television work which he had seen in his travels.

( Mr. Sutcliffe is presently making a a tour of the United States visiting computer music installations.)

Mr. Ronald Nameth, film instructor in the College of Fine and Applied Arts at the University of Illinois has expressed his excitement over the potential of developing an electronic video tape editor capable of producing special visual effects. Mr. Nameth and I have produced several films of various displays which you might be interested in viewing.

Perhaps a bit ambiguous but most encouraging is a comment made by Mr. Rick Wallot, Ph.D. student in Physics at the University of Illinois: "This is the most fantastic visual display of sound which I

have ever seen."

The staff at WILL-TV, the University of Illinois television station and NET affiliate, was very interested in hearing more about my work after they viewed a film produced by Mr. Teddy Temrick and myself from the television display. Salvatore Martirano was quite impressed by the potential of my work and suggested that we collaborate in producing electronic music-television performances as I have mentioned previously. He also suggested the possibility of producing the sound tracks for the electronic commercials which I have previously mentioned. Generally, reactions by friends and guests who have seen my display has been quite positive.

Proposal:

Considering the situations and possibilities which I have discussed I would now like to make the following requests for pursuing research and development of these exciting ideas:

- 1) Supply me six (6) 19" screen portable television sets. These sets would be converted into the "television sculptures" which I mentioned as well as be used for performances and experiments.

- 2) An equipment budget of \$5,000.00 which would cover the purchase of a lab oscilloscope, power supplies, and components such as operational amplifiers, digital circuits, resistors, capacitors, packaging hardware, and other circuit devices. I presently

own a modestly equipped experimenting bench and tools which would be used in my research.

3) A consultants fee of \$7,000.00 for a nine month period which would be considered compensation for the development of circuits and product exposure which I will supply. Of course, all results of my work would be available to Zenith and I could possibly be considered as an employee of Zenith. I would like to incorporate this work into my undergraduate progress at the University as a special project. End results of the work would be in the form of circuits, concepts and product exposure.

Conclusion:

I feel that I am qualified to undertake this project from both a technical as well as an aesthetic standpoint. Though I am an undergraduate in electrical engineering I have been working with circuit development in the Experimental Music Studio at the University of Illinois during school terms since April, 1968. I have thus also had the opportunity to deal with musicians and artists and can see the gap which exists between technology and the humanity-oriented individual. I also participated in the EAT (Experiments in Art and Technology) program in Chicago in which I designed and built a small control computer which operates a neon light sculpture. Of course, I was employed by Zenith last summer so that you have



had an opportunity to view by abilities.

Finally, I have a personal interest in the television medium. My personal opinions of today's television are not very high and I would like to work towards improving the standards of television by developing new uses of the medium. It would be in the interest of the television set manufacturer to support this work, I feel. This is a technical <sup>electronic age</sup> society and those who are technically knowledgeable, both individuals and corporations, had better start educating ~~the~~ people who live in ~~this~~ society about the technology which permeates their lives. I hope that you will agree with me and support this work as an investment in the future of television.

December 29, 1969