# AN ANALYSIS OF AN ENVIRONMENTAL PERFORMANCE WITH THE USE OF NEON LIGHT AND PROJECTED PHOTOGRAPHIC IMAGERY

PROBLEM IN LIEU OF THESIS

Presented to the Graduate Council of the
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MASTER OF FINE ARTS

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# CHAPTER I

## INTRODUCTION

While a student at Whitworth College in Spokane, Washington, I was involved with studies in ceramic sculpture. Plans to do further graduate work at another school required that I provide photographs of my ceramic sculpture for application purposes. As a result I became interested in photography mainly out of necessity. At that time photography was not used as an art form, only as a means to an end. Yet strangely enough I became fascinated by the medium and found it a continual source of artistic stimulation.

During the early trial and error days of my photographic experimentation, my work was anything but spontaneous. Most of the shots were done on a tripod making each exposure a somewhat laborious chore. But even though the experimentation was time consuming, I very much enjoyed the process because of the newness.

The bulk of the photographs were non-objective in terms of imagery and subject matter. My priorities went to concerns with color saturation in the slides, composition, color, diversity, as well as soft and precisely defined imagery.

While in the process of working with my photography, I was accepted to North Texas State University and subsequently

moved to Denton, Texas. The new environment of Texas seemed to alter my point of view and feeling for my work. I started working in as many new directions as possible. Both successful and unsuccessful attempts normally lead to some new idea or combination of ideas.

Over a period of time, my slide collection grew in size, and I started doing some small scale slide shows and multi-media shows using motion picture film, my slides and audio effects as well. As with most art forms, the quality of the presentation became a high priority in relation to the photography. With the additional interest with the presentation came new ideas about how to present the photographic imagery in an environmental performance. The initial concepts were relatively simple and basic, with later ideas growing into more complex and sophisticated systems. The later environmental concepts not only grew larger and more complicated but also included the use of neon lighting in conjuction with the photographic imagery.

The concepts of using neon with the photography came from two sources: the first being a work I had read about by Mario Merz and the second by Don Flavin. Merz had been working with neon forms which were installed sequentially in an outdoor environment. The concept was both intriguing and seemingly appropriate to my work, because the bulk of my photographic imagery was taken from neon light sources. So while early environmental concepts dealt with simple

photographic presentations, later concepts and the final installation included the use of neon in conjunction with the photographic imagery.

## CHAPTER II

## OBJECTIVES

The primary objective of this creative project was to create an environmental performance through the use of light as the principal medium. Most of the photographic imagery had been completed. The remaining task involved creating an effective and workable system to integrate the projected imagery with the neon light placements. Each system, illustrated in the figures, attempted to create a different approach in using the light mediums. Several possible systems were essentially concerned with four basic questions.

1. What type of environment and equipment were necessary to a working system?
2. What technical problems were encountered in creating an effective image producing system?
3. What dimensional factors (width, length, etc.) were involved in creating an effective image producing system?
4. What concepts and performance potentials were derived from the study?

During the course of the study, I accumulated the information for answering these questions by

1. Working out an effective and reliable image reproduction system;
2. Working out twenty or more sketches of possible installations;
3. Setting up several model or trial situations to test out ideas and possibilities in sketched proposals;

4. Installing the equipment for the final performance.

During this time, I also did research on other artists working in the light medium and other related sources.

## CHAPTER III

## COMMENTARY ON FIGURES

When the concept of incorporating photographic imagery into a performance or environmental situation came to mind, many concepts evolved. But regardless of how many concepts came about, they were all based in some way on the use of overlapping imagery (Figure #1). This simply involved the use of two or more slide projectors to produce a single image. The effectiveness of this technique proved invaluable since it diversified the compositional qualities of the imagery, intensified the color, and with the use of a dissolve unit, gave the imagery semi-kinetic quality also. This overlapping technique gave me the ability to take even simple images and turn them into something special when viewed in conjunction with another image.

Figure #1 takes the process of overlapping imagery one step further. This figure illustrates the concept of projecting the imagery through several pieces of frosted plexiglass (image sensors) rather than projecting the imagery on a single reflective surface. The intent of this idea was to allow the projected imagery to diffuse slightly on each layer of plexiglass. The net effect was to create a multi-surfaced rendition of the overlapping imagery technique, thus creating an image with depth and body.

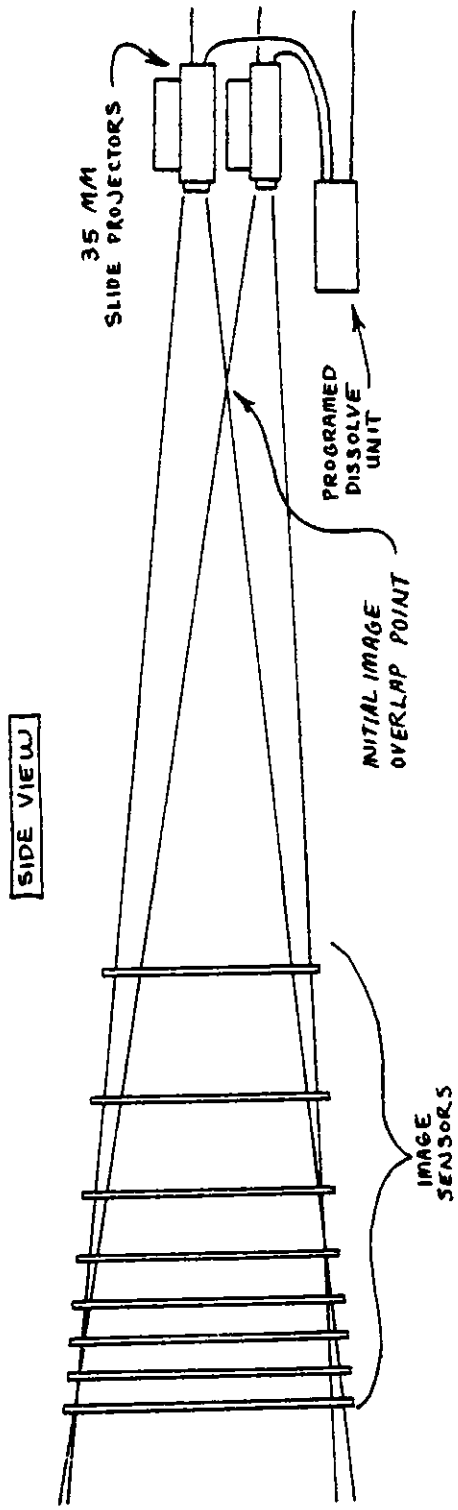



Fig. 1--Overlapping imagery projected through multiple sensors

Figure #2 is essentially a top view of figure #1, but with the addition of a second set of projectors. Although just two sets of projectors were illustrated, the intent of the drawing was to centrally locate the projection units and project the imagery in a radial configuration.

Shortly after drawing up plans for the layered glass system, the thought occurred to me that the glass sensors might prove more useful in a horizontal placement as shown in figure #3.

In figure #3, the plan required the use of a mirror to reflect the images. Initially it was just a passing thought but the use of mirrors interested me for some time to come. However, the idea was ultimately given up later because of impracticality.

Along with the reflective system concepts came ideas which had originated from the work I had seen of Mario Merz and Dan Flavin. One particular piece by Merz fascinated me in part because of its temporary nature and the strong elctrical emphasis. He had created a series of large monolithic forms with neon numbers attached to each structure, with highly visible electrical connections between each form.

In figure #4, my proposed system attempted to integrate Merz's ideas with mine. The figure roughly illustrates the monolithic forms with the plexiglass screens and projection system. The combination of these two systems was intended to enhance each piece. The concept diversified my original

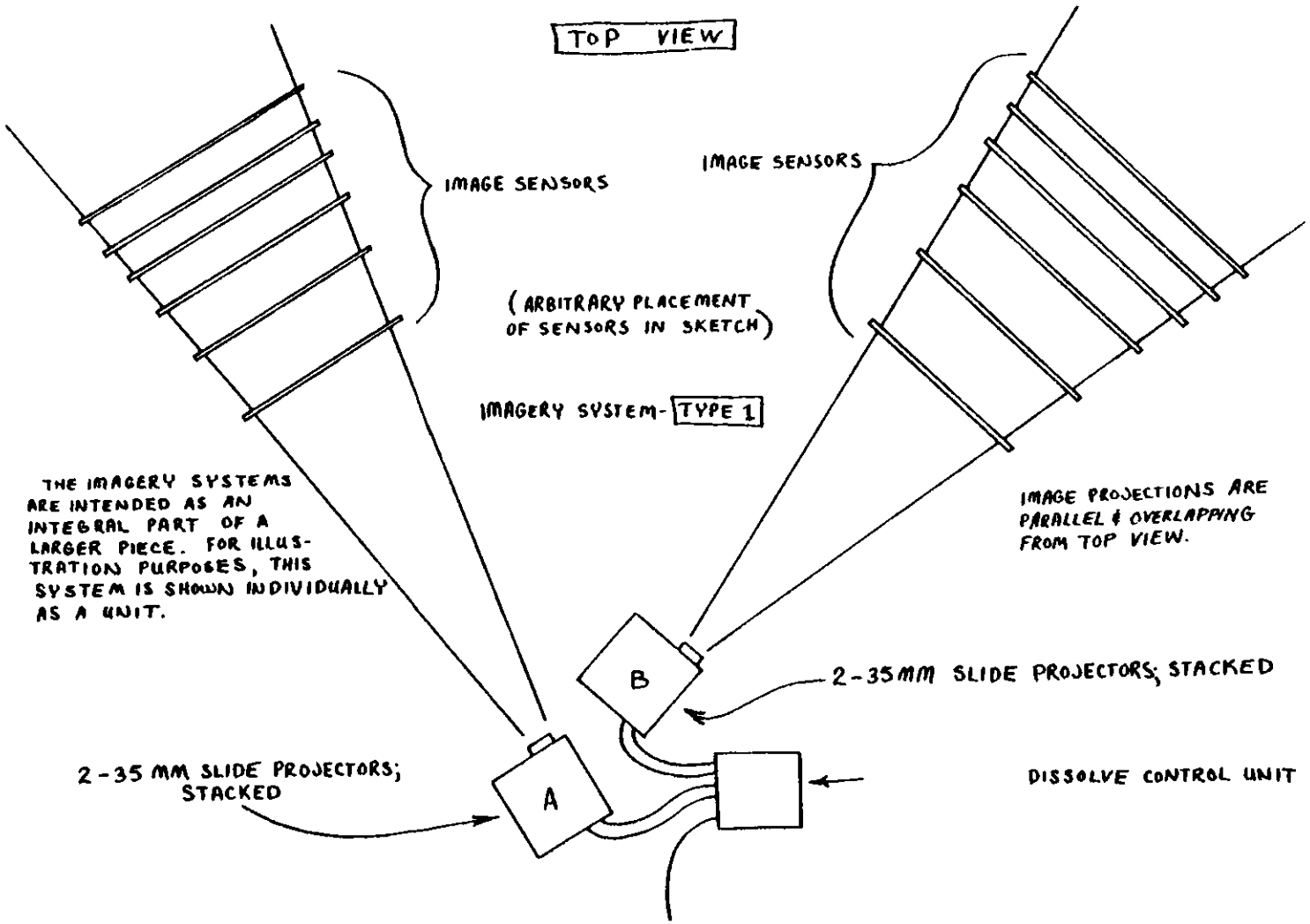



Fig. 2--Imagery projected in radial configuation

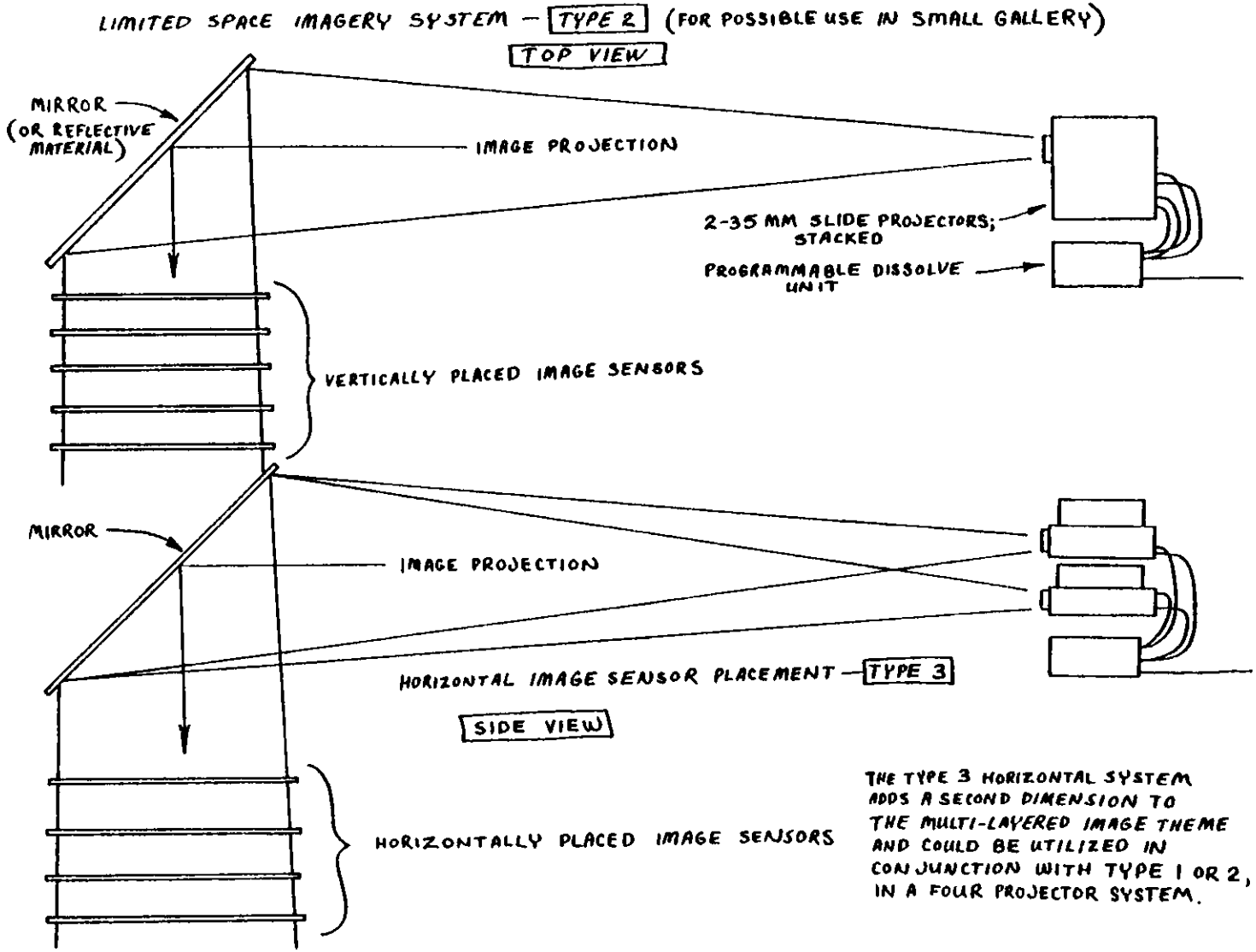



Fig. 3--Reflected imagery with multiple sensors

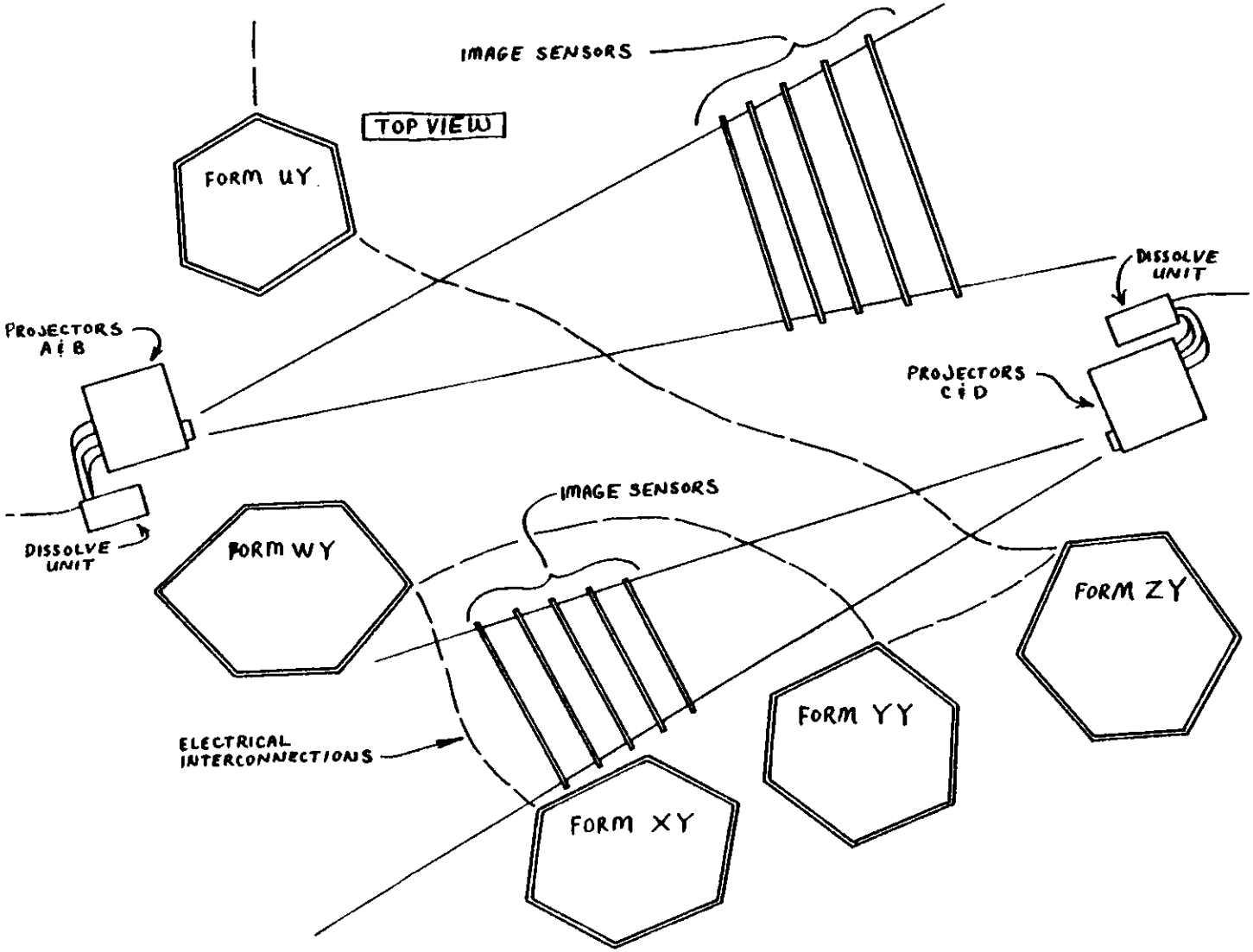



Fig. 4--Monolythic housing forms in combination with projected imagery

idea and brought another dimension to the basic system.

Figure #5 further combines and integrates the two concepts illustrated in figure #4 and #3. I wanted to utilize monolythic forms in a functional way. This system proposed using monolythic forms to house the slide projectors, dissolve unit, transformers and also incorporates the mirror/reflective imagery concept. All of the electrical equipment was intended to be visually exposed. This concept let the various components be seen and viewed as a part of the piece, rather than being strictly supportive and not functioning visually. Locating the projection equipment in the housing forms also satisfied the problem of location for the equipment. The figure also makes a pointo fo the wiring between the housing units to emphasize the feeling of the temporary or momentary. Figure #5 also uses the projected imagery through the use of mirrors which are attached to the housing forms.

Figure #6 utilizes the housing forms one step further in relation to figure #5. The image sensing material is incorporated within the housing forms. Integrating the sensing material and the housing forms was preferable in that the housing forms were utilized more functionally than in prior concepts.

Although the integration of the projection equipment, mirrors, and sensing material worked quite well in concept and on paper, the system would have created some real diffi-

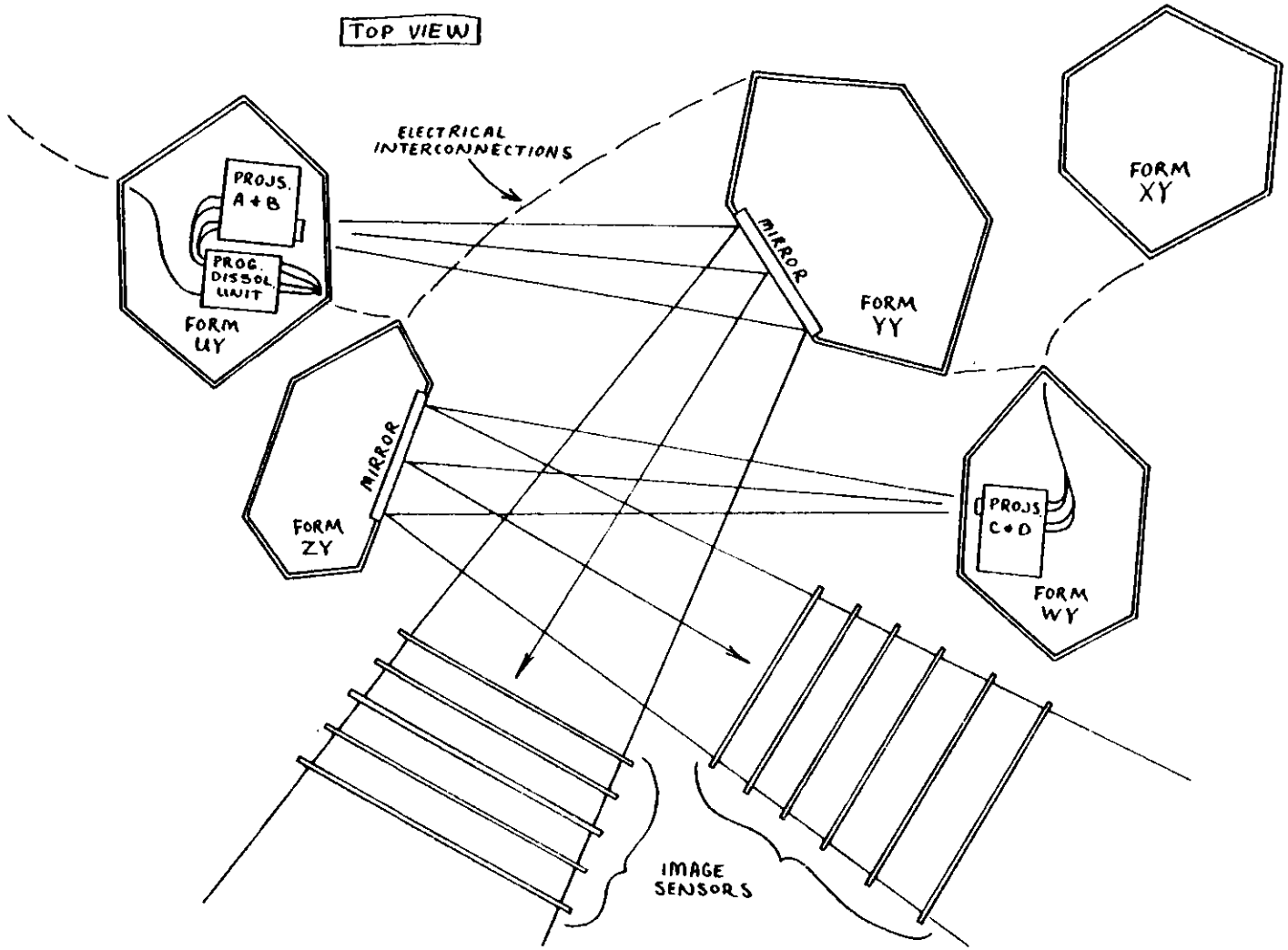



Fig. 5--Reflective housing forms in combination with projected imagery

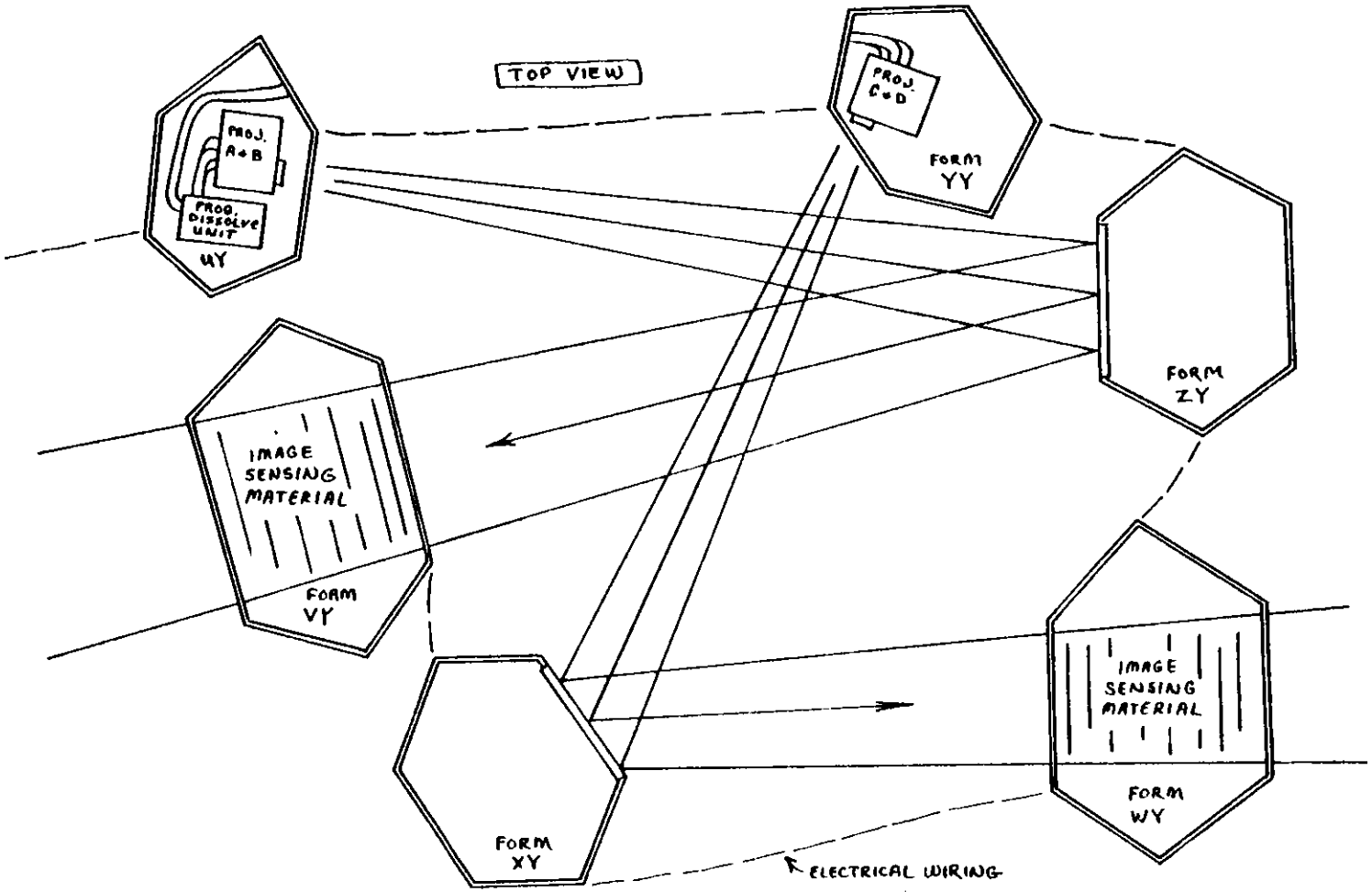



Fig. 6--Housing forms that host sensors, mirrors, and projection equipment

culties in actual use. While construction posed little problem, transporting the units would have been difficult. The second basic problem revolved around the cost of material for the image sensing material. Plexiglass would have proved the most satisfactory, but the cost per square foot was prohibitive. The third problem with the system was also related to the effectiveness of the multiple sensing unit in picking up the projected imagery, i.e., the greater distance between the projectors and the sensing material, the less effective was the image. Consequently, the concept of projecting the imagery through multiple layers of plexiglass or substitute for plexiglass was retired.

Figure #7 eliminates the necessity of the sensing screens, but still utilizes the housing forms with a simplified rendering. The numerical lighting on the housing units was also deleted. Generally speaking, figure #7 illustrates a simplification of prior drawings for the purpose of cost reduction and setup simplification.

During this time period, I set up a model situation to test my mirror/projector system and to check it out under actual working conditions using the system illustrated by figure #7.

The first unanticipated factor to come out of the model was the large physical size of the projected image at short projection distances. The test distance measured 86" from the projector (fixed focus) to the mirrors, and 144" from

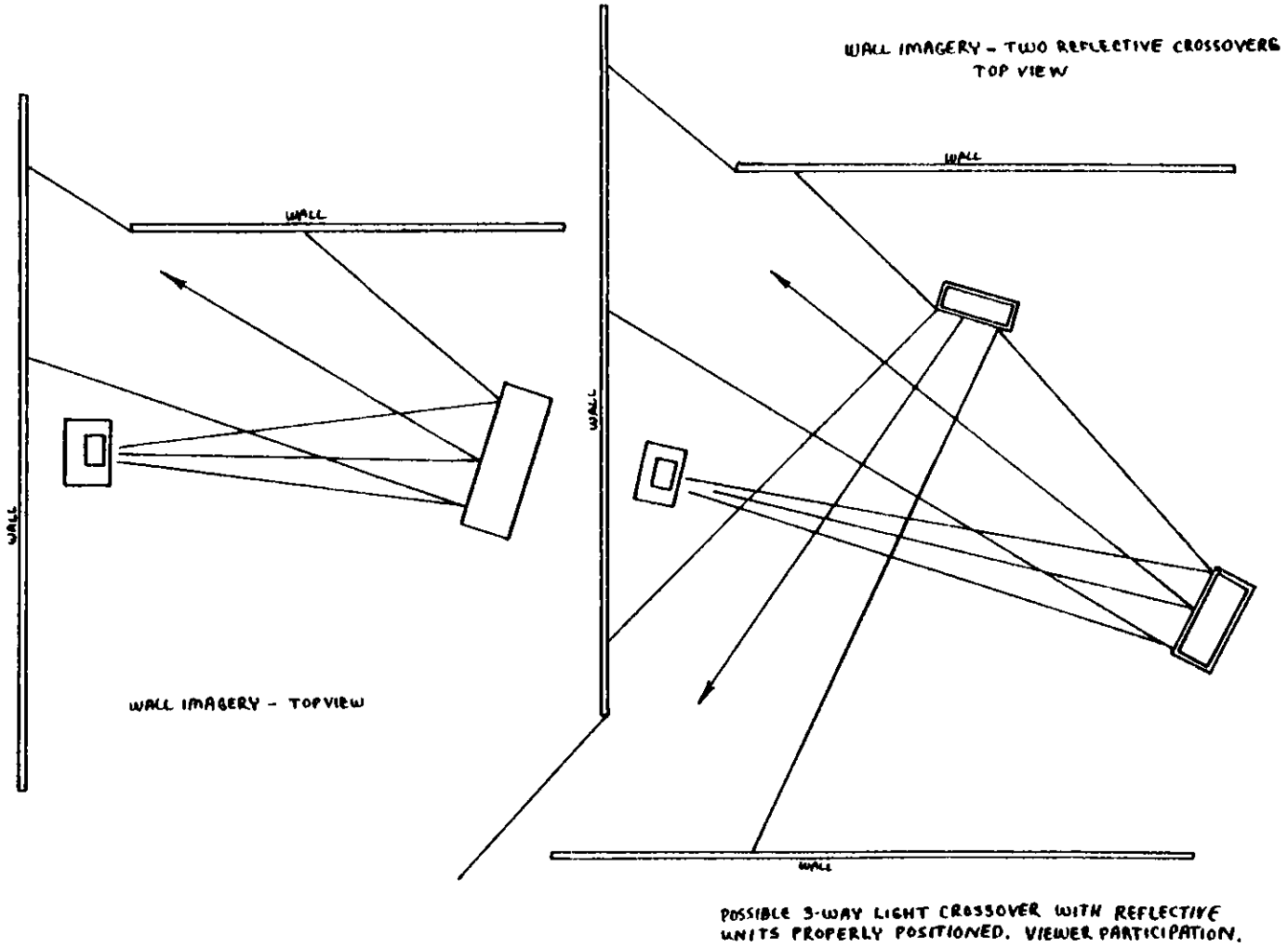



Fig. 7--Possible installation layout using reflected imagery

the mirror to the wall. Roughly speaking, the image projected was 4 feet wide at a projection distance of only 20 feet. The second aspect of test, which was anticipated, was the squareness of the image projected. The image went from a relatively square image to a triangular image when projected from progressively less perpendicular angles to the mirror and wall. The third factor explored in the model was depth of field of the projection on the projection plane. For example, in the test at a 20 foot projection distance, the projected image would be in focus 12" in front of the focal plane and 12" behind the focal plane. This narrow depth of field latitude surprised me.

During this same time, I was working as a part-time projectionist in a theater near Dallas, TX. One afternoon I took my projection equipment and slides to work with me to test the imagery projected at long distances. Since the theater was fairly large and had a reasonably large screen (25 x 40 ft.), it was an ideal place to check my slides for any graininess. The film I had been using was Kodachrome 25. When projected on the theater screen, there was virtually no evidence of any grain in any of the slide samples. Even in that situation the colors were rich, saturated and high in detail.

Figure #8 is an elaboration on figure #7. It was meant to be installed in a slightly larger gallery. The primary objective of this drawing was to help visualize the

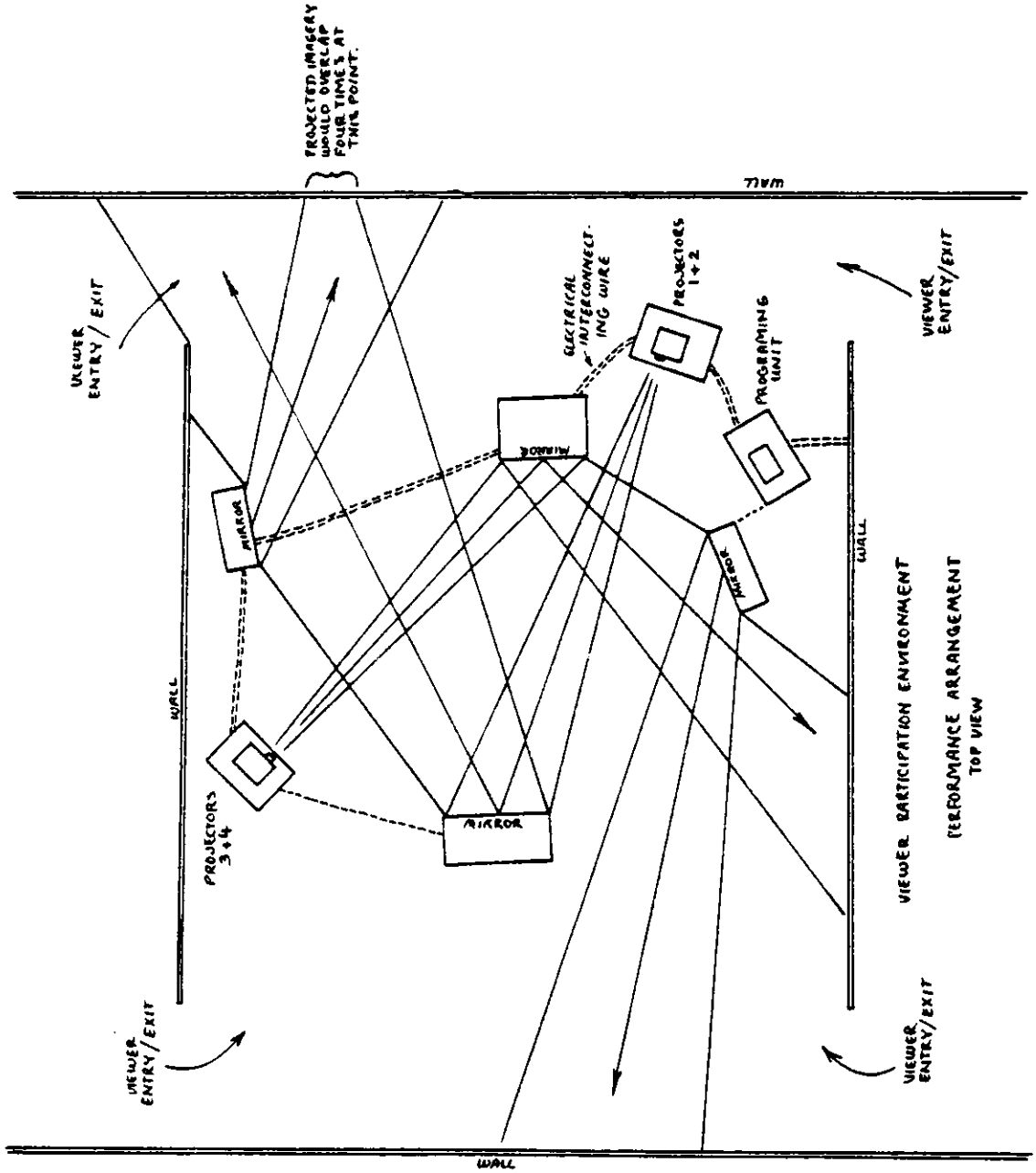



Fig. 8--Arrangement for reflected imagery in large gallery

possibilities of a slightly more complicated system than shown in figure #7. The projected imagery is reflected in and overlapped in the drawing and meant to create somewhat of a 360 degree visual experience. The system also allowed for viewer participation, i.e., it allowed the viewer to walk through the projected imagery and in effect, become part of the performance.

Since the model set-up using the mirrors had brought to light a few unanticipated problems with projecting the images, I deleted the use of mirrors on the housing forms shortly thereafter. At the same time, I did not want to give up on using a neon lighting to install in the housing forms. It was a concept I had been interested in for some time.

While looking for a neon source in Dallas and Fort Worth, I began working on concepts to utilize the neon.

Figure #9 illustrates one of the early concepts which combined the use of neon in the forms as well as the projected imagery. This system utilized suspended housing units as opposed to the floor mounted forms in previous drawings. The figure depicts a simple system where the neon is installed in the housing units.

In figure #10 the upper drawing is a side view of an installation, while the bottom drawing illustrates the placement as viewed from a top view. The only real departure is the use of a single two-sided screen which would be

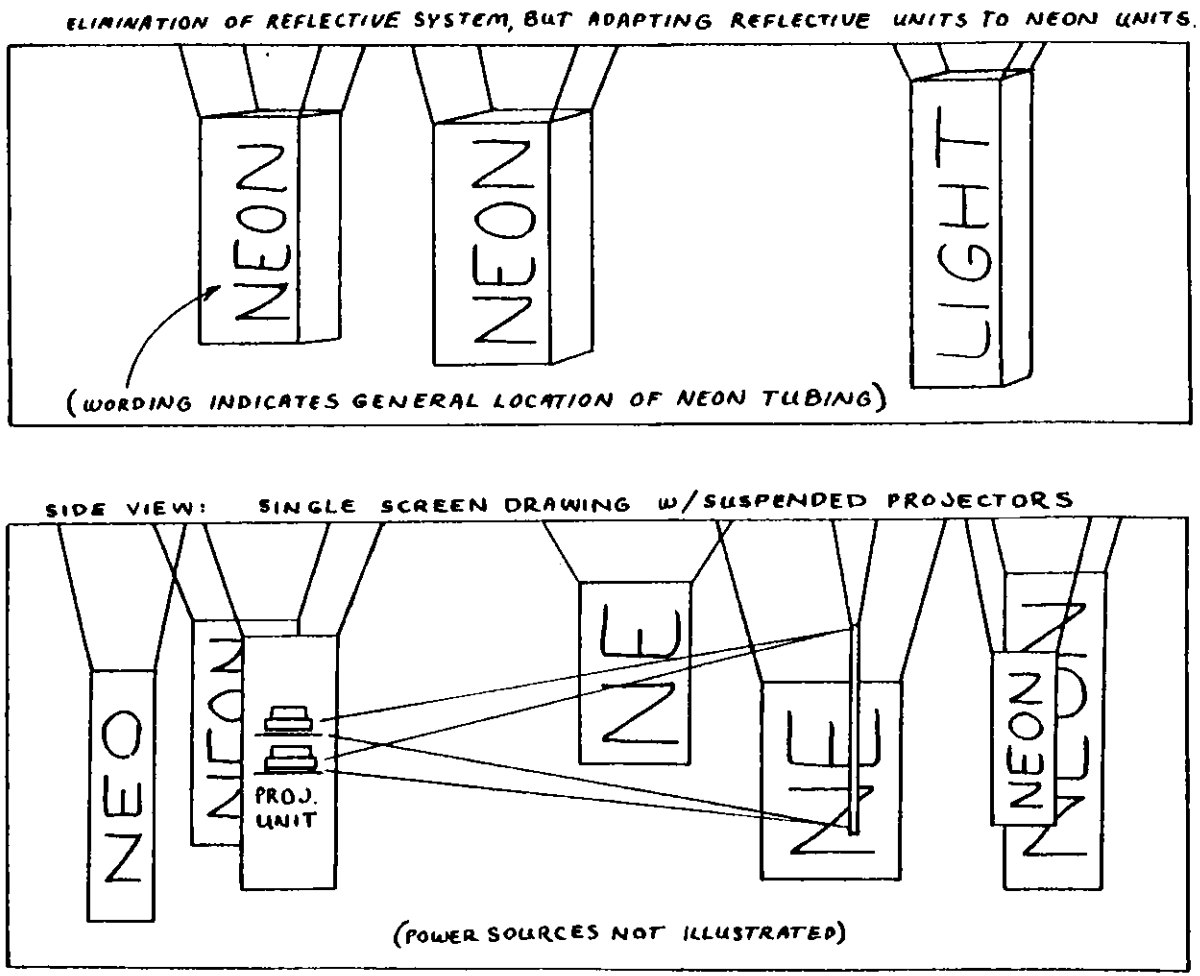



Fig. 9--Concepts combining neon in housing units

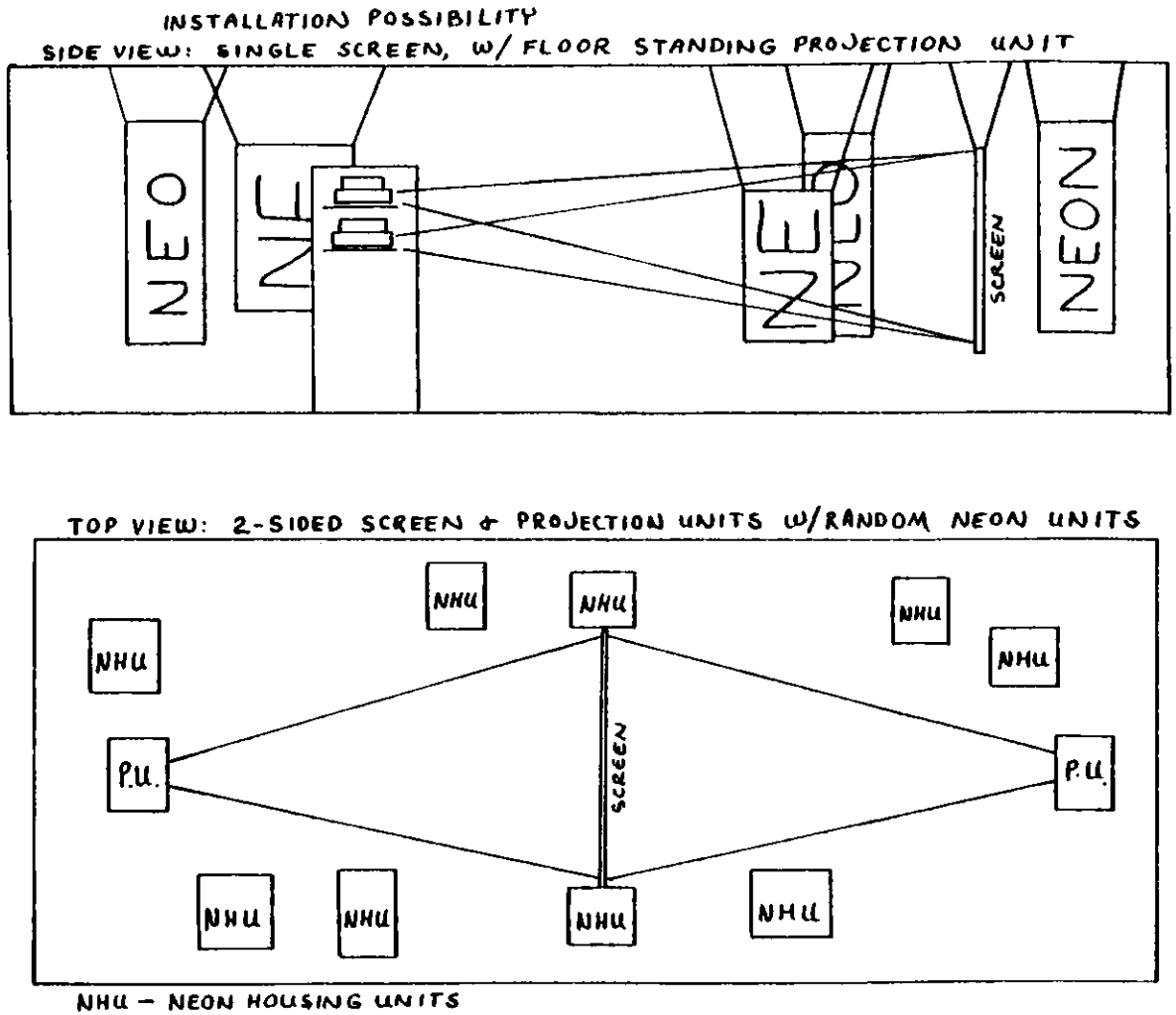



Fig. 10--Neon housing units in combination with projection system

projected onto from both sides.

Figure #11A again uses the two-sided screen, but uses shields or partitions to reduce the ambient light created from the neon lighting. Figure 11B illustrates a similar system using an alternative placement in relation to figure 11A.

After several weeks of looking for neon from various sign companies in Dallas, I finally found one that had some neon tubing they were about to discard. The company had just disassembled a very large sign which they had no use for and said I could take all that I could use. The tubing was small with short pieces of large letters, which when they were disassembled made them undistinquishable as to what they had represented in the original sign. This was perfect for my application. The only drawback was the fact that all the tubing was white and all the imagery in my slides was of assorted colors. I considered the possibility of painting the tubing but finally opted to try the tubing in its manufactured state. Some of the newly discovered neon is roughly illustrated in figure #12.

Figure #12 presents a more traditional approach by attaching the neon in framed units and positioning them vertically. The bottom portion of the figure illustrates how the neon wall units could be positioned around the projection system located in the center. The images were intended to be projected on frosted plexiglass. Even though the concept was easily assembled, it was never considered

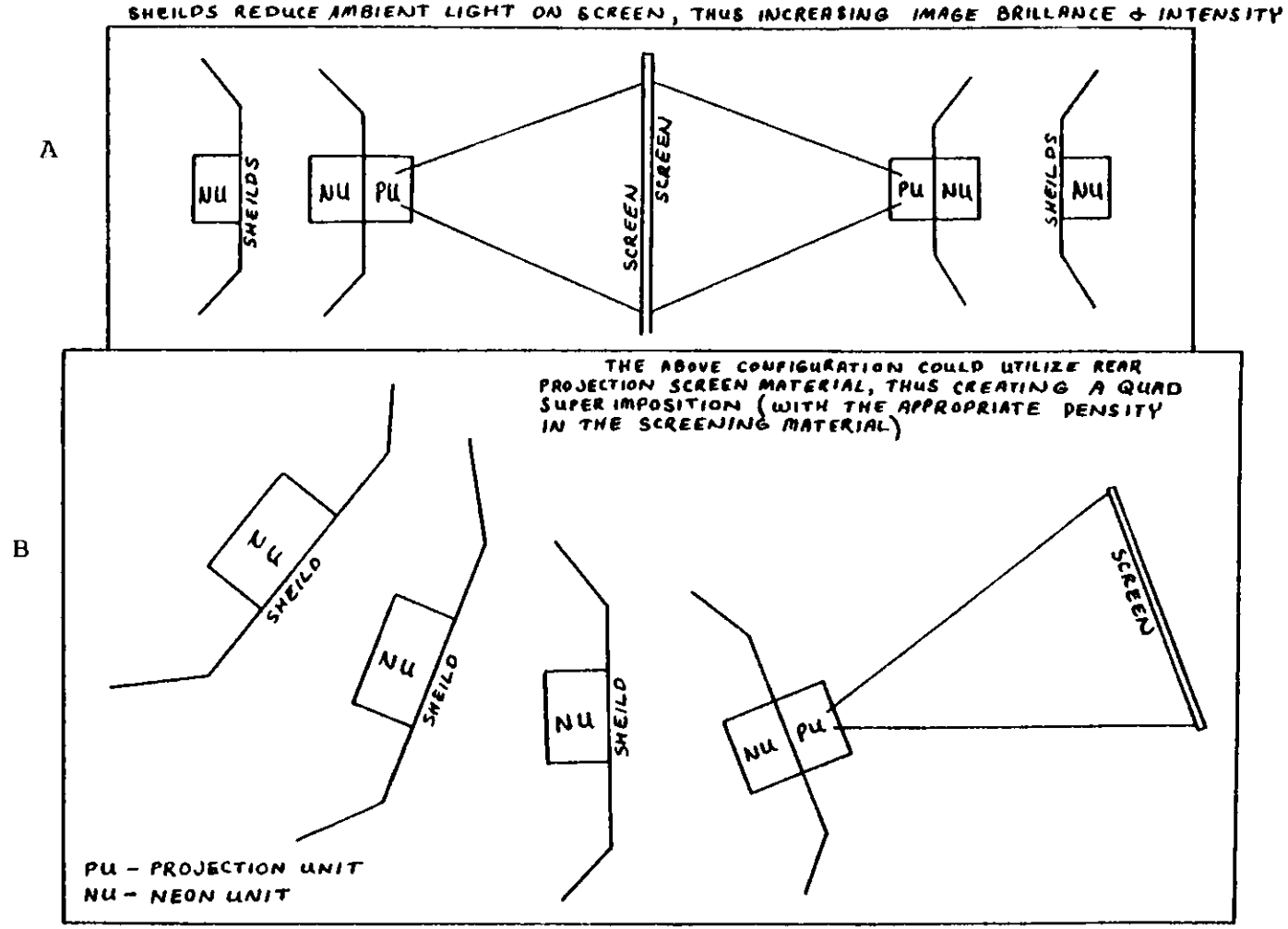



Fig. 11--Shields combined with neon housing units in combination with rear screen projection system.

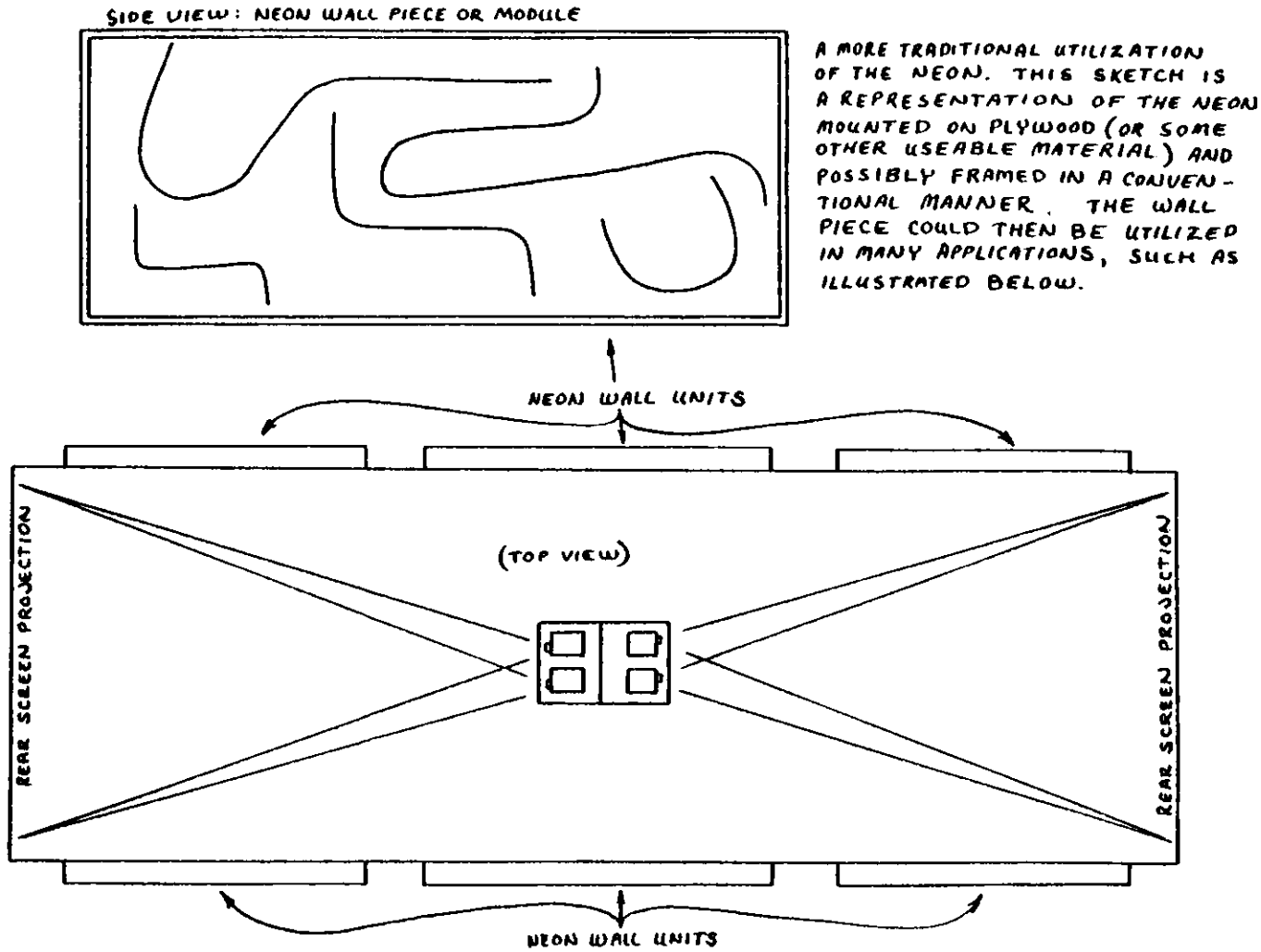



Fig. 12--Wall mounted neon housing units in combination with rear screen projection system.

very seriously because I felt the concept was fairly unoriginal, if not boring. Actually having the neon tubing in hand made planning and experimenting much easier. Figure #13 illustrates one of the new ideas I had after having picked up the neon. The figure shows the neon being held in an open fashion suspended by wires from the ceiling. There was practical reasoning behind this new installation concept. Prior to considering the open installation concepts, I had attempted installing the tubing into frames which I had built out of wood. The frames were simple and easy to fabricate, but installing the neon in the frames was not particularily easy. The frames put a stress on the glass tubing which it was not designed to withstand. Consequently, several pieces of neon were broken by simply installing them into the frames. After the neon was installed, transportation became very difficult also. The problems I encountered with the frames spawned the concept of open experimentation with the neon tubing which is illustrated by figure #13. I also did some experiments with the neon to try out the open concepts. I found that even though the finished product was acceptable, some neon tubing was broken each time it was installed or taken down. It seemed almost impossible to handle it without breaking a piece. In addition to illustrating the neon being hung openly, figure #13B depicts a possible installation using rear-screen projecting as shown in figure #12, and figure #13C illustrates a side view of a projector, screen

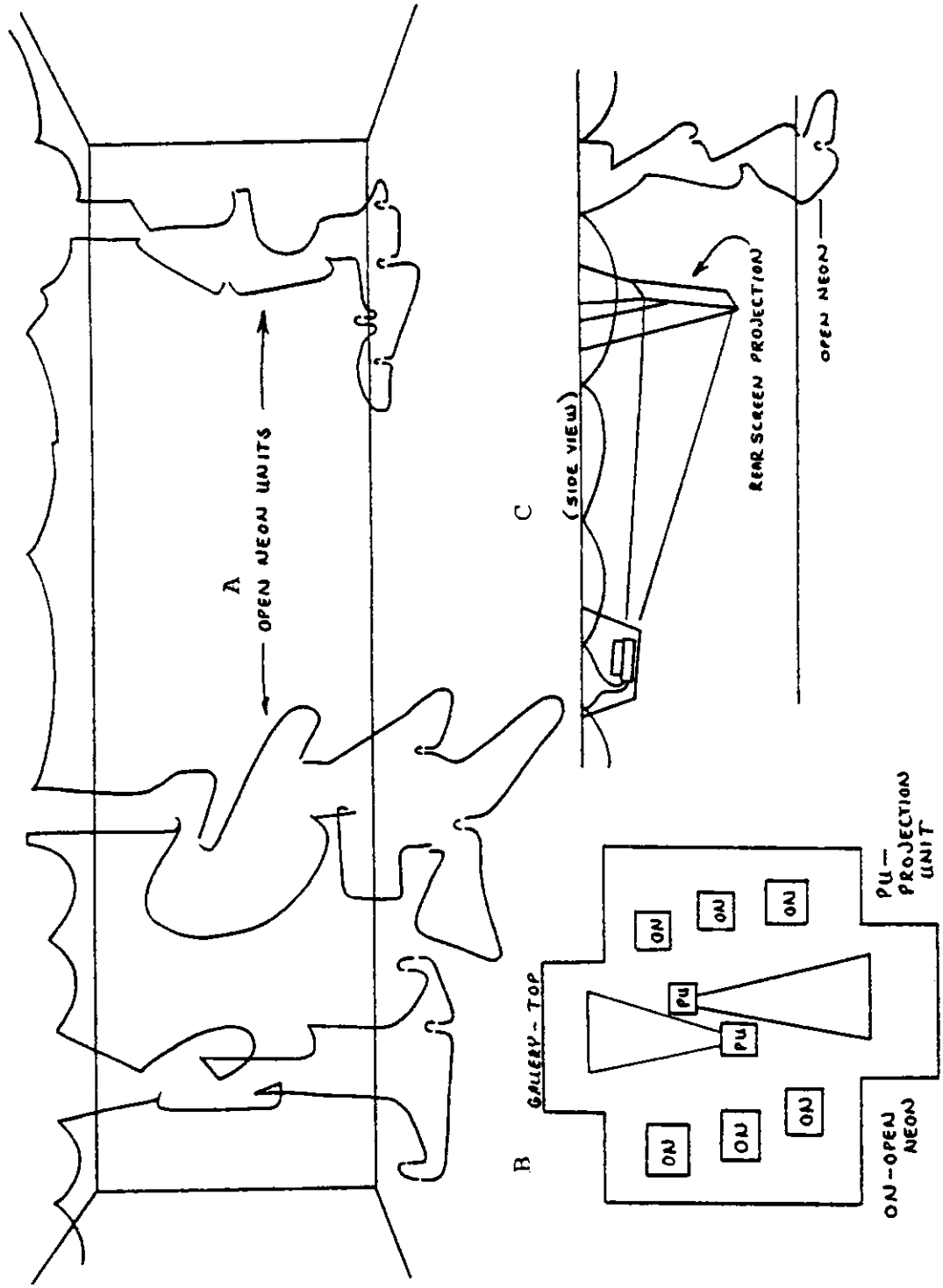
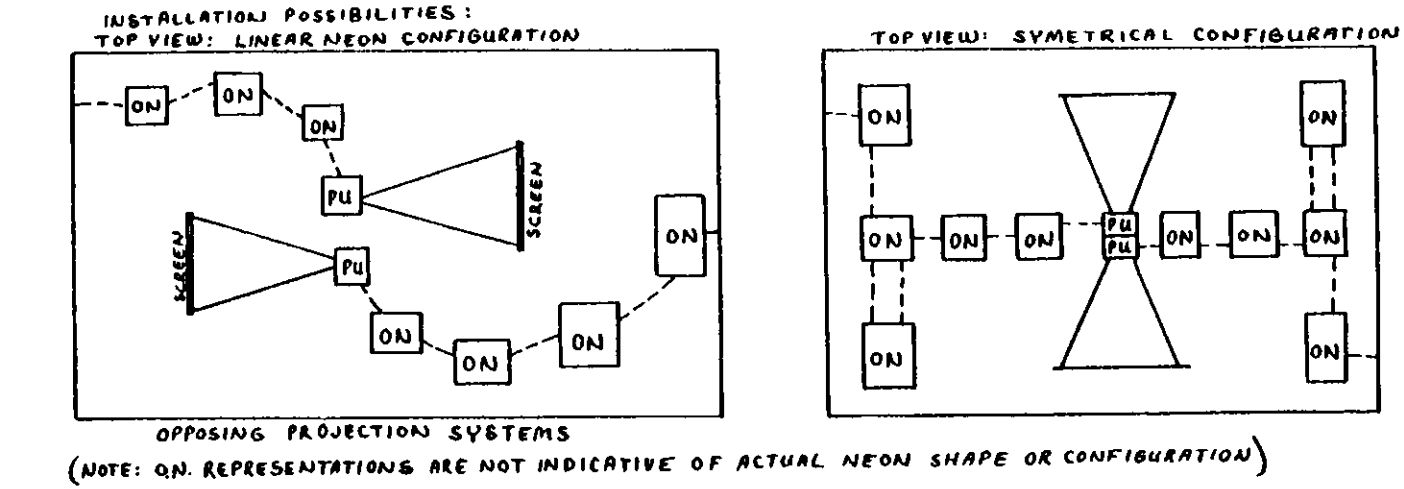



Fig. 13--Open neon placements in combination with projected imagery

and one small open neon placement.

Figure #14 depicts two small drawings of possible placements for any basic rectangular space, as well as an illustration on connecting the neon tubing. Wiring the neon together proved to be a small project in itself. I wanted a connection that would prove safe, clean and functionally aesthetic. After talking with local neon sign makers, I was advised to use copper ignition wiring from an automotive store. After checking with several suppliers I also found a particular variety of rubber distributor caps which fit perfectly between the neon tubing and the ignition wire. Figure #14C illustrates this connection. I found that taking the wire that leads from the neon and ignition wire and twisting them together proved to create a good electrical connection. Then I used the distributor caps to slide down over the connected wires which made them safe, as well as helping to give the connection some strength and rigidity.

Figure #15 is fairly self-explanatory. It simply illustrates a rather large floor/wall installation without specifically defining where the transformers would be placed. I did not realize in drawing this sketch how many power transformers would be required to power such an installation. From the information I received from technicians at the sign shops, I was led to believe a single high amperage transformer would handle large amounts of neon as illustrated in figure #15. This did not turn out to be the case. As



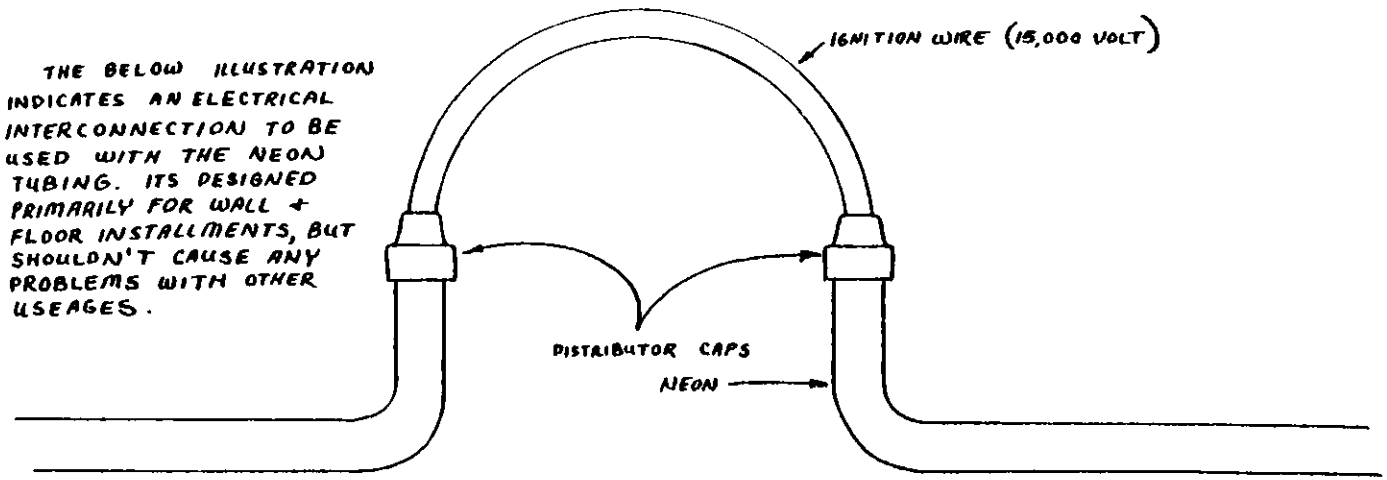




Fig. 14--Possible neon/imagery projection systems and close up of neon electrical connection.

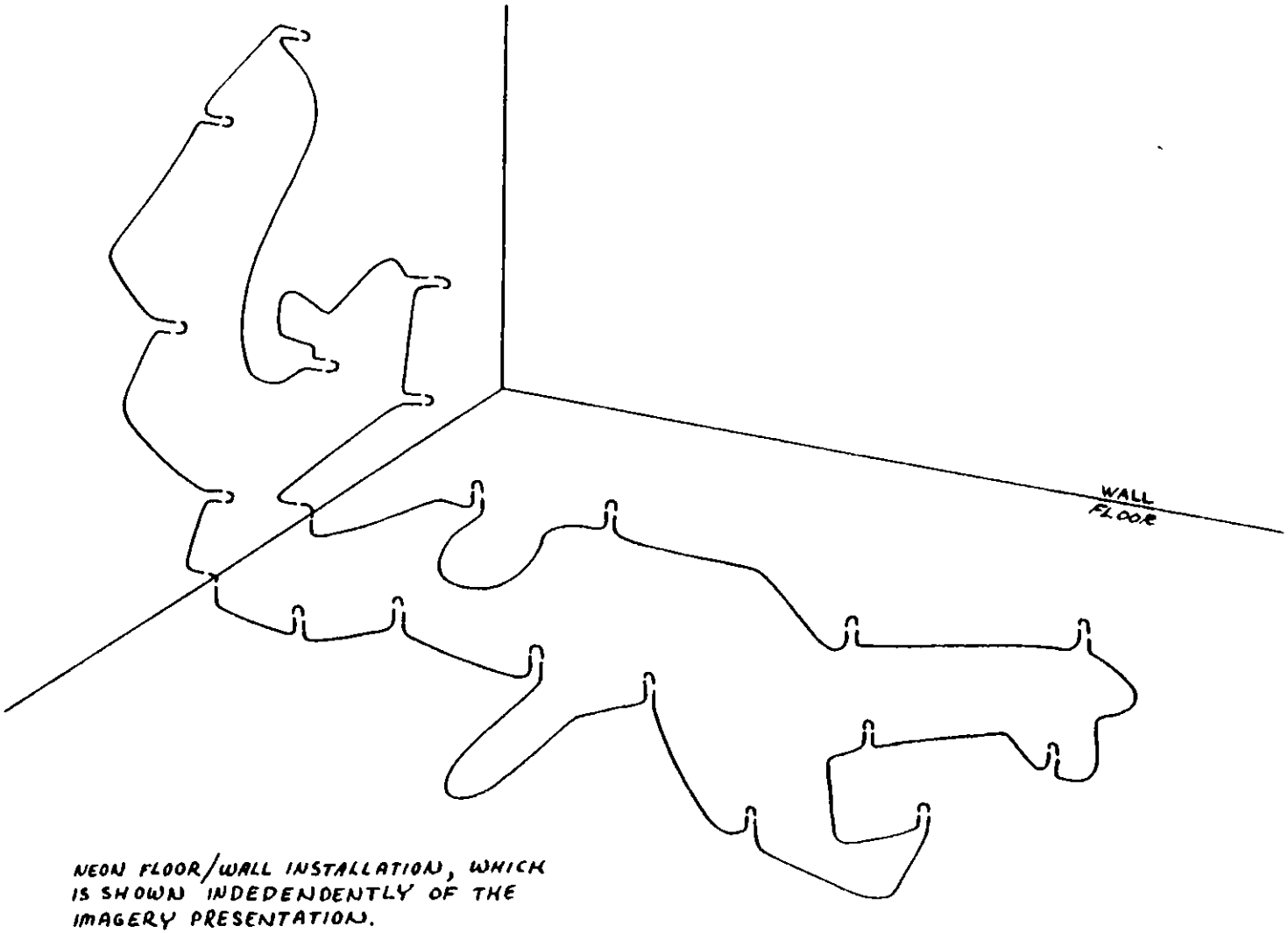



Fig. 15--Wall and floor installation using neon

it turned out, one high amperage transformer was running at capacity with 5 to 7 six foot pieces of neon. Disregarding the technical problems, figure #15 appealed to me in its sprawling configuration which was based primarily on the actual shapes of the neon tubing. The fact that it was placed directly on the floor and wall also had a certain appeal. When the neon was lighted it seemed to have an animated living quality.

One of the several projects within the overall environmental system was the fabrication of boxes for the transformers. They were required for safety purposes. Since the neon and transformers were used in situations open to the public, the transformers had to be housed. The final solution was an open-sided box with the top and sides covered with a stiff screen. A total of six units were constructed with only three actually being used in the final environmental system.

The transformers became more of a part of the overall piece in figure #16. In this drawing the transformers were placed in a series to emphasize their participation in the system rather than to de-emphasize or conceal the units. The circles of neon leading to the transformers were almost secondary to the importance of the transformers in this drawing. However, as mentioned earlier, the amount of power required by the neon negated the possibility of actually using this system (at least with the size transformers I

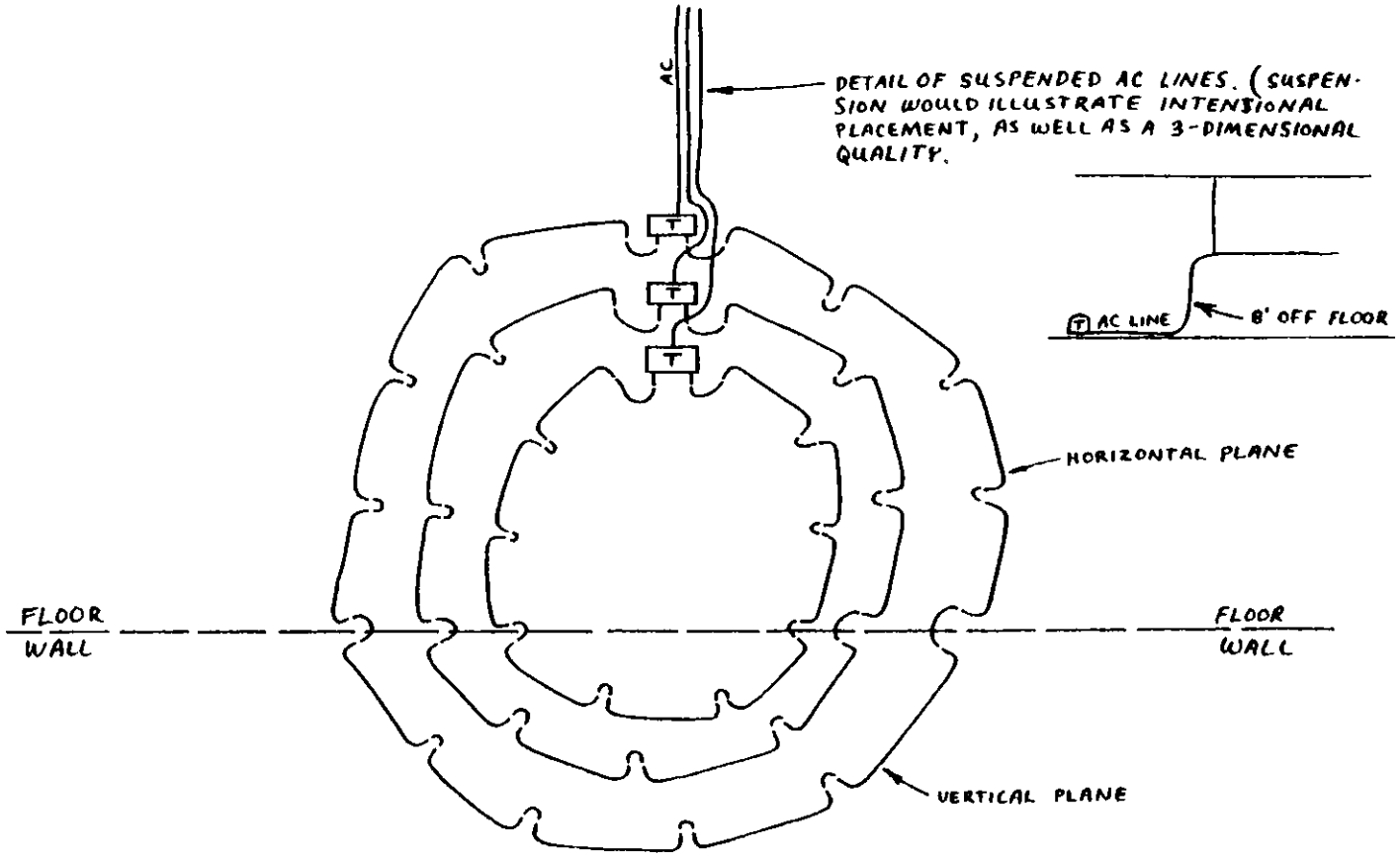



Fig. 16--Wall and floor installation using neon in circular configuration

was using).

Figure #17 is somewhat of a variation on #16. After having drawn this system, I set up a similar model to figure #17 in the North Texas State University, Art Department. The piece was set up totally on the floor with all the neon in the open and unrestricted to public access. I was primarily concerned about someone walking on the piece. Yet, since it was so bright I thought no one would step on it accidentally or otherwise. That turned out to be wishful thinking. Almost immediately someone stepped on one of the neon pieces. After the mishap I decided any further neon floor placements would require some roping off or some other type of physical barrier.

Figure #18 represents a simple variation on the neon and projected imagery combination concept. However, this system was not a particularily practical concept. It was included in the figure series because I thought the idea might prove useful later. The neon in this system essentially frames the screen in which the imagery was projected. A variation of this concept that may have proved successful would have been the use of this exact system but in multiple rings of neon.

Figure #19 returns to a neon floor installation in combination with the projected imagery. While this system looks interesting on paper, it was fairly impractical because the neon was so physically close to the screens. The light from the neon tubing would have been so bright as to drown

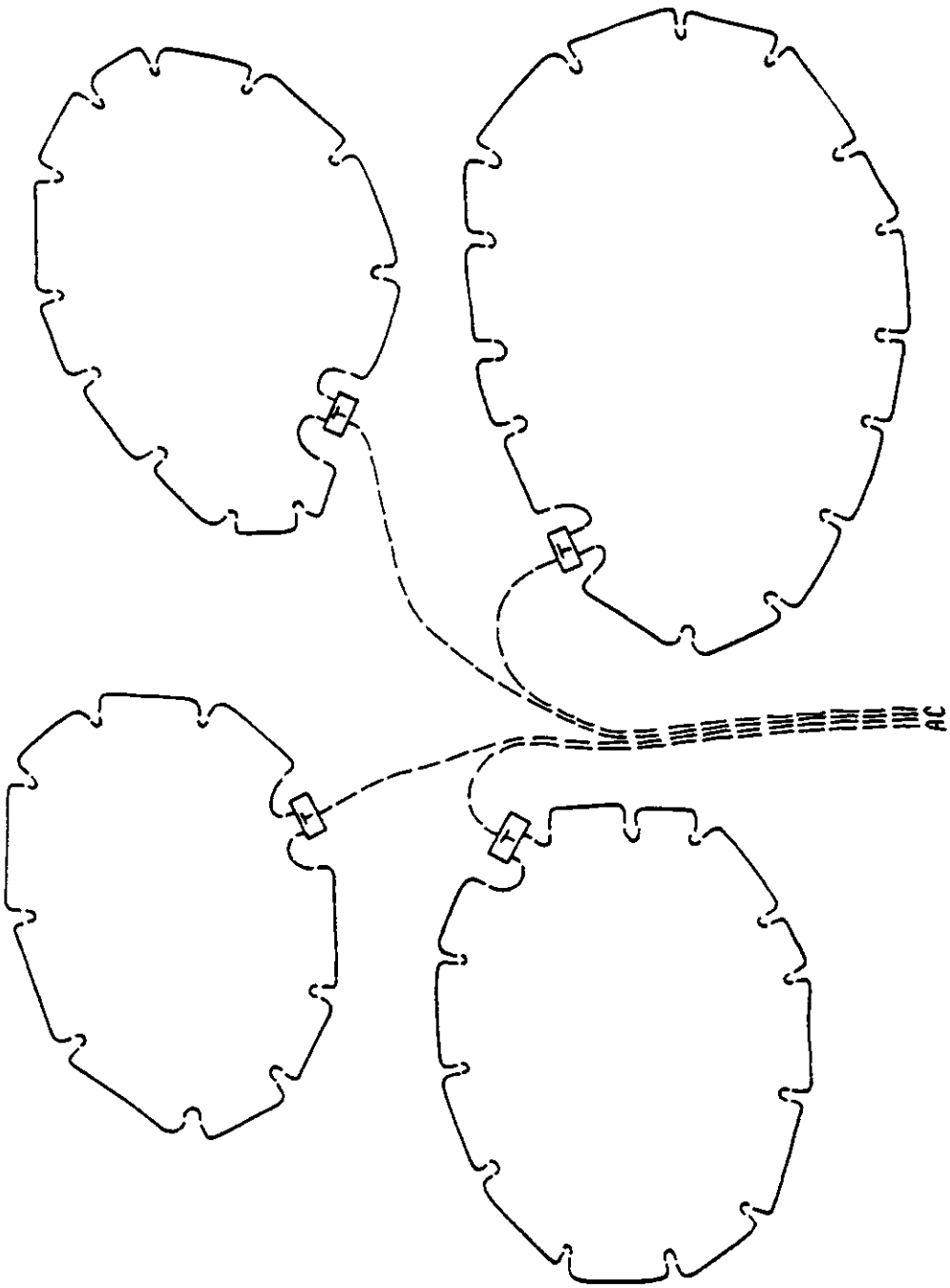



Fig. 17--Neon floor installation in clover configuration

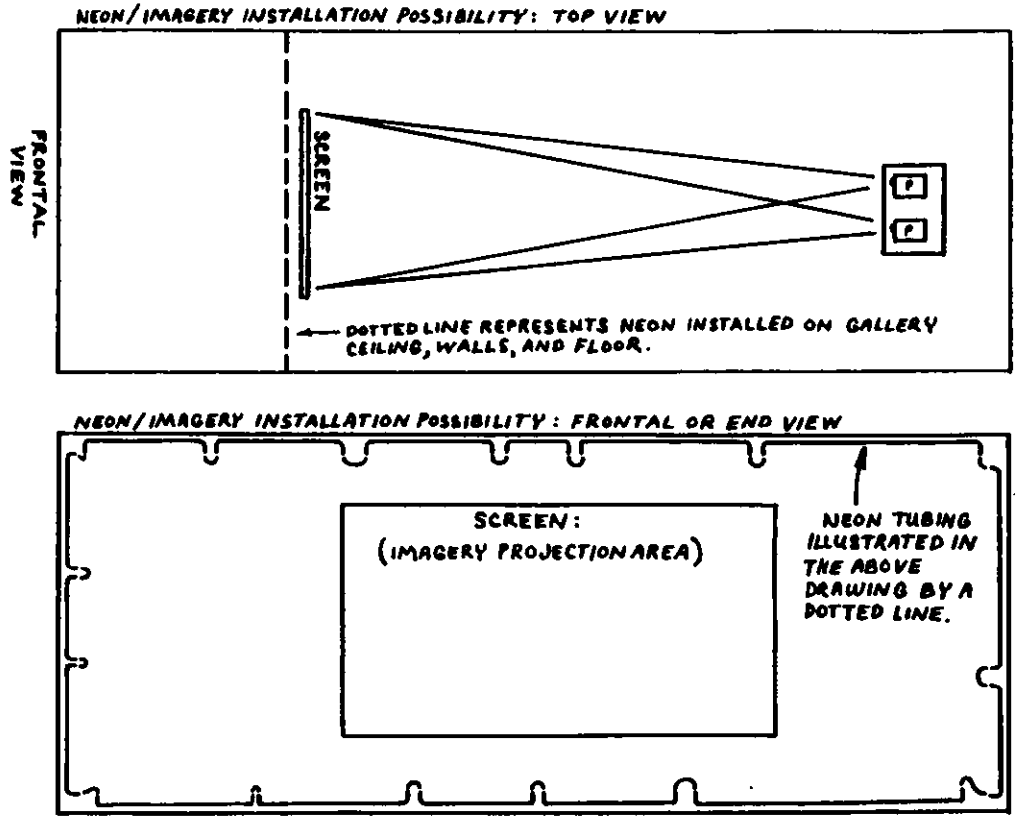



Fig. 18--Rear projected imagery system with neon encompassing screen

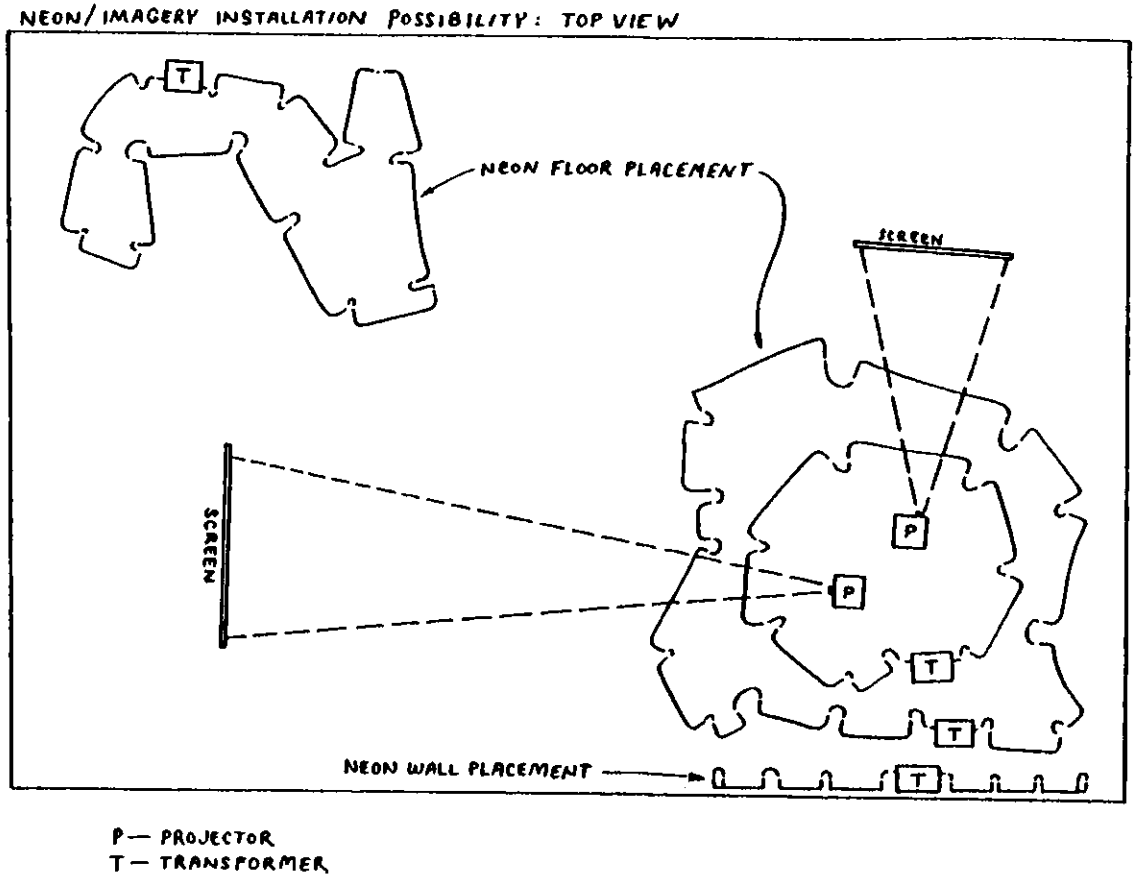


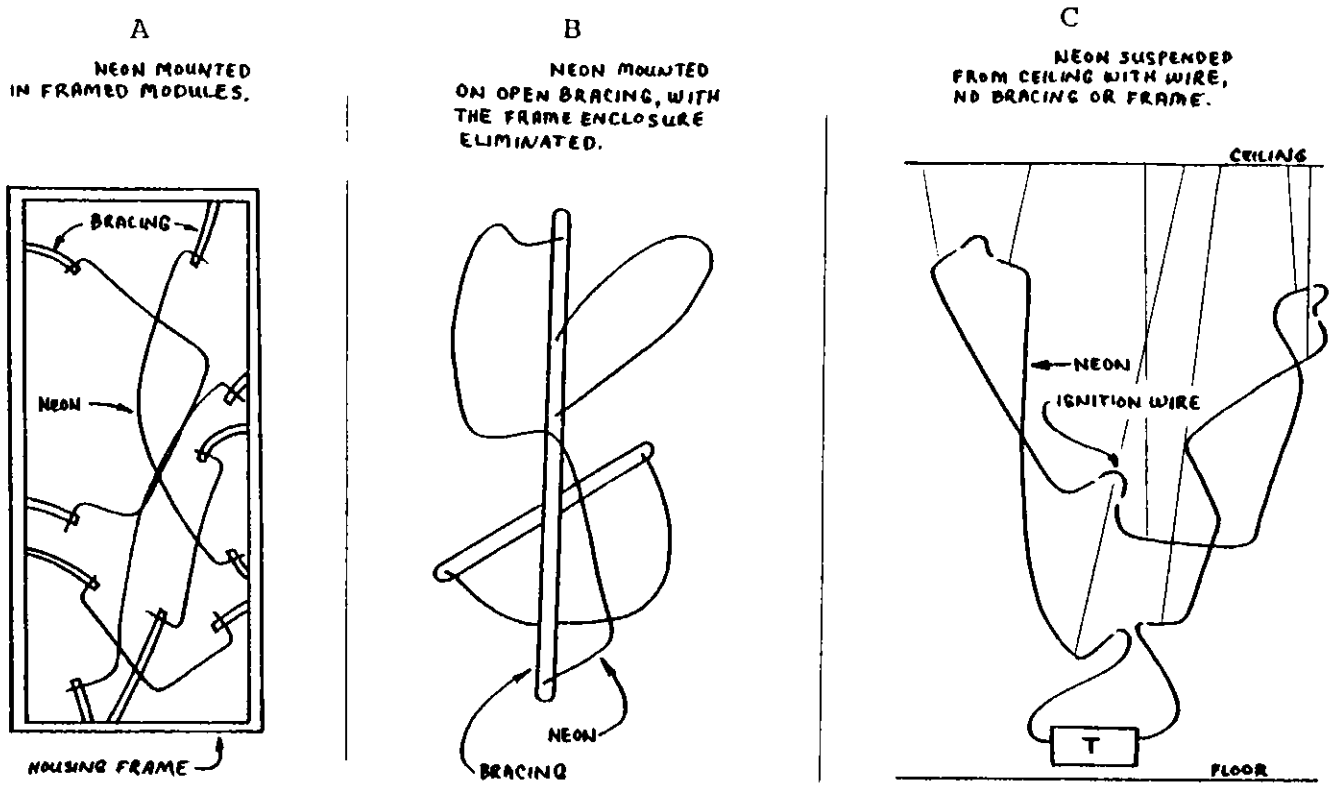

Fig. 19--Possible installation using neon on wall and floor with rear screen projection system.

out the projected imagery.

Figure #20 depicts the three basic steps the neon went through from the beginning of the project. Figure 20A depicts early concepts using an external frame. Figure 20B presents a simple internal frame for the neon, and figure 20C illustrates one of the final presentation concepts. The framing was eventually eliminated because of difficulty in fabrication as well as detracting from the visual impact of the neon.

The decision was made to install the final piece in the NTSU Art Department Gallery. The only problem I had was the fact that I had to share space with another graduate student. Consequently, we had to divide the available space in two. This had the effect of compressing all the neon and projected imagery closer together, which was proved difficult to deal with in the final installation. The net result was having to reduce the amount of neon placements possible. In terms of actual space for the neon, there was enough. But when the neon was grouped together in quantity, it created a great deal of light which, as mentioned earlier, diminished the effectiveness of the projected imagery. As a result, the quantity and number of neon placements had to be reduced for the final installation as indicated in figure #21.

Figure #21 attempts to deal with the reality of the ambient light problem by removing the neon placements from




THE ABOVE DRAWINGS ILLUSTRATE VARIOUS POSSIBILITIES AND PROGRESSIONS FOR NEON INSTALLATIONS INTENDED FOR CEILING SUSPENSION, RATHER THAN NEON FLOOR OR WALL PLACEMENT.

Fig. 20--Basic stages for neon adaptations

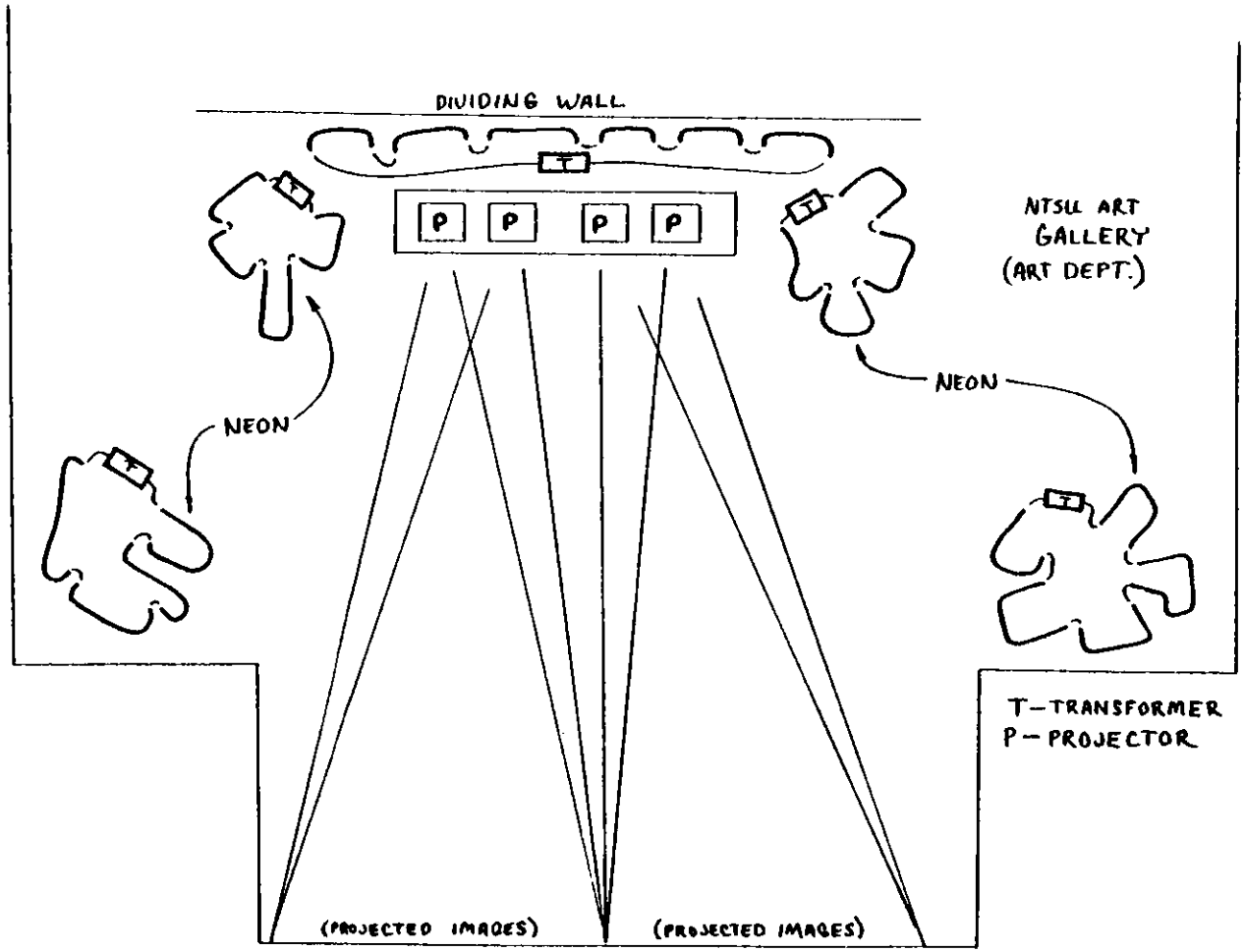



Fig. 21--Preliminary concept for final installation of neon and projection system.

the immediate vicinity of the projected imagery. The drawing also allows for the possibility of viewer walk-through participation, i.e., walking through the projected imagery and subsequently adding another aspect to the piece. As indicated in the figure, the projectors were to be centrally located on one side of the gallery. Neon placements were to be located directly behind on both sides of the projectors as well as on the outermost walls.

Up until the last few weeks I had assumed I was going to have to use a standard 60 or 90 minute cassette to operate the programmer (which in turn controlled the dissolve unit and slide projectors). This would have worked fine except someone would have to sit with the exhibit and flip the programmed tape over every 30 or 45 minutes. As it turned out, a Dallas tape dealer suggested I use an "endless tape," a new type of cassette. Using the endless tape in the programmer eliminated the need for anyone to sit with the exhibit. Once the ques were programmed on the tape, everything ran without assistance of any type.

The only other problem with the projection system was with the carousels. Each carousel has a positioning slot in which you can not drop a slide. When in operation the carousels rotate through to this positioning slot and white light is projected on the screen. After considering various solutions to the empty frame problem, it occurred to me to simply drop a slide into the projector before installing

the carousel as usual. This simple solution cured the blank screen problem and improved the presentation.

Figure #22 illustrates the final installation in the gallery as it was seen by the public. The seemingly large space did not turn out to be as large as it appeared. The first alteration that had to be made, as mentioned earlier, was to reduce the amount of neon installed. In addition to reducing the quantity of neon, the remaining neon had to be isolated with the use of portable walls, as illustrated in the drawing. In using this method of restricting ambient light in the gallery, the imagery was allowed to be projected with more saturation and brighter definition. The compartmentalizing of the neon placements was somewhat of a benefit in the fact that it created a partially secluded space for each neon unit. None the less, having to delete so much of the neon was disappointing since it was such a dynamic part of the overall piece. In earlier model situations, large quantities of neon had always been used. The viewer always appeared to be rather fascinated with those particular setups and I am reasonably sure the quantity was in part the reason. So in having to reduce the size of each individual neon piece and the number of neon placements from five to three considerably changed the effectiveness in comparison to earlier model situations. With the reduction in neon placement a considerable amount of space was available near the projection system so seating was brought in for the viewers who wanted

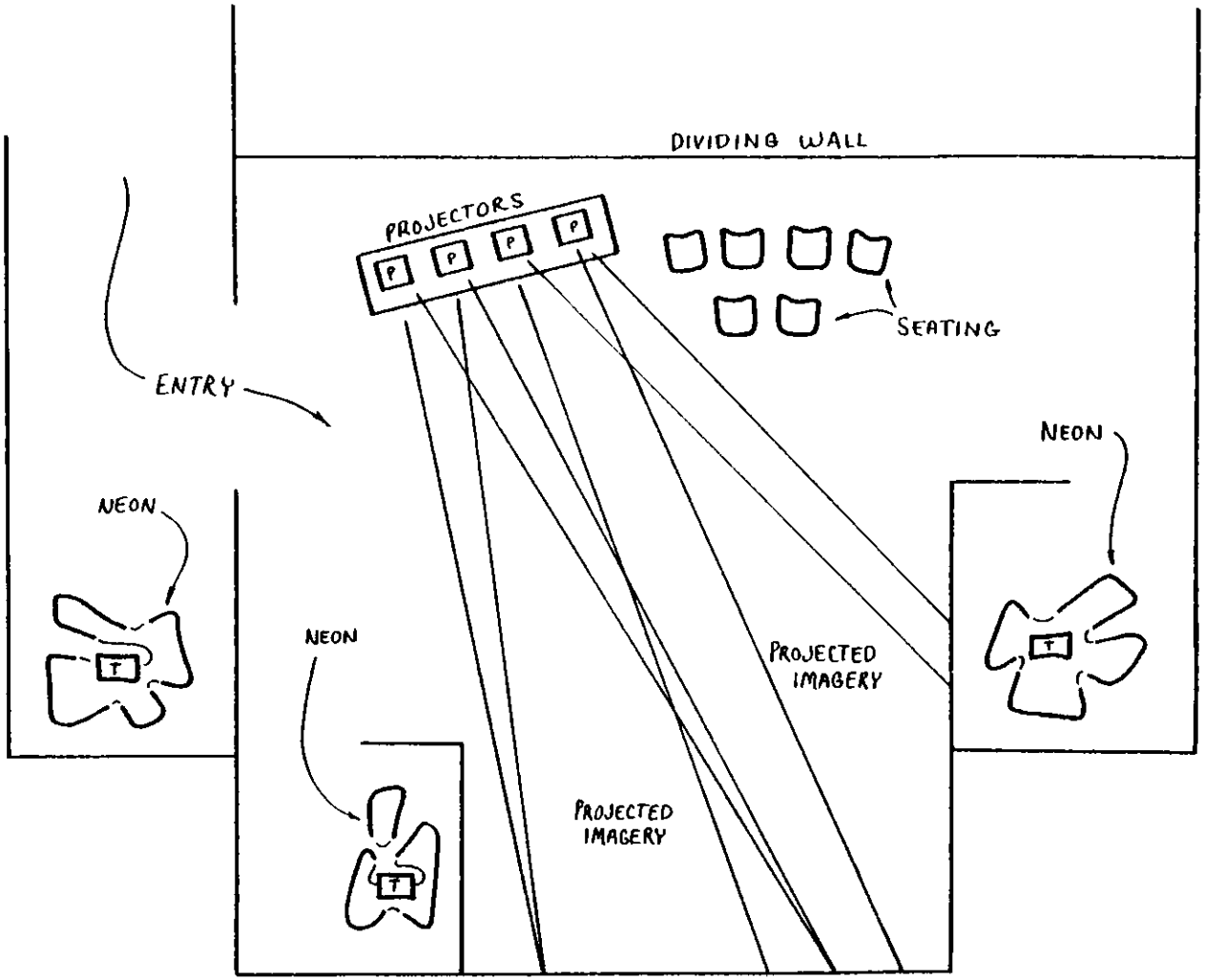



Fig. 22--Final installation for neon and projection system

to stay and watch the imagery portion of the installation.

# CHAPTER IV

## CONCLUSIONS

The purpose of the study was to explore light as a creative medium, with projected light and neon light being the final media in this creative project. The questions have generally been answered in the process description, but the following summarizes the bulk of information in the text:

A. What type of environment and hardware are necessary in producing the experience?

The specific equipment in the system included a cassette recorder, a programming unit, two dissolve units, four slide projectors, assorted neon lighting tubes (lengths ranging from four feet to ten feet), high power transformers, assorted types of wiring, and seating for the viewers. The gallery environment was approximately (as effectively used) forty feet by thirty feet. The gallery itself was very adaptable in some respects and difficult to use in other respects. Creating special areas for the neon was the best part (primarily for reducing ambient light), but the overall size proved to be somewhat small in relation to the installation that had been proposed.

B. What technical problems were encountered in creating effective image producing system?

Technical problems were fairly minimal in relation to the operation of the projection equipment in combination with the neon lighting. The operation of the recorder, programming unit, dissolve units, projectors, neon lighting, and transformers all functioned flawlessly. The only real equipment problems if it could be defined as such, were the slide mounts. As they were made of cardboard, the wear on the corners of some of the slide mounts began to bend over and periodically stop the slides from being dropped into the projectors as they should have.

C. What dimensional factors (width, length, height, etc.) were involved in creating an effective image reproduction system in relation to the light placements?

The light produced from the neon placements proved to be more intense than anticipated. Isolation of the neon placements was necessary in order to reduce ambient light throughout the gallery. The amount of neon tubing also had to be reduced, as did the number of total placements. One of the main problems was the white walls. While they were fine for projecting slides onto, they also reflected neon light very well. But the basic problem in relation to the dimensional factor was a basic lack of space. The whole gallery, had it been available, would have proven a more workable situation.

D. What conceptual processes (proposed installations of possible performance) and outcomes developed through the course of the study?

In relation to the whole project, I feel the proposed installation concepts dealt with in the body of the paper offered relatively encouraging possibilities. If cost had been no object, a few of the proposed installations could have proven very successful. But in the end cost factors played their usual roles in the final system. Cost was intentionally not dealt with in the beginning of the study, so freedom of imagination could be possible. Then gradually through the course of the study cost factors eventually were dealt with in order to arrive at a final solution for the installation.

# CHAPTER V

## SUMMARY

Looking back over the sequence of conceptual progressions, trial runs, and finally the actual performance, I feel that the study opened up many possibilities for future work. I accomplished a lot of basic work. Some of the sketches throughout the study held potential for very effective, actual installations. Although it was not possible to utilize all of the concepts developed in the drawings, I would enjoy going back and using several of the neon floor/wall concepts in new installations. While it was almost impossible to use the larger neon setups in the final installation in combination with the projected imagery, the neon could easily be used by itself very successfully. The final performance was not as effetive as it could have been even though I feel positive about the results that were achieved. The combining of the neon with the projected photographic imagery created some difficulties with ambient light. When neon was used in large enough quantities to be visually effective in combination with the projected imagery, the light from the neon began to overwhelm the projected imagery it was intended to compliment. Consequently, the neon portion of the final installation had to be subdued and reduced in size so that

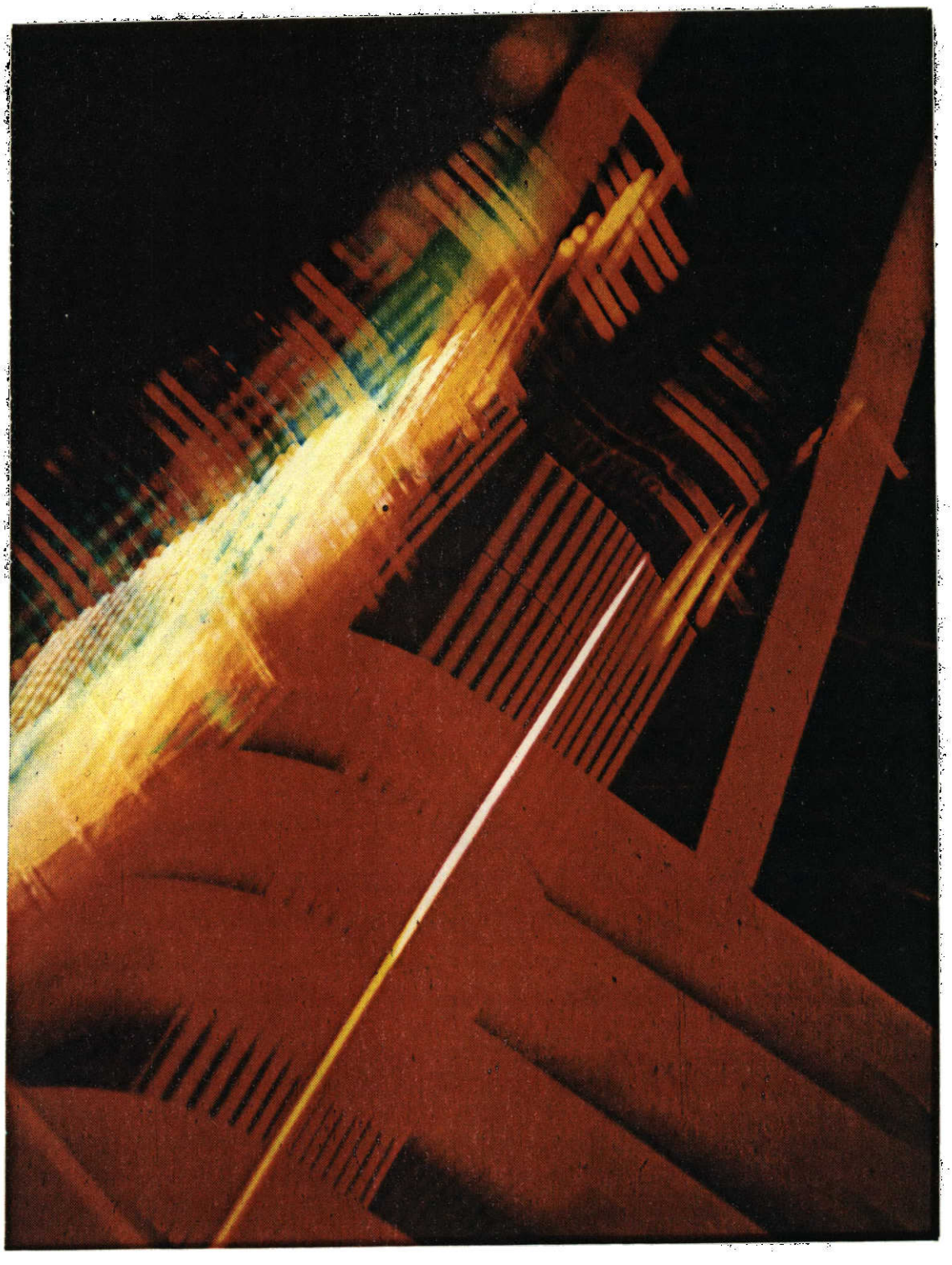
the projected imagery portion would not lose its impact. Several trial runs and model situations were set up to avoid any unforseen problems. Yet, the final installation revealed primary difficulties in combining the two light forms into a single performance that the trial situations could not anticipate.

Even with the difficulties that I encountered in combining the mediums of neon and projected photographic imagery, I am still excited about the potential of light, both with neon as well as projected imagery, as a medium for artistic expression. Even though this medium did require a great deal of time, effort and expense, I feel that it was a worthwhile and fulfilling experience.

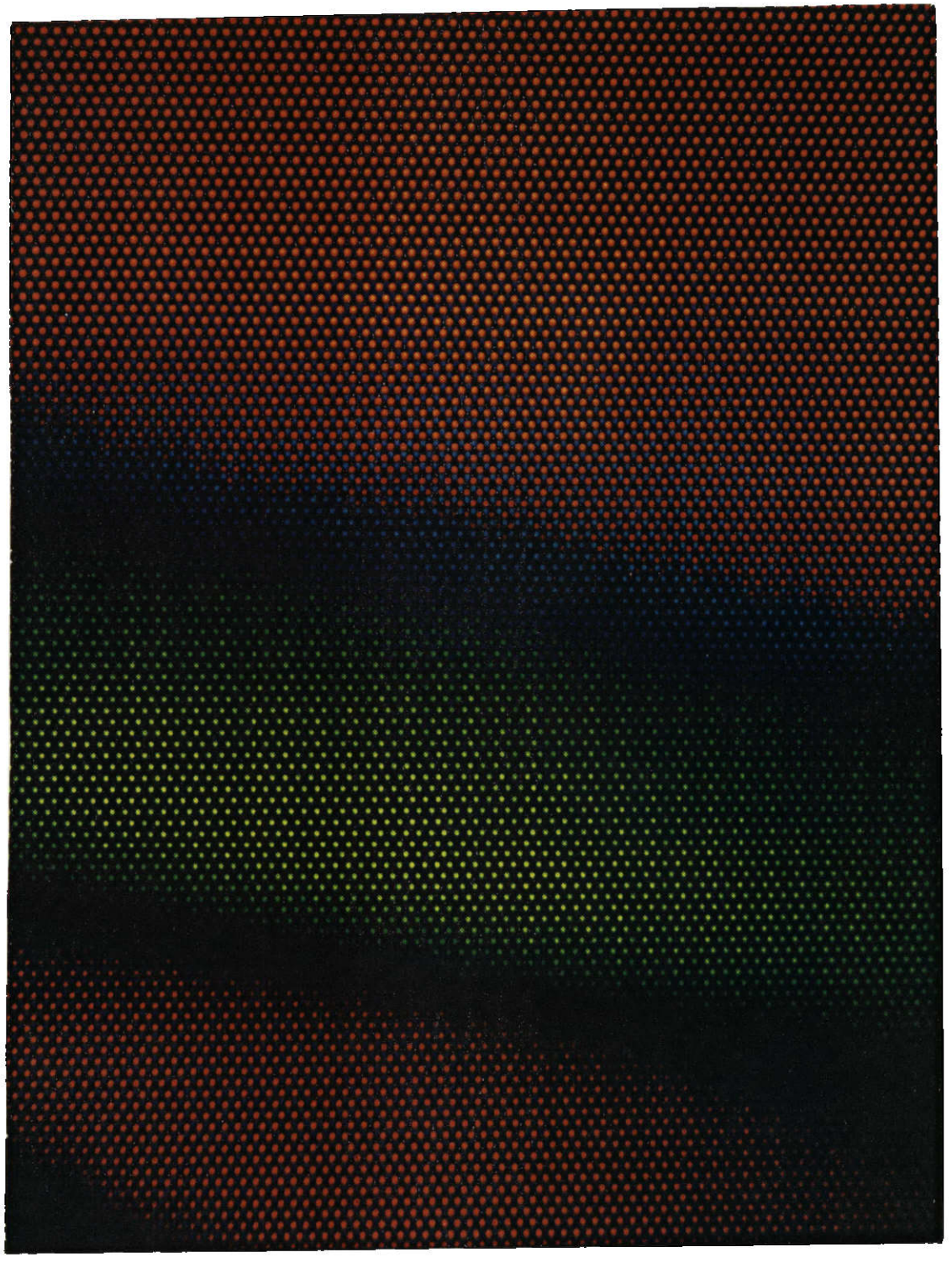
Photographic imagery (A)

Photographic imagery (B)

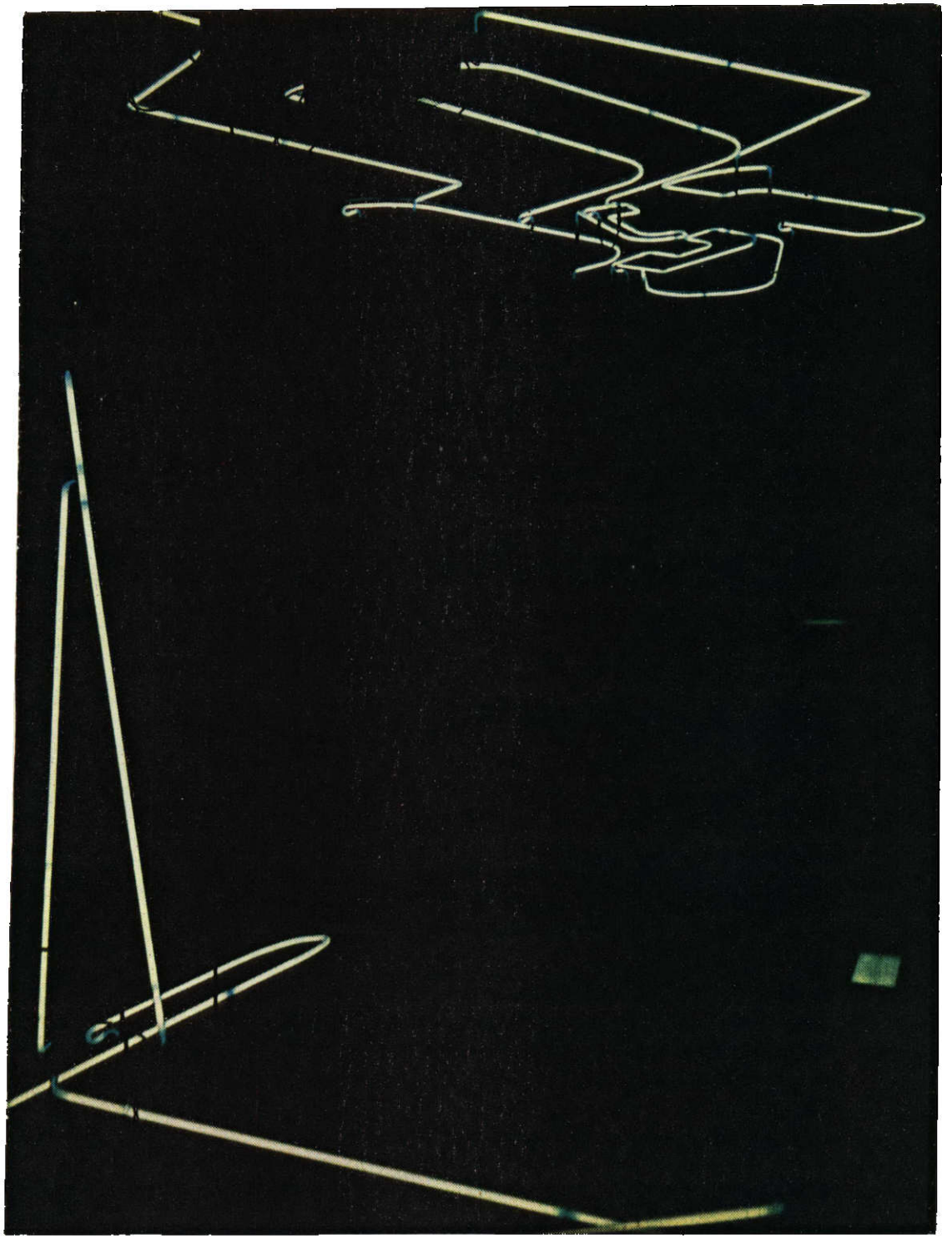
Photographic imagery (C)



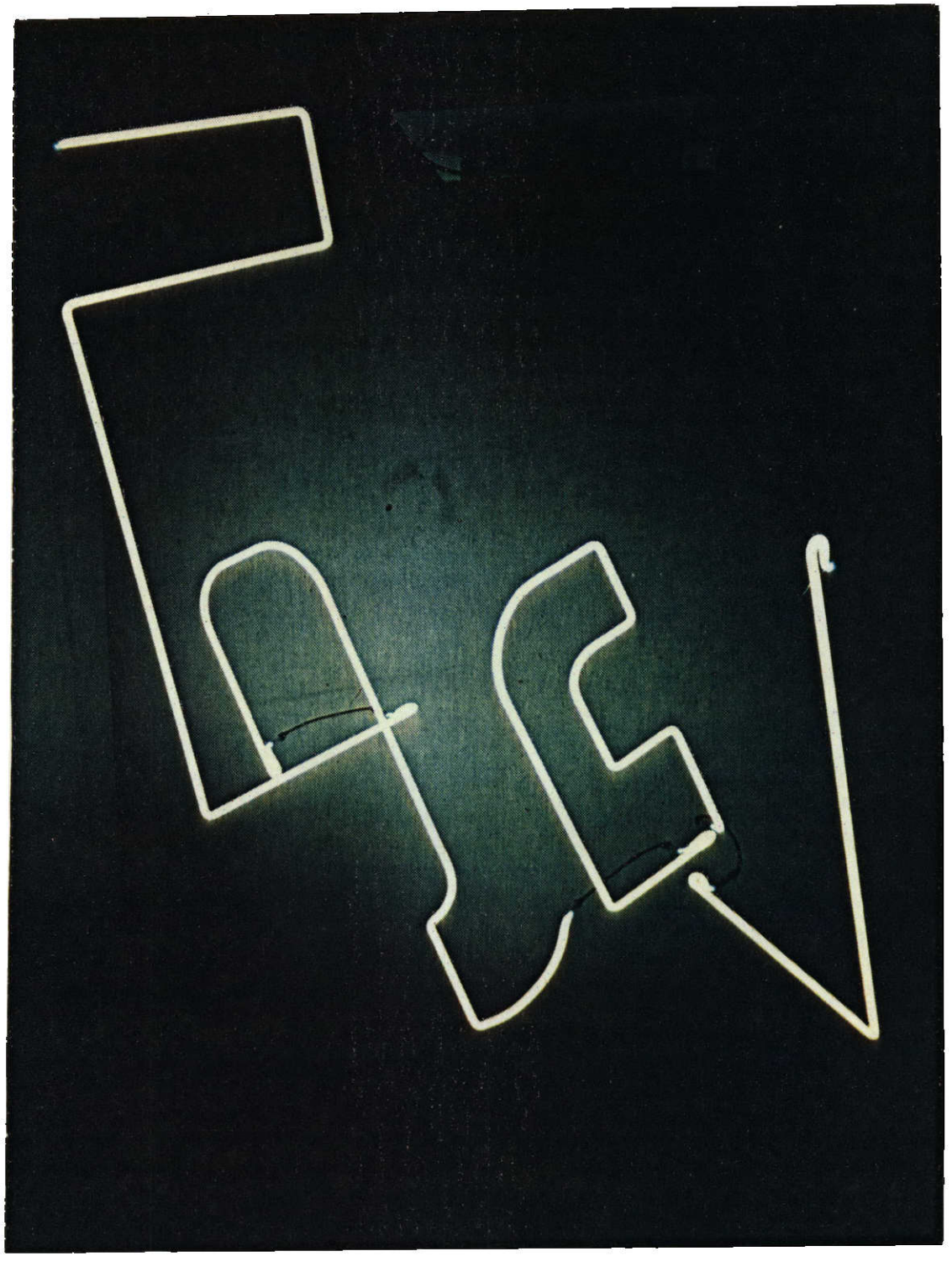
Photographic imagery (D)



Open neon installation (E)



Open neon installation (F)



# APPENDIX

## SOURCES OF MATERIALS

Eastman Kodak Co, Inc.
6300 Cedar Springs Rd., Dallas, TX

Ehrenreich Photo-Optical Industries, Inc.
623 Stewart Ave., Garden City, NY

City Sign Service Company
4010 East Side Ave., Dallas, TX

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