Designs in Clay for Architecture

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c. pp. H. Cowles.

to Dean Harold J. Brennan
for his faith and interest
in the undertaking
of this project

FORWARD

This thesis is an attempt to unify Man, his ideas, and Nature into one overall concept through the plastic medium of clay. The written portion is meant simply to reinforce and amplify the poetic statement of my completed mural entitled, "Life Forms."

I wish to extend my heartfelt thanks to both Frans Wildenhain and Hobart Cowles for their patience, understanding, and technical advice. I also wish to thank Gerald Dartt for his assistance in photographing the progress of this thesis.

Leon I. Nigrosh
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INTRODUCTION

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Man has always sought beauty in his surroundings. If beauty did not occur naturally, he attempted to create his impression of it through his own handiwork.

Among Man's earliest expressions of art are the finger scratch marks on the walls of the caves in Altamira, Spain, which have be dated around 15,000 B.C. In another part of the same caves there appears the famous "Wounded Bison" painting (c. 15,000 B.C.) about which H.W. Janson writes, "What a vivid, lifelike picture it is!"[1] Many such fine drawings of animals and hunt scenes have been discovered in caves the world over. They are believed to originally have been used as "...part of a magic ritual to insure a successful hunt."[2] As time passed, however, these drawings became more of a personal expression of the artist and were used more for decoration than magic.

The oldest known picture on a manmade flat surface, a brick wall, is the wall painting at Hierakonopolis, Egypt, (c. 3200 B.C.) of a funeral scene with men, animals, and boats. As Egyptian architectural principles began to be used to greater extent, so did the used of decorative wall surfacing.

> No matter how inaccessible or how completely hidden from view, every available inch of surface was covered from top to bottom with bits of pictoral information...Everything was there, from the correct way to prepare fish to the correct (if rather unpleasant) methods

> by which a king should send terror into the hearts of his enemies...Wherever possible the figures and the accompanying text were scratched right into the actual stone walls and pillars.[3]

A good example of the painted limestone relief used extensively by the ancient Egyptians is the interior of the tomb of Ti in Saggara (c. 2400 B.C.) which depicts the everyday activities in which the spirit of the deceased could still take part. One of the earliest experiments with spatial relationships is the introduction of a second ground line in the tomb paintings at Berii Hasan (c. 1920 B.C.). The problem of enhancing a wall surface was becoming less a task and more an art.

Another wellknown surviving example of early mural art is the "Toreado Fresco" (c. 1500 B.C.) in Crete, depicting bull vaulting - an important part of Minoan religious life. As H.W. Janson says, "The floating world of Minoan wall painting was an imaginative creation so rich and original that its influence can be felt throughout Minoan art."[4]

The Ishtar gate of Nebuchadnezzar (c. 575 B.C.) was a major step forward in Man's quest for beauty in his environment. It was a gigantic city gate constructed of polychrome glazed bricks, molded animal figures, and "...vividly colored ornamental bands [having] grace and gaiety."[5]

Only forty years after the Ishtar gate in Babylon, the Treasury of Siphnians at Delphi was completed. The frieze

on this small edifice remains an outstanding sample of the Greek interest in ornamental wall surfaces. The use of extremely deep undercutting and high relief of the figures presents a condensed but convincing spatial relationship on the wall of the Treasury. This approach was later used on the frieze of the Parthenon, showing the procession of the Greater Panathenaea which traveled around the building for some five-hundred twenty-five feet. During this time, the Etruscans, too, were creating a "wonderfully rich array of murals in [their] funerary chambers"[6] which portrayed dancing and hunting in brilliant colors.

In the First Century B.C., Rome was filled with many "window effects" painted on the walls in private houses. These works attempted to push back and open up the walls by illusionistic perspective of landscapes and figures. However, "the Roman Painter [had] no systematic grasp of spatial depth [and] his perspective [was] haphazard and inconsistent within itself." At the same time, in Pompeii, an exceptionally large and technically accomplished floor mosaic depicting the Battle of Issus was completed for a private home.

With the rise in stature and power of Early Christianity, architecture on a great scale was demanded - for the glory of heaven. Immense bare walls appeared and had to be decorated. Paint, for the Christians, was not inspirational enough when looked upon. Then the unprecidented use of glass mosaic was

introduced and thereby achieved the illusion of unreality that had been sought. The Justinian mosaic at S. Vitale, Ravenna (c. 547 A.D.), serves as the ideal mosaic construction of the Byzantine period. The figures are tall, slender, and magnificently robed. They are also individualized - no longer just symbols of human beings, but actual humans. It is a "union of political and spiritual authority accurately [reflecting] the 'divine kingship' of the Byzantine Emperor."[8]

The majority of mosaic works done during this time was for the walls and domes of the Christian church. The brilliant shimmering colors of the glass increased the effect of other-worldliness that was longed for. They also produced, quite successfully, illusions of majestic power and the glory of the heavens. The last great example of mosaic work of the period is the facade of Orvieto Cathedral (1310) which used polychromed tessera instead of sculpture to create depth and a "translucent" appearance.

The Romanesque churches of western France had a profusion of murals adorning their ceilings. Unfortunately, an emphasis on height through the use of vaults, arches, and larger window openings began to cut down on the size of blank wall spaces available for murals. An increased facility with stained glass foretold the decline of mural work.

The first half of the thirteenth century has been called the Golden Age of Stained Glass. The Gothic quest for lumi-

nosity extended through all the arts from manuscript illumination to the overpowering colored glass windows which punctuated every church and almost dissolved the architecture into one great mass of blinding color.

With the advent of Duccio and Giotto a great interest sprang up for panel paintings, that is, murals that could be executed in one place and displayed in another. This approach to art continued through the Late Gothic period into the 1400s. With the use of the newly-discovered oil paints to obtain a continuous scale of hues, the popularity of panel painting and portraiture grew boundlessly, leaving the slower, more permanent, fresco and mosaic methods behind. "Panel painting so dominated the art of the period between 1420 and 1500 that its standards [applied] to manuscript illumination and stained glass and even, to a large extent, to sculpture."[9]

Soon, with the invention of the printing press, even panel painting became a secondary form of art. It was not until Masaccio painted his fresco in the Sta. Maria Novella in Florence in 1425 that the adornment of wall surfaces regained some of its former importance. Truly, for the next two hundred years only the murals of five men - Perugino, Michaelangelo, DaVinci, Raphael, and El Greco - are worth noting. Yet even these men were more interested and concerned with other aspects of art - sculpture, panel painting, and portraiture - than with decorating large wall areas.

Profusely colored and flowery frescos burgeoned forth on walls and ceilings of almost every type of structure - churches, town halls, private homes - during the Baroque period of 1600 to 1750. But soon private collectors again became interested in smaller panels which could be displayed in various places. This, coupled with the imaginative and intricate architectural plasterwork of the time, brought a decline in the need for mural art.

Painters began using canvas, instead of wood, as oil paints increased in quality and popularity. Architects became increasingly aware of their building materials and started articulating their structures in a manner which left little room for surface decoration in other media. The revival of classicism in architecture with its columns, domes, arches, and so forth left no room for murals.

Gradually, the introduction of iron as a building material in the early 1800s caught the fancy of many architects. The fascination for the intricate webbing of iron girders soon wholly dominated architecture. A perfect example of this striking effect can be seen in Henri Labrouste's Bibliotheque Ste-Genevieve completed in Paris in 1850.

With the appearance of Impressionism, the individuality of the artist became more important. Depicting his changing views on life became most important to him; so much so, that

he had little time to devote to large surfaces. Collectors (who changed their address on the average of once every ten years) desired smaller, more portable works of art to adorn their homes.

But the crowning blow to the mural arts was its untimely divorce from architecture. As the new materials - iron, glass, steel - were introduced, the architect quickly forgot the artist and began viewing his building as some sort of monumental sculpture, a complete work of art in itself. A typical attitude of many architects at the turn of the century was that of Adolf Loos (1870-1933), an Austrian, who set himself against all ornament. He believed that architecture which was sufficiently thought out and designed with sufficient imagination had no need to hide its form under any system of ornament.[10]

The reaction against the overly-decorated architecture of the Baroque times became so great that all ornament was denied, with groups like De Stijl and the Bauhaus leading the attack. Architects took the precepts of the Cubist movement and attempted to apply them to building. "[Walter] Gropius's own architecture, as exemplified in the BAUHAUS buildings, is rational to the point of extreme - almost forbidding - severity."[11]

Of Charles Edouard Jeanneret (Le Corbusier), J.M. Richards says that "[he builds] in defiance of [Nature]. Le Corbusier's

romantic geometry, disciplined by Cubism, tends to exhaust itself in sterile abstraction of form, or in a renewal of academic formulae."[12]

This reaction to ornament has been explained as a necessary phase in which simplicity and efficiency were required to achieve a discipline in architecture that had been lacking for years. But "people still complain that modern architecture as they see it does not possess enough of the human kind of appeal."[13] However, the future looks a good deal brighter, because as Richards goes on to say

> It can be seen already that the next stage in the development of modern architecture will be towards its humanization, possibly through the greater use of NATURAL materials such as wood and stone, and materials such as brick which mellow with time, and certainly through the evolution of shapes and textures that will produce a richer and more sympathetic character than that which derives from the frigid forms of geometry.[14]

There are today men like Constantino Nivola, John Mason, Juan O'Gorman, and others who have begun to bring the human touch back into architecture through the use of a craftsman's approach to art and architecture. Joan Miro summed up this feeling when he said of his UNESCO ceramic wall, "I worked in a monumental spirit, thinking of a possible association with architecture - not to treat men who must live in modern building like unfeeling robots."[15]

PROPOSAL

It is in the current context - the rejuvination of the architect's interest in the artist-craftsman, the realization of the need for "humanizing" architecture, and the need for a return to Nature and its peace - that a ceramic mural, screen, and a sculpture for the second floor lobby of 50 Main St. at Rochester Institute of Technology have been proposed.

This lobby suffers from an almost universal problem in building design. It is in essence a large space with many openings that consume and eject quantities of humans at varying times into and out of it with little regard to order or consequence for their well-being. The lobby gives one the feeling of being in a corral or an army staging center with people milling about as if unsure of the direction in which they are supposed to go. At all other times, it offers only bleak expanses of cinderblock or wallboard punctuated by metal framed doors and windows. A few chairs are scattered about. (figs. 1-4)

The three proposed ceramic works will serve to greatly alleviate the situation. They will not only provide an aesthetic relief to the monotony of angles prevalent, but the screen and sculpture will function as methods of traffic control through the area as well.

The thesis project began by first carefully measuring the entire lobby and then constructing a $\frac{3}{4}$ inch to one foot

scale model of it. This enabled the artist to experiment in the placement of the mural, screen, and sculpture with small models. (fig.5)

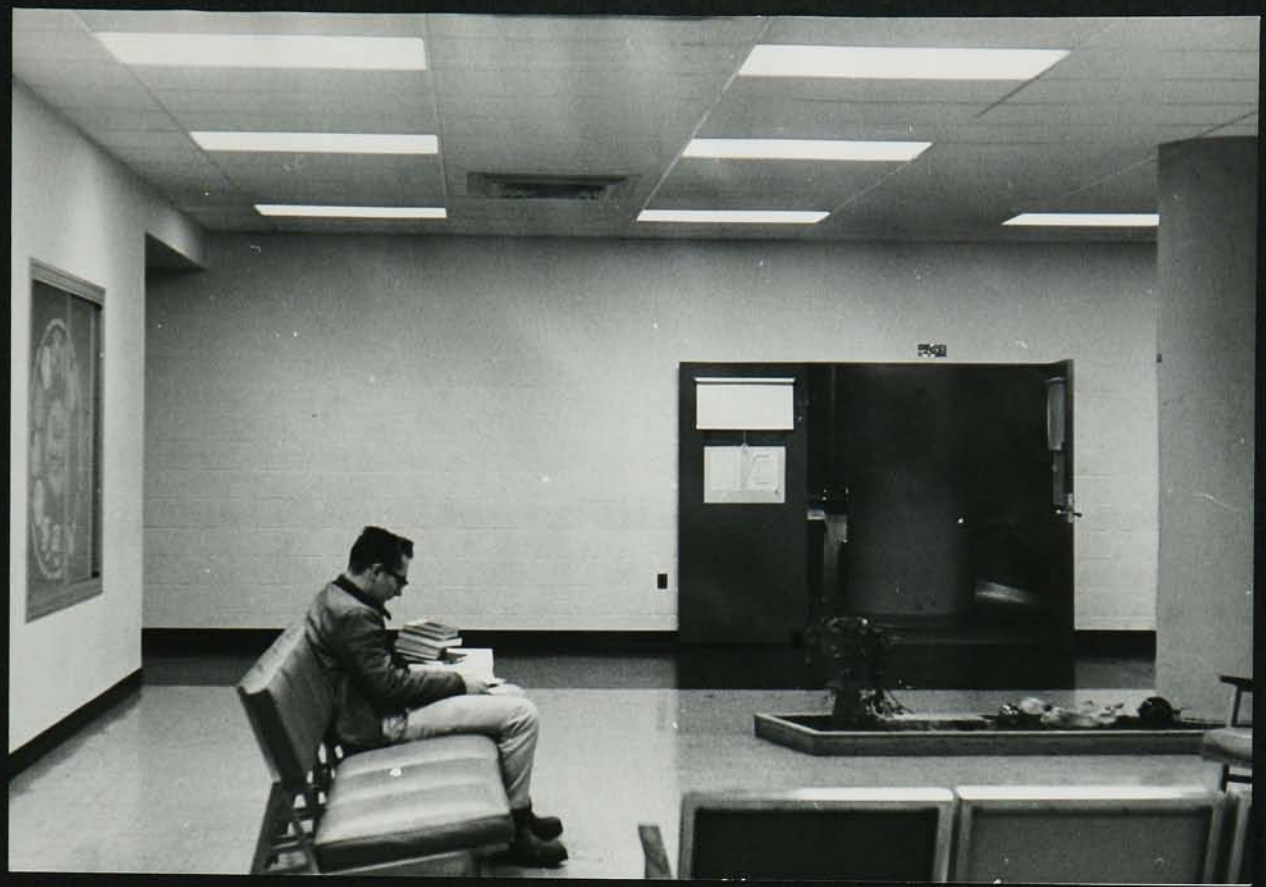

fig. 1

fig. 2

Fig. 3

Fig. 4

fig. 5

MURAL

After the general layout of the areas in the lobby had been decided, many idea sketches for the mural were drawn. From this group of drawings, a large, full-scale representation of the proposed mural was executed and then put up in the lobby. (fig.6) Its size and design were considered inadequate for the space it was to occupy, so this idea was discarded and a larger, more complicated design was worked out. (fig.7) An actual clay sample of an area of this drawing was constructed and fired. (plate 1) However, this composition became far too active and disjointed, so it too was discarded in favor of a third motif (fig.8) which was then executed in clay.

The design selected for construction is a non-definitive colorful fantasy in clay. The artist's objective with this mural is to provide the viewer a momentary relief from the hurried businesslike atmosphere which pervades the lobby. The work is deliberately non-representational in order to allow the observer freedom to discover his own objects or meanings in the liquid forms. The use of various bright glasses, glazes, and slips in combination with the unglazed clay of the mural provides a happy, yet sophisticated, sparkle of color to an otherwise uninspired color scheme in the lobby.

The mural was designed to be best appreciated by being viewed in at least two stages. Standing at a distance, the observer can allow his eye to explore the play of light and

shadow among the various parts and let his mind and imagination wander among the flowing shapes. Viewing the work at close range, the observer can examine the textural quality of each individual piece.

In order to construct the mural, large slabs of clay, two and one-half inches thick, were rolled out. Each portion of the drawing was then traced onto a slab and cut out. During the development of each section the artist accentuated, changed, or discarded details until a balance of unity and contrast of forms had been achieved. (fig.9) After the clay had dried to the leather hard stage it was cut into convenient sections and they in turn were hollowed out.

All of the slabs were executed in a scale great enough to allow for the ten percent shrinkage of the clay body, which was composed of

Kentucky Ball Clay	25
Red Art	25
Gold Art	25
Flint	10
Red Grog	10
Fine White Grog	15
Red Iron Oxide	0.5
Spodumene	15

A series of glaze and slip tests were performed in order to obtain a working palette of colors for the mural. From these test, the following slips were chosen, applied to the bisqued clay, and then fired in electric kilns to cone 5 oxidation:

Barnard Slip

Barnard clay and water

RIT Black Slip

Red Art	85
Copper Oxide	5
Red Iron Oxide	5
Manganese Dioxide	3
Cobalt Oxide	2.5
Bentonite	2.5

CH3 White Slip

Flint	55
Ball Clay	15
Bainbridge Spar	10
F 3110	15
Bentonite	6.5
Opax	5

The CH3 White Slip was also used as the base for six colorants which gave the following hues:

yellow	50% F222a
burgundy	50% UG228
purple	25% cobalt oxide
yellow green	25% chrome green
blue green	25% Celeste green #7
light blue	25% Harshaw 20079

Certain areas of high key color were obtained through the method of refiring the particular section to cone 04 with the addition of crushed glass which fused to the clay at that temperature. The following glazes were also used:

cone 04 J21-04 Bright Blue

3191	26
Lithium Carbonate	3
Zinc Oxide	20
Kaolin	20
Flint	18
Tin	4
Cobalt Carbonate	2.5

cone 04 J21-P9 Blue Green

3191	34
Lithium Carbonate	3
Zinc Oxide	23
Kaolin	20
Flint	20
Tin	5
Black Copper Oxide	1.5
Nickle Carbonate	2

The following method for mounting the completed mural in its proposed location is suggested. The painted surface of the cinder blocks should be removed and the blocks roughened. The reverse of each part of the mural should be filled to level with neat cement or dry-set mortar, to provide a greater surface, and then worked into the mortar bed which has been laid up on the wall. After the entire mural has set, a surface coat of off-white stucco should be laid on by hand to create a slight texture around the whole composition.

As a safety precaution, holes have been provided in the pieces of the mural to allow for their being wired to the wall prior to cementing, if necessary.

The mounting procedure should be carried out by professional masons.

fig. 6

Fig. 7

plate 1

Fig. 8

fig. 9

fig. 10

plate 1

plate 2

plate 3

plate 4

plate 5

plate 6

plate 7

SCREEN

The most logical development from the idea of a plain wall with an applied decoration is a wall which is an artistic composition in itself. Such a wall is the proposed ceramic divider screen to be constructed between the existing columns in the lobby.

A halfhearted attempt at providing a sitting area in the lobby (by simply arranging seats to face each other) fails to function because strollers constantly wander through and disturb those who are seated. In its present haphazard arrangement the lobby would become even more confusing if a solid wall were raised to separate the travel area from the rest area.

The screen would be a mural used for the purposes of pleasantly arranging space, directing the flow of traffic, and enclosing an area both physically and visually. It is important, however, that the travel and rest areas be just separated but not divorced from each other in order to retain the continuity of the environment.

A number of sketches for the screen and its placement were drawn. One proposal was selected as best achieving the purposes defined above. To keep the totality of the room, the screen would be constructed of many individual slabs of clay secured by brass chains from floor to ceiling. A number of the slabs would have cut out areas filled with stained glass to allow a richer play of color and light through the screen.

The solid clay areas and the open space in which they would be suspended would thus allow a person to be aware, at one time, of both the feeling of enclosure and yet still be part of the openness. The sitters could then be relaxed without being removed entirely from the business of their surroundings.

A sample area of the proposed screen was constructed. Using the same clay body as before, clay slabs were rolled out to a 3/8 inch thickness. Random sized rectangles were then cut and drilled. Some of these slabs had areas cut from them to later be filled with glass. Other slabs were textured and/or painted with Barnard slip, CH3 White, or Purple slip. All the slabs were once-fired to cone 5 oxidation.

The slabs to be filled with glass were then prepared according to a method described by John B. Kenny in his book, Ceramic Design.[16] The sides of the openings in the clay were coated with a low temperature frit (Ferro G-24) to facilitate the fusion of the glass and clay. Kiln shelves were coated with whiting and the slabs taped to the shelves to prevent movement. Powdered whiting was carefully put in the openings about 1/8 inch deep. The openings were then filled to the top with finely crushed glass. Next, the slabs were fired very slowly to 1700° F and allowed to cool for twentyfour hours. (This temperature exceeds Kenny's reccomendation, but the particular glass used seemed to fuse better at the higer temperature.)

After the firing, the excess whiting was scraped off the glass. Hydrochloric acid was used to fully remove the whiting from the crevices.

The brass chain was fashioned from 1/8 inch brazing rod and used to link the clay slabs. The units were then mounted in a frame by a manner in which the full-sized screen would be done. (plate 9)

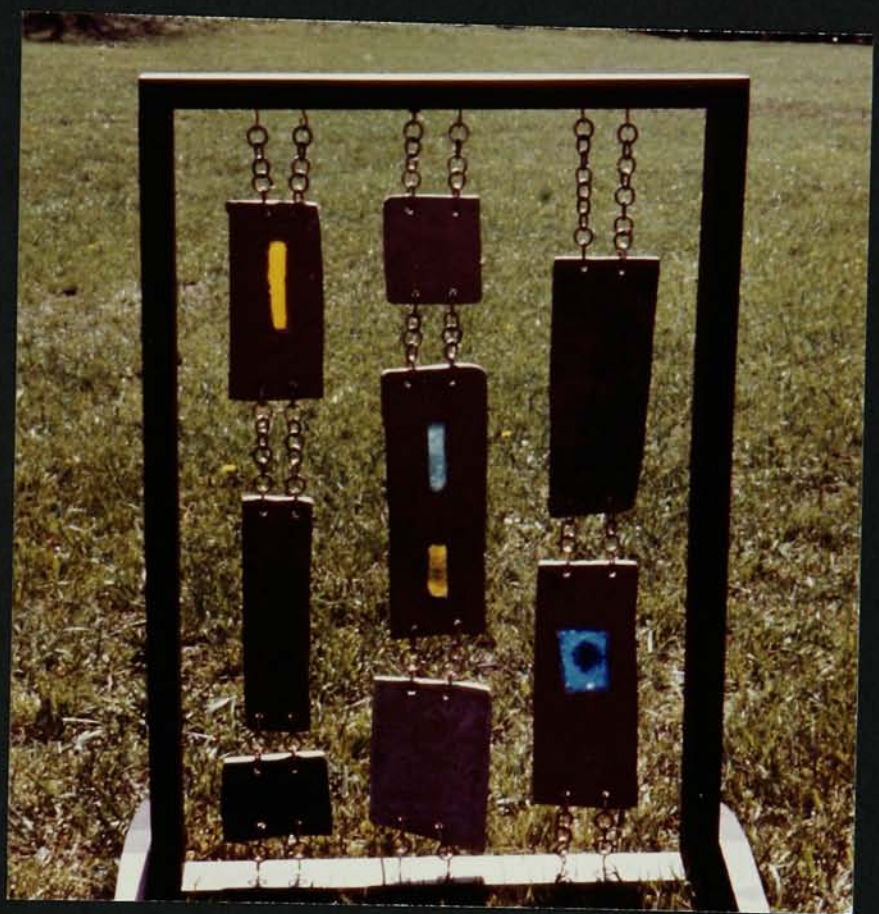

plate 9

SCULPTURE

The third element to be introduced in the lobby is a proposed free-standing sculpture, centered between the rectangular column and the inside wall - towards the elevators. The sculpture is again a step in the progression from applied decoration to architectural composition to a totally three-dimensional self contained work of art. It can be considered, as was the screen, to be an extention of the mural, becoming a mural to be viewed from any angle - not simply head on.

The sculpture is primarily placed to provide a visual contrast to the mural and screen. The placement of the sculpture also acts as a means of controlling the direction of travel to and from the elevators. It tends to form an invisible third side to the sitting area, thus suggesting that travel be conducted around the perimeter of the rest area, not through it. More than simply a traffic signal, the sculpture would provide visual and tactile relief to those who must suspend their activities momentarily in this lobby.

Some of the idea sketches show the sculpture as a fountain. However, discussion of this possibility brought forth the installation and maintanence problems inherent in such a project. Ideally, a fountain would have been the best solution to properly complete the lobby. It would have stimulated the observers sense of sight, touch, and sound.

Having the above comments in mind, the artist worked on the idea of a sculpture without water. Small idea sketches, two full-scale drawings (figs.11 and 12), a fired clay model, and a plaster model of suggested sculptural forms were executed.

The construction of sculpture in materials other than clay was fully considered. However, in the interest of presenting a balanced continuity in the lobby, it was felt that in this instance, the sculpture should be of fired unglazed clay.

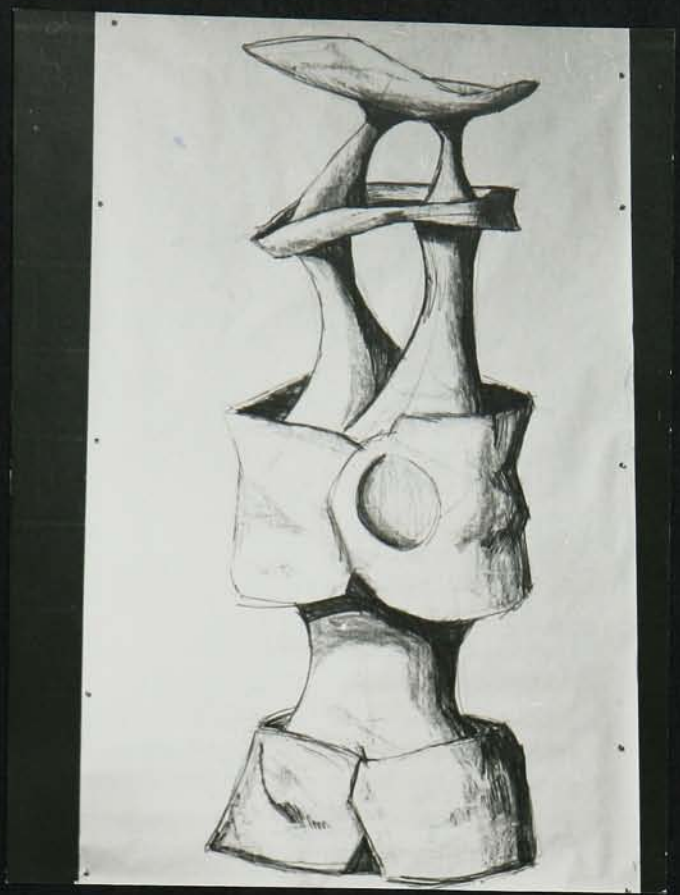

fig.11

fig.12

CONCLUSION

In a span of slightly more than four months a kernel of an idea has blossomed forth into a colorful, playful major accomplishment. During the time from the earliest sketches, through the hours of construction and calculation, conducting the repeated firings, to the final installation, the artist has grown along with his mural. Not only does this mural present a physical achievement of some size (it is well over eighteen feet long) but it is also a great spiritual and personal achievement for the artist.

Elsewhere[17] the artist has said that "as he grows, [he] will continue to offer mankind a glimpse into his 'clay windows' so that they may begin to see and share a small part of the sublime beauty of Nature." So it is with this mural and its related proposals presented herein. These objects are offered to the harried transients of this mechanical world as signs that all around them - but chiefly inside their very minds - still exist the harmonies of Life -- if they would only stop to look.

FOOTNOTES

[1]H.W. Janson, History of Art, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1962), 19.

[2]Loc. cit.

[3]Hendrick Willem Van Loon, The Arts, (New York: Simon and Schuster, 1939), 46.

[4]Janson, History of Art, 72.

[5]Ibid., 61-2.

[6]Ibid., 124-5.

[7]Ibid., 152.

[8]Ibid., 170.

[9]Ibid., 300.

[10]J.M. Richards, An Introduction to Modern Architecture, (Baltimore, Md.: Penguin Books, Inc., 1960), 75.

[11]Ibid., 83.

[12]Ibid., 84.

[13]Ibid., 60.

[14]Loc. cit.

[15]James Thrall Soby, Joan Miro, (New York: Museum of Modern Art, 1959), 117.

[16]John B. Kenny, Ceramic Design, (Philadelphia, Pa.: Chilton Company, 1963), 208-9.

[17]Leon I. Nigrosh, Clay Windows, an experiment in ceramic mural design, (BFA Thesis, Rhode Island School of Design, 1963), 37.

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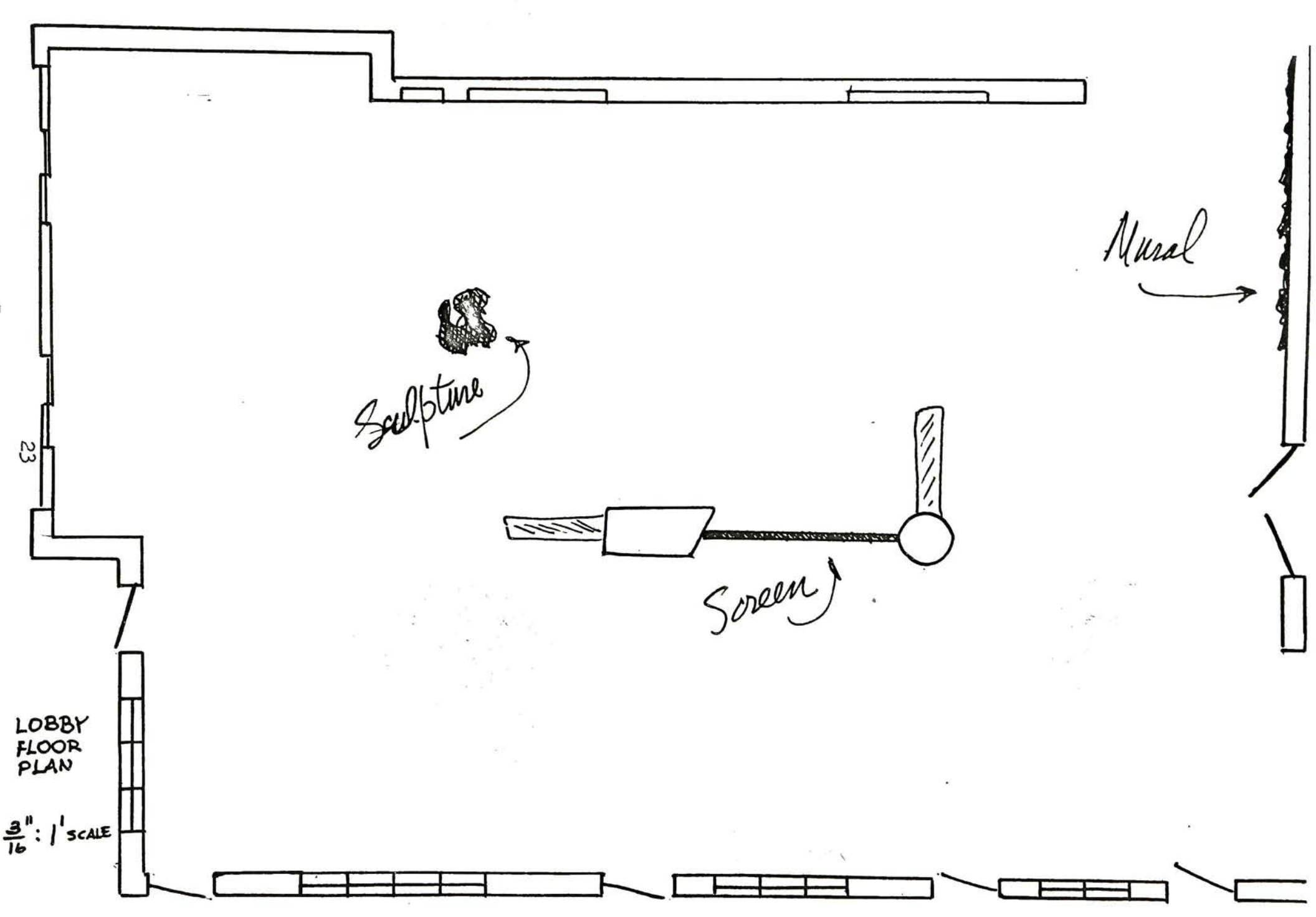
APPENDIX


Mural
Sculpture
Screen
23
LOBBY
FLOOR
PLAN
3/16" : 1' SCALE