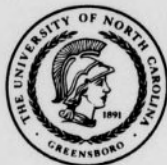


The University of North Carolina
at Greensboro

JACKSON LIBRARY



CO

no. 1449

UNIVERSITY ARCHIVES

HITE, DORIS ROSS. Applications of Mosaic Design for Today's Home. (1976) Directed by: Dr. Clara Ridder. Pp. 46.

Architects are rediscovering the unique qualities that the ancient art of mosaic can contribute to modern architecture. They are including mosaics in the design of numerous public and private structures. However, the creation of mosaic is often a high-cost process and therefore, this art is usually limited to the more expensive buildings. This study was undertaken to explore the feasibility of creating mosaics suitable for use in multi-priced homes.

Sources for mosaic supplies were located. Representative surface materials, bonding agents and backing materials were collected for experimentation in mosaic design. These materials were studied in relation to color, shape, compatibility with other materials, workability and design possibilities. Various construction methods and mosaic backings were examined. Different types of adhesives were applied and observed for setting time, holding power and coloration. The most expensive methods and materials were rejected. This investigative work effected the decision to limit this study to mosaics composed of hard tiles and stones. The decision was based on such factors as: accessibility, handling ease, moderate cost and personal preference of the author.

Finally, four original designs were created, using methods and materials considered most effective in achieving the objectives of this study. Color photographs were taken and data pertaining to materials, techniques, cost and findings was recorded.

APPLICATIONS OF MOSAIC DESIGN

FOR TODAY'S HOME

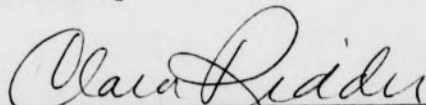
by

Doris Hite

A Thesis Submitted to
the Faculty of the Graduate School at
The University of North Carolina at Greensboro
in Partial Fulfillment
of the Requirements for the Degree
Master of Science

Greensboro
1976

Approved by



Thesis (Dissertation) Adviser

APPROVAL PAGE

This thesis has been approved by the following committee of the Faculty of the Graduate School at the University of North Carolina at Greensboro.

Thesis
Advisor

Clara Ritter

Committee Members

Laura Franck
Walter Banker

May 13, 1976
Date of Acceptance by Committee

ACKNOWLEDGEMENTS

The writer would like to express her grateful appreciation to Dr. Clara Ridder, Committee Chairman, for her continuous encouragement and untiring aid and advice during the writing of this work. Sincere thanks is also extended to Miss Lavina Franck and Mr. Walter Barker for serving on this committee and for the generous gift of their time and advice.

Special thanks is given to the writer's husband, Joseph Hite, without whose help and support the completion of this thesis would not have been possible, and to her son, Richard, for his patience and understanding during the progress of this work.

TABLE OF CONTENTS

| | Page |
|--|------|
| APPROVAL PAGE | ii |
| ACKNOWLEDGEMENTS | iii |
| LIST OF FIGURES | v |
| CHAPTER | |
| I. INTRODUCTION | 1 |
| Statement of the Problem | 1 |
| Definition of Terms | 4 |
| II. REVIEW OF RELATED LITERATURE | 5 |
| The Development of Mosaics | 5 |
| The Nature of Mosaics | 8 |
| The Making of Mosaics | 9 |
| Mosaic Materials | 11 |
| Today's Mosaists | 13 |
| The Scope of Mosaics | 14 |
| III. PROCEDURES | 17 |
| Design and Execution | 17 |
| IV. SUMMARY AND CONCLUSIONS | 19 |
| Summary and Conclusions | 19 |
| V. RESULTS | 24 |
| Findings and Results | 24 |
| BIBLIOGRAPHY | 45 |

LIST OF FIGURES

| | Page |
|--|------|
| Figure 1. Fireplace Mosaic Watercolor Sketch..... | 27 |
| Figure 2. Fireplace Mosaic Fullsize Cartoon..... | 28 |
| Figure 3. Fireplace Mosaic - Cartoon Transfer to Plywood Backing..... | 29 |
| Figure 4. Fireplace Mosaic of Mexican Glass Tiles... | 30 |
| Figure 5. Detail of Fireplace Mosaic..... | 31 |
| Figure 6. Kitchen Mosaic of Unglazed Ceramic Tiles and Beach Pebbles..... | 34 |
| Figure 7. Detail of Kitchen Mosaic..... | 35 |
| Figure 8. Entrance Way Mosaic of Quarry Tile and Beach Pebbles..... | 39 |
| Figure 9. Detail of Entrance Way Mosaic..... | 40 |
| Figure 10. Wall Mosaic of White Unglazed Ceramic Tile | 43 |
| Figure 11. Detail of Wall Mosaic..... | 44 |

CHAPTER I

INTRODUCTION AND PURPOSE

In 1971 Peter Fischer, art historian wrote, "a revival of mosaics is now in progress...(this) revival comes from the desire to restore our heritage of the past."¹ A survey of twentieth century architecture reveals that many modern structures are lacking in warmth, color and regional character. The sterility of many of these buildings might have been lessened by the inclusion of mosaic art in their design. Therefore, it is gratifying to observe that today artists and architects are rediscovering the vital art of mosaics that so enriched the buildings of antiquity.

The upsurge of technology, functionalism and materialism undoubtedly contributed to the lack of ornamentation of modern buildings. At the beginning of the twentieth century many architects were pressured by the building industry to adopt new materials and building techniques and mass-produced parts in order to offset unfavorable labor-economic conditions.² The major architects of the period, such as Wright, Pei, Le Corbusier, Gio Ponti and others continued to design

¹Peter Fischer, Mosaic History and Technique, (Chicago: McGraw-Hill Book Company, 1971), p. 101.

²Larry Argiro, Mosaic Art Today, (Scranton: International Textbook Company, 1968), p. 80.

structures with warmth, color and feeling, but some architects succumbed to the economic pressures and produced a host of barren facades.³ In many structures pure functionalism replaced the ideal of visual and plastic arts working together with mutual respect and affinity. A strong sense of materialism may also have clouded the concept of "-form follows function-" and contributed to the extreme barrenness of much modern architecture.⁴

Some architects recognized the dilemma that existed in contemporary building and have, on previous occasions, made unsuccessful attempts to reconcile art and architecture. Today mosaics and architecture seem to be leading toward mutual rediscovery. Mosaic murals are adding interest and color to contemporary buildings as an increasing number of architects and designers collaborate "to create new edifices as worthy symbols of man's aspiration toward a sense of worthiness and beauty in a materialistic world."⁵ Now, some fascinating mosaics can be observed in public buildings, churches, restaurants, hotel lobbies and even ocean liners.

One of the consequences of the mosaic revival has been its new conversion and application for the modern home. Today fireplaces, walls, floors, gardens and pools have

³Ibid., p. 77.

⁴Ibid., p. 80.

⁵Ibid., p. 100.

achieved additional interest through the use of mosaics as a means of home decoration. This inclusion of mosaics in the intimate surroundings of the home creates an aesthetic environment in which art is part of everyday living.⁶

For the most part, the artistic environment created by mosaics is limited to the upper economic levels. In spite of new materials and techniques that modern technology has provided for today's craftsman, mosaics remain relatively expensive. Lower income homeowners often find that they cannot afford to include mosaic art in their home decoration. The aesthetic quality of mosaics is such that it could offer tangible benefits to families in all income levels. This fact provides incentive for the promotion and encouragement of mosaic use in a greater number of homes. Therefore, it will be the purpose of this study to investigate the art of mosaics in order to determine the feasibility of designing and constructing moderately priced mosaics for some representative home applications.

⁶Louis G. Redstone, FAIA, Art in Architecture, (New York: McGraw-Hill Book Company, 1968), p. 77.

DEFINITION OF TERMS

Cartoon: a full size sketch made by artists preparatory to execution of murals.

Casien: Water-resistant glues formulated with milk derivatives and alkaline solutions.

Ceramic: Relating to the art of making objects or tiles from clay or other silicate compounds.

Enamel: A semiopaque vitrified material which is melted and applied to various metals. It is colored by mixing various metallic oxides.

Grout: A thin layer of fine cement used to fill cracks. Also the process of using the cement to finish a tiled surface.

Magnesite: A strong cement normally used for flooring but also applied as a base for mosaics.

Marmi: Small cubes of marble between one-quarter and one-half inch thick.

Mortar: A mixture of lime, sand and water for the setting of bricks, stones and tiles.

Mosaic: The process of putting together pieces of substances to form a design.

Mucilage: A water-solvent adhesive.

Resin: A fusible bonding agent made from natural or synthetic materials.

Smalti: Small opaque squares which have been hand-clipped from larger pieces of glass. (Also called "Byzantine tiles" or "enamels.")

Tessera (pl. tesserae): Popularly used to designate all the small decorative fragments from which mosaics are constructed. (Derived from the Latin word meaning "cube" or "little square.")

Traditional Design: Motifs and styles which are handed down from one generation to another.

Venetian Glass: Tiles of pressed or cast glass, first produced in Venice. It is available in three-fourths by three-fourths inch tiles.

CHAPTER II

REVIEW OF LITERATURE

THE DEVELOPMENT OF MOSAICS

Mosaics have been used for the decoration of religious and secular architecture for over 5000 years. Fragments of painted clay cones found in the excavation of Al Ubaid reveal that the Sumerian culture utilized mosaics as wall decoration as early as 3500 B.C.⁷ Ornamental bands of tiles, lapis lazuli and limestone lined the tombs of Egyptian Pharoahs of the Old Kingdom,⁸ the royal courts of the Assyrian Empire contained pavements of concentric tile circles,⁹ and Egyptian and Sicilian rulers exchanged gifts of luxurious ships covered with polychrome tessarae.¹⁰

Excavations by Sir Arthur Evans at Knossos unearthed metals and semi-precious stones used for intricate mosaic works in the Minoan Period.¹¹ Other excavations at Pompeii and Herculean produced evidence of wide-spread use of mosaics as a floor decoration in the private homes of the second

⁷Fischer, Mosaic History and Technique, p. 33.

⁸Ibid., p. 34.

⁹Ibid., p. 35.

¹⁰H. P. L'Orange and P. S. Nordhagen, Mosaics, p. 35.

¹¹Fischer, Mosaic History and Technique, p. 35.

century A.D.¹²

Public buildings of antiquity were also popular sites for mosaic designs and notable marine examples were found in the Public Square of Ostia and the Baths of Caracalla in Rome.¹³ But, it was in religious architecture that the art of mosaic had its greatest manifestation.¹⁴ In the 5th and 6th centuries when mosaic art reached its highest peak, floors, walls, vaults, apses and every adornable part of church architecture bore evidence of this ancient craft.¹⁵ Some of the finest known examples of religious mosaics are those in the churches of Sant' Appollinare (533-547 A.D.) and San Vitale (527-547 A.D.), Ravenna; Hagia Sophia (532-537 A.D.), Istanbul; and St. Mark's Cathedral (1063 A.D.), Venice.¹⁶

Mosaic art probably had its beginning in the search for a more durable floor covering.¹⁷ Small pebbles were gathered from beaches and fields and set in plaster, forming random

¹²L'Orange and Nordhagen, Mosaics, p. 36.

¹³Ibid., p. 39.

¹⁴Fischer, Mosaic History and Technique, p. 69.

¹⁵Edgar Waterman Anthony, A History of Mosaics, (Boston: Porter Sargent, 1935), p. 37.

¹⁶H. W. Jansen, History of Art, (New York: McGraw-Hill Book Company, 1968), pp. 159-175.

¹⁷L'Orange and Nordhagen note in Mosaics, (p. 33), that the earlier Sumerian wall mosaics have no relationship to the later style of mosaic art.

pattern mosaics. These crude designs gradually became more refined as stones were grouped by size and color into more elaborate patterns. Later, cut stones and tiles were added to natural conformations, and still later mosaics were made entirely of cut tiles and marbles. In the Early Christian Art Period mosaic designs became intricate works in black and white.¹⁸ With the discovery of glass tesserae in the third century the possibilities for design and color range became endless and mosaics were the chief source of mural decoration in fine homes and religious architecture.¹⁹

Mosaics continued as a popular art form until the 14th century. With the coming of the Renaissance and the renewed interest in painting, mosaics and other arts declined in popularity, although they continued to be used on a lesser scale throughout the years.²⁰

The 19th century brought a modest revival in mosaic interest, but it was not until the middle of the 20th century that it had its great rebirth.²¹ In its present revival artists and architects alike have become aware that "this

¹⁸Ibid., p. 40.

¹⁹Fischer, Mosaic History and Technique, p. 42.

²⁰Janice Lovoos and Felice Paramore, Modern Mosaic Techniques, (New York: Watson-Guption Publishers, 1968), p. 13.

²¹Ibid., p. 14.

ancient art is one of the most contemporary as well."²² Now after many years of neglect mosaics are again adding interest, color and warmth to modern architecture.²³

Modern technology is aiding the progressive trend of mosaics by providing new materials such as glues, adhesives, plastics and synthetics. Various properties of these new materials encourage experimentation in new methodology and use. These new methods are becoming increasingly popular all over the world and today one sees traditional as well as new materials in innovative executions adorning every conceivable type of architecture.²⁴

THE NATURE OF MOSAICS

A mosaic is defined as a "coherent pattern or image in which each component element is built up from small irregular pieces of substances such as stone, glass or ceramic and held in place by plaster."²⁵ It is this fragmentation that distinguishes mosaic from other art. Although organized into a unified composition, the parts do not lose their identity. When fragmentation ceases to be an essential part of the

²²Fischer, Mosaic History and Technique, p. 7.

²³Argiro, Mosaic Art Today, p. 71.

²⁴Ibid., p. 100.

²⁵Fischer, Mosaic History and Technique, p. 8.

design, then the design is no longer a true mosaic.²⁶ Mosaists of the 14th century lost sight of this fact when they tried to imitate painting and in so doing almost sounded the death knell for mosaics.²⁷

In addition to individuality of parts, mosaics, have certain other characteristics that must be considered if a work is to be successfully executed. The most important of these are animation of surface, reflected light, directional movement, texture and color. The success or failure of a mosaic is dependent upon the presence of all, and the intensification of some of these characteristics in a work.²⁸ Jeanne Reynal, one of the modern mosaists who best understands the medium, summarized the qualities of mosaic art when she said: "Mosaic to be real must be individual, coherent and luminous...."²⁹

THE MAKING OF MOSAICS

Traditionally mosaics have been made by setting fragments of materials into plaster using either the direct or indirect method of construction. These methods have not

²⁶Mary Lou Stribling, Mosaic Technique, (New York: Crown Publishers, Inc., 1968), p. 3.

²⁷Fischer, Mosaic History and Technique, p. 107.

²⁸Argiro, Mosaic Art Today, p. 160.

²⁹Ibid., p. 40.

changed significantly since their inception.

In the direct method, a bed of plaster is spread over a roughened surface and the design is applied directly to the wet plaster. This may be done in two ways: (1) the design is applied directly to the surface that will be the final location of the mosaic or (2) it may be constructed in a workshop and later positioned in its designated place.³⁰

The indirect method involves gluing a design face-down on paper. The completed design is then attached to a wet plaster surface; after it has sufficiently hardened, the paper is removed from the design and the exposed surface is cleaned and grouted with thin cement.³¹

These classic techniques are still in use, but the modern innovations in adhesives and equipment have opened up a whole new world of mosaics for today's craftsmen.³² Revolutionary glues and synthetic resins permit mosaic materials to be attached to a variety of backgrounds such as wood, glass and metal surfaces. Some of these adhesives are colorless, which makes the construction of translucent mosaics possible. Other glues are resilient, which gives more flexibility in surface contours, and some others have the

³⁰Lovoos and Paramore, Modern Mosaic Techniques, p. 14.

³¹Ibid., pp. 45-46.

³²Ibid., pp. 29-34.

advantage of acting as both a bonding and decorative agent.

There are no "best methods" for making mosaics, but each artist must decide for himself which method is best suited to his own type of work or is feasible for a particular construction.³³

MOSAIC MATERIALS

Mosaic materials are divided into two categories:

(1) found and (2) manufactured. Modern mosaics are made from both, singularly and intermixed.

Found materials consist of rocks, pebbles, shells, metal fragments, broken glass and tiles. The earliest pavement and wall decorations were made of such materials and, in contemporary designs, one sees these found materials embedded in everything from garden mosaics to public architecture.³⁴ One of the most unusual of this sort is Simon Rodea's Fantastic Towers in Watts, California.³⁵ The towers are composed entirely of "beautiful junk" and Rodea collected over 70,000 seashells and countless tons of tiles and bottles in the 33 years that he spent in their

³³Stribling, Mosaic Technique, p. 3.

³⁴Lovoos and Paramore, Modern Mosaic Techniques, pp. 14-15.

³⁵Argiro, Mosaic Art Today, p. 69.

construction.³⁶

Traditional mosaic materials have been manufactured since Roman times and consist of four types: marmi (marble tesserae), Venetian glass, enamel or smalti and ceramic tile. These are still preferred by modern mosaists for light reflection and color range. They are currently being used in contemporary art, alone and in conjunction with more modern materials.³⁷

Other commercial materials such as paper, fabric, shells, glass, marbles, plastics and even cereals are being used by contemporary experimental artists. This trend is observed in numerous works of west coast mosaists.³⁸

Hard substances used in mosaic composition are bonded and grouted with a variety of adhesive materials. Various cement mixtures, glues and resins may be used with equally satisfying results. Some representative adhesives used for hard materials are: Portland Cement, Magnesite, Ceramic Tile Cement, Epoxy Glue and Brand Name Adhesives like Elmer's Glue-all and 3M Adhesive. More porous materials such as paper, fabric and cereals may be bonded with mucilage and casein-type glues.³⁹

³⁶Jon Madian, Beautiful Junk, (Boston: Little, Brown, and Company, 1968), p. 43.

³⁷Argiro, Mosaic Art Today, pp. 202-211.

³⁸Ibid., pp. 211-215.

³⁹Ibid., p. 38.

Mosaic materials are selected to meet the requirements of a particular mosaic. Each surface material and each adhesive, as well as the backing material is selected in accordance with the use and location of the mosaic. Special consideration must be given to the amount of light, humidity, temperature changes and precipitation to which the mosaic will be subjected. This is particularly true of outdoor mosaics, which are subjected to radical changes in moisture and temperature.

TODAY'S MOSAISTS

Many modern mosaists throughout the world have contributed immeasurably to the present impetus in mosaic art. Boris Anrep (1883-1969), brilliant Russian mosaist worked out his own unique approach to new forms and themes in mosaics. Futurist Gino Severni demonstrated in his bold arrangements of angular figures and coarse tesserae that he understood the importance of accord in theme and craft. The Swiss artists Hans Erni and Hans Stocker working with traditional materials in discreet technique departures; Rokuro Yabashi designing with stones in typical Japanese styles; and Germany's Helmet Lander creating mosaics of abstract forms and intersecting planes, have all demonstrated the far ranging possibilities of modern mosaics.

In Ravenna the inspired professors Renato and Carlo Signorini are instructing dedicated mosaic pupils. In Spain the Catalan architect Antoni Gaudi was one of the first to

produce elegant mosaics from "trash." And artists such as Diego Rivera, Juan O'Gorman, Jose Charvez Morado and others are responsible for turning Mexico into a "veritable showcase of contemporary mosaics."⁴⁰

In the past two decades some American artists have also done serious experimental work and demonstrated that they understand the unique qualities of mosaics.⁴¹ Working in the workshops of the Eastern U. S. are: Elsa Schmid, Jeanne Reynal, Max Spivak, A. de Bethune, Sahl Swartz, and Margot and Jack Stewart. Louisa Jenkins, Robert Mallory, Mary Bowling and others are located in California.⁴² Some of these artists have infused new life into the medium by the use of new materials and techniques. They have broken down traditional barriers and introduced new concepts and through their expression in old and new materials have "restored mosaic to the eminent position it once held."⁴³

THE SCOPE OF MOSAICS

When mosaic art had its renaissance in the 20th century, it was reborn far from its Mediterranean beginning--in the workshops of America.⁴⁴ Here it has undergone many changes

⁴⁰Fischer, Mosaic History and Technique, pp. 104-119.

⁴¹Stribling, Mosaic Techniques, p. 2.

⁴²Argiro, Mosaic Art Today, p. 48.

⁴²Ibid., p. 38.

⁴⁴Stribling, Mosaic Techniques, p. 2.

from its earlier concepts.⁴⁵ Mary Lou Stribling, mosaist and author, says of its rebirth: "Revitalized by artists with vision and courage to use or reject tradition as it suits their needs, once more mosaics is taking a place of importance in the art world."⁴⁶ The impact of the mosaic revival is very much in evidence and indicates in a very impressive manner, the vitality and richness that this art can contribute to the future visual environment of modern man.⁴⁷

Mosaics has found opportunities in contemporary architecture because it has affinities with modern styles; it calls for simplification and stylization, it encourages "striking effects and heightening of reality."⁴⁸ It adds beauty and vitality to contemporary architecture without interfering with functionality.⁴⁹ Mosaic can add color and warmth,⁵⁰ crucially modify lines and spatial effects of a building, emphasize the shape of a structure, unify and divide, and underline the character of a building.⁵¹

There are few patrons today who can afford expensive

⁴⁵Fischer, Mosaic History and Technique, p. 101.

⁴⁶Stribling, Mosaic Techniques, p. 2.

⁴⁷Argiro, Mosaic Art Today, p. 94.

⁴⁸Fischer, Mosaic History and Technique, p. 7.

⁴⁹Ibid.,

⁵⁰Argiro, Mosaic Art Today, p. 71.

⁵¹Fischer, Mosaic History and Technique, p. 110.

smalti traditionally constructed mosaics, and although this classic technique is not dead, its role in contemporary architecture has shrunk considerably. Modern technology has provided synthetic materials that serve as an alternative to the expensive smalti and although these materials "may not always improve the art of mosaics they can make it less expensive and help it expand."⁵²

Traditionally, mosaic has been considered primarily in terms of religious architecture. However, in the 20th century, this art has become democratic and secular and architects everywhere are increasingly incorporating mosaics in businesses, federal buildings, educational buildings, shopping centers and other public architecture.⁵³ Also, mosaics designs are being used to add elegance and quality to private homes.⁵⁴ Generally, in its present stage mosaic is limited to homes in the upper income level. It is hoped that architects will soon begin to encourage mosaic competitions which will include lesser-known artists so that this art form may be extended to an increased number of private dwellings.⁵⁵

⁵²Ibid., p. 7.

⁵³Ibid.

⁵⁴Argiro, Mosaic Art Today, p. 132.

⁵⁵Redstone, Art in Architecture, p. 77.

CHAPTER III

PROCEDURE

The complexity of mosaic design and execution dictates that the procedure be both scientific and creative.

In order to determine the traditional and contemporary uses of mosaics, relevant literature was reviewed. Additional information was compiled through a study of current artists' works. Special attention was given to materials and techniques which are involved in the creation of their mosaics. An investigation of available materials and sources of supply was conducted and findings of this search were cataloged.

Various kinds of manufactured materials were collected. Representative findings included: tiles, marbles, wood products, glass and metal. Also, a collection was made of "found materials," such as rocks, weathered wood, broken bottles and scrap metal. After experimental work with various materials, used alone and in combination, a decision was made to limit this study to hard substances such as stone and manufactured tiles. This decision was based on such factors as: availability of these materials, ease in handling, relatively low cost and natural appeal to the author.

Watercolor sketches were made of the proposed mosaics, enlarged to newsprint cartons, then transferred to the mosaic

backing materials. Finally, four original mosaic designs were created out of the collected materials. Each mosaic was designed to be compatible with its location in the home and with existing materials.

Both direct and indirect plaster setting methods were tested. Adhesives such as Elmer's Glue-all, epoxy and ceramic tile cement were applied to wood, metal and glass backings and observed for setting time, holding power and coloration. For the purposes of this study, mosaic materials were directly set on a plywood backing with (1) Elmer's Glue-all, (2) Ceramic Tile Cement, and (3) Epoxy Adhesive.

An effort was made to keep the designs simple in order to hold the construction time to a minimum. Care was also taken in the mosaic design and material selection to take advantage of natural conformations of materials and to limit time-consuming material cutting and preparation. A sample mosaic using hand-cut tesserae set in cement was made in order to compare the time involved in modern and traditional methods of making mosaics.

Limits were placed on the cost of materials and each design was approached with the idea of innovative execution.

A description of each mosaic was written including types of materials used, techniques employed, cost of the design, and observations of the results. Color photographs were taken of various steps during production and of each completed design. The finished mosaics were labeled according to designated use and materials used in their creation.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Many of today's architects recognize that mosaic art is an effective means of adding interest and vitality to modern architecture. In the past two decades they have increasingly included mosaic design in contemporary structures. However, mosaic has traditionally been a costly art and therefore, is usually confined to use in the more expensive buildings.

The purpose of this study was to investigate the feasibility of designing and executing mosaics suitable for use in multi-priced homes.

The author found many available materials from which to make mosaics. These included stones, shells, seeds, tiles, metals, glass, plastics and the traditional smalti and Venetian glass. The widely differing properties of these materials encouraged experimentation in design and execution. After preliminary work with a variety of materials, the decision was made to limit this study to mosaics composed of hard tiles and stones. This decision was based on such factors as: accessibility of materials, ease in handling, relatively low cost and their natural appeal to the author.

A supply of stones and tiles was collected. Glazed and unglazed ceramic tiles, glass and quarry tiles, marble fragments, beach pebbles and garden stones were included in the

to determine the design possibilities. Such factors as color, shape, cutting ease and relationship to other materials were considered. Various construction methods and mosaic backings were examined. Different types of adhesives were applied and observed for setting time, holding power and final coloration. The most expensive and time consuming materials and methods were rejected. Finally, four original mosaic designs were created. Color photographs were taken, and data pertaining to materials, techniques, cost and findings were recorded.

During the course of this study, design, methods, materials, cost and time involved in the mosaic process came under special scrutiny.

It was discovered that in designing mosaics the artist must take into consideration not only the design elements of scale, balance and color, but he must also take into account texture, shape and size of the mosaic materials and be conscious of all surrounding materials and textures. Mosaic design may be approached in two ways: (1) the artist may draw a sketch on paper and search for materials with which to execute the design or (2) materials may be collected and the design created by the possibilities and limitations of the collected matter. The author found the latter to be more satisfactory for the following reasons: (1) the observation of materials before making the design gives the mosaist a better

idea of the working qualities of the material and (2) by collecting materials before the design is made the mosaist is assured of the availability of materials for the execution of the mosaic.

There are many effective ways of making mosaics. The direct and indirect cementing methods, sandcasting, direct gluing methods with fast and slow-setting adhesives have all been used successfully for modern mosaics. The most satisfactory method for meeting the objectives of this study proved to be the direct method of construction with slow-setting adhesives. Mosaic materials were set directly on plywood backings with (1) Epoxy Adhesive (2) Elmer's Glue-all and (3) Ceramic Tile Cement. The use of this method and materials was time-saving and also gave opportunity for adjustments before the adhesives set.

It was discovered that cost is not a prohibitive factor in the creation of mosaics because so many materials are inexpensive or free. Woods, streams, fields, highways and junk yards yielded a variety of suitable materials. Lumber yards, garden centers, glass and metal shops provided scraps which they offered at low cost or without charge. Tile companies supplied broken lots and discontinued patterns of tile were bought at reduced rates. Plywood, glass and metal for mosaic backing material and adhesives were also found to be moderately priced.

Time is the most important and expensive element in

mosaic design. The fragmentation that is unique to mosaic art and largely responsible for its appeal cannot be achieved in a few hours. The development of the design, the preparation of materials and the actual piece by piece construction of mosaics required many hours of concentration and hard work. It is for this reason that mosaics can never be an inexpensive art. However, it can be made less time-consuming and therefore less expensive if the mosaist takes advantage of materials in their natural shape and designs mosaics to limit cutting and preparation time. Even considering this factor, mosaic will remain beyond the budget of many people. A foreseeable remedy for this situation is Do-It-Yourself mosaic classes. Such classes, based on an Art Appreciation Format, would be far removed from the kit-concept of mosaics. It is conceivable that pupils of these classes might fall into two categories, those who would eventually be able to develop and execute their own designs and those limited to execution. In either case the goal of the class would be to teach the visual and textual qualities of materials to the extent that mosaics by rote would be virtually eliminated. Through learned appreciation of color, shape, texture and relationship to other materials, mosaic students would become aware of the design function of mosaic materials.

In summary, the variety of materials and techniques available to today's mosaists offers unlimited possibilities for design. In addition many mosaic materials are inexpensive

or free. The mosaic designer can cut the cost of mosaics by keeping the design simple and designing to take advantage of the natural conformation of materials. These measures will not make mosaics available to everyone, but they can greatly extend their scope. Therefore, it is concluded that mosaics can be designed and executed for multi-priced homes.

- 1. Survey of available mosaic materials.
- 2. Study of methods of preparing mosaic designs.
- 3. Final selection of materials.
- 4. Full size layout of the mosaic design.
- 5. Application of protective material to mosaic.

- 6. Transfer of design to wall or floor.
- 7. Application of mosaic to wall or floor.
- 8. Application of protective material to mosaic.
- 9. Cleaning and shining of the mosaic.

Materials: 1/2" x 1/2" mosaic glass tiles
 1/4" mosaic glass tiles
 Clear's Glue-all
 Mosaic tile cement
 Water

Preparation of Materials: Preparation of tile into water bath

Procedure: 1. Prepare the wall or floor to design
 2. A sheet of 1/2" x 1/2" mosaic glass tiles is laid
 across of line and purchased from a tile distributor.

CHAPTER V

RESULTS: DESIGN AND EXECUTION OF MOSAICS FOR THE HOME

Steps in Mosaic Design and Execution for This Study:

1. Study of Mosaic site and existing materials.
2. Survey of available mosaic materials.
3. Water color sketch of proposed mosaic design.
4. Final selection of materials.
5. Full size cartoon of the mosaic design.
6. Application of protective materials to mosaic background material.
7. Transfer of mosaic design to backing material.
8. Application of adhesive to background materials.
9. Application of mosaic face material to adhesive.
10. Grouting and cleaning of the mosaic.

Mosaic: Fireplace Mosaic of Mexican Glass Tiles

Materials: 1" x 2" Mexican Glass Tiles

1/4" untreated plywood backing

Elmer's Glue-all

Ceramic Tile Cement

Gesso

Preparation of Materials: Separation of tile into color lots

Tiles cut to conform to design

Procedure:

1. A broken lot of 1" x 2" Mexican glass tiles in four shades of blue was purchased from a tile distributor.

2. The materials were studied for their design possibilities.

3. A mosaic was designed to incorporate these tiles.

4. A miniature sketch of the mosaic was executed in watercolors.

5. The watercolor sketch was enlarged on newsprint to the projected mosaic size.

6. A piece of 1/4" untreated plywood was cut to 33" x 41" size.

7. The plywood was covered with one coat of gesso and allowed to dry. This was done to seal the plywood and give it a light color.

8. The newsprint cartoon was transferred to the plywood backing.

9. Elmer's Glue-all was applied in small sections to the surfaces on which tiles were laid flat.

10. Ceramic tile cement was applied in small areas to sections on which tiles were positioned at an angle.

11. The tiles were placed to conform to the cartoon design.

12. The mosaic was allowed to dry on a flat surface for two days.

Findings:

1. Mexican glass tiles are more expensive than some other types of tiles, but they have working advantages which justify the extra cost. They cut easily and may be

used in interesting variations that require little or no preparation. They bond equally well with Elmer's Glue-all and Ceramic Tile Cement. They reflect light and harmonize with a variety of textures and materials.

2. Elmer's Glue-all has satisfactory holding power to serve as a bonding agent for Mexican Glass Tiles on plywood. It dries clear.

3. Ceramic Tile Cement dries slowly, but it has sufficient body to anchor materials positioned at an angle. It is a satisfactory bonding agent for glass tile on plywood.

Cost Involved:

| Materials: | | Time: |
|------------|-------------|----------|
| Tile | \$6.00 | 18 hours |
| Glue | 1.00 | |
| Cement | .80 | |
| Plywood | <u>2.00</u> | |
| Total | \$9.80 | |

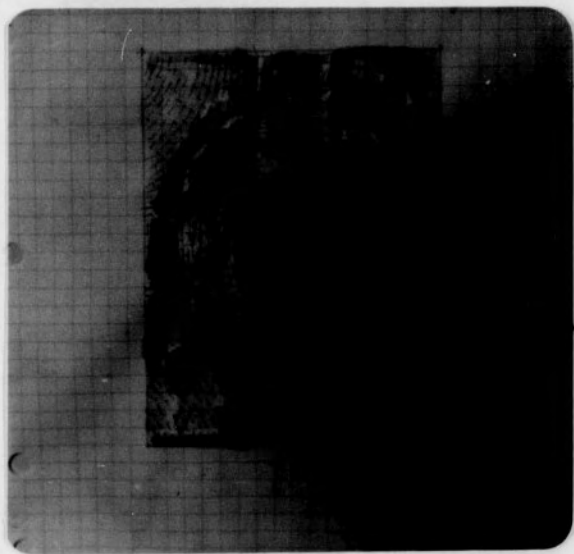


Figure 1. Fireplace Mosaic Watercolor Sketch

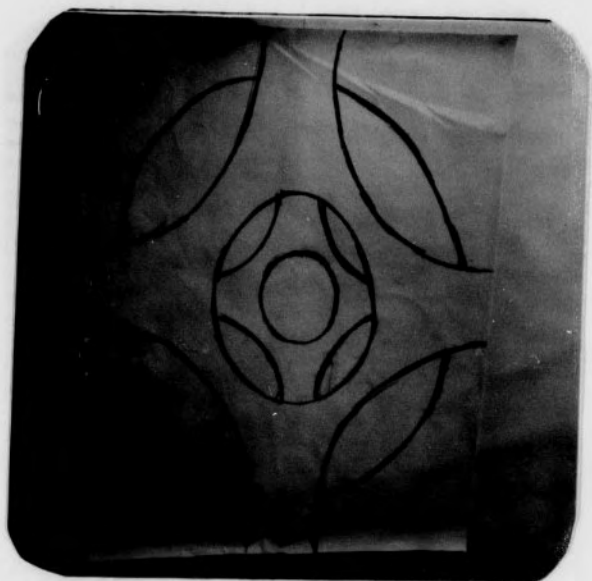


Figure 2. Fireplace Mosaic Fullsize Cartoon

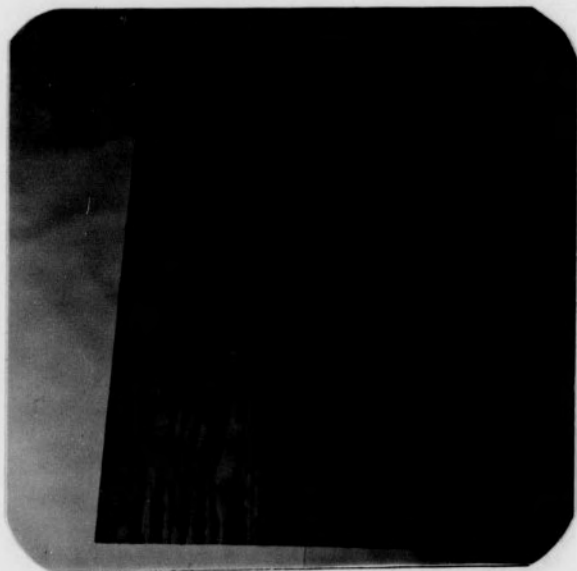


Figure 3. Fireplace Mosaic - Cartoon Transfer
to Plywood Backing

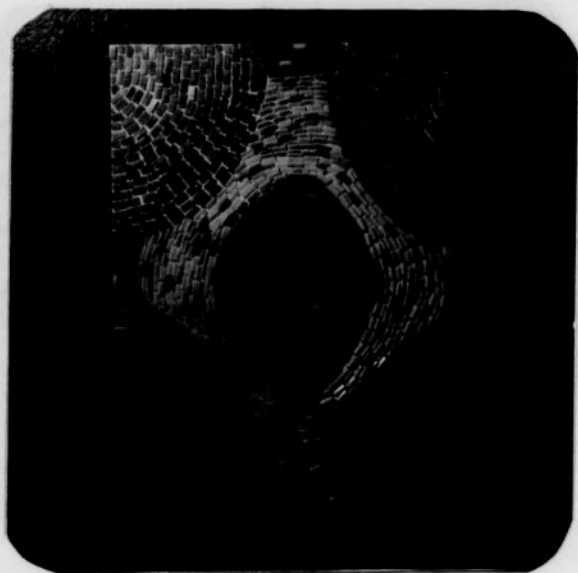


Figure 4. Fireplace Mosaic of Mexican Glass Tiles

Mosaic - Sketches made of various tiles and their patterns

Materials - Enlarged tiles in various colors

Tools - Small palette

Steps - Step 1 - Clean wall

Step 2 - Prepare wall



Procedure

1. Clean wall

2. Prepare wall

3. Lay out tiles

4. Grout tiles

5. Seal mosaic

6. Clean up

tile distributor; each section was finished with a grout sealer.

5. The design was painted and colored on a separate sheet of paper to be used as a guide.

6. A piece of untreated 1/2" plywood was cut to 18" x 22 1/2" size.

7. The plywood was painted with one coat of primer and allowed to dry.

8. The pattern was transferred to the plywood sheet.

9. Small areas of the design were marked with blue

Figure 5. Detail of Fireplace Mosaic

Mosaic: Kitchen Mosaic of Unglazed Tiles and Beach Pebbles

Materials: Unglazed Tiles in earthtones

Beach Pebbles

Elmer's Glue-all

Ceramic Tile Cement

Gesso

Preparation of Materials: Separation of tiles in color
groups

Cutting tiles to desired form

Procedure:

1. An unglazed tile sample board was studied.
2. A tentative mosaic for a kitchen area was designed to incorporate several earth colors from the sample board and beach pebbles.
3. A water color sketch of the design was made.
4. A broken lot of similar tiles was purchased from a tile distributor; beach pebbles were obtained from a garden center.
5. The design was refined and enlarged on newsprint to actual mosaic size.
6. A piece of untreated 1/4" plywood was cut to 48" x 22 3/4" size.
7. The plywood was painted with one coat of gesso and allowed to dry.
8. The cartoon was transferred to the plywood backing.
9. Small areas of the design were covered with Elmer's

Glue-all and the tiles placed to conform to the design. Some tiles were cut with tile nippers to achieve the desired form.

10. In addition to the Glue-all, some tiles were buttered with ceramic tile cement to achieve angles and raised positions.

11. Pebbles were placed in designated areas which were already filled with Ceramic Tile Cement.

12. The completed mosaic was allowed to dry on a flat surface for two days.

Findings:

1. Unglazed ceramic tile is inexpensive and it cuts and breaks with medium difficulty. Its subtle color variations and matte finish allow it to be used successfully with metal, wood and stone to achieve interesting effects.

2. Unglazed ceramic tile can be satisfactorily bonded to plywood with both Elmer's Glue-all and Ceramic Tile Cement.

Cost Involved:

| | | |
|---------------------|-------------|----------|
| Materials: | | Time: |
| Tile | \$3.60 | 28 hours |
| Ceramic Tile Cement | .90 | |
| Plywood | 2.00 | |
| Elmer's Glue-all | <u>1.00</u> | |
| Total | \$6.90 | |

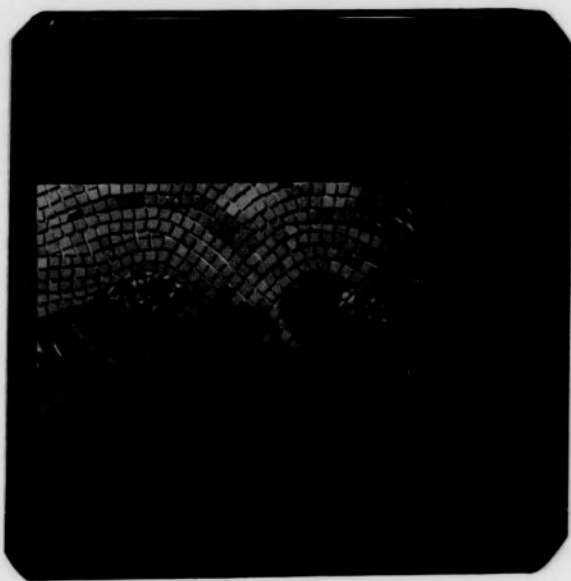


Figure 6. Kitchen Mosaic of Unglazed Ceramic Tiles
and Beach Pebbles



Figure 7. Detail of Kitchen Mosaic

Mosaic: Entrance Way Mosaic of Quarry Tiles and Beach Pebbles

Materials: 3 Shades of Brown Quarry Tiles (4" x 4")

Beach Pebbles

Epoxy Glue

Plywood

Preparation of Materials: Cutting and breaking tiles to
desired shapes

Procedure:

1. A tentative mosaic design was made for an entrance which incorporated stones and hard tiles.
2. Three shades of brown Quarry Tiles were secured from a tile contractor.
3. Beach Pebbles were obtained from a garden center.
4. The design was refined to include these tiles and stones.
5. A scale watercolor sketch was made of the proposed mosaic.
6. The design was enlarged on newsprint to the actual mosaic size.
7. A piece of weatherized 1/2" plywood was cut to 78" x 20" size.
8. The newsprint cartoon was transferred to the plywood.
9. Brown Quarry tiles were cut with a tile cutter and nippers to conform to the desired shapes.
10. Epoxy adhesive was spread on small sections of the design.

11. The tiles were placed flat in the adhesive.
12. Additional sections were spread with the adhesive and pebbles placed on the adhesive.
13. Three shades of brown Quarry Tiles were cracked in random shapes with a hammer.
14. Epoxy adhesive was spread in the remaining sections of the mosaic.
15. The tile fragments were placed on edge in the adhesive in a random pattern.
16. The mosaic was allowed to dry overnight on a flat surface.
17. The Quarry Tiles were grouted with grey cement and cleaned.
18. The mosaic was allowed to set overnight on a flat surface.

Findings:

1. Quarry tile is available in a number of shades, it is inexpensive and may be used in a variety of ways to create interesting mosaics. It combines well with stones, woods and other tiles.
2. Epoxy adhesive is a strong and satisfactory bonding agent for attaching tiles and stones to plywood. It sets relatively fast or slow depending on the consistency of the mix.

Cost Involved:

Materials:

| | |
|-------------|-------------|
| Quarry Tile | \$4.00 |
| Epoxy Glue | 1.00 |
| Plywood | 6.00 |
| Pebbles | <u>1.00</u> |
| Total | \$12.00 |

Time:

six hours

Figure 5. Entrance Way Mosaic of Quarry Tile
and Beach Pebbles



Figure 8. Entrance Way Mosaic of Quarry Tile
and Beach Pebbles



Figure 9. Detail of Entrance Way Mosaic

Mosaic: Wall Mosaic of Unglazed White Ceramic Tiles

Materials: 1" x 1" Unglazed Ceramic Tiles

1/4" Untreated Plywood Backing

Elmer's Glue-all

Ceramic Tile Cement

Gesso

Preparation of Materials: Separation of tiles from paper
backing

Procedure:

1. Several mosaic designs were drawn.
2. Experimental work was done with each design to determine the most effective method of achieving light and dark contrasts.
3. One design was selected for completion.
4. A scale drawing was done on graph paper.
5. A 24" x 36" piece of untreated plywood was covered with one coat of gesso.
6. The board was allowed to dry.
7. The board was marked in sections to correspond to the graph paper.
8. The design was transferred directly to the plywood board.
9. Small sections at the time were covered with Elmer's Glue-all.
10. Tiles composing the flat portions of the design were set directly in sections covered with Ceramic Tile Cement.

11. Tiles composing the angled portions of the design were set directly in sections covered with Ceramic Tile Cement.

12. The mosaic was allowed to dry overnight on a flat surface.

Findings:

1. Interesting mosaics can be composed of white ceramic unglazed tiles using a variety of surface treatments.

2. Gesso covered backgrounds provide a satisfactory surface for all white mosaics.

3. Elmer's Glue-all dries clear and produces the desired effect in an adhesive for all white mosaic designs.

Cost Involved:

| Materials: | | Time; |
|---------------------|------------|---------|
| Ceramic Tile | \$6.00 | 6 hours |
| Elmer's Glue-all | .50 | |
| Plywood | 2.00 | |
| Ceramic Tile Cement | .30 | |
| Gesso | <u>.20</u> | |
| Total | \$9.00 | |

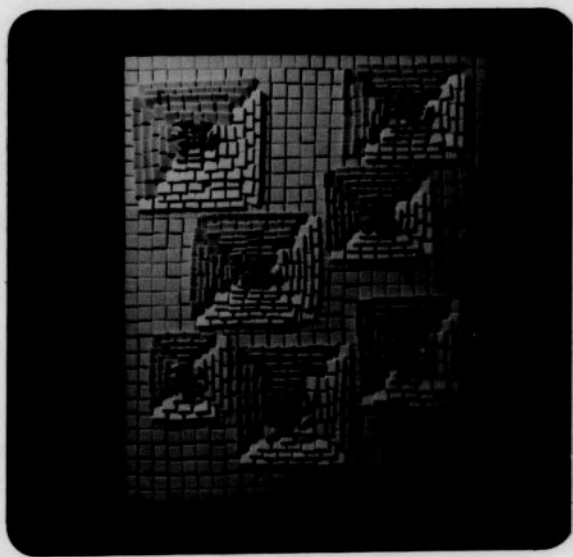


Figure 10. Wall Mosaic of White Unglazed Ceramic Tile

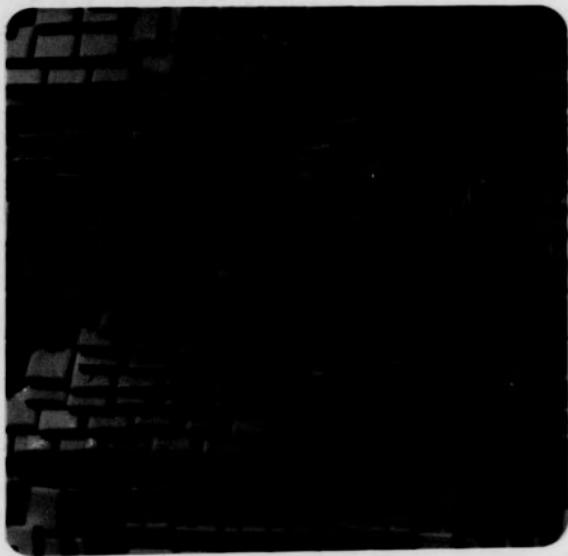


Figure 11. Detail of Wall Mosaic

BIBLIOGRAPHY

- Ahlorn, Richard. "Peter Glass, a Maker of American Marquetry," Antiques, December 1973, pp. 1096-1100.
- Anthony, Edgar Waterman. A History of Mosaics. Boston: Porter Sargent, 1935.
- Argiro, Larry. Mosaic Art Today. Scranton: International Textbook Company, 1968.
- Ashton, Dore; Campbell, Lawrence; Taylor, Parker; DeKooning, Elaine; and Pfriem, Bernard. The Mosaics of Jeanne Reynal. New York: George Wittenborn, Inc., 19 .
- Barnard, Julian. The Decorative Tradition. Princeton: The Pyne Press, 1974.
- Bellafore, Giuseppe, translated by Kent White. "The Cathedral of Monreale," Connoisseur, March 1975, pp. 217-222.
- Canovon, James. "The Glass Medallions of Carl Paulson." American Artist, August 1969, pp. 222-225.
- Chatzidakis, Manolis, and Grabar, Andre. Byzantine and Early Medieval Painting. New York: Vicking Press, 1965.
- Fischer, Peter. Mosaic History and Technique. New York: McGraw-Hill Book Company, 1971.
- "Forty Tons of Mosaics." American Artist, August 1969, pp. 18-23.
- Guest, Barbara. "Jeanne Reynal." Craft Horizons, June 1971, pp. 42-43.
- Henderson, Edwin. Mosaic Patterns. New York: Hill and Wang, 1958.
- Janson, H. W. History of Art. New Jersey: Prentice-Hall, Inc., 1970.
- Jenkins, Louisa, and Mills, Barbara. The Art of Making Mosaics. New York: D. Van Nostrand Company, Inc., 1957.
- Kirk-Greene, A. H. M. Decorated Houses in a Northern City. Kaduna: Baraka Press, L.T.D., 1963.

- L'Orange, H. P., and Nordhagen, P. S. Mosaics. London: Methuen and Company, L.T.D., 1968.
- Lovoos, Janice, and Paramore, Felice. Modern Mosaic Techniques. New York: Watson-Guption Publications, 1967.
- Madian, Jon. Beautiful Junk, A Story of the Watts Towers. Boston: Little, Brown and Company, 1968.
- North Carolina Museum of Art. The Door. Raleigh, 1970.
- Redstone, Louis G., FAIA. Art in Architecture. New York: McGraw-Hill Book Company, 1968.
- Sastette, Jacques. "Four Thousand Years of Ancient Mexican Art." Apollo, November, 1966, p.
- Stribling, Mary Lou. Mosaic Technique. New York: Crown Publishers, Inc., 1966.
- Young, Joseph L. Course in Making Mosaics. New York: Reinhold Publishing Corporation, 1957.