CEMENT AND ARTIFICIAL STONE

SCULPTURE OF MEXICO

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CEMENT AND ARTIFICIAL STONE
SCULPTURE OF MEXICO

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CHAPTER I

INTRODUCTION

The Problem

During one semester spent at the National University of Mexico and the National School of Painting and Sculpture in 1957, many opportunities were presented for studying the sculpture of that country and to note the importance of cement as a sculptural medium.

For the purpose of gathering information for this thesis, the summer of 1965 was spent in Mexico to specifically investigate and study the growing popularity and employment of cement in sculpture.

In the sources consulted for this paper, no recorded date was found on the first contemporary uses of cement in the sculpture of that country; however, information gathered from personal interviews with numerous artists indicated that cement came into prominence as a substitute for stone (giving rise to the term artificial stone) around 1932. The imposing Monument to the Revolution (Fig. 1), which was erected in 1936, is decorated with some of Mexico's earliest contemporary cement sculpture. Since those dates cement sculpture has continued to grow in its widespread use and extreme popularity until today it is one of the most widely used sculptural media in Mexico.
There seems to be great potential in the use of cement for the contemporary sculptor, not only in Mexico but in all countries where artists are endeavoring to explore possibilities of the medium. Because of its wide range of uses and versatility, the subject of cement sculpture was chosen as a problem well worth investigating.

Scope of the Study

Although this study is concerned with cement sculpture of Mexico, most of the works and artists discussed will be
centered around Mexico City. This is done because, almost without exception, the foremost sculptors of Mexico working with cement have taught and/or studied at the two most important art schools in that country—The National School of Painting and Sculpture, better known in Mexico as "Esmeralda", and The National School of Plastic Arts, which is also known as the Academy of San Carlos.

This is not to say that there are no other art schools in Mexico, but this paper will be concerned only with these two schools, since all of the national art schools are affiliated as branches of these schools through the Instituto Nacional del Bellas Artes.

This study will be concerned with the sculpture of that country and the methods and techniques employed by individual artists to achieve a finished work in cement.

Purpose of the Study

The intention of this study is not to present the technique as a new one in the realm of sculpture, but rather to investigate the various ways in which cement is being employed in the sculptural form and to point out its prominent use as well as the reasons for its popularity in Mexico.

Reasons for the Popularity of Cement

Cement for sculptural purposes is coming more and more into use in Mexico. Listed below are four main reasons that have brought about this wide use of cement for sculpture.
1. The easy access to and availability of cement in Mexico make it a very popular medium for sculpture. There is a great number of sculptors, students, and accomplished artists in Mexico who find it much more convenient to use cement because it can be purchased in almost any quantity necessary or desired.

2. Another reason for cement's popularity is its relatively low cost as compared to the cost of natural stones. Such stones as marble, sandstone, and limestone present almost prohibitive expenses to the young sculptor with limited funds. Not only is the stone itself expensive, but the cost of transportation and storage adds up to expenses which few established sculptors can really afford.

3. A third reason for the popularity of cement sculpture in Mexico is the nature of the material. The fact that cement is worked with while it is in a semi-liquid state makes it a very versatile material. It can be poured into a mold in a very liquid state and allowed to set until hard; it can be manipulated in a more plastic state and thus be packed into the mold by hand, allowing for a hollow and light-weight finished piece, a method especially good for large pieces.

4. A fourth reason for this medium's popularity in sculpture is its durability and resemblance to natural stone. This quality will be discussed further in Chapter II.
Sources of Data

The source material for this study includes data found in books and periodicals dealing with contemporary sculpture of Mexico and other countries, lectures by contemporary sculptors of Mexico, interviews with numerous artists in Mexico City and Monterrey, and photographs taken during extensive research and study in that country.

Definition of Terms

**Cement sculpture.**—Cement sculpture refers to sculpture that has been constructed in pure cement combined with small amounts of sand along with very small gravel as filler and a strengthening agent. Color may be added to this mixture or it may be painted on after the cement has become hard and lost all of its moisture.

**Artificial stone sculpture.**—Artificial stone sculpture refers to the use of cement combined with the above mentioned ingredients with the addition of such natural stones as marble, limestone, sandstone, and other native or imported stones. The addition of these stones imparts a great deal of the natural color of the stone, but other colorants are often used to help bring out the brilliance of any given stone color.
CHAPTER II

TECHNICAL PROCEDURES FOR
SCULPTING IN CEMENT

Introduction

The use of cement and artificial stone as a sculptural medium necessitates the employment of certain technical procedures which are considered basic to the medium. The purpose of this chapter is to discuss these procedures in general terms, whereas Chapter III will deal with some of the special and specific procedures and techniques which are employed by well known and accomplished Mexican artists working with cement.

Making the Model

In this type of sculpture the model for the mold is usually done in clay. In some instances, however, where the finished sculpture is to be rather small and without many protrusions, the model may be carved out of plaster. For various reasons, some artists use plaster for very large models which are usually constructed over a framework of wood or metal and a wire screening. Two other popular materials used for making models for small pieces are plastilina and wax. These do not have to be kept moist during the sculpting of the model. Moist clay, however, due to its relatively
low cost, is by far the most popular substance for making the model, even though it requires a great deal of time and effort to keep the clay moist while working with it. An example of a life-size model of clay in Figure 2 shows the work of a student who is studying with Francisco Zuñiga and José L. Ruiz. These teachers are discussed in Chapter III.

Fig. 2.—Model for self portrait by Enrique Miguez Huguenin, a student at "Esmeralda".

In making the clay model, it is always necessary to have some type of armature, the type depending usually on
the size of the model. A heavy wire or one-fourth inch steel bar armature is most frequently used, and in many instances the two are used in combination. Once the armature is completed, filler material such as tin cans, pieces of wood, wooden boxes and other such materials may be attached to and placed within the armature to cut down on the amount of clay which would be needed otherwise.

After the model is completed, a texture may be added which will be transferred to the mold and thus to the finished piece of sculpture. In most instances, however, it is preferred to give the finished piece its final texture by applying various tools to its surface after the piece is dry. This latter surfacing and texturing method usually produces a more realistic stone quality.

Making the Mold

In working with this medium, the artist is required to know something of the process for making molds. In some instances where the sculpture is very intricate, with many undercuts and protrusions, a mold may require many pieces. Making the mold, then, can be considered a very critical stage in the production of cement and artificial stone sculpture. The number of seams and pieces in the mold will have to be determined before the mold is started, and the mold will be separated at these seams by small pieces of copper sheeting or thin, small pieces of plastic which will be stuck
into the model to form a continuous unbroken line. An example of this process can be seen in Figure 3.

In Mexico there are two popular methods for making a mold to be used for cement sculpture. The procedure is usually determined by the size of the piece to be cast in the mold.

\[\text{Fig. 3.---Head model in plastilina showing copper sheeting which separates the mold into pieces.}^{1}\]

\[\text{1Suzanne Silvercruys, A Primer of Sculpture (New York, 1932), p. 104.}\]
The method which is usually employed when smaller pieces are to be cast involves the building of an inner layer of plaster—the first layer which takes the exact texture and form of the model—with a very fine plaster such as pure plaster of Paris. This layer should be approximately three centimeters or slightly over one inch thick. A colorant is sometimes mixed with this first fine layer of plaster in order to facilitate easy removal in cases where waste molds are used. (A waste mold is that type of mold which is usually destroyed in the process of removing it from the cast sculpture.) This first layer of plaster is applied with force so that it will take the exact shape of the model and eliminate bubbles between the model and the plaster.

Immediately after the first layer of the mold is completed, a second layer is begun. However, in this second and final layer, a more coarse grog or filler is used in the plaster since it will not touch the form of the model and is actually used to add thickness and strength to the completed mold.

The second method used for making the mold differs primarily from the first in the amount and type of reinforcement used in the plaster. If a mold is to receive a large amount of cement, which is quite heavy, it is necessary to have adequate reinforcement in the mold to retain the pressure from within while the cement is still in a semifluid state.
A very fine plaster is also used here for the first application of plaster in order to get a smooth and exact impression of the model. The following layer of plaster is reinforced with materials such as wire, straw fibers and fibers of the Maguey plant which are very strong, and are used in Mexico for making rope. A twine much like the binder twine found in the United States is also used. Much of this twine is also made from the Maguey plant. After the reinforcing material is laid into the second layer of plaster, a third layer is added and a fourth, if necessary, in order to adequately cover the reinforcing material. In many instances the artist uses a heavy wire in the mold, if it is to receive an especially large amount of cement. The amount and strength of the reinforcing material, then, is determined by the size of the sculpture being cast. After the mold is removed from the model and prepared for casting the final form, the mold must be bound together in some way. This is usually done with strong ropes or cords and/or wires.

Preparing the Cement for Casting with Additives and Colorants

Due to certain chemical reactions, wet cement in a pure state or combined with sand and gravel becomes very hard upon drying. However, through the use of special chemical additives and coarsely ground or pulverized natural stones such as marble, cement can be made to resemble natural stone very closely, and can be made more durable than some natural stones.
It would be almost impossible to give a complete breakdown of all of the materials that are being combined or have been combined with cement to produce a more stone-like quality. The imaginative artist is always looking for new approaches, new combinations, and new techniques by which he may produce a more individualistic and creative work. Therefore, there could probably be found as many combinations of materials as there are artists, and not all of the artists are willing to reveal their formulas. However, some of the basic and more frequently used additives for cement sculpture can be noted.

To make a comprehensive study of the medium as a whole, it would be best to look first at the basic material: that is, cement itself. This material is often used without any additives except, of course, sand and gravel, the size of which would be determined by the desired texture of the finished work. A basic formula for combining the cement with sand and gravel is one part cement mixed with as much as four to six parts of gravel. Often the artist prefers to use cement without additives since, in some instances, the natural greyish or white color of the raw cement might be desired for the finished work. The overall costs will also be lowered if additives are not used, in case cost is a factor. Figure 4 shows an example of sculpture done in cement without the use of additives.

Additives.—At this time one of the most popular and
widespread additives for cement sculpture in Mexico is marble. Some of the marble is found in Mexico but imported marbles are also used, with black and white marble being the most popular. This stone as well as others is usually added to the mixture in a very fine grain or pulverized state.

When marble is used as an additive (Fig. 5) the piece is often polished very highly in order to bring out the marble...
qualities. Figure 5 shows two works of Diana Frumin, a student of José L. Ruiz, who is discussed in Chapter III.

Fig. 5.--Artificial stone sculpture with highly polished surface by Diana Frumin. (A) "El Torso", cement combined with marble particles and green colorant. (B) "La Esposa", cement combined with marble and black colorant.

Other stone additives used in cement sculpture are the natural stones of Mexico other than marble, such as Piedra Xaltocan and Piedra Chiluca. These are stones, similar to but much harder than sandstone, which take their names from the particular locations in which they are found. The kinds of stones found in Mexico are many and some of them will be discussed under the works of various artists in Chapter III.

The addition of these stone particles, obviously, can
give a piece of sculpture a very natural stone quality. However, it is the proper finishing of a work made of artificial stone that usually determines whether the piece will resemble natural stone. In some instances cement sculpture is not intended to resemble natural stone; consequently, in such cases the natural stone particles are usually not added (see Fig. 4). A number of stones native to Mexico which are used as additives to cement are very similar to stones found in Texas and other parts of the United States, such as the well known sandstone and limestone varieties. However, marble seems to be the favorite stone additive, since the rich quality of the stone can be achieved without the cold and lifeless quality usually associated with marble.

Other additives used in Mexico include such man-made materials as Hydrostone, a white substance resembling plaster in the powdered state yet much more durable and harder than cement after mixing with water; Siporex, a cement mixture which is very light in weight but more durable than cement (this material is produced in Mexico under a Swiss patent); Vermiculite, a substance made from mica and other raw materials which was originally manufactured for use as an insulating material; and Carlita, a white substance which also resembles plaster but is much more durable and may be placed out of doors (Fig. 6).

The additives mentioned above, by their nature, would
Fig. 6.—"Consegración" by Elias Lifshitz. This is an artificial stone mixture called Garlita and was built up on the armature without use of a mold.

affect the appearance and tactile quality of the cement with which they are mixed; however, in addition to these, there are certain chemical additives (manufactured especially for cement) which retard cracking, repel water, and hasten or retard drying, whichever might be desired. Many of the Mexican artists use the above mentioned chemicals, but do not divulge their names for various reasons.

Colorants.—Color additives are used a great deal in cement sculpture of Mexico, but their purpose is basically
to enhance or enrich the appearance of the finished sculpture rather than to preserve or to give greater strength.

There are numerous ways in which to achieve various colors in cement sculpture and, of course, one of these is through the addition of different colored stones to the cement mixture, as discussed above. However, another very important coloring method used in Mexico is that of color pigments developed especially for cement (Fig. 7). These coloring materials are very similar, if not identical, to those used in the United States for coloring cement. Figure 7 is a color reproduction of a piece executed in white cement with a small amount of green colorant and black marble.
particles. Figure 8 is a black and white reproduction of a nude in which two colors were used—yellow ochre and red. The piece was given a very high polish after it was completed.

Fig. 8.—Untitled figure by Enrique Miguez Huguenin, using red and yellow ochre pigments.

Through the combination of colorants and stone mixtures, some very warm and pleasing color tones can be achieved.

The most popular method of coloring cement sculpture is that of mixing the colorant with the wet cement, as is
seen in Figures 7 and 8. Some artists prefer to apply the colorant as a stain on certain pieces to achieve various effects. Figure 9 shows a piece where this method was used in order to impart a bronze quality. The stain is applied while the sculpture still retains some of its moisture. In some instances, however, the sculpture is painted with a polychrome or monochrome coat after the work is completely.

Fig. 9.—Cement sculpture by Gerardo Pena. Red and green stains were used to give a bronzed effect.
dry. This method is not as desirable as the first, since the coat of paint wears away with weather and time as may be seen in Figure 10. Because color pigments which are mixed with wet cement and the stains which are applied while the sculpture is still moist are so much more permanent, the polychrome and monochrome coatings of paint are seldom used, since they do tend to peel and wear away in a relatively short period of time.

Another method for achieving color effects in cement sculpture is that of the mosaic. An example of this
technique can be seen in Figure 11. This is a method where-

Fig. 11.—Cement sculpture "El Cosmos" by Humberto Peraza. The artist has used mosaic for color and texture.

by the colored mosaic pieces are inlaid while the cement is still very wet.

Casting the Cement

The way in which a cement piece is cast is usually determined by its size. Small works are most often poured in
a solid piece since there is no great amount of weight involved. Using this method, the cement and additives are mixed with water until all of the elements are in a semi-liquid state, and are capable of flowing easily from one container to another.

After the mold has been coated on the entire inside surface with some type of oil base lubricant such as a petroleum jelly or a grease and the mold has been bound together securely with the opening placed upward, the cement is then introduced into the mold. The cement mixture, in a very liquid state, will easily take the shape of the inside of the mold. To insure that no air pockets form between the cement and the wall of the mold, it is considered advisable to shake or vibrate the mold lightly for a short period of time.

If an armature is to be used in the sculpture, it has to be shaped and fitted into the mold before the cement is poured. Sculptural works such as portrait busts or heads do not always require an armature. However, works involving figures with long thin arms and legs usually require an armature, which is shaped and placed into the center of the mold before it is bound together and put into position for pouring the cement.

A second method for casting cement sculpture is that of placing and packing the cement into the mold by hand. This,
of course, involves working with the cement in a very plastic state, and is used primarily in working with very large pieces such as that shown in Figure 20.

When this method is employed, one layer of cement is placed on each piece of mold, then the mold pieces are placed together and held firmly by various means of bracing and support until a second layer of cement has been placed over the first and the seams of the mold have been thoroughly covered. As the second layer of cement is placed into the mold, an armature, which has been pre-shaped to fit the curvature of the mold, is then laid into the second layer of cement. (The assembling of the mold is done in sections, usually beginning with those pieces of the mold which lie flat on the floor during the casting, and parts of the armature will necessarily overlap each seam of the mold as it is put together.) After the armature has been put into place, a third layer of cement is added to help secure the armature and to add strength to the structure. This procedure is followed until each piece of the mold has been put into place. Once the casting is completed by this method, the mold is usually bound more securely with rope or strong cording until the cement has dried.

Using this method, some artists work on one piece of sculpture for weeks at a time. However, this requires a
great deal of skill and knowledge of the medium and, of course, the cement must be kept at the proper moisture level during this period to prevent it from cracking after the work has dried. This procedure will be discussed in more detail in Chapter III under the works of individual artists.

Removing the Mold

The removal of the mold is, of course, a necessary and important step in the process of sculpting in cement. In cases which involve the waste mold, care has to be taken not to damage the surface of the sculpture if it is necessary to chip and carve the mold away in certain areas. Since the cement will still have a great deal of moisture in it at the time of the removal of the mold, it will be easy to chip and damage the surface of the sculpture at this point.

The hazards of the waste mold are eliminated with the use of a multipiece mold. This mold is usually easily removed if it is properly coated on the inside surface with oil or grease before pouring the cement mixture.

Since most larger pieces of cement sculpture are cast in an inverted position, it is considered wise to leave the mold in place until the sculpture has been set in an upright position. This will help prevent the surface of the work from sustaining damage during the re-positioning.
Finishing the Surface

Methods and techniques of finishing the surface of cement sculpture are very important, especially if the artist wishes the final surface to resemble natural stone.

In some instances it is preferred to leave the surface of the cement as it is when it comes from the mold, as shown in Figure 12. Except for rubbing down the seams left by the mold, there is no other finishing process applied when this method is used.

A second method consists of sanding the surface with a pumice stone in order to take off the rough surface and seams
and then refining with finer abrasives such as sandpaper, steel wool, and other such materials, until a very smooth and polished surface is achieved (see Fig. 5, A and B).

A third frequently used method is that of chipping off the outer layer of cement to expose the larger stone particles below the surface; then, through the use of special tools, roughing up the surface to resemble a rough stone. In

Fig. 13.—"La Princesa" by Eugenio Kish. Outer surface of cement was chipped away in order to achieve natural stone quality.
Figure 13, the artist has successfully achieved the likeness of a very rough volcanic rock with this method.

A fourth method involves the working of details and designs into the cement after the mold has been removed but before the cement has lost much of its moisture. The detail of folds shown in the figures' clothing in Figure 4 is an example of this technique.

Although there are other surfacing methods used in cement sculpture, these four are mentioned because they are the methods most widely found in Mexico.
CHAPTER III

SIX OUTSTANDING SCULPTORS WORKING WITH CEMENT IN MEXICO

Introduction

Individual sculptors and the specific techniques and procedures they use in working with cement will be discussed in this chapter.

This study of six sculptors, who are considered to be among the foremost contemporary artists in Mexico, serves to point out the significant growth and importance of cement and artificial stone as a sculptural medium in that country. Reasons for selecting these artists are based on the following criteria: they are (1) actively creating in cement, (2) exhibiting extensively, and (3) teaching in outstanding schools of sculpture. They have completed numerous government commissions, which speaks highly of their ability and pays great respect to their integrity as creative artists. Without exception, each is highly acclaimed by laymen and fellow artists as being an exemplary figure for all artists who aspire to become masters in their field.

For various reasons it was impossible to interview all of the artists discussed in this study; and, as indicated in
the number of illustrations, some are producing more actively than others in the cement medium. However, all are equally enthusiastic in the use of cement and artificial stone. Where one reflects his interest in numerous works of his own, another will show equal interest in the media through his teaching and the works of his students as well as his own works. In order to present a more comprehensive study of the use of cement in sculpture, illustrations used in Chapter II include works of students who have studied with artists discussed in this chapter, and who are studying at the schools discussed in this study.

German Gueto

German Gueto, who is now seventy-two years old, was one of the first artists in Mexico to use cement as a sculptural medium. One of the few artists in Mexico with European training, he has studied with such notable artists as Picasso, Cargallo, Brancusi, Lipchitz, and Julio Gonzales.1 Gueto first went to Europe in 1916 to study and work for one year. After going back to Mexico, he returned to Paris in 1927, where he continued his studies until 1932.

In 1954 Gueto again returned to Europe to travel with exhibits of his works. There he was acclaimed to be a singular, unclassifiable, and irregular artist who had achieved dazzling results with whatever material he touched.2

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2 Ibid., p. 121.
Throughout Mexico Cueto is noted for his abstract and cubistic works (Fig. 14) which reflects his early years of training with such masters as previously mentioned. According to Stewart:

He spent...five years in Europe, exhibiting in France, Spain, Switzerland, and Holland. In Paris he enjoyed the stimulating friendship of Brancusi and Archipenko. Although he professes to have remained independent of their influence, his work today has a strong feeling of contemporary abstract sculpture.\(^3\)

Cueto has experimented with the material Siporex (Fig. 15) and used it for a number of his artificial stone and cement works. He likes to work with this material because it is

very light in weight and relatively easy to carve, yet is quite as durable as a conventional type of cement.

This cement, Siporex, is carved rather than cast in a mold and can be purchased in block form in the size desired. The materials making up the formula for this substance include cement along with other elements known only to the company which produces it. This substance was developed and patented by a Swiss company; however, it is produced in Mexico under the Swiss patent.

The process for making Siporex involves a procedure similar to that used in the firing of ceramic wares. The elements which make up the material are mixed in proportion,
placed in the kiln, and fired to a predetermined high temperature. In the process of firing, the Siporex expands gradually to several times its original size.

Cueto seems to find his greatest strength of expression through abstracted form as seen in Figure 16, A and B. His

Fig. 16.—Two cement abstractions by Germán Cueto. (A) "El Rey David", cast with pure cement and colorant. (B) "Estela Tres", cast with cement combined with Vermiculite and a small amount of Carlita.

feeling for the abstract form is further exemplified in Figure 17, which shows a piece of playground sculpture commissioned by the government for the Social Security Department in Mexico City. This cement sculpture was designed and completed for the playground of the Social Security Building kindergarten, which is maintained for the children of office
personnel. The sculpture, referred to as "Un Beisbolista", is designed with a hole in the chest area at which children may throw balls.

According to Arroyo:

German Cueto is an authentic inventor...whose single and permanent communication with this world is his generous guidance of young sculptors and his avid study of all the changes which occur continually about us.

Even at the age he has attained, Cueto continues to amaze and surprise all of those who view his works and, with

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4 Antonio Luna Arroyo, Panorama de La Escultura Mexicana Contemporánea (Mexico D. F., 1964), p. 120.

5 Ibid., p. 121.
his artistic initiative, he is a constant source of stimulation to others.

Tosia de Rubinstein

Tosia de Rubinstein was born in Ukrania, but at the age of four she left that country with her parents to take up residence in Mexico.

Her early training included studies at the National School of Plastic Arts with such notable artists and teachers as Francisco Goitia and Ignacio Asunsolo. The foundation and background that she received has enabled her to adjust her work to many different styles, one of which may be seen.

Fig. 18.—"Maternidad" by Tosia de Rubinstein. Cast artificial stone finished with a chiseled surface.

Ibid., p. 112
in Figure 18. In Arroyo's opinion, the works that she has completed thus far can be divided into three groups:

The realistic pieces (portraits and nudes), the expressionistic pieces, and the experimental works which come between the two groups mentioned and a cubistic form.  

For most of her larger cement figures she uses a stylization and simplification of the human form (Fig. 19), eliminating details and concentrating on creating an image through volume and simple curvilinear shapes.
Tosia de Rubinstein sculpts with cement in various ways in an effort to capture the tactile qualities and appearance of natural stone. In most instances she has achieved this effect very well; however, in some of her works there can be noted some discoloration and "spots" which she attributes to a change of proportions in her cement mixture while casting a given piece. A discoloration resulting from such a change can be noted on the left arm of the sculpture which is seen in Figure 19.

The imperfections of cement mixtures and casting are much more noticeable in cement and artificial stone sculpture when it is wet. For example, such pieces located in an open patio or garden would tend to show imperfections more readily after a rain or shower.

One of her most successful pieces in achieving a natural

![Figure 20: "The Reclining Woman" by Tosia de Rubinstein.](image)
stone-like quality is that of the "Reclining Woman (Fig. 20) which was carried out with the use of a grey and white cement with white and black marble particles being used along with fine sand and a very little amount of black colorant. The "Reclining Woman" was cast in a nine piece mold which was held in an inverted position. When the casting was completed, part of the mold was removed in order to reduce the weight. However, strategic pieces of the mold were left on the figure in order to protect the surface of the work from prying levers and other equipment used to place the figure in an upright position.

A very evenly pitted surface was given to "The Reclining Woman" by chipping off the outer layer of the form. The texture achieved by this method imparts a very pleasing visual effect as well as an equally pleasing tactile quality.

In her work entitled "Beso Apasionado" (Fig. 21), she used grey cement with sand and gravel, combined with a large proportion of black colorant. The finished work is a very dark grey bordering on black. Contrary to the method she frequently employs for surfacing her works, Rubinstein gave this piece a very polished surface. This piece was cast in an eight piece mold.

In casting large works such as the two mentioned above Rubinstein introduces the cement mixture into the mold by hand. The first layer of cement is very fine, using only sand with pure cement, and is approximately one inch thick.
Fig. 21.—"Beso Apasionado" by Tosia de Rubinstein. Cast cement with polished surface.

The second layer consists of a mixture using larger gravel and stones in a thickness of about two inches. She places a small amount of the second layer on the first layer before setting in the armature, which places the armature wholly within the second layer of cement.

In making her armatures, she ties the steel and wire together with a twine made from fibers of the Maguey plant. Because of its durability and strength, this twine is used not only for tying the armatures together but also as a
strengthening agent for plaster molds as well as for reinforcement in the cement mixtures used for casting.

Rubinstein sometimes finds it necessary to extend the casting of a work over a period of two or three weeks, during which time it is necessary to keep the cement very moist in order to prevent the finished work from cracking after it is completely dry. When this is done even with utmost care it is very difficult to prevent some seams from showing after the piece has dried. The presence of such seams can be noted in Figure 21.

Rubinstein displays great facility for imparting a depth of feeling and emotion through the simple curvilinear planes of her works. In regard to her works, Arroyo says, "The distinctive traits of her works are seriousness of thought, adherence to natural form, and elegance without affectation."\(^8\)

Adolfo Laubner

Adolfo Laubner came to Mexico from Germany in 1909, when he was eight years of age. At the age of eighteen he began his studies in art at the National School of Plastic Arts, living and working in Mexico City. During the years that he has lived in Mexico, he has completed many commissions for various states throughout that country.

His work "Sagrado Corazón" (Fig. 22) was completed for the Catholic Church in Guadalajara in the state of Jalisco.

\(^8\)ibid., p. 112
For the past few years Laubner has lived in Monterrey, where he teaches sculpture at the Technological Institute of Monterrey. It is in Monterrey that one of Laubner's best known works, the Angel for "La Purisima" church, is to be found. This was the first church built in Mexico employing contemporary architecture.

In sculpting the Angel for "La Purisima", a model was made with the use of wood, wire screening, and plaster. With the model completed in plaster over the wood and wire, a
plaster mold was made for casting the final work in cement. Because of its size the Angel was cast in three different pieces. As each separate piece was poured, steel reinforcements were used as a strengthening device and as a means for binding the three pieces securely together. Due to the size of the figure, which is three meters, or approximately ten feet tall, it was necessary to use a person of very small stature to enter the mold for casting the cement forms.

Fig. 23.—Angels on "La Purisima" church in Monterrey, Mexico. The Angels, by Adolfo Laubner, were cast in cement.
Angels were assembled before being put into place along the outside of the church nave.

For most of his work in artificial stone, Laubner uses a natural stone additive from the state of Guanajuato in central Mexico. This stone is ground into three different sizes, frequently combined with a small amount of green colorant, and used in proportions of one or two parts of cement to four or six parts of stone.

Laubner's work reveals a sobriety with a somewhat Gothic

Fig. 24.—"San Augustin" by Adolfo Laubner. This sculpture, cast in artificial stone, is located in Guadalajara.
influence along with an unusual acumen for line and volume. In observing the expressions of his figures, one becomes aware of the portrayal of a profound sentiment and tenderness as seen in Figure 24.

Laubner has maintained a classic style portraying a serenity and gentleness in his figures which is somewhat foreign to the styles usually associated with and found in Mexico. Even though his style has brought him criticism from within his adopted country, it has also brought him acclaim.

José L. Ruiz

As a sculptor and teacher in Mexico, José L. Ruiz has played a most important role in the lives of many young artists in the past thirty years. For the past twenty-five years he has been teaching sculpture at the National School of Painting and Sculpture. It is estimated that during this period of time he has produced about seventy-five good sculptors. According to Stewart:

José Ruiz has worked as a sculptor in Mexico City for many years. During the regime of President Cardenas, he filled many government and presidential commissions. More recently, he worked with the sculptor Frederico Canessi in the designing of masks for an American ballet production in Mexico City and, with Juan Cruz, helped create the Cervantes statue for the 1947 Book Fair. Another interesting commission shared with Fedencio Castillo, was the sculpting of portraits of Lenin and Stalin for the Russian Legation in Mexico City.

His work is frequently shown in group exhibitions in Mexico City and is quickly acquired by Mexican art collectors.


 Ibid.
Ruiz uses the cement medium a great deal in the sculpting of models for works to be carried out on a larger scale in bronze or natural stone. Figure 25 shows a model completed in cement for a larger work entitled "La Madre", the larger work being on permanent display in Tehuacán, his hometown in the state of Puebla.

Concerning Ruiz' background and influence on Mexican art Arroyo states, "His principal fountain of inspiration
has been precolonial statuary and the 'indigenista' school, which especially cultivated artists from the roots of the Mexican Revolution".  

Although Ruiz seems to prefer the technique of carving directly in stone, he stresses the use of cement sculpture in his classes where his students are required to learn the basic procedures for casting with molds.

Ruiz' works reflect the style acquired in his early training at the San Carlos Academy, showing great facility for imparting a mood and depth of feeling through the use of broad surface planes with a minimum of detail.

At present Ruiz is completing a large statue (ten feet in height) of José María Morelos, who was a hero and leader in Mexico's struggle for independence from Spain. He received a government commission for this sculpture, which will be erected in the state of Morelos in honor of that famous hero of Mexico.

Francisco Zúñiga

At seventeen years of age Zúñiga completed a work in his native Costa Rica entitled "Maternidad", which the authorities of that country prohibited from being shown because, in their opinion, it was immoral. Possessing a great creative urge and talent and living in a country without a tradition in the arts, Zúñiga began to look toward the artistic horizon of Mexico.  


In 1936 Zuñiga went to Mexico, where he studied with
Manuel Rodriguez Lozano, and in the following year he worked
with Oliverio Martinez on the sculptural adornments for the
Monument to the Revolution (Fig. 1).

From his early assistantships to such men as Martinez
and Guillermo Ruiz involving works of very great dimensions,
he developed an aptitude for monumental art and the plastic
integration of sculpture and architecture. Concerning his
work, Stewart notes:

Zuñiga has won a number of sculpture compe-
titions and carried out several government
commissions. Both his sculptures and his draw-
ings have been exhibited in group shows in Mexico;
however, only his drawings have been shown in the
United States. He does some painting in addition
to drawing, sculpture, and teaching.13

Zuñiga, as well as many other contemporary Mexican art-
ists, has been moving toward what has been called "a new
poetic-abstract romanticism."14

One of his outstanding works, which was a government
commission, is the Waterworks Monument at Valesequillo in the
state of Puebla. This piece, eighteen feet tall, is carved
in stone and suggests a strength and earthiness which is
typical of his style. This same style can be noted in his
"Mujeres" (Fig. 26).

In his work "Mujeres", Zuñiga has incorporated a modern

13 Ibid. 14 Ibid.
Fig. 26.—Artificial stone sculpture "Mujeres" by Francisco Zuñiga.

Sculptural quality along with a precolonial kinship. This simple linear quality and lack of detail is indicative of the style that can be noted in many of his later works in stone as well as metal.

Mathias Goeritz

Mathias Goeritz is a man who figures greatly in the modern movement of the plastic arts in Mexico. He was born in Danzig, Germany, in 1915. His studies in Berlin included painting, drawing, and sculpture. He graduated in philosophy,
esthetic theory, and history of art. He then went on to superior studies in Paris and Bosilea, where he was greatly influenced by the Blau Reiter and Bauhaus groups.\(^{15}\)

In 1949 he arrived in Mexico by invitation of the University of Guadalajara. Since that time he has taught in the Universidad Nacional Autonoma and the Universidad Ibero-americana and has worked actively in architecture, painting, and sculpture. Goeritz is a zealous partisan of the current movement in architecture in Mexico and has collaborated on constructions and urban plans with various architects of Mexico City. One of his most imposing contributions to monumental cement sculpture (Fig. 27) is his "Las Cinco Torres de Ciudad Satélite" by Mathias Goeritz. Cast cement with painted surface.

Ciudad Satélite (The Five Towers of Satellite City). These towers present a most impressive setting for entrance into Mexico City from the north.

In regard to the influence of Mexico on Goeritz as an artist, Arroyo says:

It goes without saying, Goeritz is an outstanding sculptor within the modernism movement in the plastic arts which has slowly come into being in Mexico. He has been inspired by the ancient art of Mexico as well as by the Indians, but his fundamental sensibility coincides more with the modern movement.16

Goeritz seems to have found his greatest strength of expression in architectural sculpture. He feels that the meaning and goal of his art should not be merely a reproduction of reality in a lyrical and decorative representation but that it should reveal the direct and indirect influences of the world around him—science, industry, philosophy, architecture, the imagination, and all other factors that might influence man's life from day to day.17

This study of the six artists presented above indicates that cement is becoming a very popular medium for sculpture in Mexico. However, this popularity is being brought about not only by these artists, but by their pupils and many governmental agencies as well.

16 Ibid., p. 128. 17 Ibid.
CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

This study was undertaken to investigate the various ways in which cement is being employed as a sculptural medium in Mexico, and to reveal the importance and potential of this art form through the works and techniques of six contemporary sculptors in that country as well as some of the works of students from two outstanding schools of sculpture.

Chapter I serves as the introduction to this study by stating the problem and giving the purpose and scope of the problem along with the sources of data and definition of terms. Chapter II presents a review of the basic technical procedures necessary for sculpting in cement. Chapter III offers a discussion of the six outstanding contemporary Mexican sculptors referred to above and their works.

Twenty-seven illustrations supplement the report.

Conclusions

Since the year 1932, when German Cueto first used cement in his sculpture, cement and artificial stone have continued to grow in popularity as a sculptural medium in Mexico.

There are four important reasons for the popular use of
cement sculpture in Mexico: (1) it is easily accessible, (2) it is relatively low in cost as compared to natural stones, (3) the nature of the material allows it to be manipulated in a semi-liquid or very plastic state, and (4) it has great durability and close resemblance to natural stone.

The success of artificial stone and cement sculpture depends greatly on the artist's knowledge of and ability in the following basic procedures: making the mold, use of additives including colorants, methods of casting, and finishing the surface.

It can also be concluded that cement is a very versatile sculptural medium, as indicated by the works of the artists studied in this report. For example, the technical approach may involve surface textures which range from the very smooth marble quality of Diana Frumin's "El Torso" (Fig. 5, A) to the rough tooled surface suggesting volcanic rock as seen in Eugenio Kish's "La Princesa" (Fig. 13). Another aspect of this medium's versatility is apparent in the great variety of sizes possible. Monumental forms may be created such as those of Mathias Goeritz in his "Five Towers of Satellite City" (Fig. 27), or the artist may choose to cast a very small form such as the abstract works of German Cueto (Figures 14 and 15). The semi-fluid state of the medium allows the artist to use techniques which are not possible in natural stone, for example, applying detail while the cement is still wet or adding colorants for various
effects. Examples of these techniques can be seen in the works of Sandro Tagliolini (Fig. 4) and Tosia de Rubinstein (Fig. 20) respectively.

The study shows that those artists and their works chosen as representative of the trends in the sculpture of Mexico point to a very wide and popular use of cement and artificial stone as a sculptural medium.

The importance and worth of this trend is validated not only by the endorsement of these six artists but also by that of the administrators of the national art schools in the country and the many governmental agencies that have awarded numerous commissions for cement sculpture.
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