

## Industry in Depth

# A Journey Into the World of Mosaics: Historical and Contemporary Use

By Lewis J. Goetz, FIIDA, FAIA

**F**

or thousands of years, mosaics have been part of interior spaces. Their start can be traced back to primitive man’s simple arrangements of pebbles into patterns, describing a direction or message. The techniques gradually developed through history – from decorative floor and wall surfaces in villas and cathedrals to the modern expression of mosaics as art.

Mosaics can be described as the art of decorating a surface with designs made up of small, closely placed pieces of hard material, or tesserae. Tesserae glass material, known by the Italian name smalti, is opaque and brilliant in color and can be manufactured in hundreds of hues.

### AN ANCIENT ARTFORM

Scholars have traced mosaics back as far as the fourth millennium B.C. to the Temple of Uruk in Mesopotamia. Other examples equally as ancient are found in Pre-Columbian cultures – objects were decorated with the shells, mother-of-pearl and semi-precious stones. Mosaics were also uncovered in Greece, dating back to the fourth century B.C. in the ancient capital city of Pella. But it was the conquest of Greece by the Romans in the second century B.C. that eventually raised the level of artistic refinement.

Christian art furthered the decorative technique in churches and other religious buildings, but under the Byzantines, mosaic art became a privileged language to express divine, supernatural and mystic themes. The use of manufactured materials, including gold, and the techniques of setting the tesserae at different angles and depths, created magical lighting effects.

St. Mark’s Basilica, the cathedral of Venice, is one of the city’s most famous churches, as well as one of the best-known examples of Byzantine architecture and mosaics with its opulent design, showcasing the wealth and power of Venice. Consecrated in 1094, the walls and ceilings are covered with mosaic art in a mixture of Byzantine and Gothic styles. From the 11th century on, the building was known by the nickname,

Chiesa d’Oro – “church of gold” – because of the elaborate gold mosaic domes. Unfortunately, as Byzantine art declined, so did the golden age of mosaics.

### LIVING WITH HISTORY

My own personal encounter with mosaics came in February when I had the opportunity to take and evaluate a course in mosaics given by Orsoni Smalti Veneziani in Venice, Italy. The maker of mosaics since 1888 – now owned by Italian company TREND – was my host and course provider. Since my wife, Mary Ellen, had not been to Venice before, she accompanied me on the journey while I attended class.

The weeklong course, “Master in Mosaic: Living the Venice Workshop” (3.2 CEU/LU), was a work, learning and living experience. Although I have used mosaics many times in interior design applications, my knowledge was limited compared to what I experienced during the intensive course. I was immersed in the world of mosaics, living above the factory where mosaic tiles have been produced for more than a century. I visited some of the

finest historical examples of mosaics and was instructed by world-class artisans and artists that have made a life out of mosaic art.

We arrived in Venice on a Sunday evening via the train station. The evening arrival made our first impression mysterious and adventurous. After a 15-minute walk from the station, we arrived at the doorway of Orsoni in the Cannaregio area of Venice. Stepping through the ancient doorway of the walled compound, we immediately encountered the extraordinary setting of Orsoni's mosaic gallery. The compound included the gallery, offices, factory, garden, and bed and breakfast living quarters.

Once in the compound, it was as if time stood still in the surroundings of an ancient craft. The mosaic gallery, the colorful used crucibles, the fire of the furnaces and the walls of glass slabs in every color imaginable, all revealed part of the fascinating world of glass mosaic tiles.

The history of Orsoni is the history of Venetian mosaics. For four generations, secret alchemies of mosaic color and techniques have been handed down. Orsoni revived the old crafts of Byzantine gold leaf mosaic and the pure smalti of Murano's Renaissance glass mosaic.

Each morning, I awoke at dawn to the sounds of the Orsoni factory, where quintals of colored enamels, glass slabs and gold leaf mosaics were being crafted. Each day, mosaics left the factory to decorate private and public spaces all over the world, from Westminster Abbey in London to the gilded domes in Bangkok, from kings' palaces in the Middle East to the pagoda of the grand palace of the Royal Family in Thailand.

Lucio Orsoni, the grandson of the founder, now Honorary President, is aristocracy in the world of mosaics. Immediately upon meeting him, I could hear in his voice the love for mosaic art and a passion for the meticulous formulas

combining light and color. When asked if it was difficult to make the colors, he quickly replied in English with his charming Italian accent, "It is easy to make colors, but very difficult to make the right color." The "color library" adjacent to the furnace preserves what seemed like an infinite number of tones and shades necessary to provide artists throughout the world with the materials to create beautiful mosaic art.

#### A LEARNING EXPERIENCE

Our class group comprised six individuals, three representing U.S. interior design: myself representing IIDA; Susan Globus representing ASID; and Eric Wiedegreen representing the Interior Design Educators Council (IDEC). The remaining three were from the Washington, D.C., area and were participating to expand their knowledge of mosaics.

During the class, we visited the Orsani factory, saw historical and contemporary mosaic sites in and

PHOTOGRAPHY BY LUCINDA CRABTREE



# Glossary of Terms

- Annealing**—Slow cooling process starting at around 500 degrees Celsius in a special oven. The newly molded glass (or glass slabs) are cooled to prevent stress from the different cooling times, and therefore different contractions in volume.
- Cutting**—The operation to obtain the tesserae from the glass slabs. Hammers and chisels have been used since ancient times for this task, but today, automatic or semi-automatic machines can also be used.
- Cartellina**—A thin layer of blown glass covering the metal leaf in gold and silver tesserae. The cartellina is applied by firing and protects the metal leaf from oxidation.
- Crucible or pot**—The container in which the frit and cullet (broken glass) mixed with colorants or de-colorizers are heated to fusion point to prepare glass. They are usually made of silica and refractory clay, although other refractory materials can be used.
- Fusion**—The transformation of the vitrifiable mixture (batch) or frit in the pots into glass. The process takes place at high temperatures.
- Glass paste**—Used for tesserae produced with traditional, almost lead-free glass (less than five percent lead oxide).
- Melting furnace**—The furnace consists of a bench, a shelf for pots over the fireplace and a cubicle where firewood is stored. The air for combustion enters through the same opening used for loading the wood, while waste gases are exhausted through a central hole in the bench, thus allowing heat to reach the pots.
- Gold leaf**—A thin sheet obtained by beating gold. In tesserae, the color shade is determined by the purity of the metal, the thickness of the leaf and the color, if any, of the cartellina and of the support.
- Micromosaic**—Mosaic made of tiny tesserae obtained from thin rods of uniformly cut polychrome glass paste.
- Refractory**—Clay-based material mixed with silica that is able to resist heat and contact with fused glass without being deformed or corroded to any great extent. These materials are used to make the melting furnace and pots.
- Sand**—The most common form of silica used to make glass. Sand is usually not pure silica, since it contains other minerals in various quantities, depending on the location of the sand deposit.
- Slab**—The thin mosaic strip or disc (pizza) is obtained by pressing the fused glass on a flat surface or drawing through two cylinders. After annealing, the tesserae are obtained by cutting with diamond-pointed instruments or hammering with hard steel points or blades.
- Smalto (smalti, plural)**—Smalto is brilliant, completely opaque and usually prepared by adding crystalline material (corpo) and colored material (anima) to the colorless or colored fused glass. Smalti provide several thousand shades.
- Tesserae**—Small, usually square pieces of glass or other materials used to make a mosaic. Size generally ranges from a few millimeters to 2 centimeters long and 5 to 10 millimeters thick. The term is derived from the Greek word meaning “four-sided.” Tesserae are obtained from a glass slab, initially incised by a diamond-edge tool. The glass slab is then placed on a hard-steel sheet and struck with a hard-steel chisel to break it into small pieces.

around Venice, and traveled to an Orsoni artist’s studio. We were inspired by talented instructors. One of those, Giulio Candussio, is one of Italy’s premier mosaic artists. His works can be found in schools, corporate offices and public spaces, including the temporary transportation center at the former site of the World Trade Towers in New York.

But work for the class began even before we arrived in Venice. We had to prepare a design for our own individual mosaic art piece. After a short introduction of mosaics on our first day of class, we were immediately immersed in the creation of our art piece.

Our art pieces were limited in size and built on a piece of 1/2-inch plywood, since we needed to

transport them back to the U.S. Plywood is a common substrate for mosaic art, but the tiles can also be applied directly to walls, floors, ceilings or any stable surface. Our smalti glass tiles were glued to the plywood with simple water-based glue or with mortar-type cement. The mastic used depended on the type of mosaic piece created – whether for indoor or outdoor

use, or a permanent fixture or for a piece of decorative art.

Transposing an art concept into the mosaic medium is by no means a mechanical process. But quickly sketching an art concept, our instructors Giulio and Lucio transformed photos and paintings into mosaic interpretations. Another technique is the photocopying of the intended art piece and then drawing the network of tiles over the photocopy. This translation process is the first step in transforming ideas into mosaic art.

Binders, inert fillers and supports make up the basis for mosaics, whether wear- and weather-resistant, or simply an art piece. Binders include cement, tile glue, gypsum plaster and clays. Tiles are placed into the binder to hold them in place. Placement of the tile can be accomplished by leaving a small space between tiles, allowing for mortar to be placed, or by positioning the tiles closely together so no mortar fills the gaps. In either case, the placement of the tile must eventually lead to a meaningful pattern that reflects the original art project. Each method has a distinct feel and result.

The basic tools are simple and largely consist of tools for cutting mosaic tesserae, including a hammer

(a hardened steel tool with two cutting edges), a hardie (a sharpened piece of steel used as a base to cut the mosaic tesserae), and tile nibblers and carpenter’s pinners (used to cut the mosaic materials). Trowels and spatulas are also used for spreading mortar and adhesives.

The mosaic materials are either natural or manmade. Natural materials include marble, sea pebbles, shells, crystals, semi-precious stones and minerals. Natural materials, in spite of their aesthetic value, are dull in color compared to the brighter-toned color glass of smalti, a manmade material.

Smalti is obtained by fusing a compound from silica, metal oxides (cooper, iron, cobalt, etc.), fluxes and stabilizers, in a large container at temperatures as high as 1,500 degrees Celsius. It is the unique mixtures of these materials at the right temperature that yield the thousands of varying colors. Each of the colors has a unique recipe. It is those recipes that make the Orsoni smalti so unique and special. After the molten glass is created, it is pressed into flat plates, which are eventually cut into small square-shaped pieces. The slabs

can be cut by the artist if unique sizes and shapes are desired.

**MODERN ART**

Unfortunately, many think of mosaic art as ancient history. But today, it has a real place in contemporary spaces. As part of the course, we had the opportunity to visit the TREND offices in Vicenza, a city in northern Italy.

Vicenza is a commercial and manufacturing center famous for its Palladian buildings such as the Villa Rotonda and one of Andrea Palladio’s last great works, the Teatro Olimpico, completed after his death in 1580. The TREND corporate offices occupy an historic villa, Villa alle Scalette, high atop a surrounding hill overlooking the city. TREND uses the villa to showcase its products. From the floors and walls to the furniture and artwork in the villa, mosaic tiles are used throughout to exemplify the art and sophistication of its products.

The art of mosaics is as contemporary as it is historical. Mosaics can be artistic, functional and beautiful. Mosaics can and should regularly be considered in interior design applications to add practical characteristics in wet areas, high-traffic areas or when a statement needs to be made.

The appreciation I gained during the course was a result of the intensity involved in creating an art piece, the long hours in the studio – 12 hours a day sometimes – and the exquisite results that can be obtained with mosaics. 📍

## Additional Resources

- orsoni.com
- domusorsoni.com
- trend-vi.com
- giuliocandussio.net
- “Making Mosaics,” Angelo Cangemi, 2003, Antonina Parisi Publisher

# A Journey Into the World of Mosaics

Adapted as an exercise by Suzanne M. Heath, Senior Director, Education and Professional Development

## exercise:

- 1) Name two cultures in which mosaics have been traced back to the fourth millennium.
- 2) Name three binders and three tools that are used to create mosaics.
- 3) What are some modern-day examples of areas where mosaics can be used?
- 4) What are the differences between naturally made and manmade materials used in the creation of mosaics?
- 5) Provide the names of locations where mosaics have been installed over the years.

## contact information:

Name \_\_\_\_\_ Firm \_\_\_\_\_

Mailing Address \_\_\_\_\_

E-mail Address \_\_\_\_\_ Phone \_\_\_\_\_

## instructions:

Individuals who read this article and complete the series of questions above are eligible to receive continuing education credit (CEU), as approved by IIDA. Completed exercises should be returned to IIDA via:

mail IIDA Education Department  
c/o PERSPECTIVE CEUs  
222 Merchandise Mart Plaza  
Suite 1540  
Chicago, IL 60654-1104 USA

fax IIDA Education Department  
C/O PERSPECTIVE CEUs  
312.467.0779

e-mail [ceu@iida.org](mailto:ceu@iida.org)

There is a \$12 NCIDQ registration fee to register and obtain CEU credit.

This course has been approved for 1 hour of continuing education credit (0.1 CEU). Upon returning a completed exercise to IIDA, registration information will be forwarded to you. If you have any questions, contact the IIDA Education Department at 312.467.1950 or toll-free at 888.799.IIDA.