Mosaic School Notes

Studio Arte del Mosaico; Ravenna, Italy; Luciana Notturni, founder and teacher
These are from our class held in September, 2008

In addition to Luciana, we were assisted by Brunetta, Daniela, Silvia, Anna, Mannela and Gabrielle (translator, when needed, from Canada). Along the way I met Marco, who handles the school web site and most email. Also, Marco De Luca stopped by. Our teachers regard him as Ravenna's best mosaicist- that is quite a compliment.

Luciana has two locations in Ravenna. The first morning, we met at the studio with a storefront window on Via Negri. Luciana greeted us and outlined the work we would do. Gabrielle interpreted when necessary. When Luciana gave an extended talk or lecture, she would speak in Italian and Gabrielle would translate. Otherwise, Luciana would speak to us in English. The two classes, the beginning class and the class in mosaic portraits for returning students, were held in the studio adjoining Luciana's house a short distance from the Via Negri studio.

First Meeting: In the studio on the first morning were a number of mosaics produced professionally by the studio. Our attention was directed to an assortment of images on paper of fragments from the mosaics of Ravenna. These were all of a size manageable for the one-week workshop- a size not larger than 25 cm x 25 cm (10" x 10").

Choosing a project: We chose our image of what we would attempt to make. We made two tracings. First, a tracing of the mosaic, outlining each tessera of our mosaic. We used wax paper. Then, we made a reverse of the tracing. This reverse tracing was made in water soluble ink so that it could later be transferred onto our lime base.

Then we moved to the other studio to set up and get to work.

Demonstration of setting up the easel and work area:

There is a board 2 cm (3/4") larger on each side than our lime putty slab. And our lime putty base is larger than our mosaic design by the same amount—2 cm (3/4") on each side. Place the board and lime base on the easel (a short easel made of angled plywood), set on a table top so that you cannot quite reach the design from your chair.

The *martello*, the hammer, has a curved top and two flat pointed ends.

The *tagliolo* (known in the USA as a hardy) resembles a large upturned flat chisel. It is set centered in a tall block of wood, giving it a stable base. To gauge the correct height for your *tagliolo*: Standing in a relaxed posture, the top of the wood for the *tagliolo* is at fingertip height. Set your chair, and have the *tagliolo* on your right side if you are right-handed, on the left if left-handed.

The smalti or marble is cut by bringing the *martello* down onto the mosaic material, which is held between two fingers and poised on the *tagliolo*.

The lime base: The lime base has the consistency of a rolled slab of clay or malleable putty, about 2 cm (3/4") thick. The lime base is 2 cm (3/4") larger on each side than the mosaic design. When it is applied to the board, first one slab is applied and pressed down so that it will not slide off. Then a thinner second layer is added.

The lime base cont'd: See notes at the end of this paper on my own attempts at making lime putty.

If lime putty is not available, use a rolled slab of clay, but do no let it dry!

Sculpey or, in Italy, DAS- may be used carefully. This hastily scrawled note in my notebook leaves me with a question: What does it refer to? I'm pretty sure that my notes were referring to Sculpey (DAS) as a substitute for the lime base, but I'm not sure. Please email me if you know anything about this.

2016 Notes: Sculpey and DAS are both "air dried clays" carried by numerous art and craft suppliers. I have not worked with either of these products as of early 2016.

Transferring the design: Center and lay the reverse design that was traced in water soluble ink onto the lime. When laying on the reverse tracing of the mosaic, be certain that water-soluble ink is face down (or else you must re-trace). While the paper is on the lime, poke holes through the paper, more holes in the intricate areas, to avoid bubbling resulting from air being trapped. Settle the paper onto the lime surface so that the ink is transferred. Lift the paper straight off.

Definition*:* **A mosaic is**…An organized surface of lines, not "filled in" spaces.

Rules:

1.) There is a subject, and there is a background. The background should not distract from the subject. Make no background mistakes.

2.) Sometimes one sees backgrounds of mixed colors: Historically, production difficulties may account for mixed-color backgrounds.

3.) Split lines:  Do not arrange randomly; example,  .

4.) Using smaller tesserae results in less total color. Smaller tesserae = less total color. Blends, where a color appears to lighten, can be done with color, but also with the size of the tesserae. For example: As one leaves more space between tesserae, the effect will be that the color appears to lighten (this effect appears more seamless when viewed from a distance).

5.) A contour line outlines the subject, and sometimes duplicate contour lines are used. This serves to emphasize the distinction between subject and background. Thus, the background lines can end properly without being a distraction from the subject.

6.) Lines should end with a triangle. Background lines ending at the edge of the subject are a distraction; so, distance end-of-line triangles from the subject.

7.) No horizontal tessera on a horizontal line.

Personal note: I am intrigued by the last rule. Left to my own devices, I would not naturally follow this rule. I don't think I would have understood this rule from just looking at Ravenna mosaics. I look at my own project in the class; sure enough, it has a background of mostly squarish shapes and the ending triangles.

For more on rules, refer to *Il Mosaico per Immagini*
Marco de Luca
Published by Edizioni Essegi
This may be available through:
http://www.webster.it/BUS/page_books.htm
The listed price in 2009 is 15 euros

To create the mosaic: The tesserae are pressed into the lime.

Cut, place in lime, cut, place, cut, place, etc. Work up random colors to have in hand, placing…sorting through pieces in-hand, placing, etc.

Work a line at a time, like writing, not at random.

A tessera set more deeply into the design is *sottile*. One more pronounced is *profondo*.

Luciana talks about the history of mosaics, especially the use of gold:

In the early days of floor mosaics, floor backgrounds were white or black. Colors were not prevalent.

The use of the gold background had an important function- a religious meaning. Gold = light= God.

Sometimes backgrounds- green, for example- are considered the subject.

Personal note: An example of this is in Classe, about 12 km from Ravenna (bus #4 or 44). Classe was once an extremely busy port, now silted in. The city is gone, but Sant'Apollinare survives. It is a fine example of the basilica form, typical of the early Christian churches including the early St Peter's in Rome.

Luciana says, "Gold, when it is a background and seen close up, can dominate." This can make gold the subject (thus violating a rule). When a mosaic will be seen close up, Luciana advises that areas thought of as "gold" use gold smalti combined with yellow stone or yellow smalti. This tones down the gold area a bit.

Think about this: old churches had only flame light.

Gold could be ennobling. It might be used highlights, as in hair.

Gold could be a gradation…or a separation of areas…

Transfer the mosaic from the lime base to a permanent mortar base

The first step is to remove the mosaic from the lime base.

Let the lime dry. As we were told, "That is not possible today." So…

Sprinkle the mosaic surface with marble dust. Fill the crevices, but remove the marble dust from the surface. The marble dust in the crevices creates a barrier between the glue to be applied to the surface and the lime putty.

We use medical-type gauze, an open weave, a larger weave is okay. It adapts to the surface of the mosaic. It should extend beyond the edge of the mosaic by at least 2.5 cm (1").

Wet the gauze before putting onto the mosaic surface. Squeeze it out, stretch it, then lay it on the mosaic. Lay one layer of gauze on the mosaic.

One can use bedsheets, t-shirts, but no material that is a protein (typically animal fur).

Use cotton.

Apply the glue: Use water soluble glue- here are three types:

1). Rabbit skin and bone glue- best quality is just rabbit.

It dries quickly-in a few hours, a day at most.

To make the glue, let crystals or beads sit in water, then put them in a double boiler till slightly thick but still "runny" consistency—this is very traditional old-fashioned wood glue. To rabbit glue- add glycerin for smoothness and to diminish smells. Use an anti-fungal additive to preserve it.

2.) Easiest glue- flour and water glue- cooked- a papier-mâché paste, it takes up to three days to dry.

Glue types continued:

3.) Wallpaper glue- it is not very strong. Add a bit of PVA (white) glue. PVA (poly-vinyl adhesive) is not water soluble, but it softens in water.

We're using rabbit glue:

Scratch off the top of the banana leaf. *Note*: I have no idea what this refers to. Please write me if you remember anything about a banana leaf.

A natural fibre paintbrush is used to apply the glue. Do not lift it from the surface, and do not stroke with it. Use a circular motion, work it into a bit of a foam.

For a small mosaic, use one layer of cloth.

If the mosaic is 1 meter or larger, lay another gauze on top. Do not add more glue, but work the surfaces together.

Once the gauze has been placed and the glue has been applied and allowed to dry…

Remove the mosaic from the lime base.

Loosen the lime from the board. Use a long spatula to get in behind (below) the lime, running along the base. It will come free.

Grasp the gauze, and peel the mosaic from the lime base. Turn it over, and remove any lime from the back of the mosaic, but not from the gaps. The lime left in the gaps prevents the cement from squishing through the gaps between tesserae.

Once adhered to the cloth and removed in this way, the mosaic can be installed anywhere.

The back surfaces of the tesserae must be clean. This is so that the mosaic will bond with the mortar or other adhesive into which it is set.

Use a knife blade to cut the gauze extending beyond the mosaic.

Setting the mosaic

We set the mosaic onto wood with a frame surrounding it, then add an intermediate surface of tile grout that frames the mosaic.

We will install the mosaic onto a board with a raised frame around it.

Scratch into the surface of the board for better adhesion.

Mix the thinset mortar according to the recipe on the bag.

Cover the back of the cleaned tesserae with the thinset mortar- the correct thickness for this application is determined by the height of the most "profound" tessera. Also apply a thin even layer on the wood (or other base).

Use a spatula to spread, and a small plastering trowel to keep the edge crisp. Thinset is not applied thoroughly to the edge where the mosaic will be set, but almost.

Pick up the mosaic and place it.

Use the flat of your hand to place and set the mosaic. DO NOT push the edges or it will buckle. This process eliminates bubbles and excess cement.

Remove cement from around the edge. This avoids a color difference between the cement and the tile grout or *cocciopesto* to be added at the edge.

Now we have the mosaic permanently set onto the framed board.

History note: Using the very traditional mortar used for walls was a 10-year drying process. Now, for speed, one can use thinset mortar.

Remove the gauze from the surface.

I have no notes on this. I remember working outside in the covered work area. It seems that we put a liberal amount of water on the mosaic and scrubbed it vigorously. Then more water, and more scrubbing. The glue loosened quite readily with a few applications. It dissolved in the water, and I seem to remember a thorough final rinse, maybe using the hose.

Classic border setting for mosaic fragments: **The recipe for *cocciopesto***.

Mix up marbles, stone, smalti, anything (inert ingredients), to "kitty litter" size (I assume that this is an international unit of measure), or to the standard grain one wants…

Mix it dry.- For the demo, 1 part = one handful

1 part marble dust
1 part sand- construction sand (these two are the "inert" materials)
1 part Portland cement

Inert materials inhibit cracking.

Add water to the ingredients to a consistency like peanut butter.

Pour around the mosaic that has been set inside a frame.

Water will rise to the surface and from a film.

At just the right time you need to sponge up the water.

"Float" the surface- use a sponge or even a paintbrush.

For speed, use pre-made tile grout, and this is what we did in class, as follows.

To complete the display of the mosaic: add material between the edges of the mosaic and the frame of the board.

Mix 2 parts sand with one part tile grout, then water (make fairly "liquidy"), like batter for pancakes.

The inert sand inhibits cracking and gives a surface, especially when floated (worked with water and a sponge or brush at the right time, so that the mortar is slightly washed away and the sand texture made more profound).

Pour in carefully around the edge of the mosaic.

Creppe is the Italian name for the cement for around the edges.

I am a bit confused about the exact meaning and use of *cocciopesto* and *creppe*. Please write if you can illuminate me.

Reproducing historic mosaics, and photographing historical sites:

To make a copy, do not copy exactly. Or, copy after having made a payment according to copyright laws.

To copy can be illegal if it is exact, especially in other countries. An exception may be if it is to be published, but clearances are necessary.

When copying old mosaics, one may find that a stone is from a specific country or river, and is not accessible.

Find colors with the same relationship.

The key is the intensity of color, the relationship of the colors, expression and movement.

Mix colors to approximate a given color.

Regarding photos of unpublished archeological sites: one risks having to pay should one publish a photo of the mosaic.

Methods for creating a mosaic.

There are, essentially, two methods for creating a mosaic, direct & indirect, binder notwithstanding.

Direct method mosaics are not grouted.

Indirect method mosaics- grout is an option. For a floor, a table, tiles in a bath- gaps must be filled.

Even antique **mosaics** were not grouted. Floors were often installed and then ground down.

End of 1800's, the indirect method was "invented" to reduce costs.

For mosaics on walls- mixing the two techniques is possible.

Tendency is to use always a grey grout (white will dirty anyway)

Considerations for the installation of mosaics.

There are 3 layers- the mosaic, the binder, the support surface.

1930's- 50's- Portland cement was used, but proved not strong enough.

Then epoxy resins were used, which were strong but toxic.

Newer products are thinset cements adapted for various situations.

Thinset is a refined version of Portland cement with inert ingredients, plus PVA (polyvinyl adhesive) white glues or some latex.

At the studio, we have 2 basic types-thinset-with a 20 minute set time or the slow drying version, which takes about 3 hours. We use the 3-hour cement to work on a direct method mosaic. Spritz the 3-hour cement before applying the drawing to help the water soluble ink transfer.

Regarding the characteristics of other cements- the recommendations are:

Talk to the producing company

Look into colored or grey cements

What is the mix of fine or coarse, and what is the percent of inert materials?

What is the mesh used to sift the materials?

Fast or slow-drying? Horizontal or vertical- the consistency changes?

To make thinset- buy normal cement, add some sand plus lime (hydrated, not hydraulic).

A mosaic may be made or set on a base which may then be installed on a wall.

Indoors- no problems

Outdoors- cement bases, marble, terracloth- the bases are too heavy to set without problems.

The base must be guaranteed not to move.

Hexlite (formerly aerolam) fibre glass with aluminum mesh is sturdy and lightweight. It is a fiberglass surface with a corrugated metal interior between the two faces.

Wedi-board- what I call in the USA "gatorboard"- frame the edge and put an X-brace on back.

Roughen the back surface for adhesion.

History/technical note: When mosaics are placed on a base of a wall of brick, the surface is built up. On top of the brick are layers formulated in various ways of of lime, sand and marble dust.

On our last day, Luciana's daughter Silvia, who is an official guide to the monuments, guided us and spoke about the history on a tour to Sant'Apollinare Nuovo (basilica), San Vitale (church), the Mausoleum of Galla Placidia, and the Domus dei Tappeti di Pietra (House of Stone Carpets). Early on the tour, Luciana was with us at the art museum. The walls of the porch around the interior courtyard are filled with modern mosaics, many of them created for a landmark city-sponsored exhibit in 1959. A number of the original cartoons are exhibited next to the finished mosaics. There are also notable more recent works. Luciana worked on several of the mosaics that are on permanent exhibit.

Luciana spoke about a number of mosaic studios and suppliers during the week, and I have added a few:
Manufacturers:
Mosaici Dona'Murano di Dona' Stefano:
http://www.mosaicidonamurano.com/
But Luciana told a sad story about how the Dona brothers split, and Mario Dona is in Spilimbergo:
http://www.donamosaici.it/
Of course there is the famous Orsoni family, who makes smalti in Venice:
http://www.orsoni.com/
This company is in Ravenna and produces mosaics: La Campagnia dell'oro
http://www.sicis.com/
This company sells stone in Italy- Moruzzi, located near Verona. The stone can be ordered with mesh on the back and a paper front for installation by others.
http://www.moruzzi.com/

These are sources in the USA:
http://www.mosaicsmalti.com/
http://www.dimosaico.com/
Luciana spoke highly of the quality of all the producers, including this Mexican smalti carried in the USA by…
http://www.smalti.com/

The school in Ravenna:
Studio Arte del Mosaico (Mosaic Art School)
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http://www.sira.it/mosaic/studio.htm
Luciana Notturni, founder and teacher

Well, there is still more to write from my notes. But I thought I would put this part together and make it available, and I'll write up my other notes in the near future.
What a fine class it was. My classmates were Betsy and Diana from the USA, Helle and Susan from Denmark, Katherine from Canada, Tina from Australia, and Michele from Denmark (I believe) by way of Chile (I think).

I have looked onto making lime putty for use at home in Eugene, Oregon, USA.

The original making of lime putty in the Roman manner involved using calcium oxide. It generates tremendous heat, and then, it is recommended, set aside where it can't easily oxidize for several months, and 3 years would be even better. The Romans would bury it, and a Roman might have been happy to inherit a stash of lime putty. This may be true lime putty.

I visited a mason's supply store in Eugene and they do not carry lime putty, or raw calcium oxide. At my local farm supply store, I bought a bag of calcium hydroxide.

From what limited information I could find, it may be that the calcium hydroxide is calcium oxide that has been slaked, the step when it is combined with water, the step where great heat is generated and where it may be best to understand the correct steps to be followed.

The calcium hydroxide I bought is lime that is used on fields. I mixed it up with water and came up with a creamy consistency. The next day I mixed some more of it drier than the first batch, let it sit for a day (to absorb more of the water), and it made a stiff mix, what I remember from our class. Perhaps it dries out more quickly. I haven't had the chance to use it yet.

There were three notebook notes of my own that I did not understand. I noted them as I went along, but I thought I would re-state them here in case anyone reading this can enlighten me:

Sculpey (DAS in Italia) may be used as a substitute for what material in the mosaic process? From my notes, it may be as a substitute for the lime base, or it may be something that can be used as a fourth type of "glue" to help with the transfer of the mosaic from the lime to a permanent setting. I'm not sure.

I'm not sure of the precise meaning of *cocciopesto* and *creppe*. I believe that *cocciopesto* is very traditional and *creppe* has to do with the more modern thinset materials.

"Scratch off the top of the banana leaf." I have no idea what this was about. It was in with my notes about rabbit glue.

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3-d bases- Luciana's bench, raincoat, book
Cemnent bench- local instllation worked dkirectly w/ chicken wire support- sprinkle with sand

Beirut fountan- Styrofoam, carved to shap shipped to boatyard, where it was sprayed wiuth expoy resin, sprinkeled with sand & pebble, worked diredt method
PVA- use with sand

19th century restoration relied on thick cement for permanence, and now must be "cut" to try to "lift" the mosaics.

Verona is a good place to shp for mosaic

Installing the tagliolo
Say than marble & glass cost the same- 20 euros per kilo

Sit in the chair to be used- measure a 90 degree angle from the elbow- that's the height for the wood
Drill four holes to make a swuare; hardy dows not touch the bottom, doesn't fall in

Hardy surface- it comes to a point, but it is not a blade
Stell hammer- keep sharp, can cut glass or marble
Martello's come in two sizes, 900 gram and 450 gram
Recommendation is to not buy the smalti hardy (widia, carbide tip).
Buy the marble steel hardy. Keep the bottom edge of the hammer flat (this is instructions for sharpening; that is, do not bevel the edge upwards, just bring the curved top around to meet the base, and form a sharp edge there.
Fiamminghi, following Luciana's urging, does have a hammer that is steel on one side and carbide steel (widia) on the other.
Steel is fine for marble, and carbide widia, is the professionals choice for glass. But smalti work can be done just fine with steel tools. These should be kept sharpened- not to a fine blade, but sharpened to a a point.

Traveling with a mosaic? It si a work of art. Do Not use the word mosaic. Call it a work of art, but not "a mosaic!"

Mannela 3rd BCE
Pebble- cuvbe tessera, circal 3rd c BCE
900 BCE Battle of Alexander, Battle of Isis napled
down to 3 mm background, 2 mm for figures 120 BCE
As famous- Nile/niloptic mosaics
Usually in palestrina East of rome 5 m x 3m

Mentioned by Pliny the Elder- the unswept floor 1st c. BCE (an original version may have been a 2nd c. BCE Pergamaom creatoto
Aquileia
Another more famous version in the Vatican Museum (a mouse eating nuts)
Capitoline Museujm of Rome- Room of the Drinking dowves, down to 1 mm tesserae, Helleni found at villa of Hadrian in Tivoli
Greek mosaicists were tht most highly revered by Romans
Black 7 White mosaics around 1st c. CE, more middle class type of mosaic
Black 7 White and figurative Black & white, hadrian's Villa
Dog mosaic- Pompeii
Black & white mosaics uncommon in Morocco, Tunisi, etc- they were simply not preferred
Siciliam mosaics mande by Tunisisan Artis
3rd C. CE- dissatisfaction with Black & White, the empire collapsing led to lavish decoragion- using large tessera
Piazza Armerina in sicily- 90 rooms, the Great hunt'
Piazza Armerina- The Great hunt- nos sense of depth, typical of late Roman period, influence of Christianity? Attendant lack of skill
Otranto- famous cathedral- proimitive w/ Christioan thems- made by monks
14th-15th c. mosaic abandoned, ceramic tiled kick in- up to 16th-17th c. with a rrival of terraxzo floor 1st used by Palladio through …19th?
Cosmati mosaics, not a true mosaic, but rather a marble inlay

Wall mosaics
1st c. 1 BCE Romans, Pompeii, in Naples
More important- glass on fountaisn, ofgen with shells, Pompeii & Herculaneum destroyed 1st c. AD
La case di Nepturen Anaphrotite- Marriage with fan illusion
Rome- guided tour in Necropolis- Book ahead- a later glass mosaic- Christian
Rome- Mausoleum of Santa Costanza- Romans like to marry there
Ravenna, 5th c. Galla Placidia dark blue = death Good shepherd- Receding landscape
13th c. Artists moved away from Byzantine Art
Giotto made mosaics, now destroyued
Santa maria in trastevere- Rome a sense of depth & shade in the folds, profile was a novelty, (escept for Judas)
Vitreous glass tile, industrial mosaic, St. Paul within the walls in rome- Late 19th century
Gino Severini- 30's cubist- School in Ravenna is dedicated to him
Bravura- father & daughter mosaicists- large fountain in Ravenna
Cervia- by Bravura
Nureyev tomb- mosaic of his favorite carpet

Materials
Smalti- around the world- all good glass is glass
Orsoni, Venice
Dona- Vnice & Spilimbergo repeat colors, temperature, timing
Antique mosaics- "sandy" used for antique (Dona & Orsoni

Othercompaniesmalti.com 407 895 3977
Best for modern, colors do not repieat "antique"
Ravenna- the market is for copies
Marmi-
Can be had anywhere
Sporfirian from Egypt for green
Alpini green does not cut well, was not used in the past
Xinamarie- colored spectrum glass sold in Ravenna
The school cut
Top side end
There is a resin marble like- corian and other names
Tools- sharpen pointed sharp, not knife-edge on a blade
Ravenna- via O. Guerrini, a lead-free glass, can't miz with normal mosaic
168 CAP 48025 S. Alberto
www.tilesand tools.com for ceramic materials, including small ceramics for jewelry.
Finishing a mosaic,
Pick out cemdnt that covers any tesserae- tone down the cement with a mimneral oxide/water wash
Put lots of color onto the surface (after everything is dry), let it soak in, wash off with a damp sponge

Protection for exterior marble installations- the mosaic must "breather" and not "trap" humidity.

Paint the grout around the edge with a typical paint-it does not absorb the mineral oxice/water mix in any regular manner

Back to marbles
Us a wax- floor wax, paste wax, etc.
Brush wax onto the surface, and repeat it once or twice a year
Keep the mosaic drying- set up on a table
Note tools at check in- do not say the word "mosaice."
Mix mineral oxide & water very thin, wash all over so it flows into cavitgies- wipe but do not sponge to remove color
W/ Daniela-
Installation Alessandra Daprella- an apxe
Ind floor- floor- 8 year project (to raise funds)
Apse- 1 year- w. one month installation
Church of the Transfiguration
Tape w reference points scribed across exposy mortar- nailed into place
Seams are filled in on site
Orleans, MA community of Jesus.org/transfig
3 rows of tessera out

Luciana's floor

Entire floor- very expensive- huge quantity of any one color is needed, direct methos was a mistake, carped was don reverse method
Poured black cement on back of carpet and frame- thin to “grout”
Then thick cement
Direct metod part of floor required addition of concret to make an even surface so the grinder would not pull out the tesserae
Hot water pipes under the floor craced the marble- requires insulation