

III. MODELING, CASTING AND CARVING

Modeling. In modeling, the artist builds up the sculpture by adding layers of clay, wax or any soft pliable material. The material must stick to and blend with itself. Because the materials often used in modeling are soft, brittle or not long-lasting,

most modeled sculpture is turned into a more permanent form. Clay figures are often baked until hard. Even the earliest sculptors included this step. *Terra Cotta*, an Italian term meaning *cooked earth*, is used to refer to baked sculpture.

Materials and methods. Modeling also uses a variety of materials and tools. Below is a brief list. These can be found at an art supply store, a craft store or a hardware store.

1. Fettling knife—long-bladed knife especially for carving clay.
2. Modeling tools—plastic or boxwood tools for creating detail in clay sculpture.
3. Sgraffito and clean-up tool set—tools of varied shapes for cleaning hard to reach places.
4. Straight needle—needle in handle for throwing, decorating or leveling a thrown pot.
5. Celluclay®—instant papier maché powder.
6. Microcrystalline wax—soft brown wax that softens in warm water or with handling, for building on an armature, may be cast or simply left in the wax form.
7. Modeling dough—reusable clay similar to Play-doh®, hardens when exposed to air.
8. Paperclay—pulp-based white modeling

Activity 3.1—Modeling Projects

Choose from the following projects, one that you would like to do. Remember, consider design principles as you begin your project. Do several thumbnail sketches. Carefully choose and gather your materials before you begin. Having a goal in mind helps you to get a good start and can avoid frustration. However, it is possible to alter your plan as you proceed if you discover possibilities along the

- clay: paint may be added prior to modeling.
9. Plasticine® modeling clay—an oil based clay that never hardens, comes in colors, reusable.
 10. Sculp-metal®—looks and handles like clay, but air hardens into metal that can be buffed to give an aluminum like finish; the surface can be enhanced through metallic sprays.
 11. Self-hardening clays—air dried projects resemble kiln-fired ceramics and may be painted or stained.

DESIGN CONSIDERATIONS

As in construction, form is an important design consideration in modeling. The sculpture's form takes shape as layers are added. This form (the positive space) will then create the negative space (or the space surrounding the form). Texture, either sleek and smooth or rough and varied, will add interest to a modeled sculpture. Lines are also created as the form takes shape. These can be used to direct the viewer's eye. A line is created where negative space meets positive space and defines the form.

way. This is part of the beauty of the creative process.

1. Assemble several pieces of styrofoam with dowels to hold them together. Cover with plaster. Use rasps and sandpaper to smooth plaster if desired.
2. Create a clay portrait head by making an

egg shape and pulling it on a neck. After it is carved, hollow it out to a one-inch thickness, leaving an opening in the bottom.

3. With one-half pound of oil clay, interpret a word such as "calm," "angry," "sad" or "love."



Instructor check

Initial

Date

Casting. Casting is a common method of making a modeled sculpture permanent. It is also a form of sculpture in and of itself. Soft material is cast in metal or another hard substance.

First, the artist makes a mold of the modeled work. Next, the artist pours in a more permanent material—cement, bronze or aluminum, for example—and allows it to harden. With this method, any number of replicas of the original sculpture can be cast, as long as the mold lasts.

A sculptor may use the following media for his creations.

Casting Materials.

Mixing bowls and scraper—pliable bowls for mixing plaster; quick cleaning

Rubber mold-making kit (for casting rubber molds)—molds that are easily removed and reusable.

Crea-stone®—a refined form of Plaster of Paris

Activity 3.2 Casting Projects

Choose one casting project from the following list. Again, remember design should be considered from the start. Do several thumbnail sketches. Plan out all your steps in advance and be sure all materials are gathered first. What form(s) will your cast sculpture have? How will line direct viewer's eye? What surface texture will the final piece have? What about color—will it be an important element?

1. Create a clay model, make a plaster mold of it and then cover the mold with paper pulp.

Consider the mood you are trying to convey in the sculpture.

4. With ceramic or oil clay, create a human form in a seated position, with arms held close to the body or head.

may be carved or cast

Hand-made paper pulp - created by grinding paper and/or cotton linters in a blender

Hydrocal—slower setting than plaster of Paris and has a less porous surface; can be carved

Hydrostone—hardest of the gypsum plasters: five times the strength of Plaster of Paris; not for carving

Plaster of Paris—gypsum in powder form; when mixed with water it quickly hardens.

DESIGN CONSIDERATIONS

Design considerations are primarily the same for casting as for modeling and construction. However, the final product is a step away, and some things, such as surface texture might not be as controllable. It is important though, and it could be that desired surface texture will come with experimentation. Also, sometimes surprise results can be very exciting and pleasing.

2. Do a sand casting in a box (or at the beach). Make a pattern in damp sand, pour plaster, and allow it to harden. Put a large paper clip in the back while not completely set to hang this on the wall.
3. Grind cotton linters for paper making in a blender, drain through a sieve, pat the pulp into a plaster or plastic mold.
4. Make a bas-relief by creating a design in oil-based or ceramic clay, building up the sides to make a shallow tray.

Carving. In carving, a sculptor works with a solid block of material, wood or stone, for example. The sculptor visualizes the finished form and cuts and chips away material to reveal it. Today, few sculptors carve in wood or stone. Carving is a strenuous and time-consuming process. Few can afford this approach as it ties up the sculptor's money in expensive material. Modeling is faster, cheaper

and more flexible. However, many of our history's most valuable sculptures have been carved. And, carving is still used as a craft and serves as a nice leisure-time activity.

Materials and methods. Below are lists of materials used in carving as well as tools and supplies for stone and wood-carving.

Carving Supplies:

1. Clay—Indian red, white sculpture, raku, clay with grog, white talc, stoneware clay.
2. Marble—more difficult to carve, takes a high polish.
3. Plaster of Paris (gypsum)— a quick setting white powder that is mixed with water the addition of vermiculite makes carving much easier.
4. Soapstone—easy-to-carve stone that finishes to a high polish, gray, green, or off-white.

Stone Carving Supplies:

1. Flat chisel—metal chisel with a straight across broad head for a fine finish.
2. Point chisel—metal chisel that comes to a

point; different sizes from 1/4 to 1/2 inch.

3. Wet and dry sandpaper—paper that comes in different grit densities; used wet for polishing stone or metal.

Wood-Carving Tools and Materials

1. Coping saw—a saw with a deep neck and fine blade; may be used for interior cuts after a hole is drilled.
2. Mallet—a specially shaped tool for pounding on chisels to remove wood; often made of lignum vitae, the hardest wood.
3. Vise—an adjustable clamp for a workbench that will hold wood for carving in place.
4. whittling knife—a knife with a short blade, sometimes at a right angle for whittling.

Safety Reminders for Sculpture:

- Always find a way to secure an object for carving: a vise, sandbag, C-clamps, a wood carver's bench screw or a V-board (made by screwing two 2 x 4-inch boards at right angles on a large base of plywood that you could either sit upon or clamp to a table.)
- Use common sense in handling chisels or other carving tools.
- When carving with sharp tools, always wear goggles or a mask.
- When using electrical equipment such as a drill, band-saw, sander, table saw or torch, wear goggles or a mask, push sleeves above elbows, tie back long hair and remove all jewelry.
- Don't use solvents or chemicals near open flames.
- Lock chemicals and solvents in a metal cabinet. Keep dangerous chemicals away from small children.
- When working with materials such as foam, poured urethane, or other chemicals with a strong odor, wear a mask and work in the evening so fumes can dissipate.

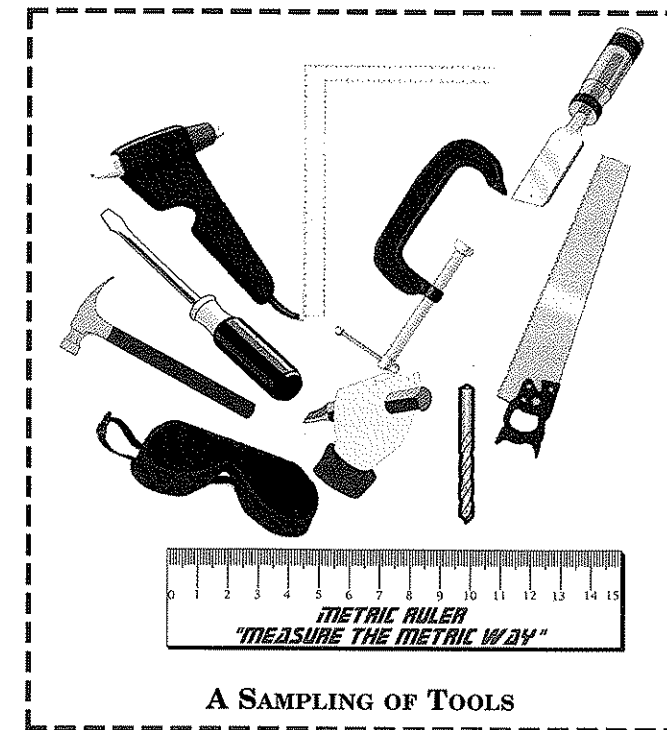
Activity 3.3 Carving Project

Choose one of the following carving projects. Do several thumbnail sketches first. What design elements will you emphasize? Remember to keep in mind positive and negative space, lighting, balance, proportion and focal point. Keep safety in mind as you work.

1. Carve a design in a paraffin block.
2. Carve a sculpture from firebrick with rasps, knives, and coarse sandpaper.
3. Carve large pieces of Styrofoam® packing with a heated blade, finish with rasps; paint.
4. Create three variations of a simple geomet-

ric form in three different materials such as wax, plaster and wood. Combine them.

5. Mix three parts vermiculite, two parts plaster, two parts water (plus a little extra), and pour it into a paper milk carton. Let harden. Remove carton and carve with a knife or plaster rasps.
6. Soap carving is age-old but continues to be a good introduction to carving, as it demonstrates the technique of removing only small amounts of material at a time. Using bar soap, do a soap carving.
7. Use slate for a bas-relief sculpture, carving with stone tools, rasps, and sandpaper.



A SAMPLING OF TOOLS



Before you take this last Self Test, you may want to do one or more of these self checks.

1. _____ Read the objectives. Determine if you can do them.
2. _____ Restudy the material related to any objectives that you cannot do.
3. _____ Use the SQ3R study procedure to review the material:
 - a. Scan the sections,
 - b. Question yourself again (review the questions you wrote initially),
 - c. Read to answer your questions,
 - d. Recite the answers to yourself, and
 - e. Review areas you didn't understand.
4. _____ Review all vocabulary, activities, and Self Tests, writing a correct answer for each wrong answer.

