

Workshop: Teaching Human Facial Modeling Through Plaster Face Casting

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Abstract

As 3D student skills progress, sooner or later they begin work on accurately proportioned human models. While caricature design is often very forgiving in its realization, human designs need to be very close to “right on.” This presents a tremendous challenge for 3D animation students, many of whom have had limited anatomy training.

The traditional solution to source material has been to provide photographic references. The standard front and side shots provide a good starting point for students to work from but provide no information on appropriate polygon topology or details such as the curvature of the head between the eye and the temple. Yet, it is impractical to get a live model to provide 3D reference by sitting next to the student as he or she models. The difficulty of finding a good 3D reference for students to work from becomes the challenge.

At the University of the Incarnate Word, we have begun using a traditional method of face casting. Traditionally, this technique is used to create plaster masks or molds upon which prosthetics can be constructed. The mold is reusable and can be constructed from plaster or even lighter cements.

1 The Mold Creation Process

The student must first be prepared by covering her hair with either a skullcap or other thin plastic covering like a plastic wrap. A thin layer of petroleum jelly should be applied to eyebrows, eyelashes, and around the edge of face to ensure easy extraction from the alginate. To protect the clothes, cut a hole in a plastic bag and place it over the student’s shoulders and another across the student’s lap.

The technique utilizes an inexpensive and easy to use prosthetic alginate that is spread over the student’s face. For most individuals, about one-half pound is sufficient to completely cover the face, bottom of the chin and top of the neck. Be sure that in the application process you leave the nostrils uncovered.

The alginate sets quickly (within 5 minutes) and then is covered with plaster bandages to reinforce the form. Upon drying, the alginate and plaster bandages create a reinforced negative of the student’s face. It is important that the student does not move, talk, laugh, or smile during the process. Typically it takes two people to apply the alginate quickly enough to cover the face before it sets.

Once dry, have the student place her hands on her face and lean forward. Remove the alginate plaster form from the student’s face by placing the fingers inside the edge of the mask and working along the edge until the mask falls away from the student’s face.

Fill a box with loosely crumpled newspaper to create a soft place in which to place the alginate negative. Center the negative in the box in a way to allow the most plaster to be placed in the form. Fill the nostril holes with excess alginate or petroleum jelly to keep plaster from flowing through these holes. If there are any holes or bubbles that emerged during the process of applying the

alginate, take a moment to fill these imperfections with a new batch of alginate or petroleum jelly. Remember that holes in alginate mold will result in raised areas in the plaster form.

The best results are usually achieved by mixing the plaster to a fairly thick consistency. However, don’t use too much water. Filling this negative with Plaster of Paris or cement patching materials provides an accurate (to the pore) duplication of the student’s face. Typically, the drying process is under an hour.

When the plaster is dry simply remove the plaster and alginate negative from the plaster leaving the positive face form. Often, there are small imperfections in the positive form that can be easily worked out or sanded down with an Exacto knife, razor or sandpaper.

2 The Digital Realization

In class, we use this 3D plaster mask to discuss and draw appropriate polygon or NURBS topology before starting the digital modeling process. The students are assigned to begin plotting their polygon or curves placement by drawing directly on the face. Many digital modeling problems are avoided at this stage by making sure that the student plans out what parts of the face need the most digital information. Insightful discussion can take place as the student draws and erases planned topology on the face. This keeps the frustration level within the software low.

Upon completion of plotting the topology, the face mold can either be photographed from the side and front for use as the photo source or the student can work from the traditional photographs of their own face. However, once the topology is already worked out on the face, the student’s photographs of these molds often provide helpful information as the student begins to actually place curves or polygons. As they model using the photos as background reference, they can reference their own plaster face sitting on the desk in front of them.

For difficult-to-model areas of the face including the cheeks and the corners of the face (i.e., from the eye to the temple), the plaster mold provides invaluable reference unavailable from any of the front or side photographs. Other areas of specific benefit include the nostrils and bottom of the chin.

3 In Class Advantages

Typically, most 3D students are of the mindset that they should always be working on the computer. The technique described in this contribution is one way of assisting students to develop a broader sense of research and careful observation before, during, and after the digital creation process.

By creating a 3D replication of a student’s face, we have found an increase in productivity and a decrease in frustration. Theory of how to organize polygons for creases, folds, and bumps is understood before digital modeling takes place. Students have an opportunity to enjoy a tactile version of the product they are working on and generally enjoy a higher interest level.