Lost Wax Method Bronze Casting

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ABSTRACT

Large scale bronze casting is a work intensive process that requires adequately equipped studio space, time, and a set of highly refined skills to complete the eight stages of the process. My goal was to construct a life sized bronze statue of a traditional Athabascan Fisherman. I chose to sculpt a classically proportioned Greek style statue, using similar processes and ratios. I looked over photographs that I took in the Vatican museum and several anatomy books. Wendy Croskrey supported my research in large scale bronze casting a project this size. Through experimentation I discovered the importance of using the correct plaster and reinforcing molds properly. The process provided me with many firsts, such as a mold cracking open, plaster not setting, and having to recast a piece. Through hard work and careful consideration I was successful in completing the project.

METHODS

- Constructing the steel armature to be covered in plaster and clay
- Building up a plaster shell to be covered in the oil based clay
- Adding on clay and sculpting definition
- Making life casts of my ears, face, hands, and feet
- Continuing sculpting and experimenting with clothing
- Completing him as nude to be able to add clothing in a different material later
- Attaching the sprues, vents, core pins, and pouring cup
- Applying silica plaster to the face coat over Shellac and alcohol mixture
- Plaster Silica Molds are poured ready to be loaded in the kiln for burn out firing for three days

- Brushing on the liquid plastic two part mother mold to ½ inch minimum, two coats used
- De-molded the silicon cast the pieces in wax
- Reassembling the wax pieces on the armature, using hot putty knives and wood burners
- Re-texturing to match using a metal spoon and clay ribs for smoothing
- Attaching the sprues, vents, core pins, and pour cup
- Pouring the molten bronze into the mold, bronze melts at about 1700 F and is poured between 1780 F and 1900 F
- The molds must cool before being broken open, chisels, hammers, grinders, water, pressure washing, sand blasting, and a lot of work is required to remove the mold material.
- The pour cups, vents, sprues, and core pins must be removed. The whole piece is wire wheeled and the seams are prepared for welding.
- An internal securing structure is added for final installation. The welds must be filed, and the surface retextured to match. A final buffing is done.
- The patina is now applied and the whole piece is covered in a protecting coat of wax.

ACKNOWLEDGEMENTS

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REFERENCES

- The Body, Photographs of the Human Form, William A Ewing
- Figure and Form, Lu Bro
- Drawing From Life, Clint Brown and Cheryl Mclean
- Constructive Anatomy, George B. Bridgman

INTRODUCTION

The project can be broken down into eight major stages that are comprised of many smaller individual steps.

- Stages
  - Construction and building of the armature ..........1 week
  - Making and layering on the clay .........................1 week
  - Actual sculpting of clay ................................9 weeks
  - Casting wax duplicate ...................................1 week
  - Casting in molding material ................................1 week
  - Bronze pouring ..............................................2 weeks
  - Welding, Metal Chasing, and clean up ...................2 weeks
  - Patina .........................................................2 days

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