Brian Sandilands

Portfolio of Production:
Fabrication, Education,
Research, Fine Art & Industry

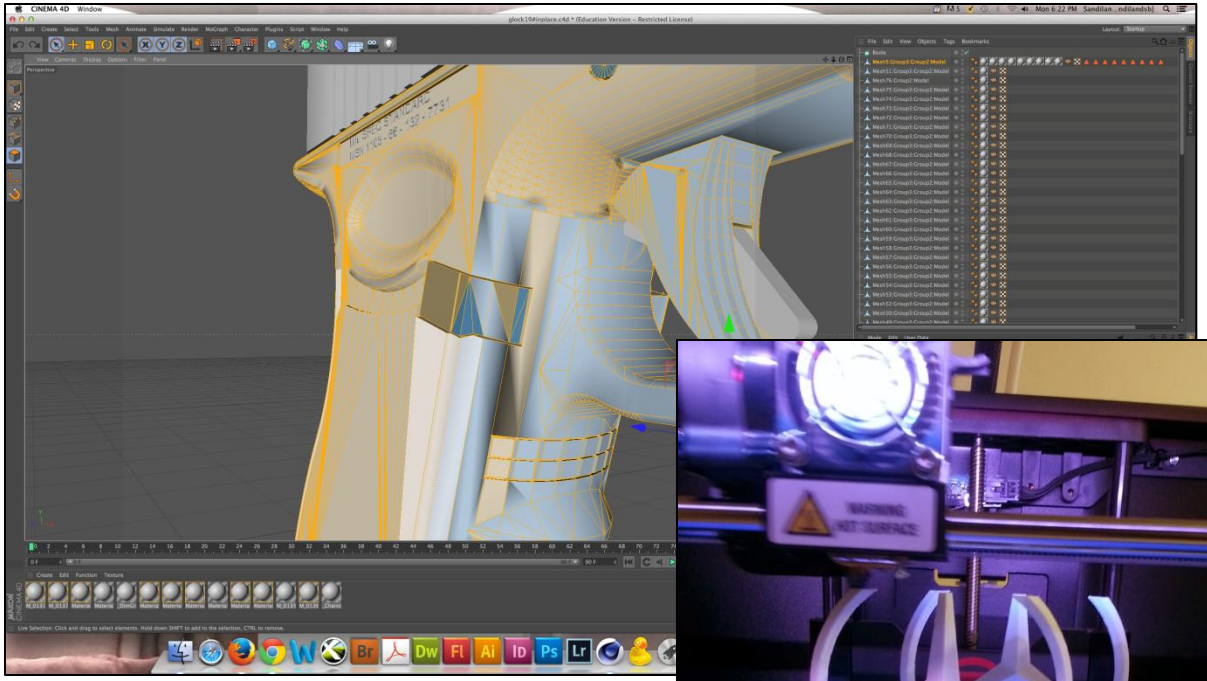
Statement:

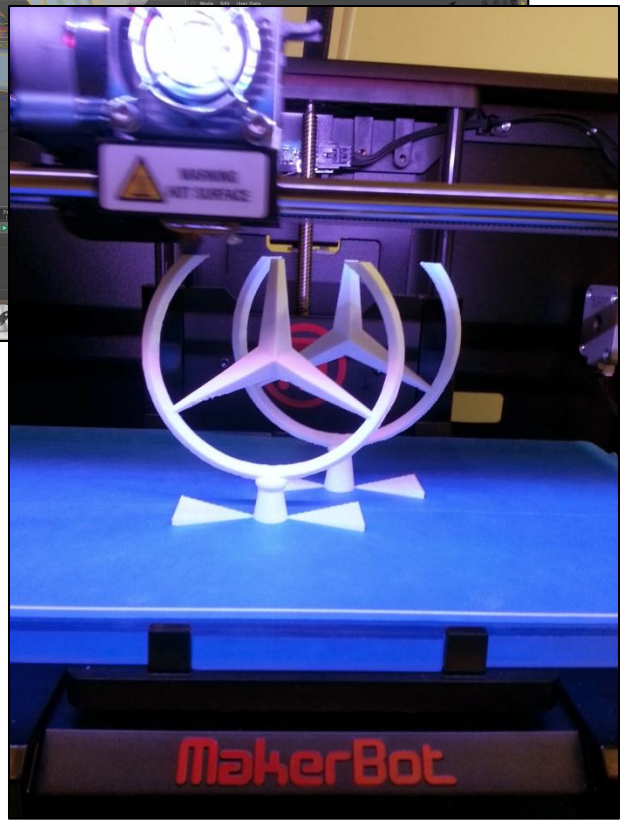
This portfolio showcases a diverse range of work that samples production experience involving CAD/CAM/CNC processes. Work with other parties is highlighted here. The content presents work in education, research, fine arts, and production.

The CAD/CAM/CNC processes includes: Additive processes (3d printing, etc), subtractive processes (3-7 axis milling, etc), laser cutting/engraving, and hybrid processes that combine additive and subtractive work with handwork and other multimedia applications.

Consultation and Project Management

Experience with consultation and management of the successive stages of development a project undertakes from concept/input to physical realization/output.



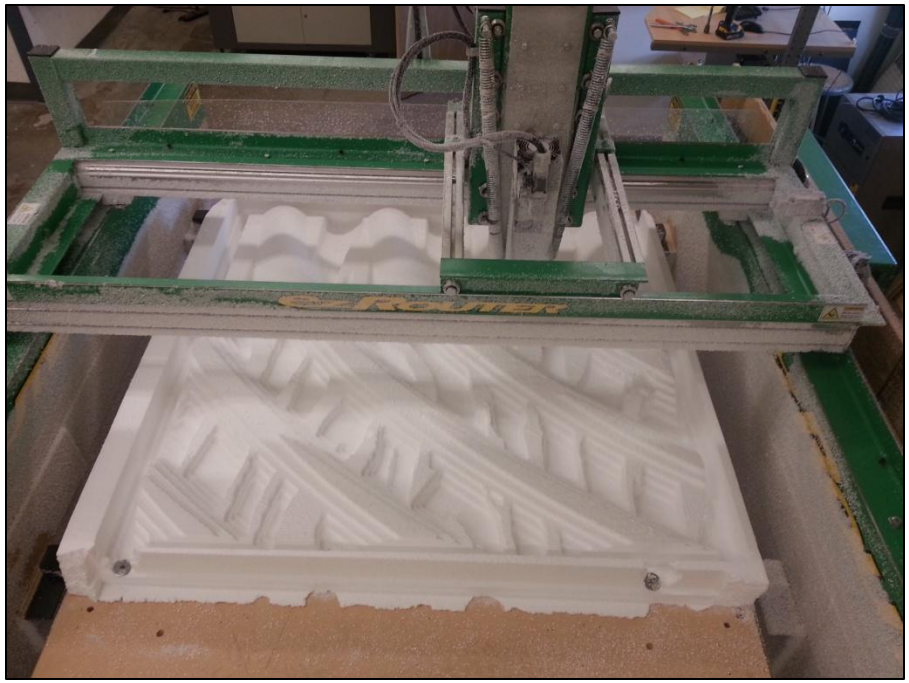


Experience with adapting and optimizing parts of the pipeline to software, machines, and production resources readily available to project.

BFA +MFA STUDENT WORK AT *THE CENTER FOR NEW ART* AT WPUNJ

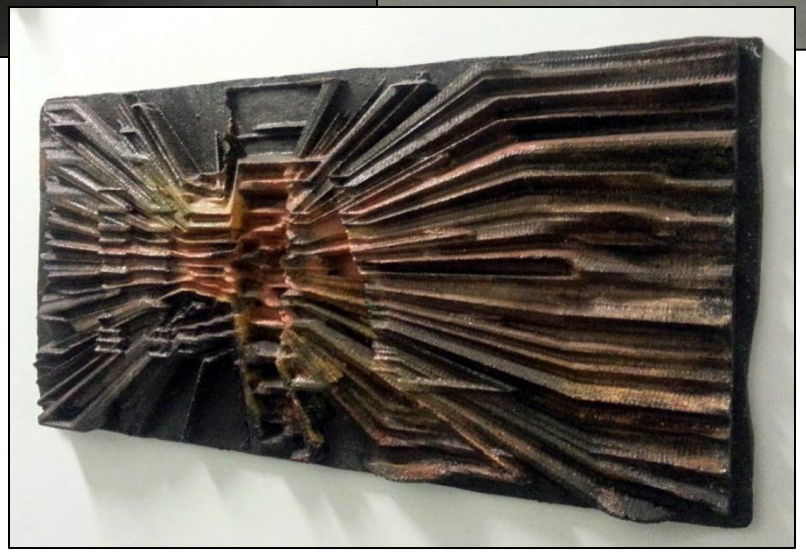
William Paterson University of New Jersey

Production Management of BFA + MFA Panels for Michael Rees' *Sculpture and Digital Media*



As part of Prof. Michael Rees' signature class, *Sculpture and Digital Media*, students were tasked with developing panels derived from two interwoven surfaced worked through in CAD via parametric geometry. Worked with students to understand design constraints of 3 Axis milling in EPS (undercuts, etc.) and volume of stock material. Managed ordering of material, programming, production, and lead time with students.

Eudomar Lopez (BFA). 2014.
CNC Milled EPS with custom paint and compound finish.
http://eudomarlopez.weebly.com/



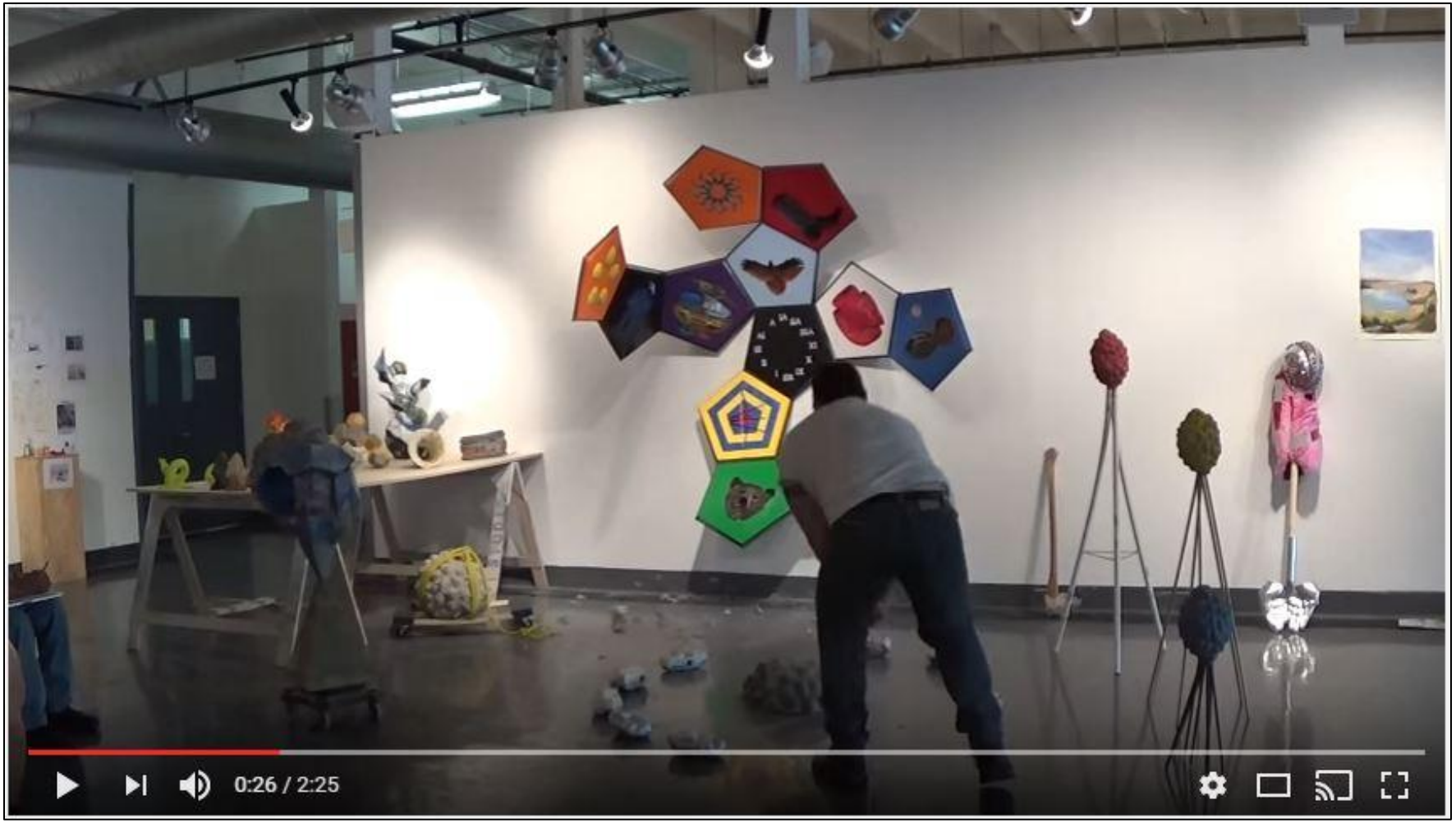
Selected BFA panel works from *Sculpture and Digital Media* 2014. Selection displays diversity of EPS surface treatment students experimented with. A workshop/lesson plan for working with EPS was developed that same year and brought to multiple classes.

Production Management of BFA + MFA Panels for Michael Rees' *Sculpture and Digital Media*

David D'Ostilio MFA 2014.
EPS, Resin, Latex Paint, Joint Compound, Spray Paint, QR Tags

Worked with student in his first experience with programming 3 Axis CNC, experimental surface treatment of EPS, and QR tags to produce significant first year MFA output. David was shown how to work through programming parameters to achieve new aesthetics with various roughing and finishing passes. QR tags were embedded with AR and audio files.
http://www.daviddostilioart.com/

David D'Ostilio MFA



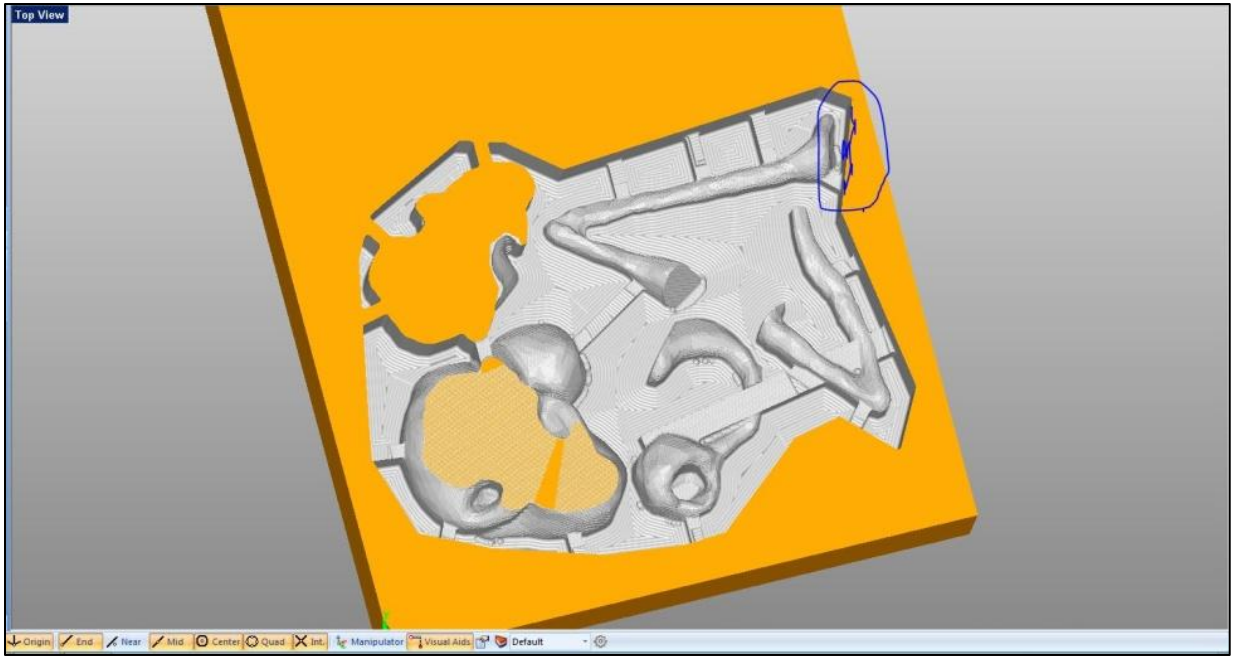
Worked with David to produce artifacts of performances *Manual Mastery Malfunction* (above) and *Chopping Deconstructed.* Processes covered include: 3D scans of body fragments and found berries, model repair of Boolean operations in panels (3d topography from images work by David), CAD prep/orientation for 3D printing and CNC milling, engineering 3D parts to marry analog objects in hybrid fashion. http://www.daviddostilioart.com/performance.html

Jennifer Hastings BFA

Displayed here and on following slide are works that Jennifer produced through an independent study with Prof. Rees. Student revieved dual major in Art and Anthropology. Worked with student to handle 3D scanning and watertight construction of 3D models for PLA printing. Student went on to make iterations of this work in metal and ceramics (shown in this slide. 2014-2015.

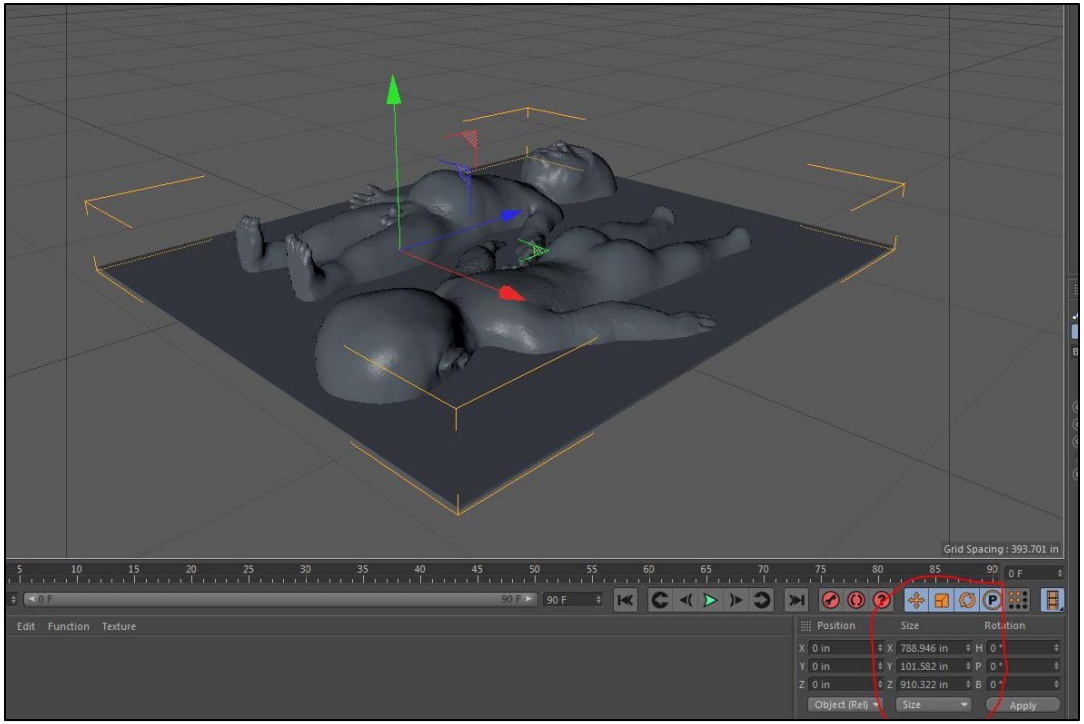
Jennifer Hastings BFA

Coverage of work depicted:
http://www.wpunj.edu/news/wpmagazine/spring2016/wp-detail-2.html



Dana Apicella MFA

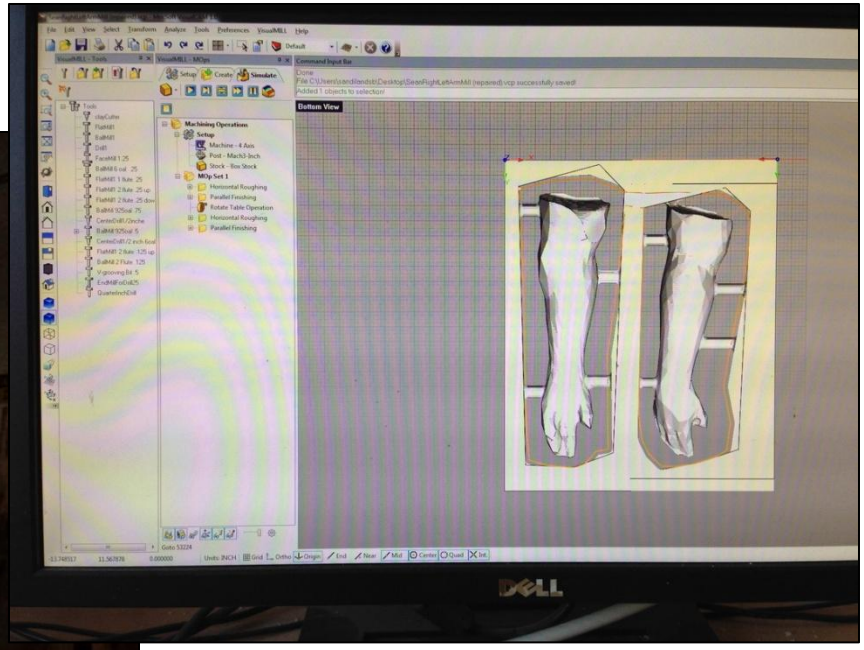
Worked with student slice part and place support structures in CAD to increase efficiency in CAM and physical production. Used simulation in CAM to teach parameters of flip mill production process. 2015.
http://dana-apicella.com/



Sean Tulner BFA

Worked with student to use Cartesian geometry to stage part/object in preparation for CAM. Student learned strategies for slicing high polygon count models from Prof. Rees. Worked with student to mind this in CAD preparation stages of production.
2014.
http://seantulner.weebly.com/

Sean Tulner BFA



Student had background as sculptor and prop designer. Images of thesis work depicted here show flip mill workflow at stages in pipeline during programming and at beginning of post processing. Root 3D model created with voxel geometry in Zbrush-student gained tacit experience with decimating 3D model to reduce point count and improve production. 2014.

MFA Student Work: Marc Calello

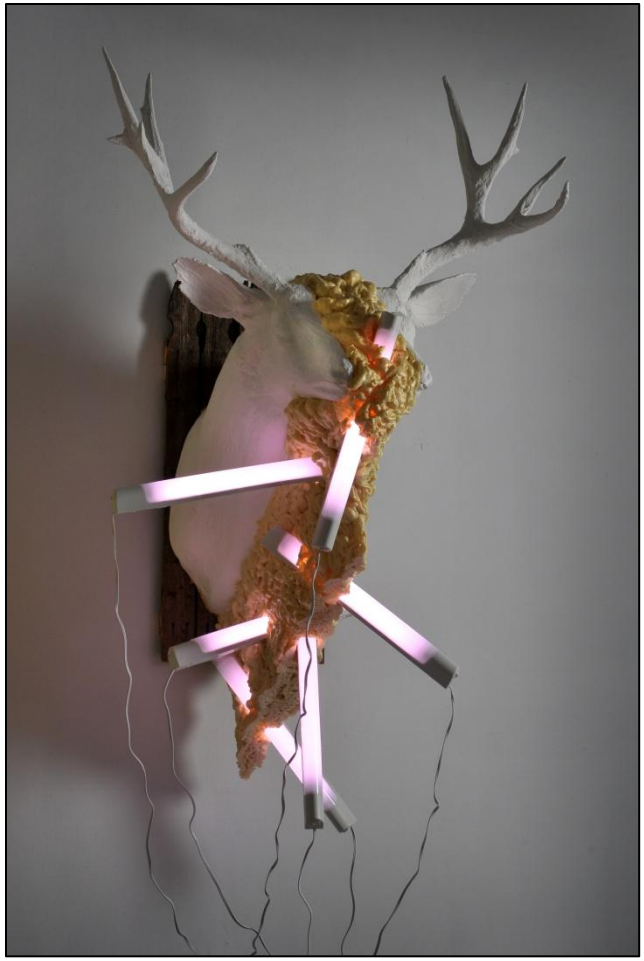
Marc Calello is a NJ based artist working in sculpture who was MFA candidate at WPUNJ. He contributed significantly to CNA output during his candidacy.

Calello works in secondary education and has shown in USA and Italy.

"Patriarch" 2013.
EPS, Plaster,
Lamp, Chord.

Worked with artist to handle manipulation of downloaded open source 3D model and discussed conceptual implications of practice. Instructed on the slicing of model into sections for CNC milling out of sections of stock EPS material to maximize sculpting of form with resources at hand. Artist was introduced to "flip milling" to get more out of 3 machine Axis. Sculptural concepts of undercuts and structural stability were worked through in CAD stages of process. Marccalello.com

Marc Calello:



Precipice. 2014. 56x48x36”
EPS, Plaster, Spray Foam, Found Objects.

“Untitled”. 2014. 42x36x32”.EPS, House Paint, 3D printed PLA.

Artist built upon experience with work flow employed in “Patriarch”. With “Untitled”, Artist began to fully manage CAD preparations, machine programming, and 3D printing.

Marc Calello:

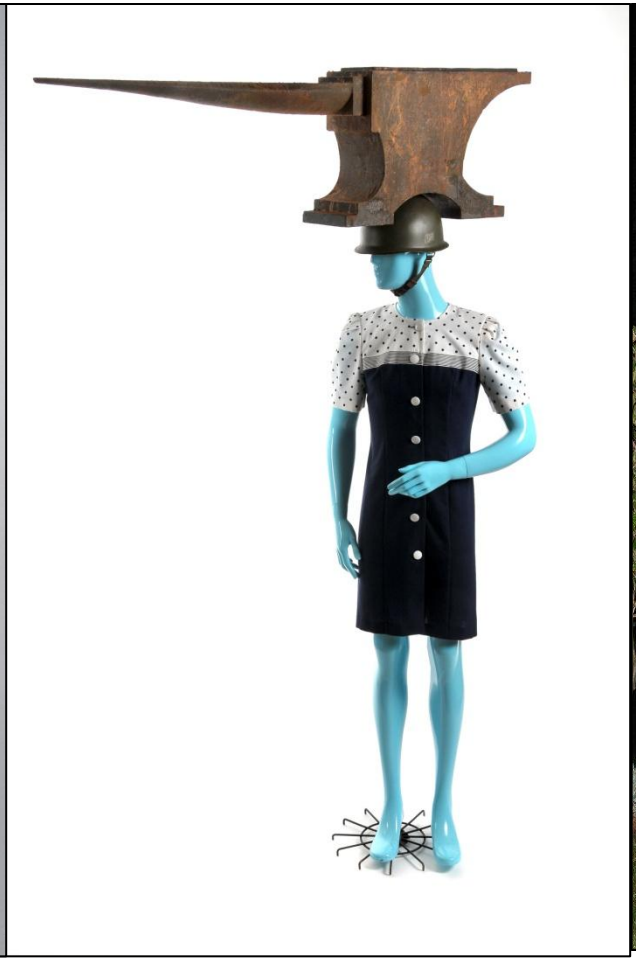
“Untitled”. 2014. 3D Printed PLA, Spray Paint.

“Untitled”. 2013. 3D Printed PLA, Spray Paint.

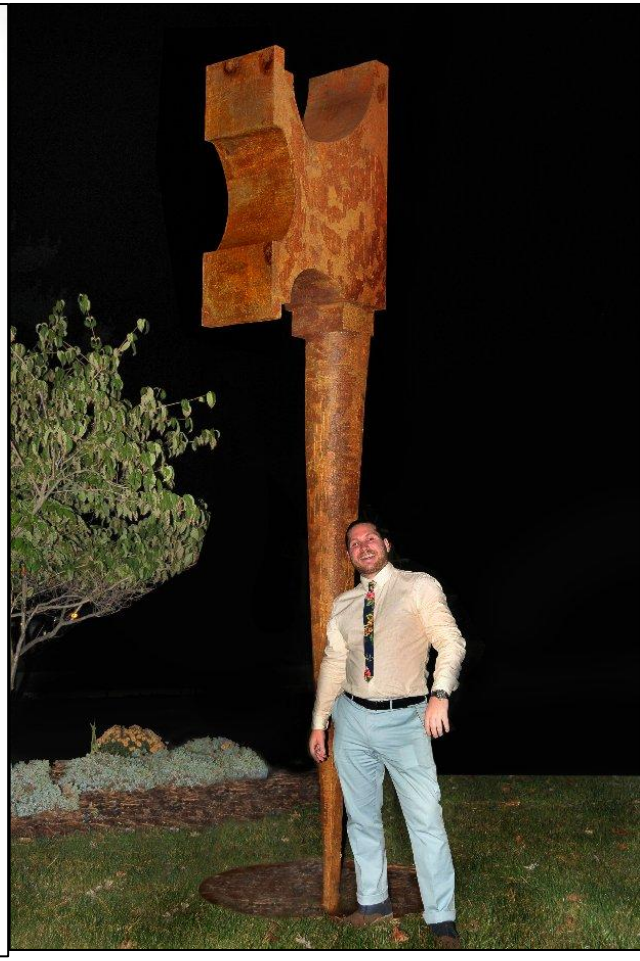
Artist’s first significant 3D printed works. Worked with artist on repair of 3D models downloaded via open source channels, especially with manifold surfaces and process of making watertight. Emphasis was placed on orientation of model to minimize generation of support to reduce post processing.

Marc Calello:

“Limp”. 2013. 48x48x8”.
EPS, Iron Patina



“American Relic”. 2013. 84x72x22”
EPS, US MI Helmet, Dress, Manikin



“Erect”. 2013. 20x30x156”.
EPS, Steel, Iron Patina.

Artist manipulated root 3D model downloaded through open source channels to create files for CNC milling in EPS. Programming education through nesting in 3D model of stock to control horizontal roughing of form through sculptural interaction with geometric parameters. This informed workflow for other EPS sculptures. Calculation of surface area to execute patina application was learned in software.

STEM to STEAM Workshop (Dodge Grant) Eastside High School (Paterson, NJ) + CNA

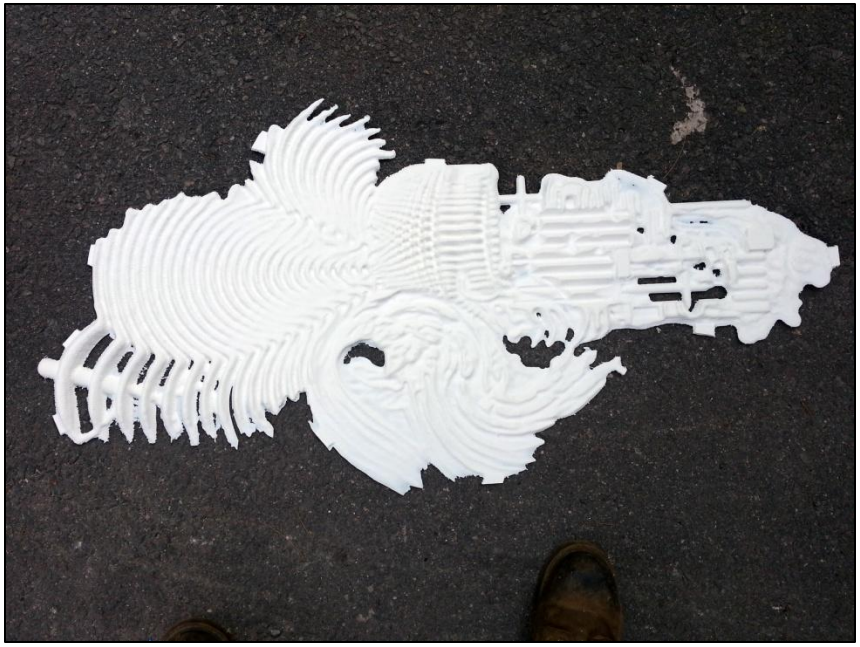
Art, science, and math students from Eastside High School in Paterson were provided opportunity to participate in *STEM to STEAM Initiative* funded by Dodge Grant and spearheaded by Michael Rees . Students gained experience with 3D scanning, manipulating scans with voxel geometry in Sculptris. Managed students preparation of models for CNC milling in EPS (above) and PLA 3D printing. Worked with students as they learned about undercuts/constraints of 3 Axis, visually diagnosing programming parameters on output, and post processing.
http://www.wpunj.edu/coac/departments/art/center-for-new-art/programs-and-exhibitions.html

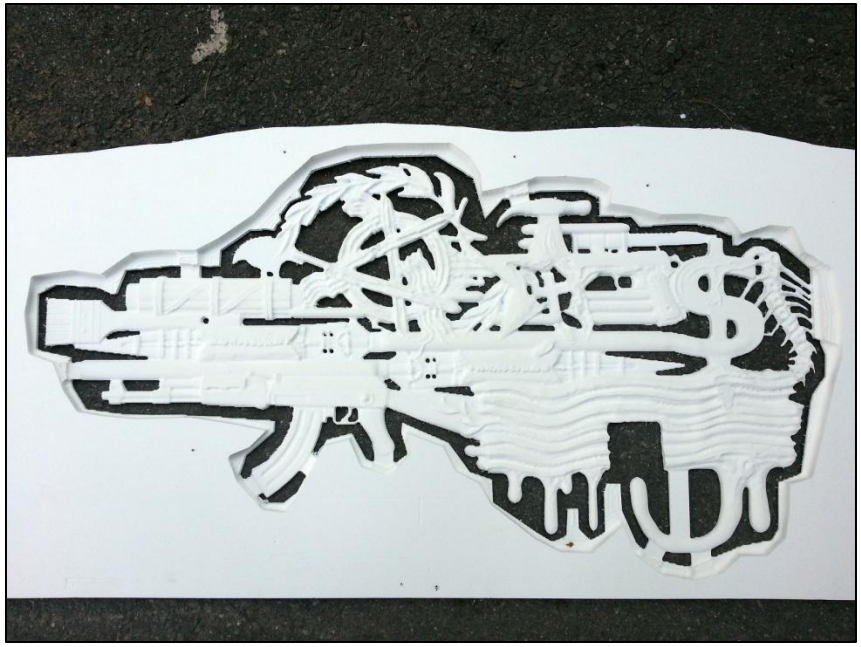
Artist in Residence at CNA: Maria Lux

“Float” 2015. 12x6x9’. EPS, Flowers

Downloaded open source 3D model, learned strategies of repairing model to apply parametric operations and manipulate model, slice parts for fabrication, artist participated EPS workshop, artist learned how to use CAD to attain material volume needed , *Installation of "Float: New Work by Maria Lux" at the University Galleries, William Paterson University, Wayne, New Jersey, Spring 2015. http://marialux.net/Float*

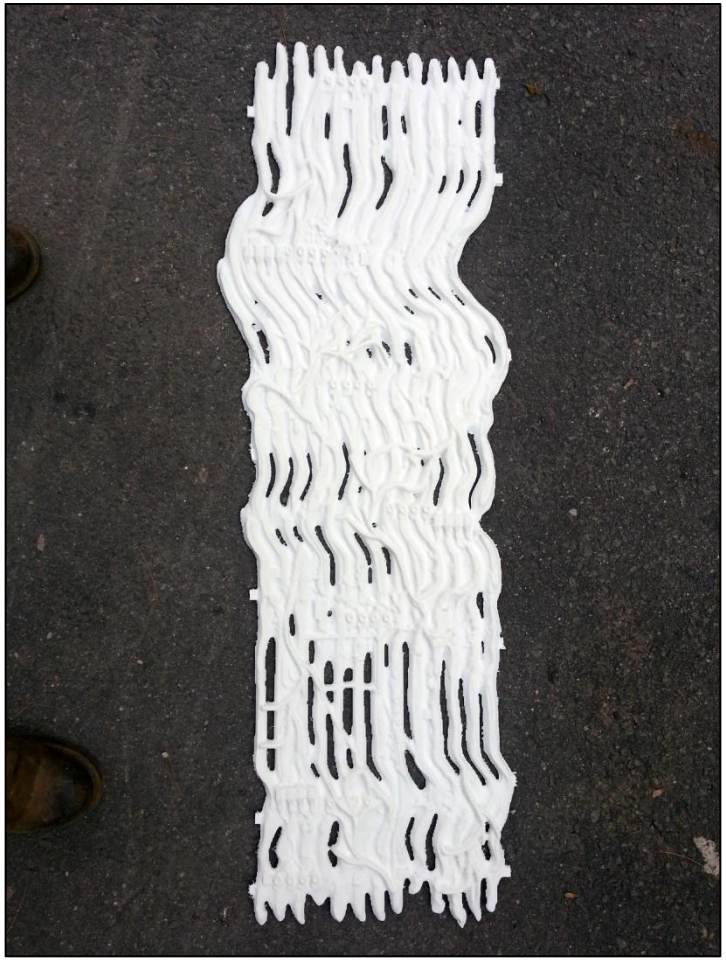
Distinguished Artist Lecturer at CNA: Fabian Marcaccio

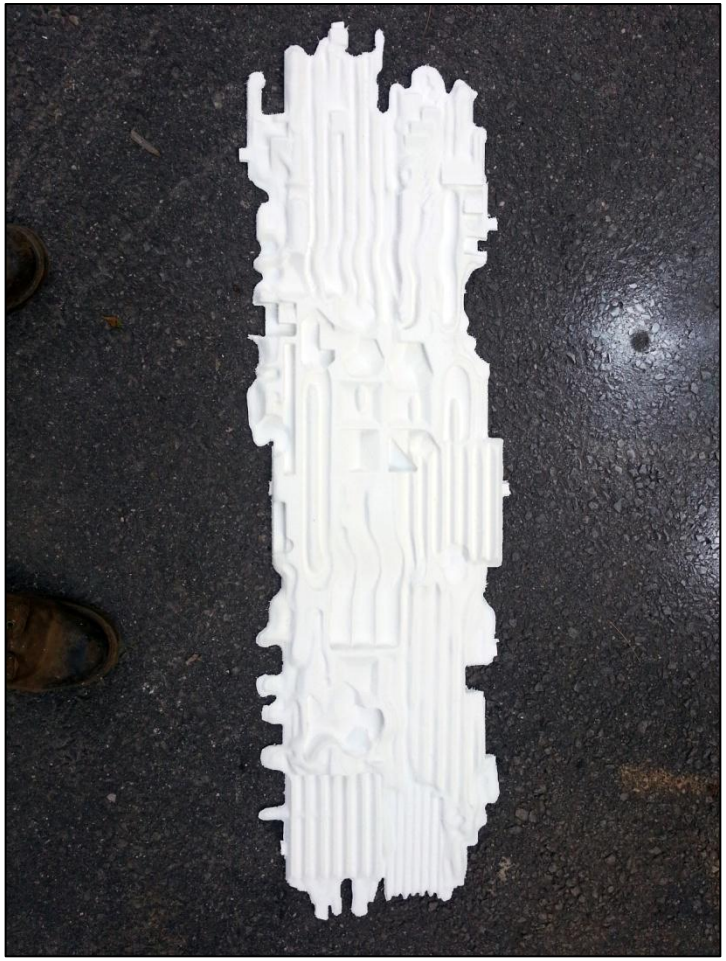




Worked with Fabian Marcaccio to produce a series of reliefs from his files. Panels were made in 4” thick EPS and “0.75” thick sintra. Root models were scaled in thickness to exaggerate relief and explore aesthetic of machining contour marks from various programming strategies.

Distinguished Artist Lecturer at CNA: Fabian Marcaccio





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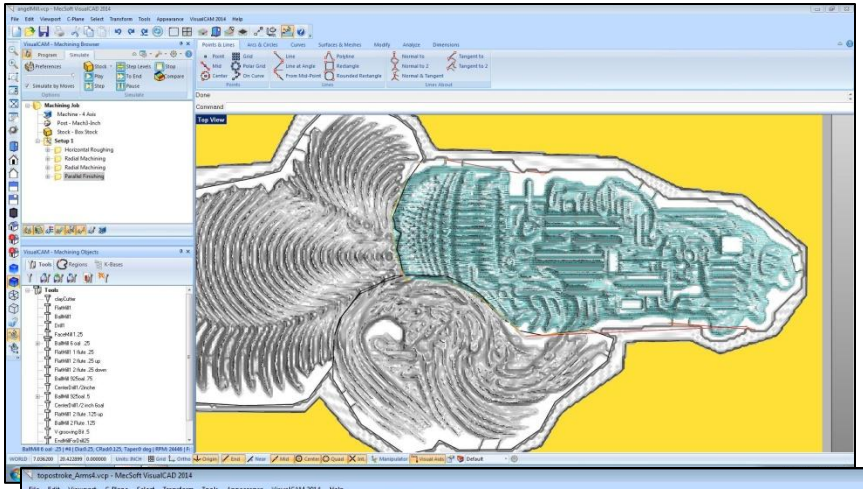
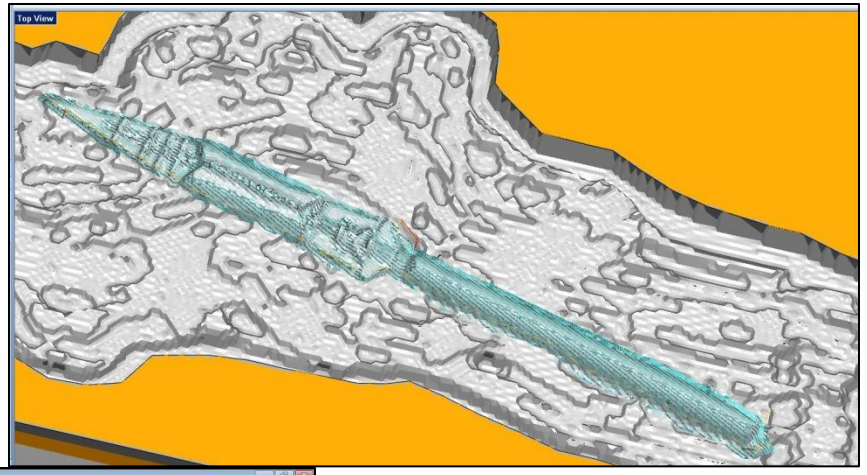
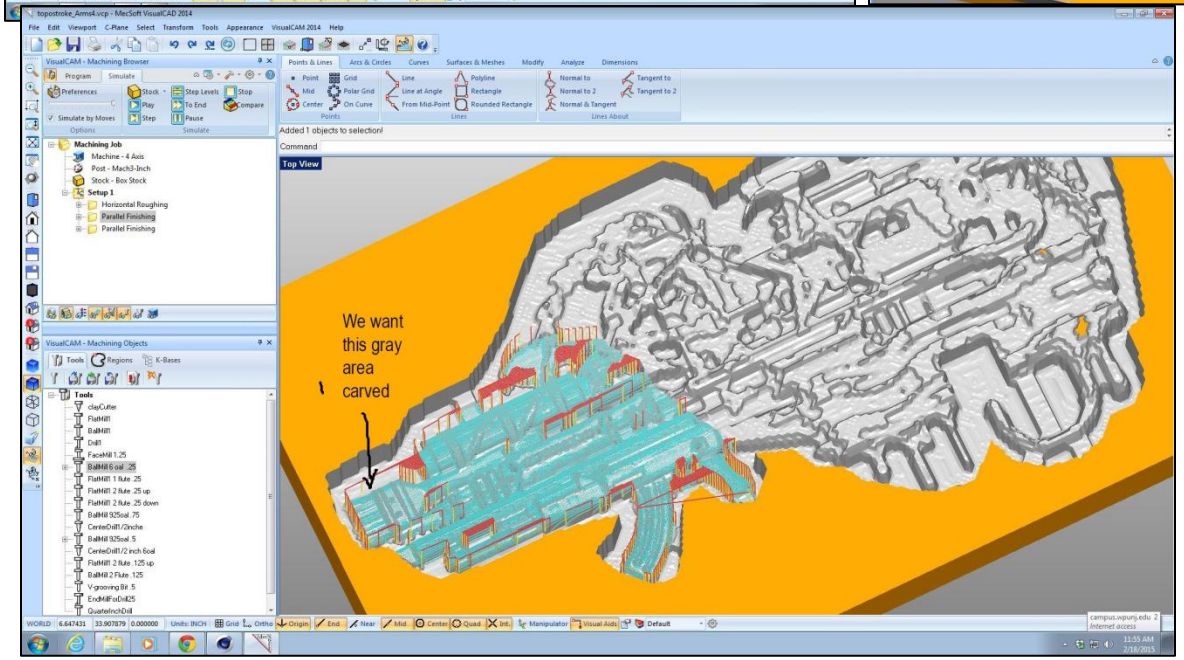
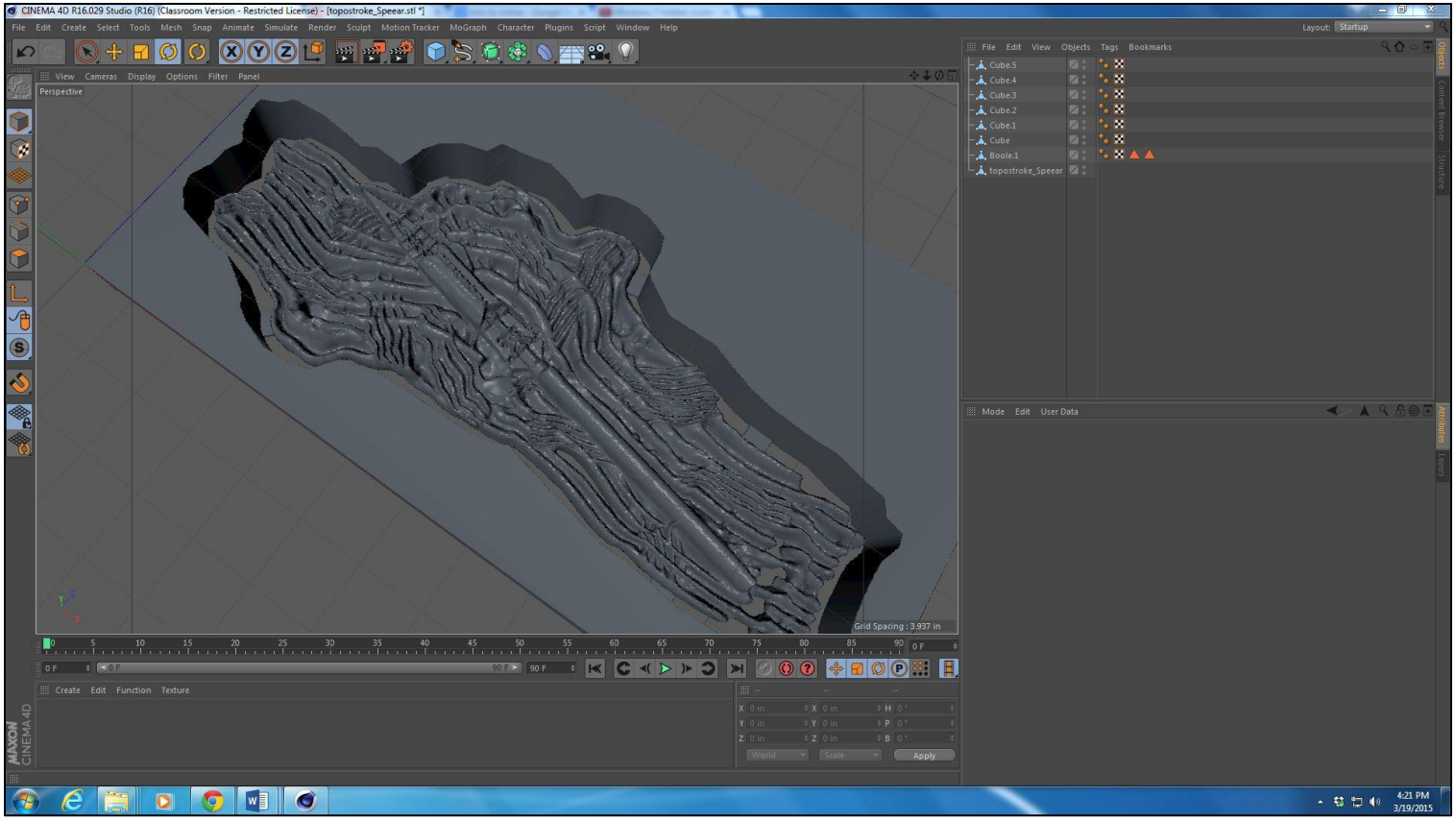






Examples of work in programming/simulation stages to control mark of machine and inform finished aesthetic.

Distinguished Artist Lecturer at CNA: Fabian Marcaccio

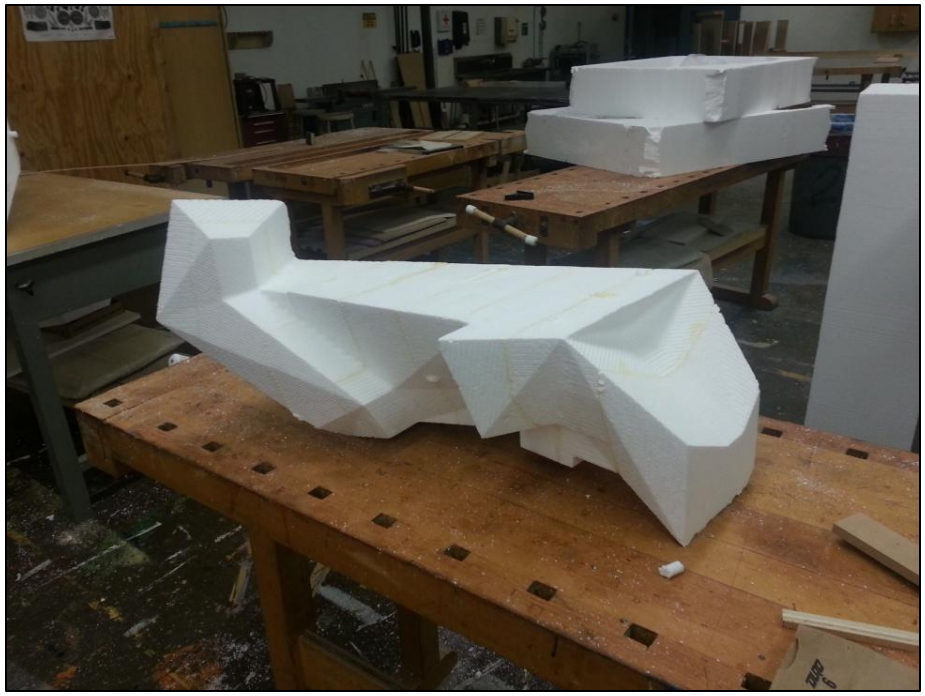


Controlling machining parameters before programming stages with geomtries in CAD stages.

Vik Muniz

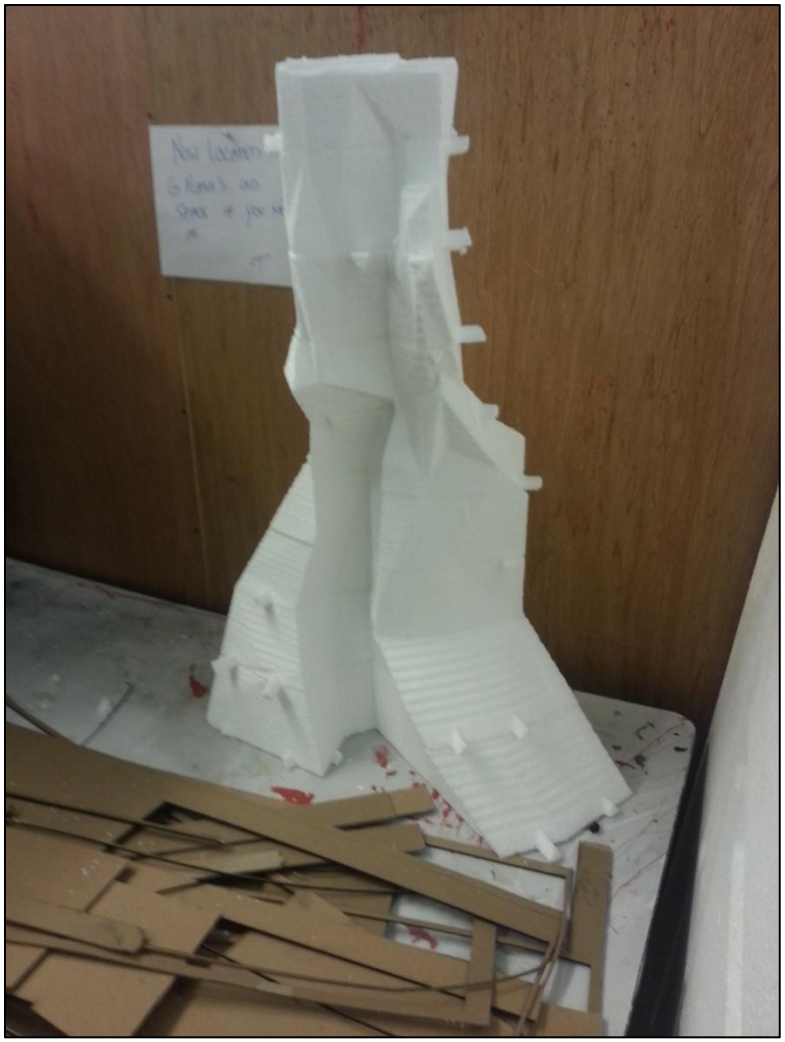
Fabricated prototypes of Vik Muniz fawn 3D scans as studies for fabrication in marble. Studies were iterations of different sizes with different aesthetics derived from programming parameters.

Michael Rees and Robert Gero:



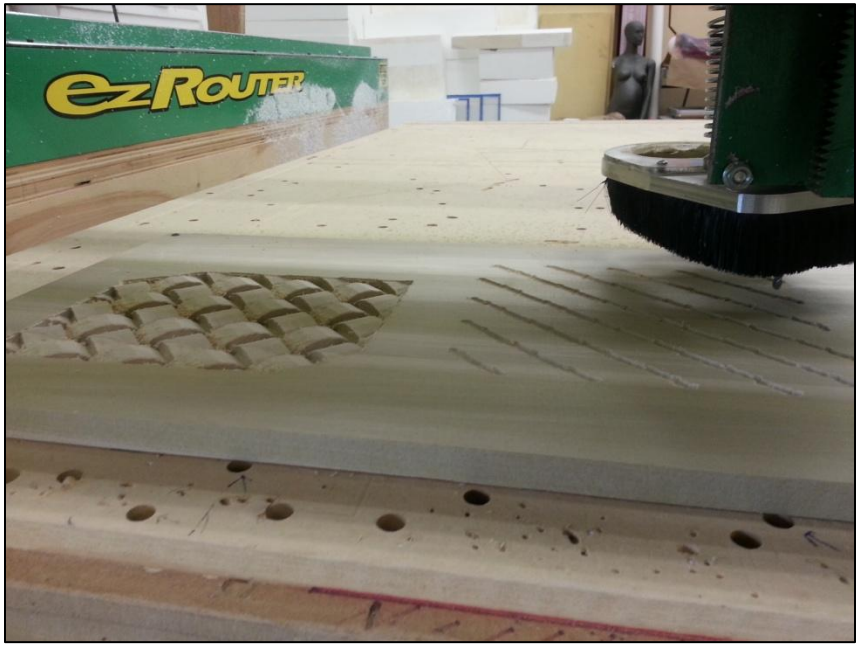
Production work for collaoborative series, “Intervening Phenomena 2011-2013” with Michael Rees and Robert Gero. Editions of this project were displayed in MAD Museum. 3D models were sliced and oriented in stock material to minimize finishing time by anticipating undercuts. (top right image from website of Michael Rees)

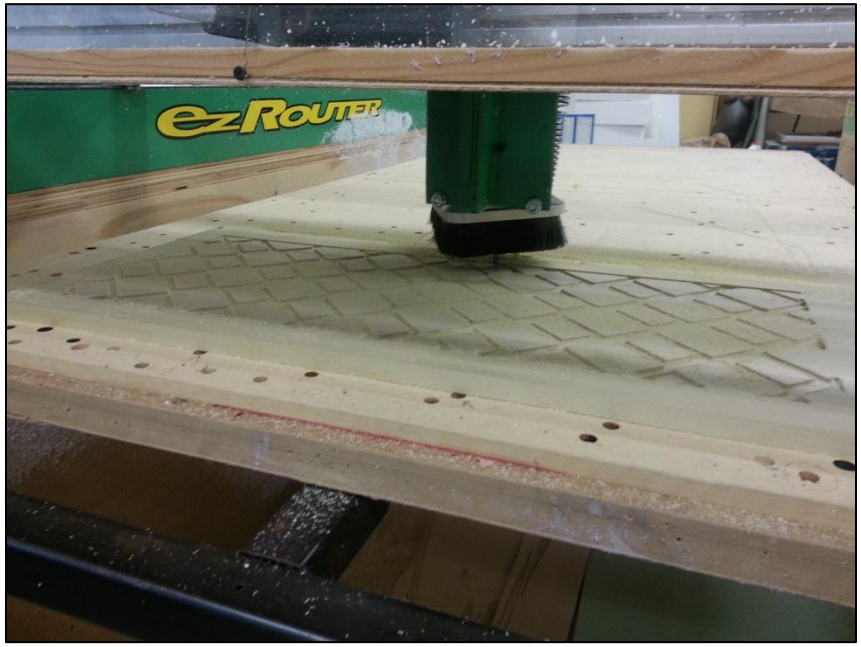
Michael Rees



Managed files for Rees in process of slicing model to fit in stock for 3 Axis machining, optimized placement of support material, etc. for production in EPS. Sculpture would serve as a study for 5 Axis machining in stone.

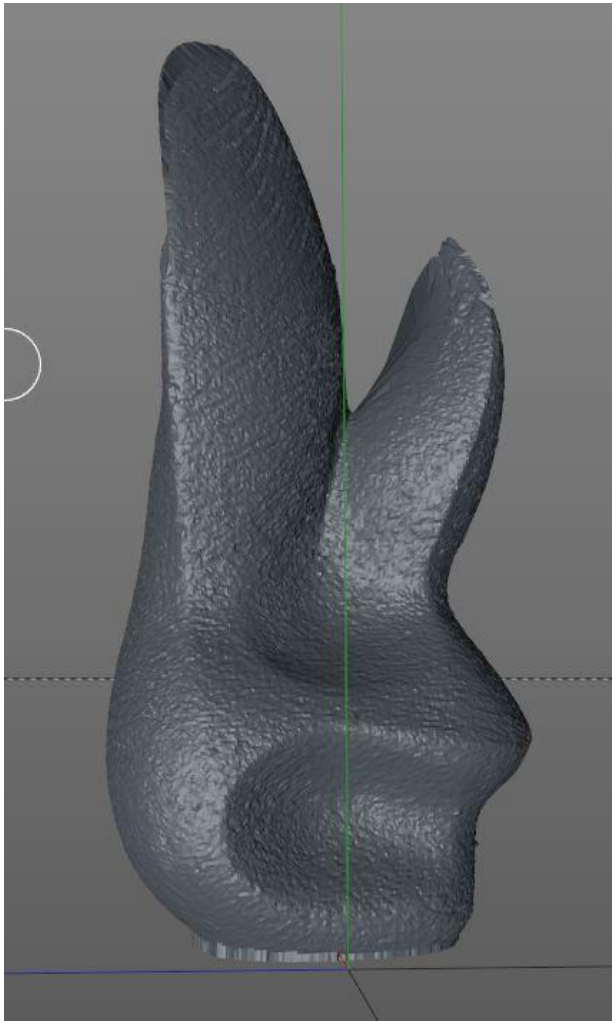
Alan Lazarus

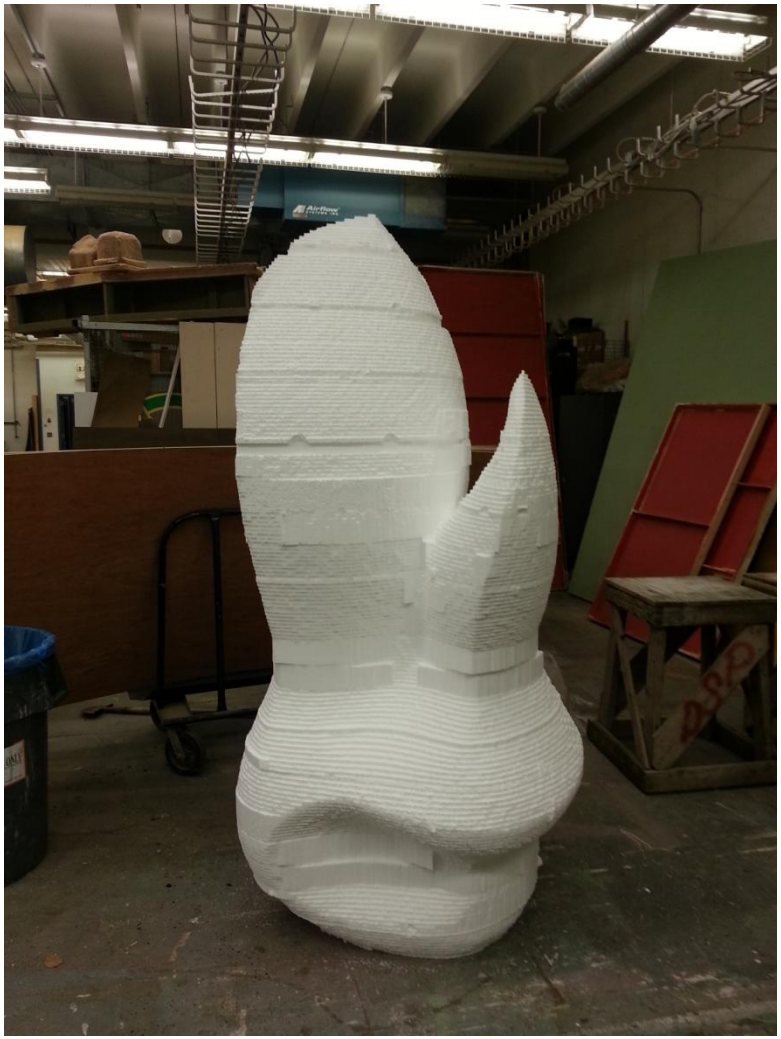




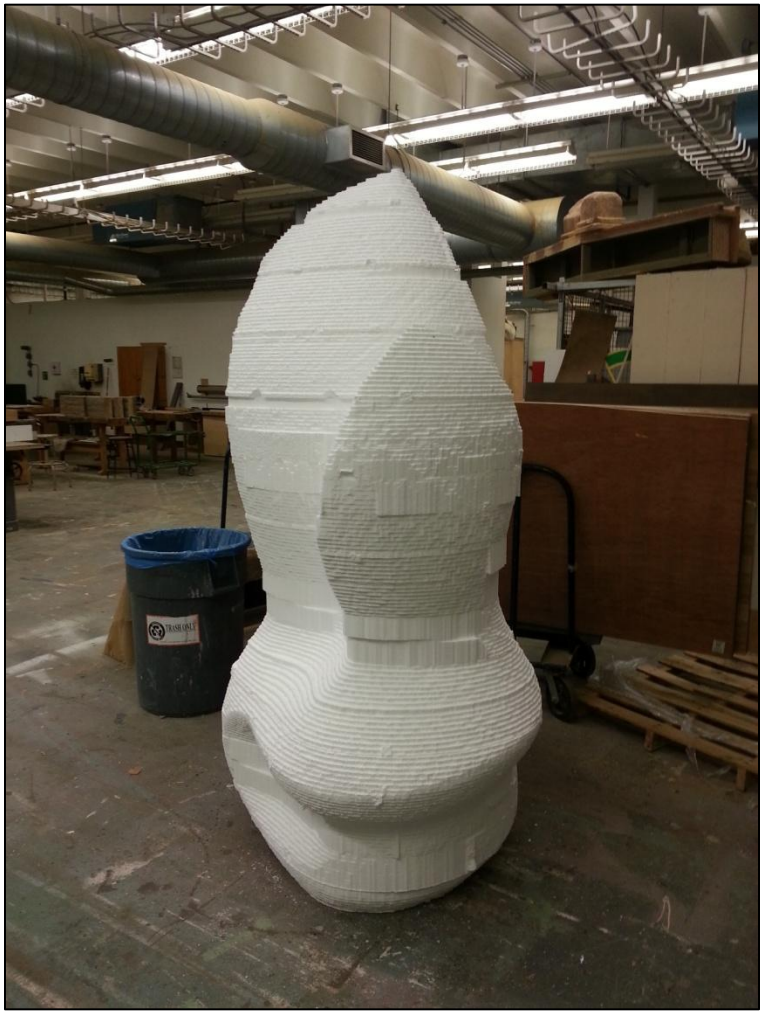
Prototyping basket weave patterns, new aesthetic via polygonal models and programming parameters

Elaine Lorenz



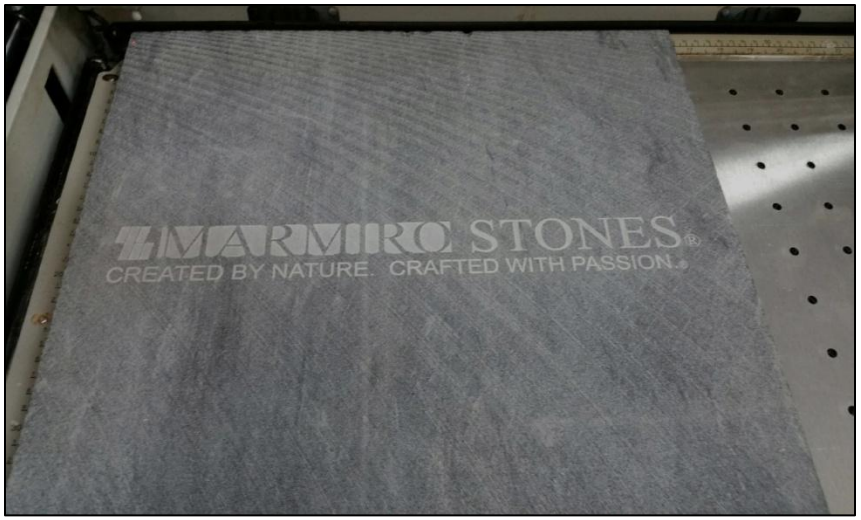


Elaine Lorenz



STONE FABRICATION

CO2 Laser Engraved Natural Stone



(clockwise from bottom left) Marmiro Stones Logo for AD Home Show. 2016. Deep Blue ™; Chevron Design for Architecure Digest Home Show. 2016. Azura ™; Christie Study. 2015. Deep Blue ™.

Water Jet Cut Outs

0” Grout Joint White Mist ™ custom inlay into 12x12x3/8” Deep Blue ™ Polished tile.

Azura ™ 3/8” Thick Brushed finish cut out.

CUSTOM RADIUS AND FREE FORM PARTS/SYSTEMS OF LANDSCAPE ARCHITECTS

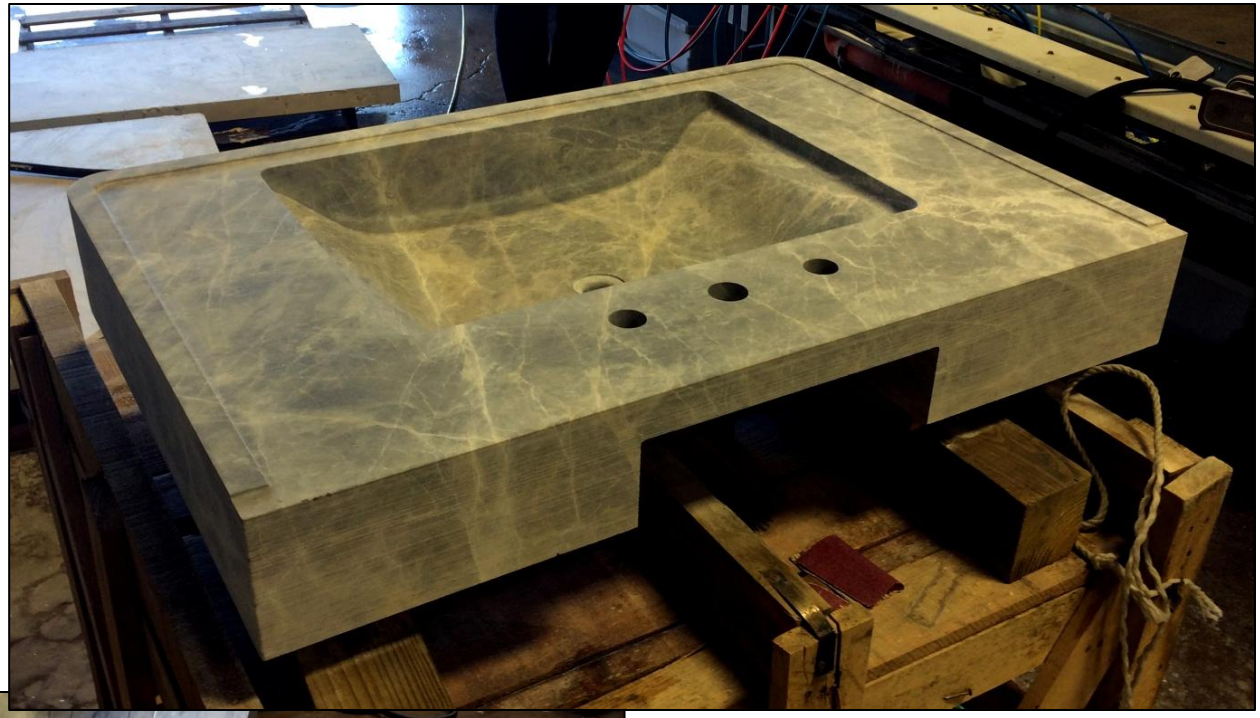
Custom “T” Coping pieces where bull nose edge detail of 12” wide Terra ™ pool coping meets edge detail of 14” wide spa coping. Developed streamlined design system for custom natural stone pool, wall, spa, fire pit, etc. coping starting with recorded site dimensions using Proliner ™ to draw DXF files in real space. This is then used to generate detailed installation map for crews on site with numbered parts, files saved in database. As radii of actual construction often do not align with architect’s exact measures; this system becomes crucial in delivering high quality product that negotiates deviations of actual foundation and saves on installation time.

Product/production design and production management.

Parametric modeling in rhino, 3 axis flip milled, carved with electroplated diamond tooling.

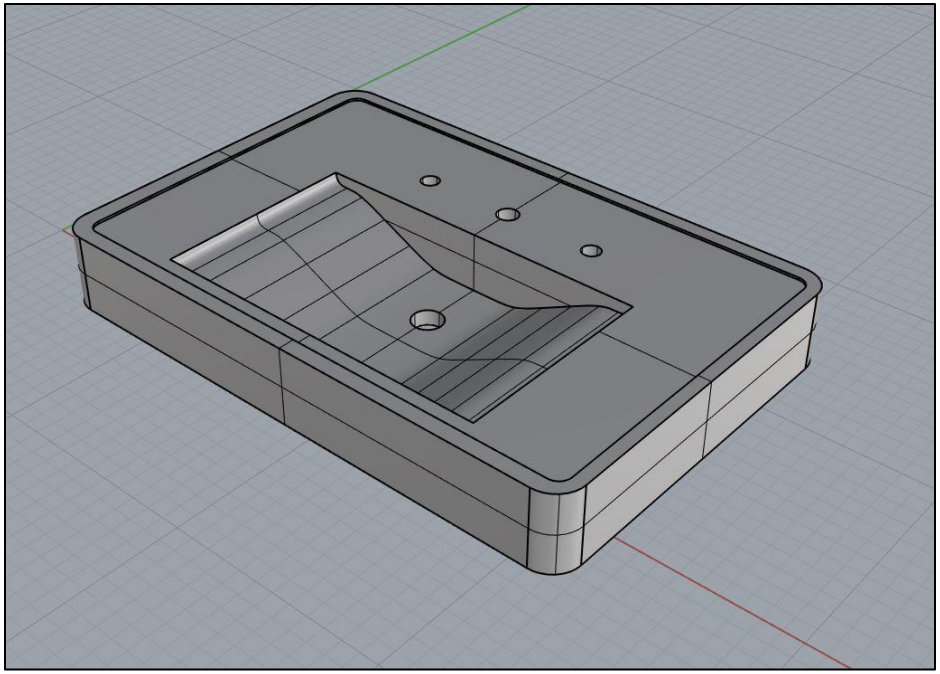
Engineered for incorporation of standard 2-4cm faucet hardware in block through calculating necessary wall thickness between sub-forms.

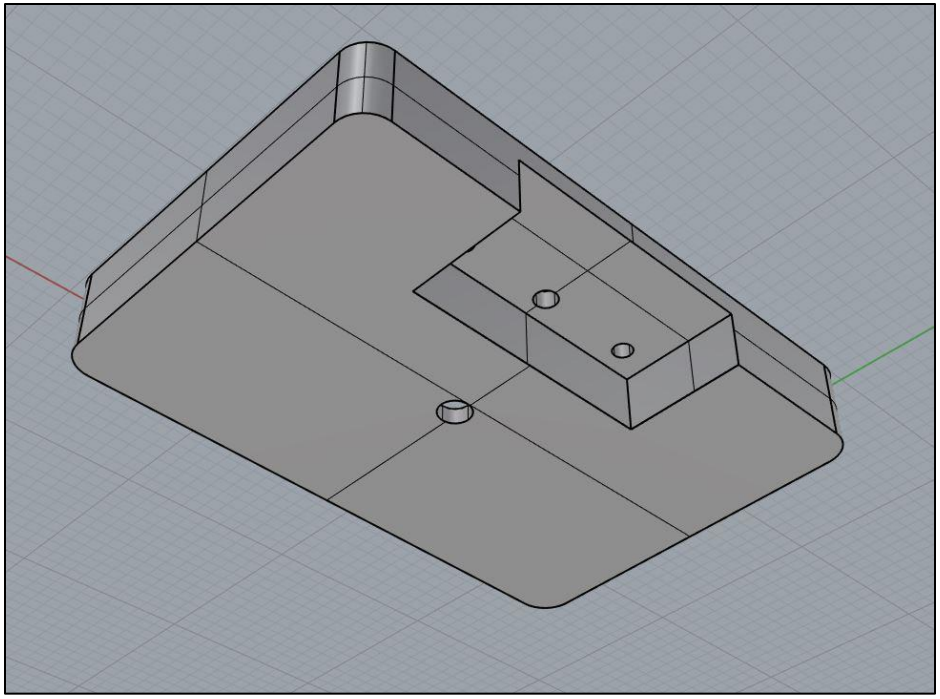
Hand carved-custom drain.



24x35x6”

Custom Carved Projects





Examples: 3D Print Personal Work

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www.MrMcGinny.com

BSandiNJ@gmail.com

(973)851-0388