



Working With Clay

Page Wilson

Firstly, shout out to my advisor, Clay(ton Shonkwiler). Secondly, this article is about ceramics.

Clay can be difficult to work with. As an overview, you start with wet clay and the amount of details you are able to add depends directly on how dry/wet your clay is, so you have to be careful to add the right details at the right time. There are in fact, many spots where one can mess up their piece. Making pottery is generally classified into two categories, handbuilding and throwing on a wheel. My favorite kind of pottery is when you throw something on the wheel then add a handbuilt piece onto it afterwards, like throwing a cylinder then adding a handle to make a mug. Or throwing a vase and sculpting a flower by hand to add to the side.

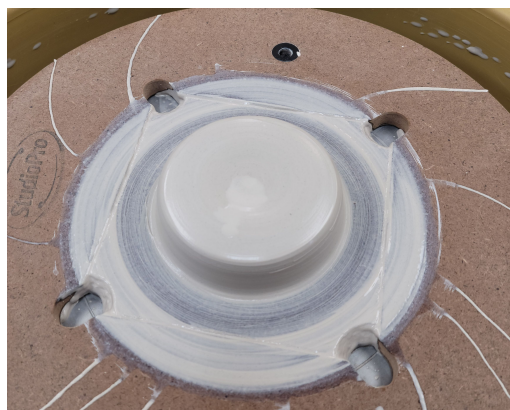
Once fully dry, we say your piece is “greenware.” When fired in the kiln, it becomes “bisqueware.” Then you can add a glaze and fire it again, giving it extra color and cool designs.

I want to focus on making pieces on a pottery wheel. A pottery wheel is what it sounds like, famously seen in the movie *Ghost*. It is a machine with a horizontal surface that spins circularly at various speeds, $SO(2)$ style. Yes, the wheel can go in both directions to account for left and right handedness. There are 4 key steps to making your piece. The first is to center the clay (insert image of Clay meditating). This allows for more stability and symmetry in the steps to come. Opening the clay is next, which entails placing a finger in the middle, pushing down to create what will be the inside of your vessel, and widening that hole by pulling outwards. If you go all the way down to the horizontal surface, you add an extra dimension to your cohomology (disc

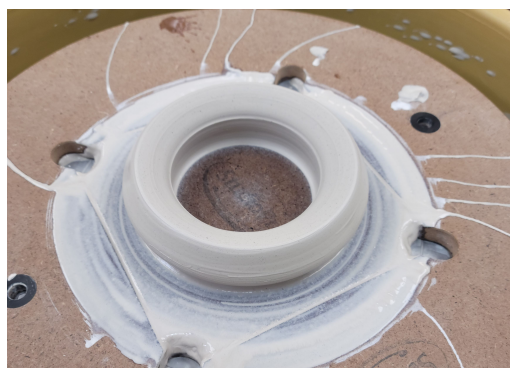
versus S^1) and your vessel would no longer be good for holding liquid. At this point you have either a Wether’s or a LifeSaver. Either way, the last step is to “pull” the walls and add height to your piece.



Uncentered Clay



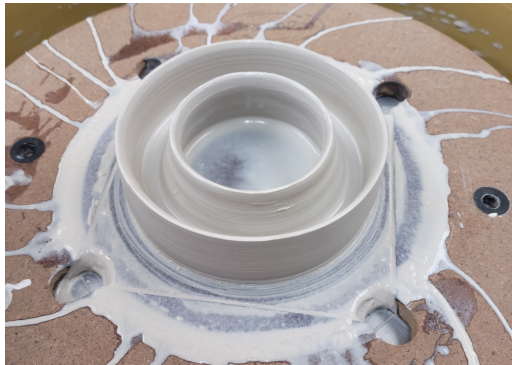
Centered Clay



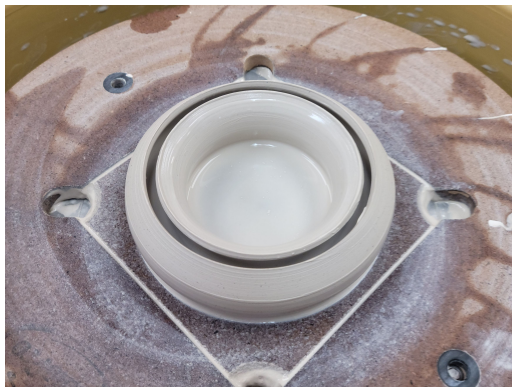
Opened Clay



Extra Indent



Pulled Walls



Shaping the Walls



Combined Walls, Torus Made!

I was able to add more variety to my piece by making an indent and having two walls to pull.

Think of the 4 steps as axioms. They are your fundamental building blocks. Through these axioms, you are able to put together different theorems; you are able to make a variety of shapes and objects. Ways to vary your piece can include adding a hand built element, having multiple walls,

adding rims, lids, varying the thickness of your walls, or even poking holes in the finished product. You can stack these variations/techniques/theorems to create something unique, all starting from 4 basic steps/axioms. For some pieces, two separate pieces are thrown on the wheel and combined at a later date; the merging of two theorems. I see each finished piece as a proof, a combination of techniques to make a single result.

I cannot help but compare this to Euclidean Geometry and wonder if potters are already working with the equivalent of parallel postulate or if a new axiom/move will be discovered and ceramics will be changed forever. Probably not.

Come support your local non-profit pottery guild, NOCO Pottery Guild, at our semiannual market taking place at Northside Aztlan Community Center May 1st through May 3rd. Some potters will have other wares, as well. If anything, come see a free art show.

May 1-3

Friday 1-3 (Early Entry, \$10)

Friday 3-8

Saturday 10-4

Sunday 10-2

Milestones

We want to congratulate the following people for their successful defenses and preliminary exams during March.

- Sandra Nair successfully defended her PhD work on “Ekedahl-Oort and Newton stratifications on unitary Shimura varieties, and on Hodge-Newton reducible local Shimura data of abelian type.”
- Amaury Minino successfully defended his PhD work on “Hypergraphs and their associated Lie algebras.”
- Tatum Rask successfully defended her PhD work on “The Möbius Homology Laplacian for Persistence.”

March Question of the Month Results

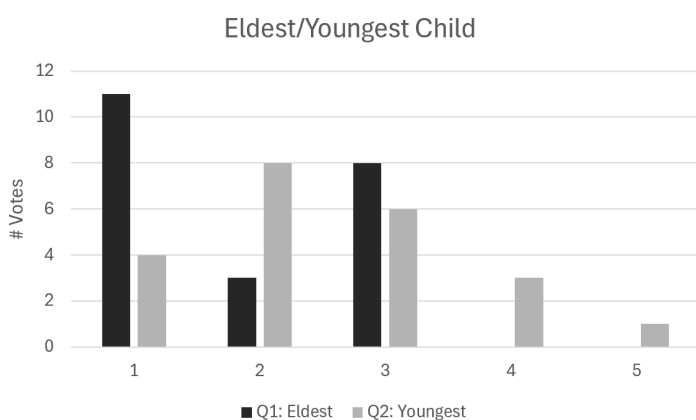
Felix High

In March, we asked two questions to readers:

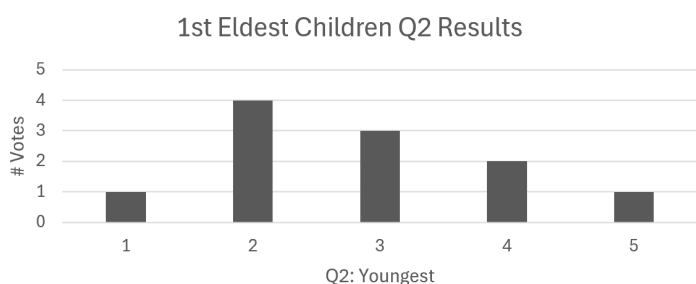
Q1: With 1 representing the eldest, 2 representing the second eldest, etc, what number eldest child are you?

Q2: With 1 representing the youngest, 2 representing the second youngest, etc, what number youngest child are you?

For example, Felix is the youngest of two siblings; so, he would answer that he is the 2nd eldest and 1st youngest. The goal of these questions was to see if we could produce a normal distribution. With a total of 22 votes, let's see how we did:



As you can see, half of our votes were eldest children! Q1 definitely did not get a nice normal distribution. However, we do get a nice skewed bell curve for Q2. In fact, if we only look at the votes from the first eldest children, we get a very similar trend:



If you have a question that you want polled, please reach out to either the Torus or to Felix High.

Sports

- The Sitting Ducks won 2nd place in CSU intermural tube water polo tournament. They were bested by their enemies, the Calzone's Cowboys for a 2nd year in a row. Do you want to seek revenge? Consider joining the Ducks in the Fall!
- Professor Ben Knudsen got third place in the Colorado State hide and seek competition. This qualifies him and his team for Nationals! Be sure to congratulate him next time you see him.
- The CSU curling team participated in College Nationals and made it to quarter finals!
- Meet on April 21st at 11am on the oval in front of Weber for a race.

Advice From Tori

*Dear Tori,
Who are you?
Sincerely,
Confused Torus Reader*

Dear Confused Torus Reader,

I understand the confusion! As a new Torus addition, I am here to help you when you need help. Send me your serious, or non-serious, advice questions and I will do my best to provide some answers.

Love,
Tori

*Dear Tori,
I don't know how to write a thesis.
Plz advise.
- troubled grad student*

Dear Troubled Grad Student,

Well, this is a big one. I wish I had all the answers. First, consider trying really hard. Second, definitely spend as much time as possible talking about how hard it is instead of actually writing it. Third, have faith in yourself and your ability to do

whatever kind of math it is you do. Once you have faith in yourself, the thesis will practically write itself. . . . Or at least that is what I am told.

Love,
Tori

April PotM

Provided by Ignacio Rojas

Consider the function $\sin(x)$. This satisfies the differential equation $y'' + y = 0$ or in operator terms, we say that the differential operator $D^2 + 1$ annihilates the function $\sin(x)$. Can you then find a differential operator \mathcal{L} which annihilates the function $\sin(x^2)$?



Ignacio's "I'm turning 30" conference

This is the first announcement for a week-long conference The "I'm turning 30" conference at the Fort Collins on September 21st to 25th, 2026, because I'm turning 30. The topics will be centered around whatever you feel like speaking about.

Here is the tentative list of speakers:

- *You*
- *Me*
- *Anyone who registers lol*

Further information can be found on the homepage of the conference: <https://irojasr.github.io/30yoConf> or check the QR code.

Seeking Greenslopes Organizers

Are you interested in running Greenslopes in the Fall? Contact Donovan at d.leyba@colostate.edu. Paid for by Greenslopes Graduate Student Seminar and Associates.

Seeking new tea time team members

If somebody doesn't step up to run tea time next semester, Makenna will lose it. Please somebody help with tea time. Especially if you haven't done it before. Contact Makenna at makenna.greenwalt@colostate.edu

From the Editorial Board of the Torus

We hope you are enjoying the tenth edition of The Colorado State Torus! Do you have an idea for an article or comic? We encourage you to submit a contribution: you can email us at MATH_ColoradoStateTorus@mail.colostate.edu. The deadline to submit your work for the May addition is April 31st. Participation is required for graduation, this is a threat.

The current editors of the CST are beginning to think of retirement and are hoping the next generation will continue the newsletter. If you are interested in becoming an editor in the Fall, please reach out!

Love from your editors,
Page, Joe and Ian

Foto(s) del Mes



Photo Credit to Andrew Reimer-Berg

Department Event Calendar

<i>*Jedi Jazz Experience</i>	<i>Konstruct Brewing</i>	<i>4/9, 6:30pm</i>
<i>*The Retake</i>	<i>(Ask Hilary)</i>	<i>4/19, 2:30-3:30pm</i>
<i>FoCoMX!, Choice City Seven</i>	<i>Colorado Room</i>	<i>4/24, 8-8:45pm</i>
<i>FoCoMX!, The Retake</i>	<i>Coopersmith's Poolside</i>	<i>4/25, 4:45-5:30pm</i>
<i>FoCoMX!, 12 Cents for Marvin</i>	<i>O'Dell Brewing</i>	<i>4/25, 6:30-7:15pm</i>

**Free admission! Check out Hilary's website at <https://basstwomusic.com/>.*

Also in April, we have the Curatorial Talks and Reception for Symmetry Structure Space: Mathematical Visions in Art April 9th, 5:00-7:00pm.

At the beginning of May, NOCO Pottery Guild has their semiannual market taking place at Northside Aztlan Community Center May 1st through May 3rd (see main article).

If you wish to have any events listed (music or other arts), please email hilary.tanner.freeman@colostate.edu

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April Question of the Month

Please answer and cut out this question and drop it in locker #7 near the upstairs graduate offices. Check back next month to see the results!

(Q) If you were to feed a Monster(TM) energy drink to a Victorian child, do you think they would...

(A) Die

(B) Evolve

(C) Do nothing

Piranesi: Reflections on a House of Statues

Miguel Andrade

Piranesi is a novel about many things, memory, art, mathematics, academia but most importantly beauty. Piranesi lives in a house, potentially an endless one, filled with statues that line the walls of the vestibules and halls that he traverses. These statues depict everything ranging from the fantastical (angels and Minotaurs), the quotidian (people reading books or standing around) to the allegorical (Piranesi favors a statue of a gorilla as a symbol of strength and courage). Much like our main character can recognize that these statues represent things that are not of this world, the reader can always glimpse at reflections of other worlds within the novel. The name Piranesi is an allusion to Italian painter Giovanni Battista Piranesi; there are echoes of Borges's *Library of Babel* and *The House of Asterion*, Plato's cave and topos hyperuranios, all throughout the House. Most amusingly, one of the characters strongly reminds us of notable eccentrics (or cranks) such as Jacobo Grinberg or Jodorowsky. Piranesi walks the House with diligence, memorizing and cataloguing every statue, numbering every hall and writing down anything of interest about the House (such as its other inhabitants).

But where Piranesi finds comfort and calmness, we as readers are left with a sense of unease, why is he here, where did he come from, who is the Other, and what is the meaning behind the statues (if there even is one)? Clarke's novel is first and foremost an amazing page-turner, we find ourselves ending every section of the

book with more questions than answers. However, the greatest strength of the text is not in its ability to create suspense from a seemingly boring and sterile world, but the way in which that same world seems to engulf us every time we peek between the covers. The House seems to be all around us, and we seem to step right beside Piranesi at every moment of his Journey. As the story progresses, even the glimmers of another world do not seem to break the illusion that we also inhabit the halls and depths of the House. The House is all around and omnipresent from the first to the last page. It feels as though the House precedes any other possible reality.

We share in Piranesi's delight of the wonders of the House. It also makes us ponder if this sort of environment, one full of mysteries and images, is better suited than the real world to intellectual pursuits like the one our protagonist embarks on. Piranesi is, first and foremost, a scholar. His thinking, although at times flawed and misguided, is always that of the ideal rationalist, everything is approached as a learning opportunity. I find myself reflecting on the attitudes of Piranesi, of his primordial state of academic rigor and logic above all else. I do wonder if the House is a metaphor for the ivory tower or the echo chambers that surround many academic fields. *Piranesi* is able to inhabit both ideas, as the House is both a simulation of another world but also its most pure distillation.

..... ✂ ✂ ✂

Another important element of the novel is certainly nature. In what would be considered a sterile and ascetic world such as the House, nature seems to find a way to break into it. Not only that, but it marks the frontiers of the House. The House comes alive not only in the eyes of our protagonist, but also by the presence of the fish, algae, and birds that roam the halls alongside the narration. The question of why they are here is never answered, but we get the sense that there is something about nature that precedes it all, and that it will be there to endure even when we are long gone.

There is still much to be discussed about *Piranesi*, which while stylistically simple, is highly complex on its themes. There are so many strings left to pull at than the ones I hinted at here, and urge anyone with even a slight interest in fantasy to pick it up. If after reading the book you still find a certain hunger for stories like this, of the intersection between the occult, the academic and the fantastical, there is no better recommendation than both collections of short stories: *Fictions* and *The Aleph* by Argentinian author Jorge Luis Borges.

Graduate Student Council Things

Town Hall Event: Panel of administration from the Financial Aid Office, scholarships, Grad School to help provide insight and answers about questions concerning financial/aid issues, scholarships, and grant opportunities.
April 28th 2-3:30 LSC 386
Submit Questions for the Panel:



General feedback survey: Let's flood them with input from the math department



GSC events (April):
Coworking at the Grad Space every Thursday from 2-4pm (4/2, 4/9, 4/16).
Headshots at the Oval- RSVP required: Wednesday, April 15 6:45-7:15pm.
Breaks with Bear + Brain Rest @ Grad Space: Friday, April 24 10:30am - 12:30pm.

RSVP for any of these events with:



Graduate Student Recognition Nominations: Nominate faculty, grad support staff, and graduating peers for recognition (and MONEY prizes) Look for the link in upcoming GSC recap email from Parker and Linley.

ACROSS

- 1 Georgia airport code
- 4 Weeding tool
- 7 Sign of summer
- 8 Mean: Abbr.
- 9 "Monsters, ___"
- 10 Chill (out)
- 11 In the direction of
- 12 Location for someone requiring immediate medical care: Abbr.
- 13 Italian aperitif
- 16 Parade of cars
- 18 Begins
- 19 Earth's oceans, so to speak
- 20 Removes the pits from

	1	2	3		4	5	6	
	7				8			
	9				10			
		11			12			
	13			14			15	
16								17
18								
19								
	20							

DOWN

- 1 Actress and comedian ___ Wong
- 2 Not final
- 3 Gets around
- 4 Be able to sue, say
- 5 Not that good
- 6 Torus editor Joe's cat
- 13 Funnel-shaped
- 14 Singer John with the album "Bruised Orange"
- 15 Notions
- 16 Scale notes
- 17 Double curve

March Solutions

1	2	3	4		5	6	7	8
T	I	F	F		U	R	A	L
9	A	C	A		10	P	A	P
11	S	E	R	R	12	A	T	I
13	E	S	M	E	R	A	L	D
		14	L	U	C	K	Y	
15	16	S	W	A	P	S	E	A
17	18	T	E	N		I		20
19	21	L	E	D		N		22
						E		