

Rochester Institute of Technology

RIT Digital Institutional Repository

Theses

5-15-2013

Cross section

Joanna Poag

Follow this and additional works at: <https://repository.rit.edu/theses>

Recommended Citation

Poag, Joanna, "Cross section" (2013). Thesis. Rochester Institute of Technology. Accessed from

This Thesis is brought to you for free and open access by the RIT Libraries. For more information, please contact repository@rit.edu.

Rochester Institute of Technology

A Thesis Submitted to the Faculty of
The College of Imaging Arts and Sciences
School for American Crafts
In Candidacy for the Degree of
Master of Fine Arts

Advisors: Richard Hirsch, Jane Shellenbarger, Richard Tannen

Cross Section

By Joanna Stewart Poag

15 May 2013

Abstract

I plan to make sculpture using modules to build monolithic structures. The sculptures will explore equilibrium as it relates to an interaction and balance between elements. Weight, both visual and physical, will be a key focus of each piece. The sculptures incorporate gravity and mass in a way that exaggerates or defies the weight of the pieces.

The formal strategy of breaking symmetry is employed to develop sculptures that incorporate gravity and mass and express visual movement in opposition to predictable mathematical sequencing. Line is used as a sculptural means to explore form. It has been used in a way that highlights the expressive quality of a structured system.

Empedocles stated that equilibrium is the balance of right (correct) proportions. It is the “generally proportional relationship (in that) health means a particular balance between...components” (Mainzer 52). This exhibition seeks to explore existing structures, orders, and balances within the scientific world through the means of homeostasis.

Homeostasis (specifically an open system, as it interacts with the outside environment) is “the maintenance of metabolic equilibrium within an organism by a tendency to compensate for disrupting changes. (It is) a universal tendency in all living matter to maintain constancy in the face of internal and external pressures” (Howell, 54). Homeostasis is the process of maintaining balance within a natural

system. It suggests movement and change without connoting upheaval and disorder; it is a regulation of the system's inner workings.

Discussion of Sources and Research

This body of work seeks to explore equilibrium and homeostasis of a system- the self-regulation and balance of multiple parts. Initially being interested in agricultural patterns and the health of the soil, my research broadened to explore balances and symmetries I found within any natural/organic system. While reading *The Fabric of the Cosmos* by Brian Greene, a book on contemporary chaos theory, I began exploring sound waves, ocean waves, swallow flight patterns, honey bee flight patterns, jellyfish swimming formations, and other patterns of movement. These initial explorations allowed me to observe and make comparative connections between different systems, including biological, social, and theoretical systems through visual expression and methods of functioning.

Aesthetically, I was looking for modular forms that could easily be stacked or built into the other. I wanted components that physically fit into each other for support, thereby bringing the focus towards the components' interdependence. I started with the rhombic tetracuboctahedron, which after building several structures with them, I found the pieces to be stagnant. There was no movement, the pieces had become mathematically accurate and not visually dynamic. In keeping with the angular, geometric forms of the rhombic tetracuboctahedron, I also began exploring origami tessellations and other folding patterns. My research in folding and bending brought me to two modules. Both were triangular forms; one a closed form while

the other hosted an open interior (half of the closed form). Although these felt fairly successful, I wanted to continue exploring as many modular forms as possible.

Because I was interested in the linear qualities of movement patterns (physical and graphed) I began to make thin loops. The loops still maintained modularity while possessing personality, curling and moving in slight variations. I enjoyed the slight individuality and expressiveness given to each form while each maintained its modular format. After finding the loops to be my most compelling modules, I decided to base my exhibition on them—or rather, use line as a method to explore form. From that point, I began researching line drawings of Salvador Dali, Jorinde Voigt (Fig. 1), and calligraphic marks from China, Islam, and Western cultures. The drawings and marks all had a structural quality but the expressiveness of that structure fascinated me.

I was reminded that because the loops were parts to a whole, I needed to reduce individual characteristics of each

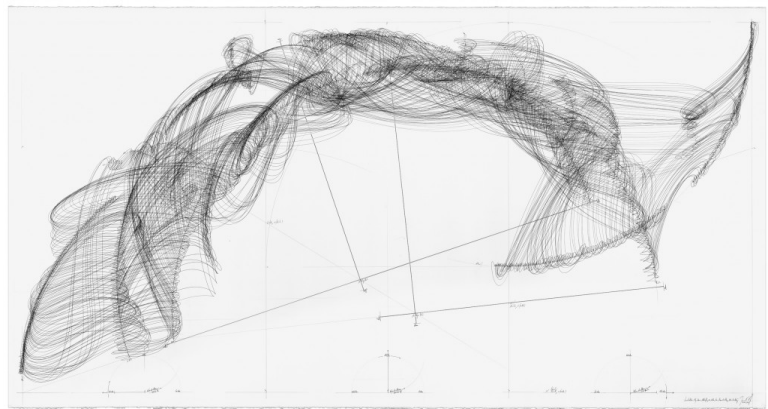


Figure 1

one. I decided to make a wall piece in which I would explore a progression of the loops. I determined that the wall was a straightforward place to begin, as I had already chosen the form of the modules and only needed to figure out a method of attachment to the wall. I made loops of different sizes that I rolled with a rolling pin instead of pinching like I had the primary set of loops. These loops did not have the

individual expressiveness of the first ones I made—they were simple and quite similar to each other. The piece consisted of about twenty loops, vaguely based on an unspecific musical progression. No distinct pattern or spacing was determined and the piece decidedly had no volume. The method I used to make the pieces (rolling pin) removed so much individuality that they became uninteresting. The necessity that the piece be made of clay diminished; the modules might as well have been made of steel.

The indistinct method used to assemble the wall piece helped me realize that I needed to be

deliberately precise about how I pursued form—that assembly of the final piece could in no way be vague

or arbitrary. It was

essential for the piece to

stimulate motion rather than meander. It was crucial to create a very specific set of premeditated techniques to follow in order to generate a successful piece. I

determined that instead of starting with line and trying to regulate what form it could make, I needed to start with form and use line as a method, making a cross section of a form.

It was necessary to explore artists' methodology of approaching form and structure, so I began researching the work of Ursula von Rydingsvard, Ruth Asawa, and Tony Cragg. Von Rydingsvard uses 2x4s which she alters, cuts, and glues to



Figure 2

create massive structures (Fig. 2). I was particularly interested in her work because of the way she uses modular forms as a way of approaching mass. Her forms visually and physically have immense weight and express a considerable amount of movement, weight and movement being two concepts I wished to emulate in my work.

Asawa's crocheted wire sculptures create voluminous form within form, using line to create different tones through shadow and layered voluminous shapes (Fig. 3). Her forms existing within forms connected me back to my exploration of homeostasis—an open system's ability to regulate itself from the interior. Asawa's voluminous forms interact to suggest a balance and movement from within. Taking a similar approach, I started to investigate simple forms within forms.

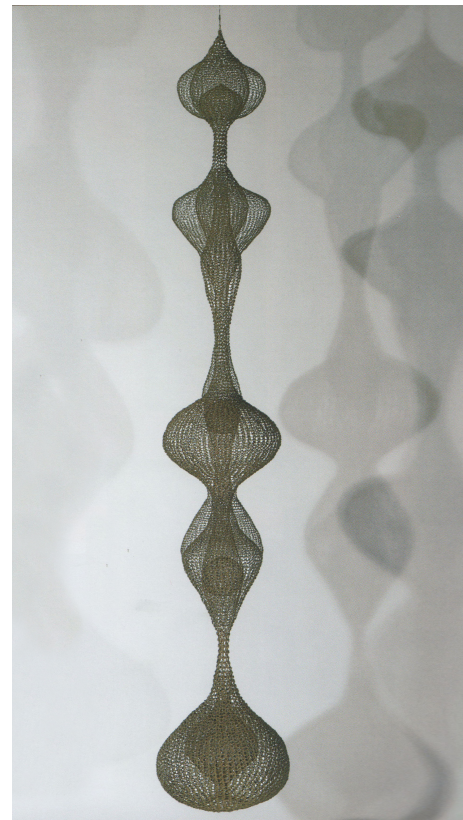


Figure 3

Tony Cragg's most recent pieces express



Figure 3

mass and high-speed movement that progresses through space (Fig. 3). His work connected me back to my studies of sound waves

and flight patterns. I continued to study a way to incorporate mass and movement into my work in a direct, controlled manner. Researching the methodology of these artists allowed me a framework with which to build my own system of working and exploring form.

I began investigating simple shapes and forms, specifically using curvilinear forms. The first shape that I decided on was a cylindrical tube that would make its way through the space. I began by making a series of lines on graph paper that then became the path the tops of the loops (height) would follow. I found that this method didn't translate well into a three dimensional form, and the line simply seemed arbitrary. I then went back to looking at calligraphic flourishes in the hopes of finding a line that had the mass and motion that I wanted to generate in the cylindrical tube. Looking at these flourishes also helped me to determine how I wanted the line to move through the space, ultimately becoming *Progression*.

The second piece I decided on was two conjoined ellipses, or a lemniscate. *Lemniscate* would hang in space and hold another series of forms that ran through the interior. The form I initially chose for the interior followed expressive calligraphic line but I found that the complexity of the line overly tightened the interior of the installation. I simplified, settling on a smaller shape, similar to the exterior shape that would repeat more frequently than the two ellipses. After making maquettes of both of the pieces, I was ready to start construction.

Critical Analysis

The use of clay was important to this body of work. When initially exploring my conceptual framework, I wanted to make sure that my work needed clay as its

medium to be successful. Clay is massive, responsive to the touch, warm and approachable. Although it is receptive to my hands, it does not like to be long and thin. My pieces needed to give viewers a sense of the massiveness of the material while simultaneously defying the very nature of clay. I wanted the work to have a connection to the viewer through the finger marks on each piece. The finger printing gives the pieces an organic, human quality that is unique to the soft and malleable characteristics of the material.

I chose to use terra sigillata to surface the pieces. I wanted to mask the surface as little as possible to reveal the subtlety of the making process. The pinched surfaces give a sense of character to each component while maintaining a similarity between them. The repetition of the individual marks made by my hands relate to the life in the many balanced components. I chose black and white surface colors which focuses attention on form. The colors of the pieces have been simplified to monochromatic black and white in order to reduce the individuality of each module within the structure, allowing the viewer to see the structure primarily as a whole, rather than as individual elements. Black terra sigillata was used on *Progression* to continue the relationship between the piece and an inked, calligraphic line. I chose white terra sigillata for *Lemniscate* to give weightlessness to the piece. I wanted the viewers to feel as though the form was connected to a graph—almost existing in theory rather than reality.

The process of making was highly controlled until kiln firing. Each piece was formatted and numbered in Adobe Illustrator to ensure that each following component was the correct height and size. I was taking a very methodical approach

to creating a visual system. The variation came with slight differences in how I handled each piece, how much moisture was in the clay when I was surfacing the components, etc. The firing process also forced me to allow for uncontrolled nuances in each component. I was only able to be in partial control of how the pieces changed once they entered the kiln, as each firing was slightly different than the next. The results were minor color variations, tonal differences in surface sheen, and slight warping, all of which ties nicely into the thematic content of this body of work; a healthy entity must react and adjust to unforeseen pressures. In homeostasis, a system has the ability to self-moderate when it comes into contact with impacting sources on the exterior or the interior. These self-moderations either mean removing that outside force or changing the entire system to accept the new impacting force (Mainzer 224). Firing in the kiln became the perfect vehicle through which to explore the clay's homeostasis.

I have focused on several themes in this body of work, although the connections that could be made to and through different systems are tremendous. Although this body of work is primarily about equilibrium and homeostasis, (with equilibrium being the end goal and homeostasis being the process), this body of work can be approached from a variety of perspectives, including mathematical, social, biological and neurological perspectives. I've been intrigued by the balances and intricate systems within the natural world. These systems are incredibly adaptable to different situations but seem to maintain their ability to keep themselves healthy and functioning.

Equilibrium is the balance or “rest” of many components, while homeostasis is the process of regulation of that balance. I have chosen to explore the two concepts together because I feel as though the two need each other to exist. Without homeostasis, balance can become a predictable, unfaltering form. With homeostasis, a form instantly becomes alive as it constantly moves and adjusts to different impacting forces.

This body of work is a cross section of an open system. An open system is any system that supports life—humans are wonderful examples of an open system because our bodies are constantly taking in and removing material (breath, food, waste, etc.). I am striving to provide a closer look, or a sectioned view of those entities. The components of the pieces offer the viewer a slice of a whole: segments of an expressive line, slices of an infinitely expanding entity. Together, these interdependent sections create the mass and movement of a healthy living system. The individual components are certainly interesting, but much more intriguing when seen as a functioning whole. Although these pieces allude to calligraphy, biology, graphing a system, sound waves, music, etc. they can really be approached through the lens of any system—the connections can be explored through any attitude. An open system allows interaction with exterior forces, whether forces that impact the exterior of a system or make their way to the interior, an open system is constantly interacting with the environment around it. It makes changes based on the needs and health of the system, even if that means that the functioning of the system changes all together to continue surviving in the environment (Mainzer

207). There is certainly an evolutionary lens to an open system, with the healthiest, most adaptable living systems surviving under pressures and circumstances.

Due to the many perspectives through which to consider this body of work, music inevitably surfaces as a theme. Each component can be seen as a note, with each note on the staff having its own tone, crescendo and decrescendo, etc. The musical piece is incredibly structured, but each has its own set of methods and approach to being played. A note is capable of nothing but a tonal sound when alone, but together with other notes produces a melody. Timing is important as it determines how and when a sequence of notes is played. This progression of regulated melody allows the viewer to interact with sections of the piece as well as the whole. While appreciative of certain musical compositions as a whole, there are always certain sections that resonate with me, whether for the mood it produces or a particularly compelling series of chord progressions. It is the attitude of *whole* appreciation that I'm looking to kindle in my viewers.

Mathematics and logic are components of this body of work as well. There is a logical, structured approach to each piece that surfaces in a way that is systematically accurate. The systematic processes with which mathematics and logical analogies are approached are similar to the way I address my work. Although I have yet to understand the full conceptual implications of mathematical theories, I recognize their connections to my work. The lines, progressions of quantities, ascending and descending orders are all ideas that relate to my work.

CONCLUSION (500-1000 WORDS)

Progression is a systematic approach to an expressive line. It runs approximately fifty-five feet long and follows a calligraphic flourish. I chose to use black terra sigillata to suggest an inky brush stroke. Each component holds the shape of closed arches, indicating similarities to entryways, cathedral windows, and even eggs (new life). The components all slightly vary in tone and surfacing, which gives a nice individuality while still allowing the components to read as a whole.

Lemniscate focuses on the internal movement and regulation of an entity during the homeostatic process. The piece itself holds the form of two ellipses, or a lemniscate, with the exterior rings holding smaller rings that form ellipses that rotate through the interior of the piece. It is structure within structure and form within form. The piece hangs on clear line at human body level and runs approximately fourteen feet long, suggesting existence on a graph or a plane. The shape is reminiscent of a double helix, cell structures within the soil, and basic atomic structure. *Lemniscate*, like its name, is an entity of infinite potential to continue on through time and space. I chose to use white terra sigillata to make it seem lighter, and more precise. The slight variation in the surface color keeps the piece from becoming a static form.

The next pieces in the series could explore changes that include variations on color and texture finishes. Changes include variations on color and texture finishes.

The pieces could be explored differently through interior/exterior color contrasts or texture differences (exterior matte, interior glossy).

The body of work I am currently making is systematic and exact. I would like to consider variations of form that return the work to a more expressive and spontaneous quality of line. Changes in form would allude to other systems. For instance, an angular line may have connections to graphed sleeping patterns, heartbeats, sound waves, architecture, etc. A different set of emotions associated with angular lines (vs. curvilinear) would be evoked.

More experimentation with kiln firings might also lead my work in a fruitful direction, as it would force me to give up control and allow the material to warp and move in a way that I cannot necessarily predict. These natural changes allow for the clay to truly interact with an unknown variable, mimicking the homeostatic process of any living system. The kiln variations could allude to the draping of fabric or relationships to other materials (leather, etc.).

Cross Section explores equilibrium and homeostasis of an open system—the self-regulation and balance of many parts. Together, these two pieces made of interdependent sections create the mass and movement of healthy living systems.



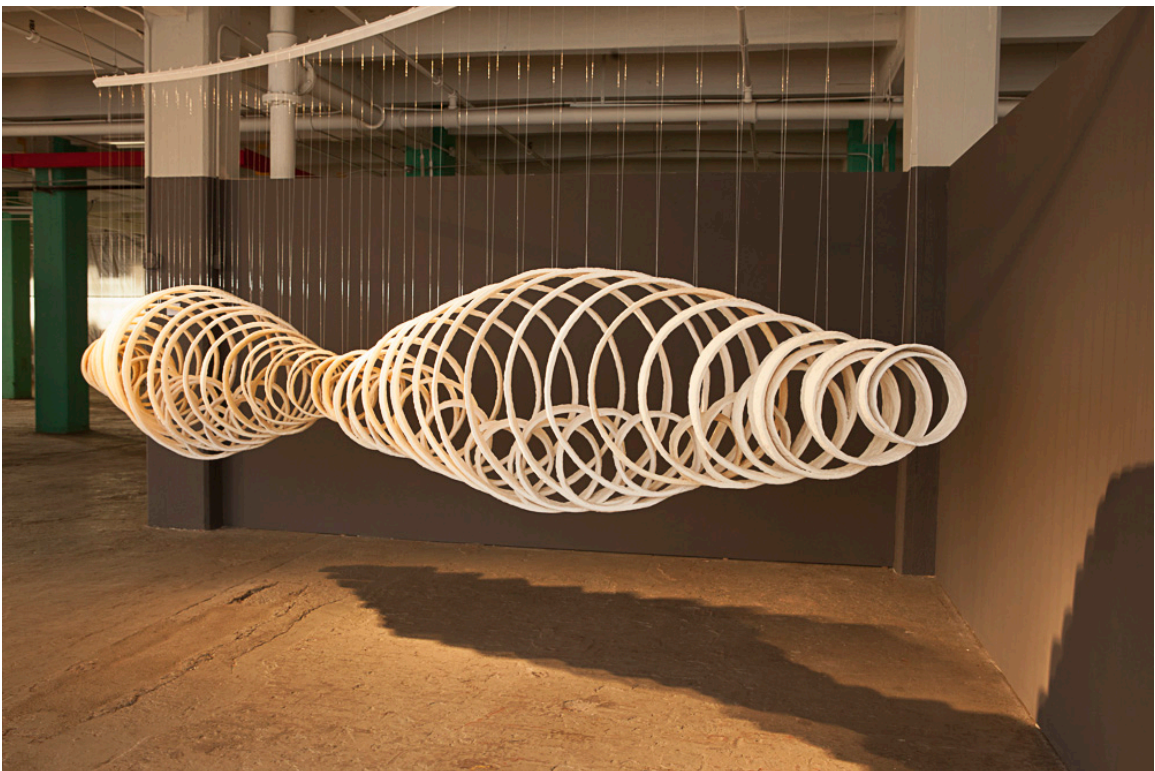
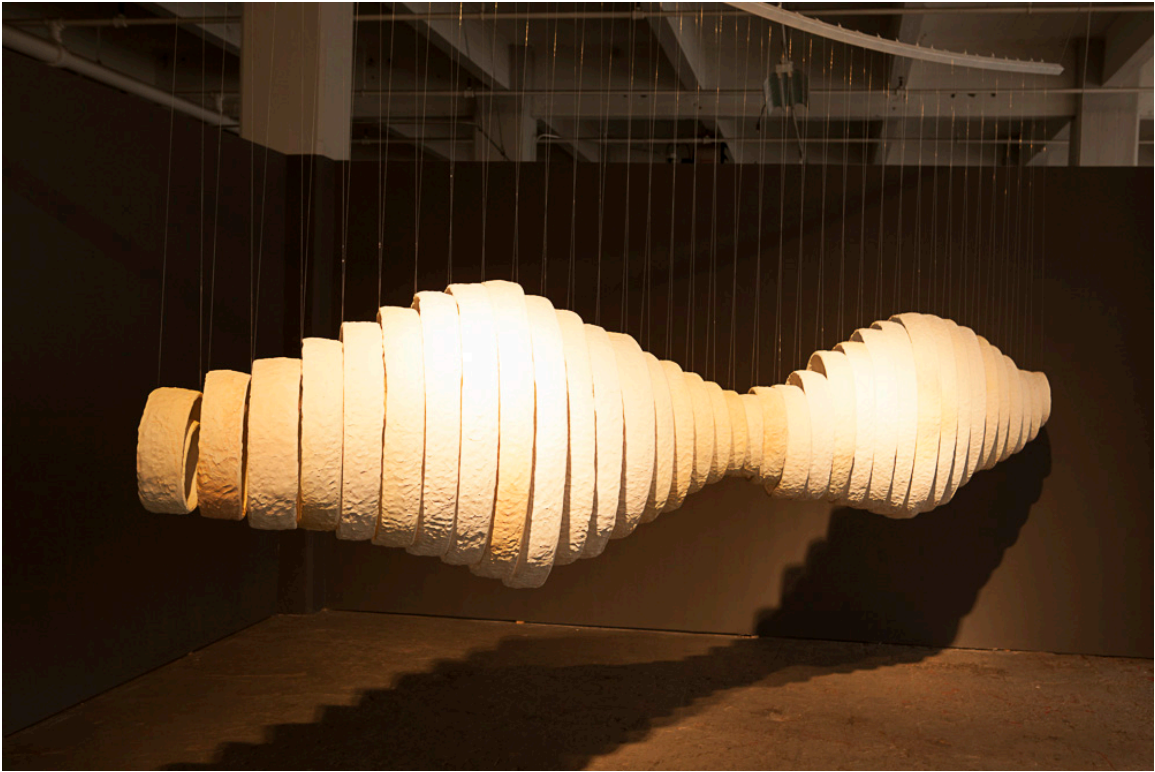
















Works Cited

- Asawa, Ruth. *Untitled (Hanging Six-Lobed, Multi-Layered Continuous Form within a Form)*. *The Sculpture of Ruth Asawa: Contours in the Air*. p. 178, no 57. (illustrated in color). November 2006-Fall 2007 Woven copper and brass wire.
- Cragg, Tony. *Group*. 2012. Royal Academy of Arts: Magazine and Blog. Sam Phillips. <http://www.royalacademy.org.uk/ra-magazine/blog/tony-cragg-at-lisson-gallery>. November 28, 2012. Wood.
- Howell, Anthony. *The Analysis of Performance Art: A Guide to Its Theory and Practice*. The Netherlands: Harwood Academic Publishers, 2000. Print.
- Mainzer, Klaus. *Symmetry and Complexity: the spirit and beauty of non linear science*. NJ, World Scientific Publishing. 2005. Print.
- Voigt, Jorinde. *Konstellation Algorithmus Adlerflug 100 Adler, Strom Himmelsrichtung, Windrichtung, Windstarke*. 2007. Jorindevoigt.com. Pencil on paper.
- Von Rydingsvard, Ursula. *Blackened Word*. 2008. Ursula von Rydingsvard: Working. Patricia C. Phillips. Prestel Publishing, New York. 2011. Cedar, graphite.