

name: Abdulla Al Shamsi  
date: October 31st 2006  
precedant: Urn Fabrication Retail Store

url:

[http://images.google.com/imgres?imgurl=http://www.urnsnw.com/dimensional\\_art/images/u25-cremation-urn.jpg&imgrefurl=http://www.urnsnw.com/dimensional\\_art/ambassador\\_urn.htm&h=330&w=450&sz=36&hl=en&start=273&tbid=dDxpHVdyAZRlXm:&tbnh=93&tbnw=127&prev=/images%3Fq%3Dlaser%2Bwood%26start%3D270%26ndsp%3D18%26svnum%3D10%26hl%3Den%26lr%3D%26client%3Dfirefox-a%26rls%3Dorg.mozilla:en-US:official%26sa%3DN](http://images.google.com/imgres?imgurl=http://www.urnsnw.com/dimensional_art/images/u25-cremation-urn.jpg&imgrefurl=http://www.urnsnw.com/dimensional_art/ambassador_urn.htm&h=330&w=450&sz=36&hl=en&start=273&tbid=dDxpHVdyAZRlXm:&tbnh=93&tbnw=127&prev=/images%3Fq%3Dlaser%2Bwood%26start%3D270%26ndsp%3D18%26svnum%3D10%26hl%3Den%26lr%3D%26client%3Dfirefox-a%26rls%3Dorg.mozilla:en-US:official%26sa%3DN)  
click on cremation urns links

example:



description:

to find this site I looked for inspiration for the assignment that I worked on. The idea of carving images out of wood is one that is very intriguing to me as it requires a great deal of patience, creativity, hand-eye coordination, basically an expertise that as of now is beyond my reach. Therefore, being able to reproduce the image flawlessly (using the laser-printer as oppose to my hand) is the closest alternative that was presented to me. I have learned that a reproduction of an image can also be done three-dimensionally, as oppose to the common ideal of having a flat photo, and that is a technique which I hope to utilize in projects to come. There is a certain sentimental attachment to the 'PICTURE' and by adding it onto a dense medium I believe that one can provide layers of meaning to something that is considered to be benign.



## EXCERSICE DESCRPTION:

My initial reaction to the assignment is to try to create an image. Somthing that could incur some value for furture use [such as a gift for someone, or a record of one's memories]. Therefore, I though of the creation of a three-demensional, textural, representation of a what we commonly value as a two-dimensional concept. The progression of technology brought the means of capturing memories to ones fingertips, and hence, why not allow for the sense-driven interaction to also include the value of touch. The image then not only represents a three-demensional being, but also is a three-dimensional entity in itself.

The examples you see on the left of the page are preliminary tests at creating this three-dimensional idea. Using chip-board as a medium limits the depth of the constituency but allows, for what I have seen, a greater contrast in color (burnt/unburnt), which truly accentuates the two levels. As a first attempt in this mode of fabrication I believe that the example meets its purpose and opens up uses of a variety of material.

My finished project will be transgressing a scene on a wood surfacing allowing for further juxtapositions and finishes subsequent to the use of the laser printer.

Abdulla Al Shamsi  
assignment #1  
48514 Digital Fabrication i  
October 29th 2006

## Cat Cocoon

laser-cut corrugated cardboard

<http://www.thegreenhead.com/2006/02/cardboard-cat-cocoon-made-from-laser.php>

this project creates three dimensional space through the lamination of laser-cut planar surfaces.

i found this idea to be of interest because it relies on one's ability to think of form in a predominantly sectional way. where this sectional approach becomes especially interesting is where the voids in the form are introduced; the legibility of these cylindrical openings through the layers of planes is enhanced by the corrugations in the material.

additionally, the slanted appearance of this object, in combination with the porous nature of the cardboard's edges, lends a sense of movement to the piece.

Louisa Jauregui



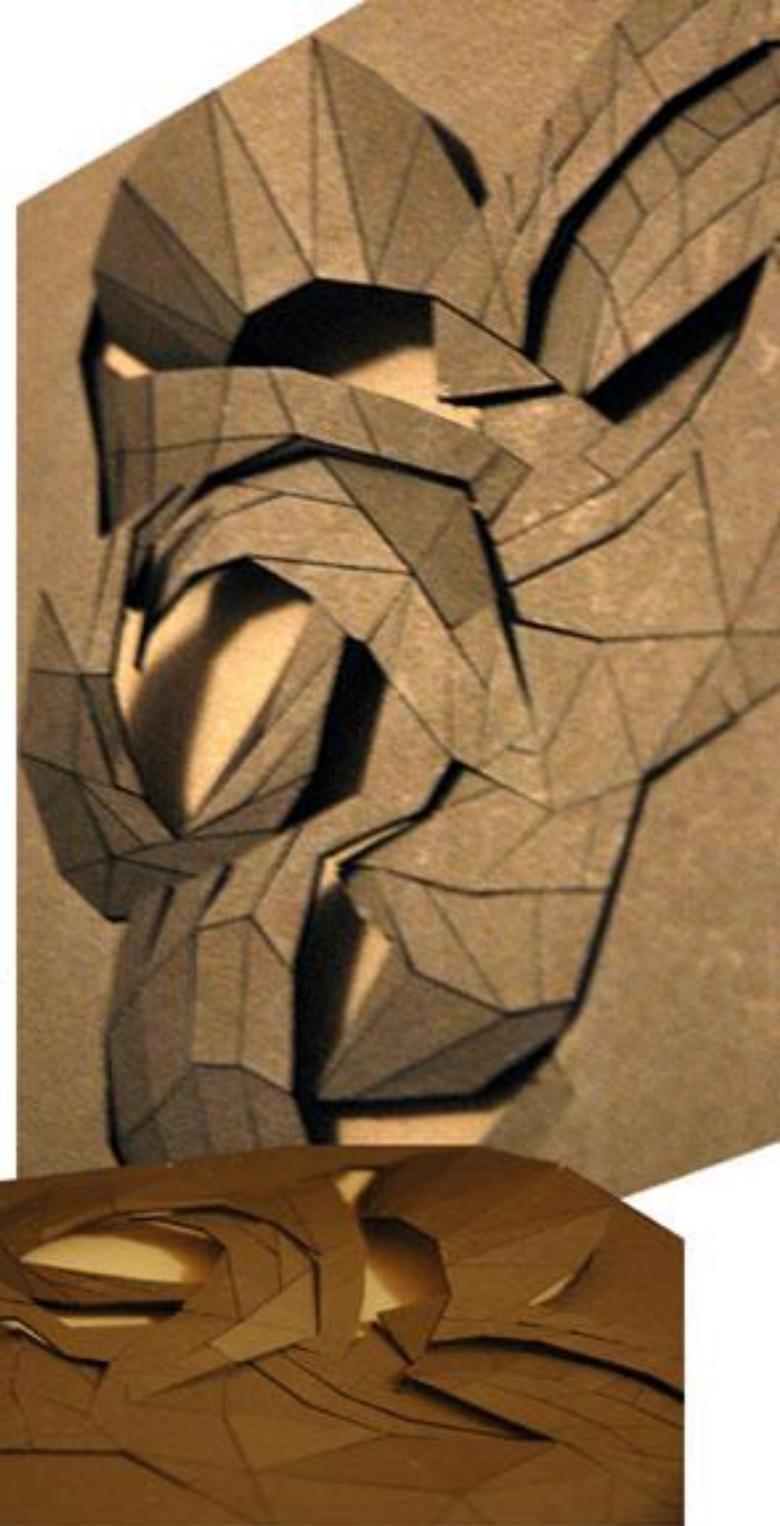
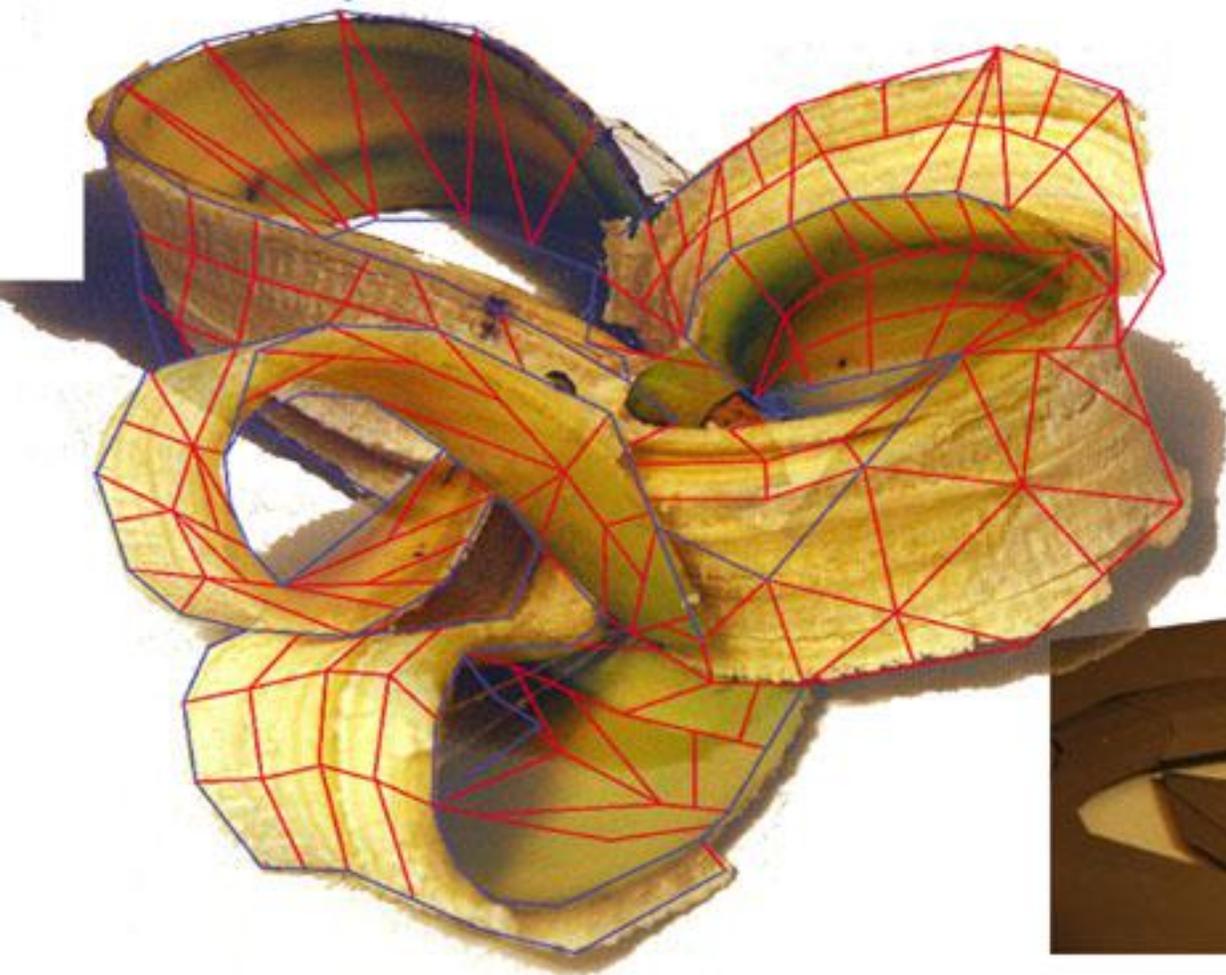
## Skin Folds

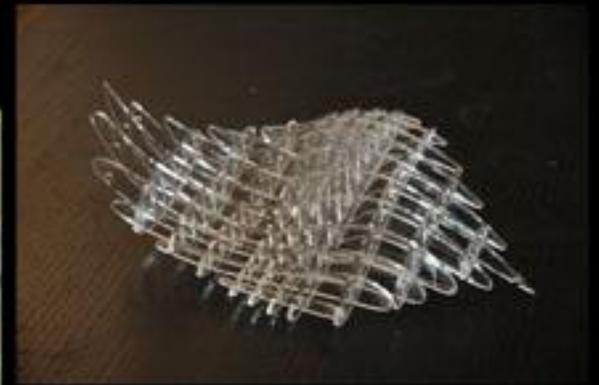
48-514::Digital Fabrication

Louisa Jauregui

10.31.06

Through this project I have analyzed the folds and spaces formed through two superimposed images of a banana peel. In defining regions of extreme contrast through cuts and those more uniform through engraving, I was able to create distinct, yet connected, elements by separating segments at cuts and folding them along the engraved edges to create a sense of volume within each segment.





## Wavy Leaf

48-514::Digital Fabrication  
Louisa Jauregui::Jessica Kim  
11.07.06



This project developed through the exploration of positive and negative space. The object that we have produced expresses both of these qualities through its wave-like form. In developing a sliceform, the idea of occupied space increased in importance and influenced the execution of our project. By using plexiglass, the relationship between form and light is accentuated. The translation of light and color through its edges enable the movement within the piece to be more apparent.



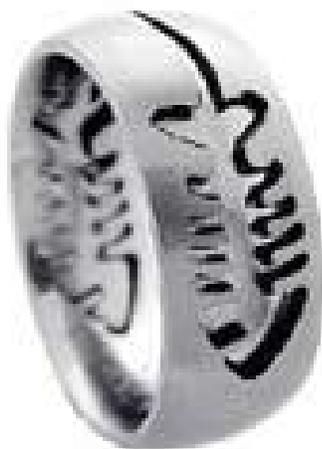
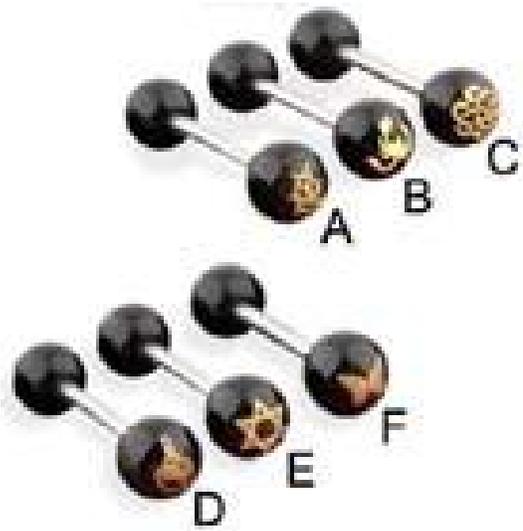
Daniel Tse  
Oct 30 2006

Digital Fabrication  
Precedent of Laser Work

Laser cut Jewellery:

I'm not sure about how I feel about jewelers using lasers to do the detail work on jewelry. I feel that jewelry is only valuable because it is traditionally hand crafted by an artisan. The value of a piece of jewelry can be made higher with the addition of fine and rare jewels but it is most about buying a design.

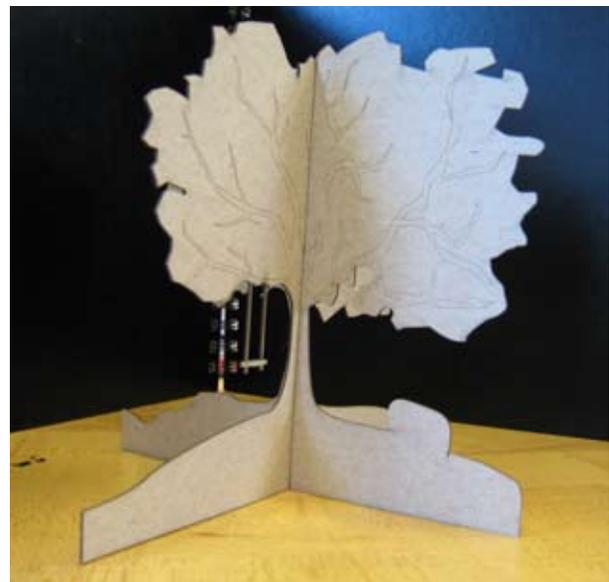
Many times, jewelry is made to highlight a jewel but these examples are all about detail on a basic form devoid of jewelry. The detail created by laser puts detail on surfaces that most jewelers would have traditionally not even deal with.



## TREESCAPE

While sitting around in studio, I happened to glance outside and saw a lot of people enjoying the sunshine. I wanted a piece of that life but knew that I was chained to my studio desk for a few more hours. I decided to make my own tree and a swing to play with.

The design of the tree was aimed towards testing the capabilities of the laser cutter. To see how closely it could follow a sporadic line like the one created for the engraved branches. I also wanted to see how closely it could cut out elements so that the material was still stable, the swing was created to test that particular detail. Finally, we were informed that the laser cutter doesn't cut straight down through the material, that it fans out slightly. This detail concerned me about how tight joints would need to be designed on "paper" so that it was a tight fit. The laser cutter has proven itself to perform very accurately regardless of complexity in design.



## MULTI LAYER FORM

My inspiration for this piece came from the need of a serving tray at home. Originally detailed to be cut out of clear plastic, The hardboard was the closest thing that I could find in depth and size. It turned out great, the pieces are crisp and the ribbing makes the form very sturdy, I also plan on melting a piece of plastic on top of the framing and that should conclude the design of this serving platter.

The form was derived from my original idea which was a pirate ship, the hull turned out so subtle and soft that I decided to just concentrate on that and make it larger.

Laser Setting:	Speed	40
(Hardboard)	Power	40
	Freq	1000





## EXCERSICE DESCRIPTION:

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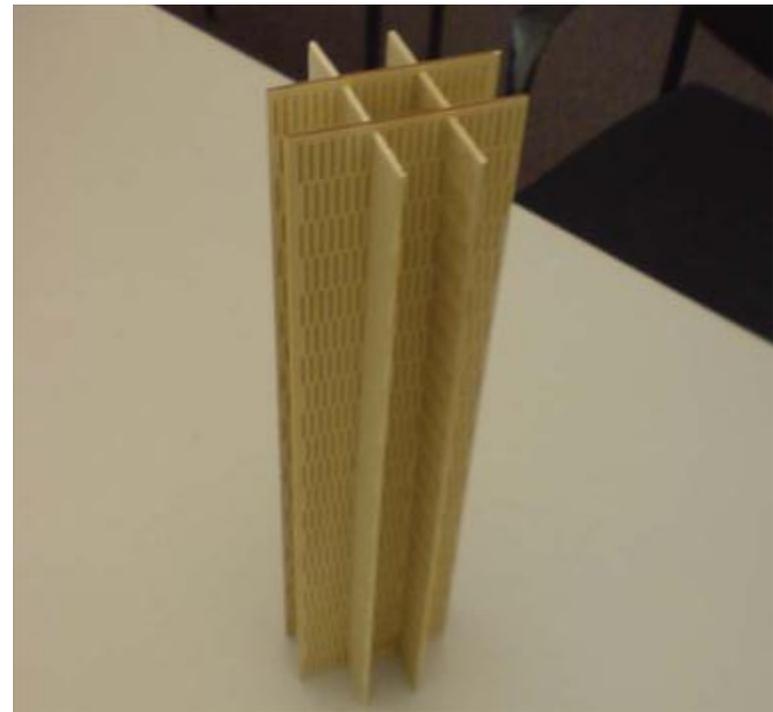
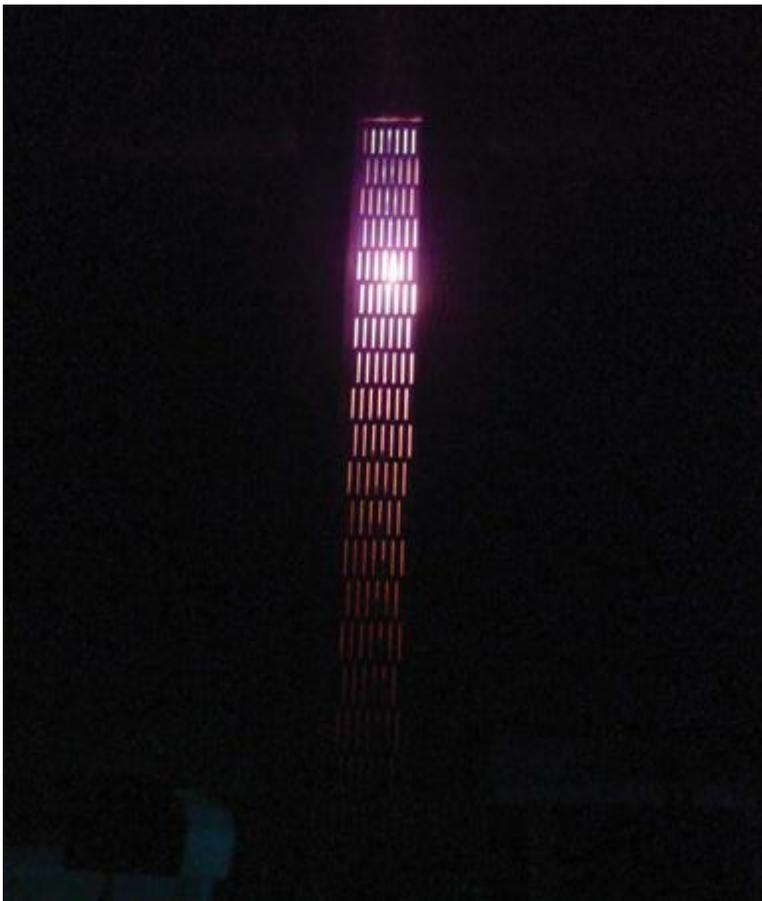
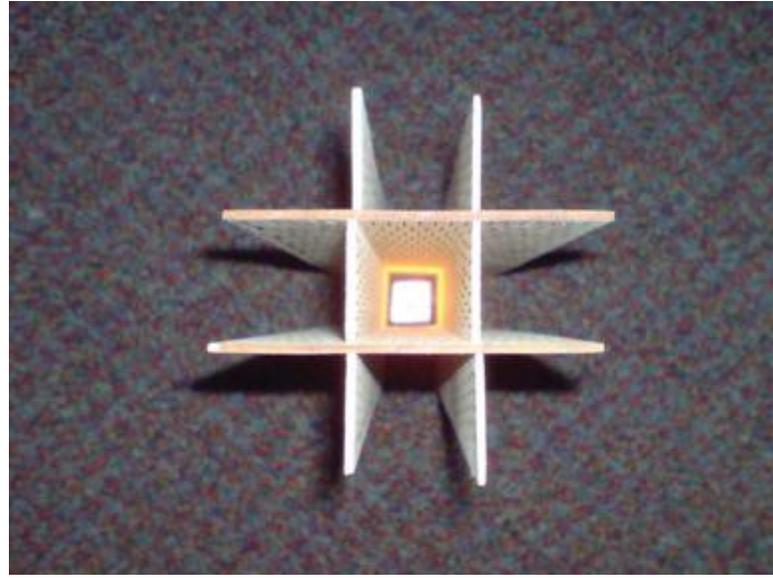
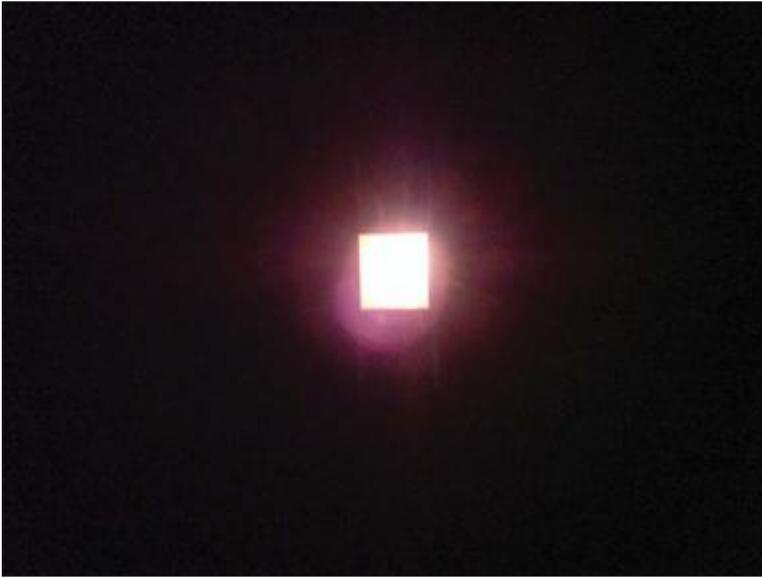
My finished project will be transgressing a scene on a wood surfacing allowing for further juxtapositions and finishes subsequent to the use of the laser printer.

Abdulla Al Shamsi  
assignment #1  
48514 Digital Fabrication i  
October 29th 2006

## EXCERSICE DESCRIPTION:

The idea behind this project is to create an object which interacts with a light entity [a candle in this case]. Using the laser cutter, Samuel and I wanted to emphasize the negative space as oppose to the positive. Hence, instead at looking at what is remnant from the laser cutter bed, we shifted the emphasis at what is not there.

The choice of material, being it bass wood came instinctively to both of us, as we wanted something sturdy that could perform structurally as well as aesthetically. What came as a surprise to us, however, was how the sheet of bass wood reacted when internally illuminated. The candle light, with in the walls of the structure, created a red tinted glow of light which could only be explained by the sheet of bass wood filtering out all other colors. Future iterations of this project could involve using the same design but with a series of different materials to try to produce a variety of different tints. Additionally, various light sources could replace the candle to see if the same effect would be produced.



Abdulla Al Shamsi & Samuel Espada  
assignment #2  
48514 Digital Fabrication  
November 9th 2006

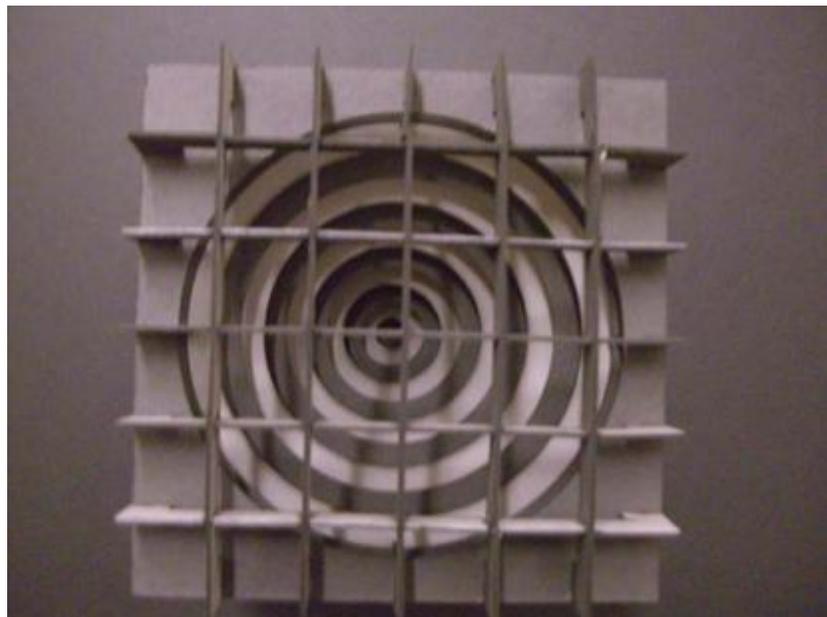
# THE SQUONE

The Squone was an exercise in necessity because it could not have been created by hand: it required the laser cutter. The Squone is at once a solid and a void, a cube and a cone. The squone is not a representation of another object.



The Squone was maximized from one 24" x 36" sheet of matboard, to eliminate waste. There was slight error in the cutting due to the fact that the material was the maximum size.

It was very difficult to put the layers together because of the half-lap joints. It would have been easier to make simple notches.



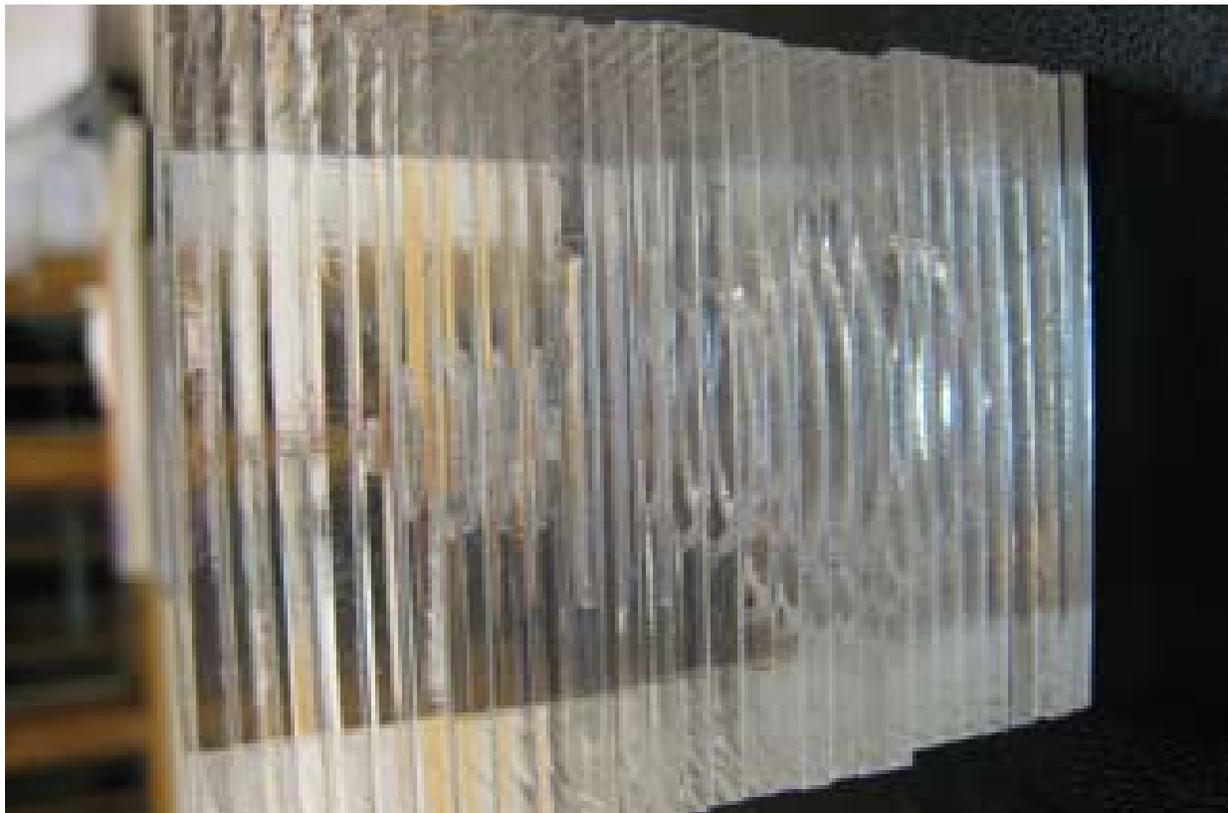
Daniel Tse  
Nov 13 2006

Digital Fabrication  
Assignment 3

## Egg Drop Cube

After creating a huge piece the week before, I wanted to see if I could create a small piece that expressed my idea of an egg floating in air. I got the idea while I was making breakfast. The individual slides make up the forms of an open shell, a yolk and a drop of whites flying above it while the two pieces of the shell fly off to the side.

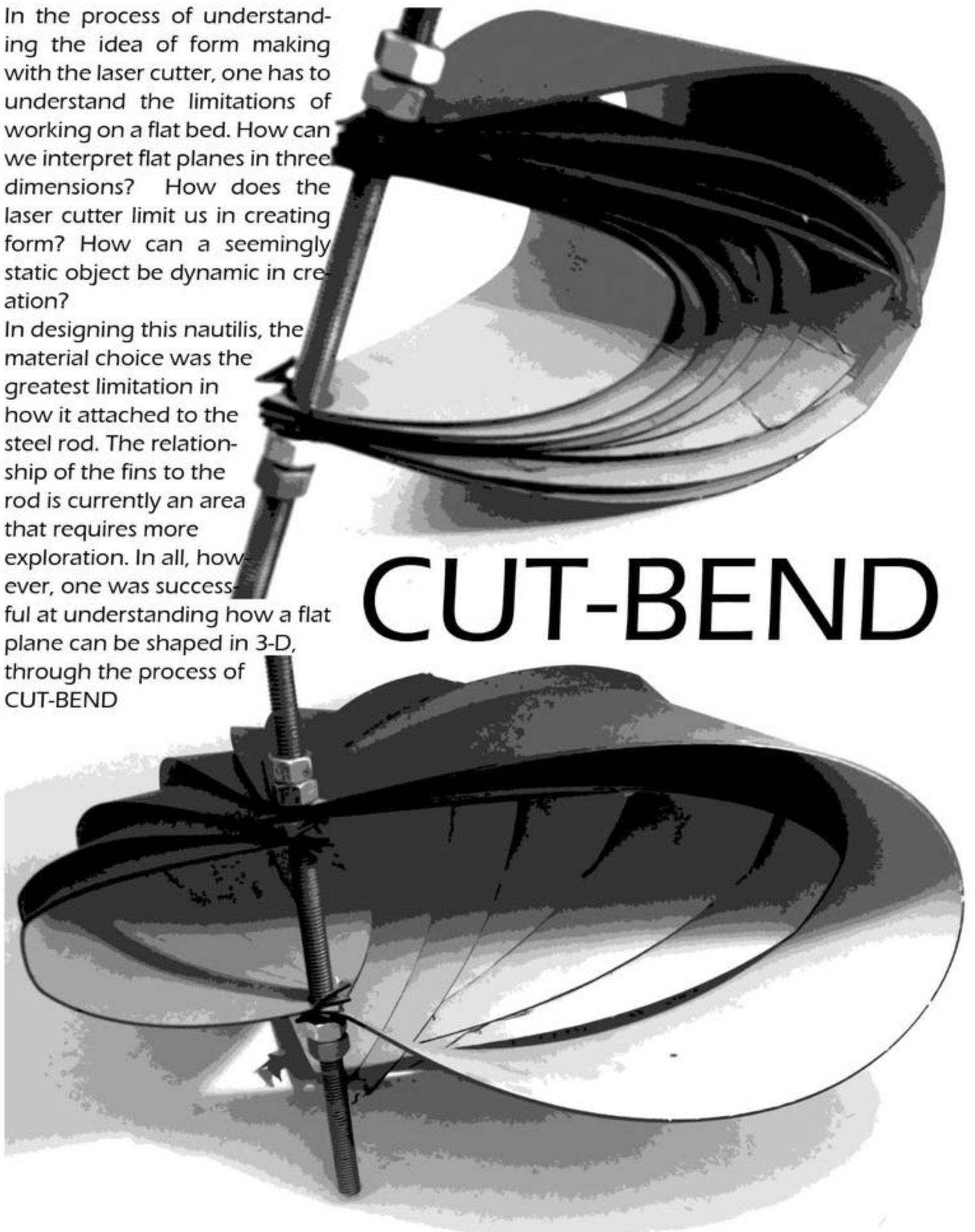
Settings:     Power 100  
                  Speed 40  
                  Frequency 1000



In the process of understanding the idea of form making with the laser cutter, one has to understand the limitations of working on a flat bed. How can we interpret flat planes in three dimensions? How does the laser cutter limit us in creating form? How can a seemingly static object be dynamic in creation?

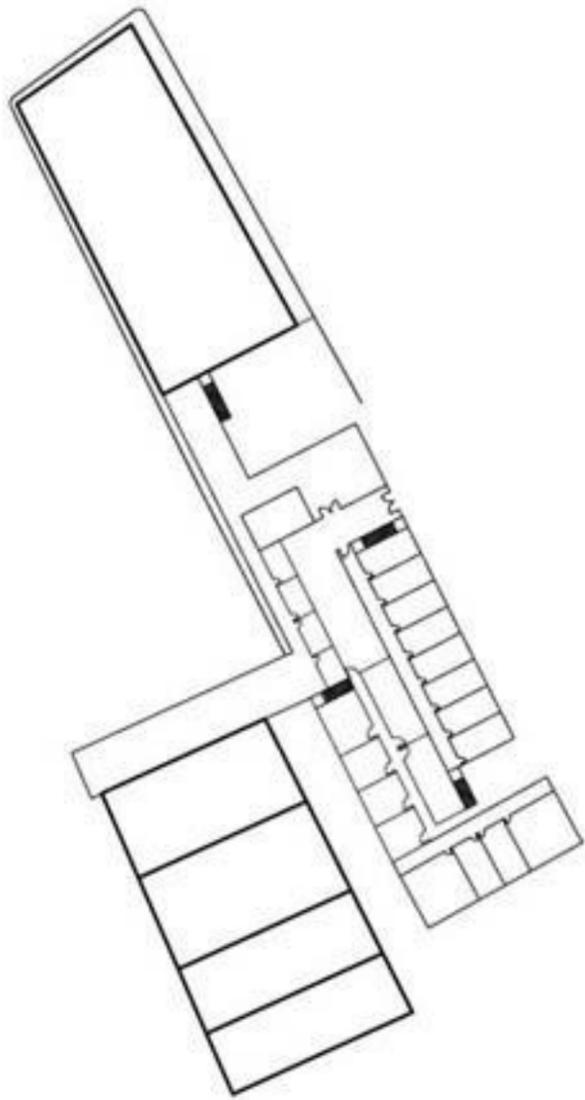
In designing this nautilus, the material choice was the greatest limitation in how it attached to the steel rod. The relationship of the fins to the rod is currently an area that requires more exploration. In all, however, one was successful at understanding how a flat plane can be shaped in 3-D, through the process of CUT-BEND

# CUT-BEND



# LASER CUTTER RELIEF BOARD

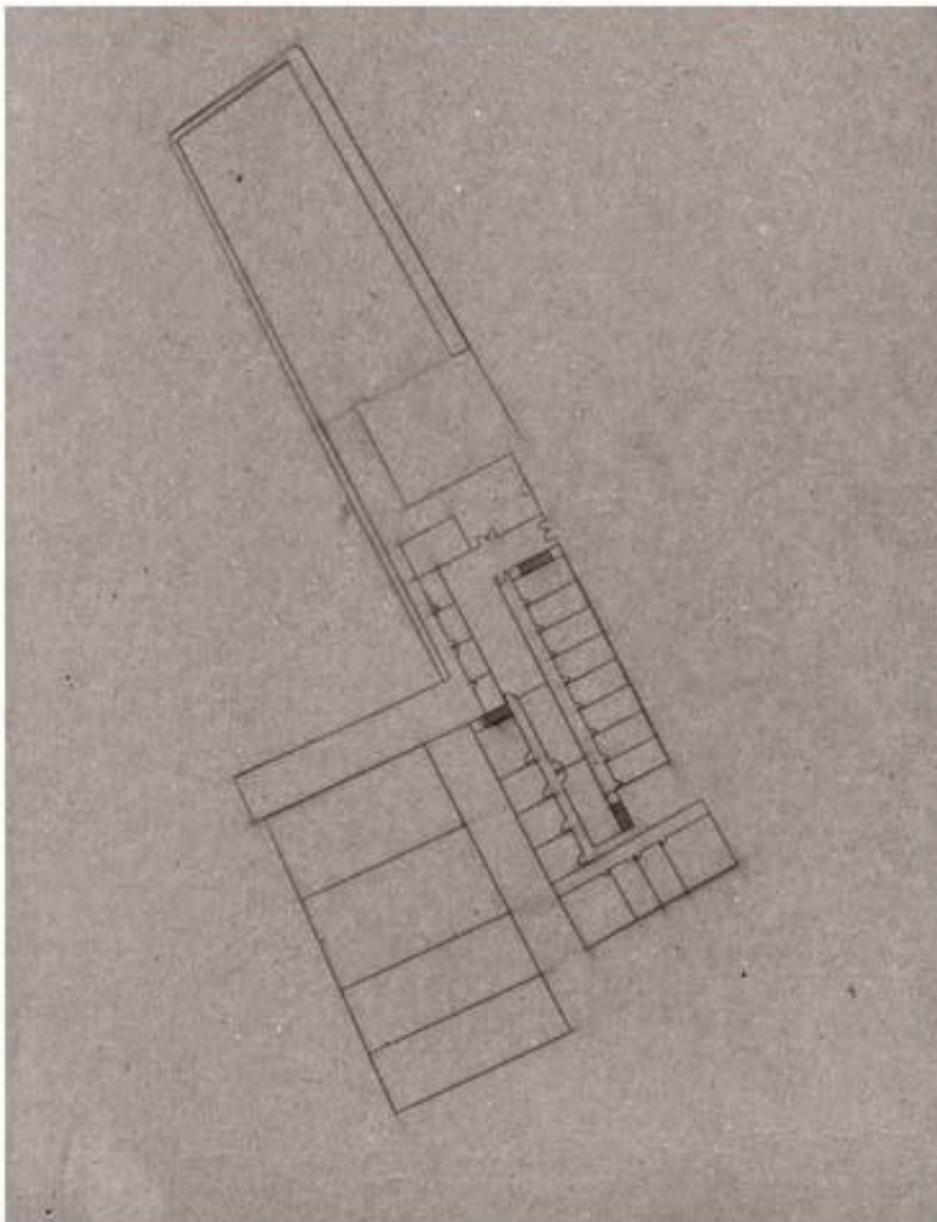
PROJECT ONE NIKKI DEBOLSKI



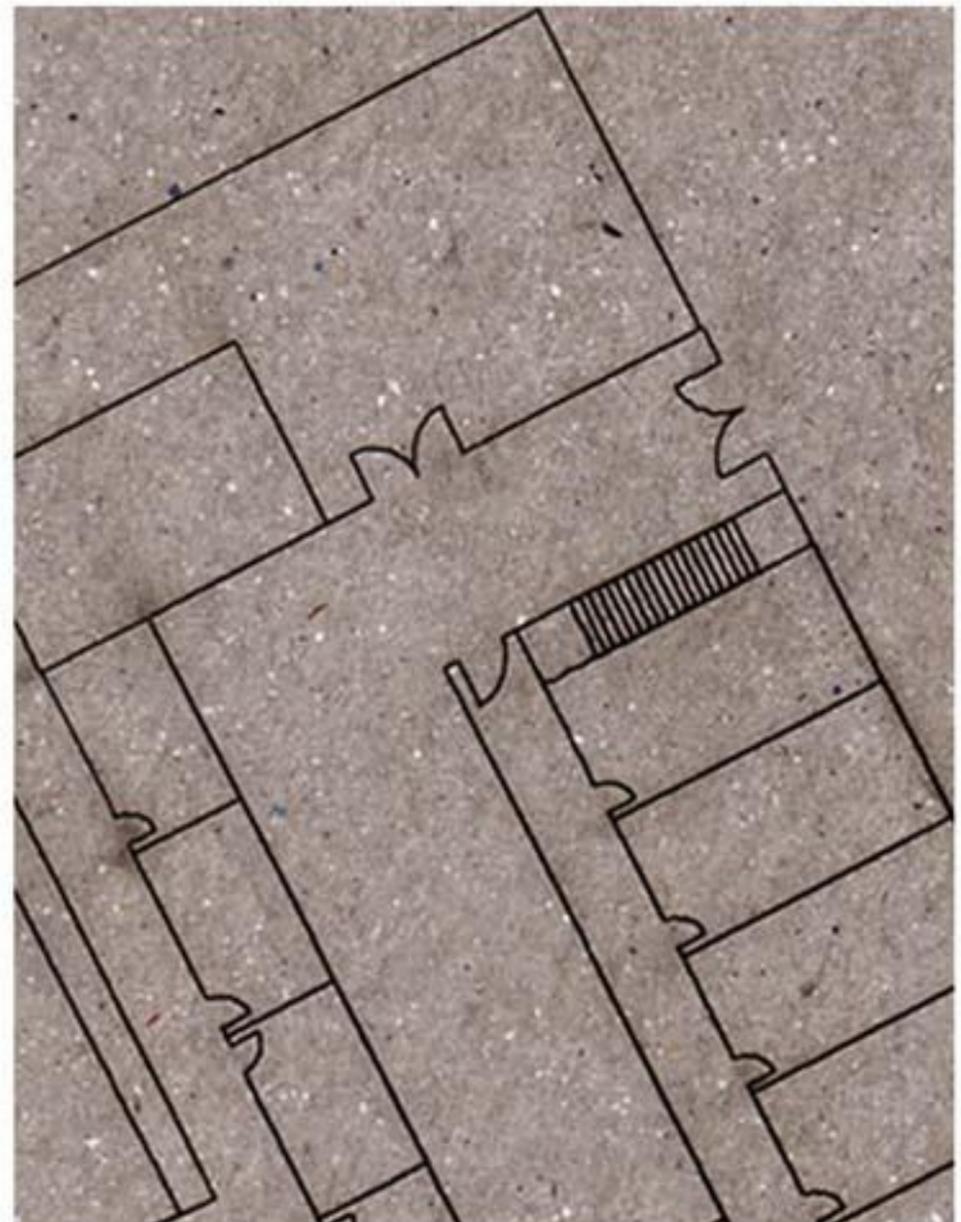
ORIGINAL CAD DRAWING

The goal of this exercise was to create a 2D cad drawing that would then be imported to the laser cutter and scored to create a relief on piece of 1/8" chipboard.

Taking a floor plan drawing from my studio project, this exercise explored a new way to create unique presentation drawings that could begin to add additional layers of information and detail.



CHIPBOARD RELIEF BOARD



RELIEF BOARD DETAIL



## Virgin Atlantic Clubhouse

John F. Kennedy International Airport, Terminal 4  
New York City

**SHoP Architects**

### **An oasis revealed within a bustling urban airport**

Virgin Atlantic's new upper class lounge at JFK is an environment that celebrates both the power and possibility of New York City, and the excellence and irreverence of the airline. It is an urban oasis, entered into beneath a glittering waterfall and bounded by a 90-foot-long pool that accommodates dining along its interior bank.

Like a shimmering city-mirage, pearlescent, undulating screens define the bar and more intimate seating areas that combine comfort and privacy with a privileged view. These impressive structures, designed and fabricated using the latest in cutting-edge digital technology, are illuminated with soft and subtly color-shifting patterns, revealing at one scale the twinkling skyline, at another the glowing hearth. Within this setting, like in any good New York City neighborhood, all needs can be met without going far. Food and drink, power and digital ports, a soothing place to rest, or a chance encounter with a fellow traveler can all be found.

Open to the 40-foot ceilings of the main structure, with sweeping views of the terminal and the runway, the lounge becomes a stage for the unfolding story of each passenger's journey.



# Tord Boontje\_Copper Garland



Flora  
copper garland

designer:  
Tord Boontje

design year:  
2004

manufacturer:  
Artecnic, USA

notes:

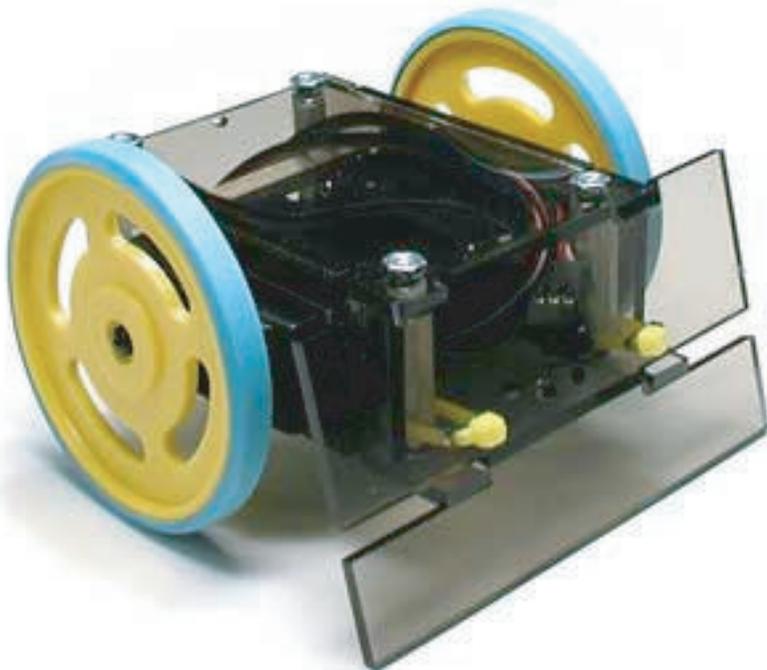
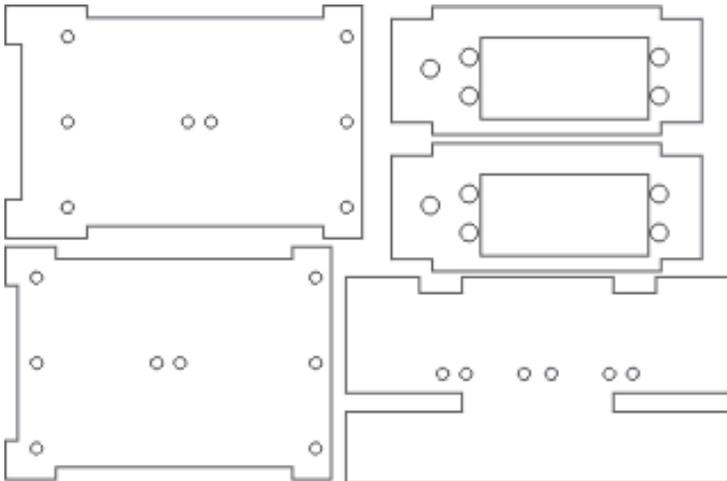
The original of this suspended architectural element was created by Tord Boontje for a new building development on Keane Street, Covent Garden, London. Suitable for outdoor use, it is intended to slowly patinate over time when subjected to the elements.

dimensions:  
approx 12' long

## Laser Cutting: Servo-Driven Sumo Robot

The five laser-cut components consist of top and bottom panels, two identical side panels that hold the servos, and a front shovel panel.

The top, bottom, and side panels are attached by bolts and standoffs, and the interlocking front panel is held in place with nylon cable ties. All the pieces were cut from 1/8" acrylic, and the top and bottom panels are about 3.25" x 2.25".



# Laser Cutting: Project 1, Raster Image

This is the first attempt at using the laser cutter. I decided to do a raster image that I have of a squatter. The whole process took about 4 minutes, high speed and low power. It was printed on cardboard.



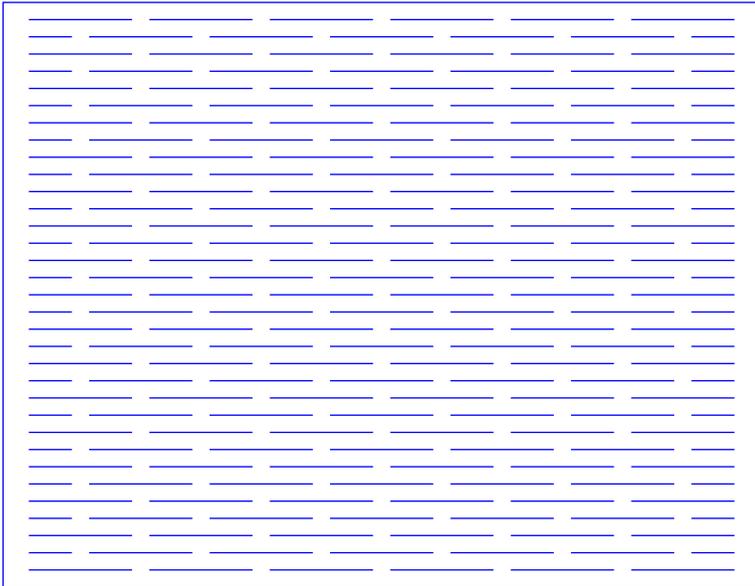
DIGITAL FABRICATION  
DR. MARK GROSS  
PROJECT 1  
31 OCTOBER 2006  
GREG TANSKI



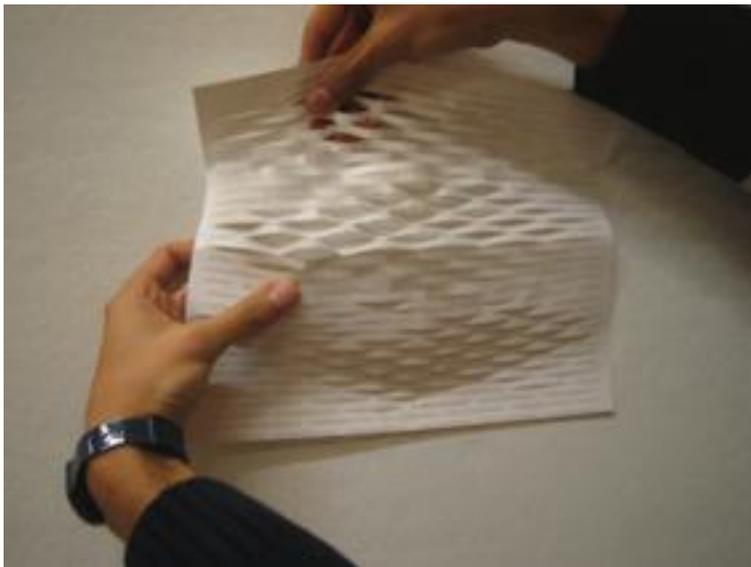
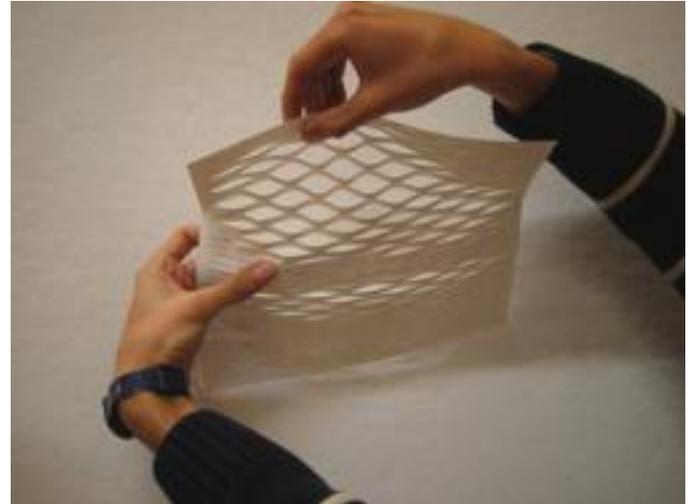
FOR MY FIRST PROJECT, I CHOSE THE BUFFALO SABRES' LOGO FROM THEIR ORIGINAL JERSEY AS THE SOURCE FOR MY IMAGE. A CHARGING BUFFALO ABOVE TWO CROSSED SABRES WAS THE LOGO OF THE FRANCHISE FROM ITS INCEPTION IN 1970 UNTIL 1995-1996. FOR THE 2006-2007 SEASON, THE TEAM ONCE AGAIN CHANGED ITS UNIFORMS AND NOW USED ITS' ORIGINAL JERSEY AS A "THIRD" OR ALTERNATE JERSEY.



(2) 3D VOLUME FROM 2D PLANE

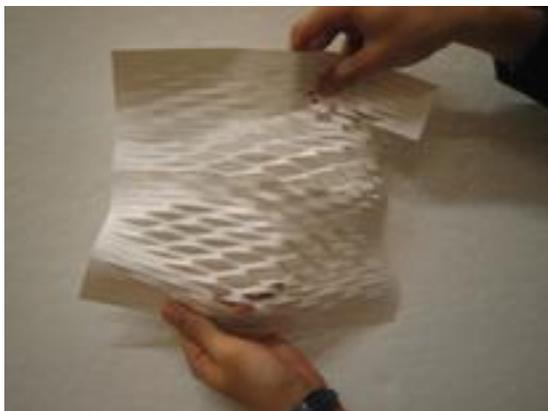


Cut sheet for bristol paper



My objective was to cut a plane so that, when pulled/pushed, it deforms in a uniform way in 3D. My precedent study (Terra Incognita, R&Sie(n) 2006) was my inspiration for this idea. I determined the cut pattern so that there is an overlapping grid, and although I studied how the precedent was cut, I could really predict the physical result of the cut. I did know to use flexible material, but in the future, I would use a thin plastic, because the paper becomes creased or ripped if the surface is stretched too much.

I think this kind of surface could be used for many applications, where some kind of visual permeability is needed. I am interested in exploring the structural potential of this kind of surface, maybe in furniture.



(PRECEDENT)



R&Sie(n) and Pierre Huyghe  
Terra Incognita

<http://new-territories.com/terra%20incognita.htm>

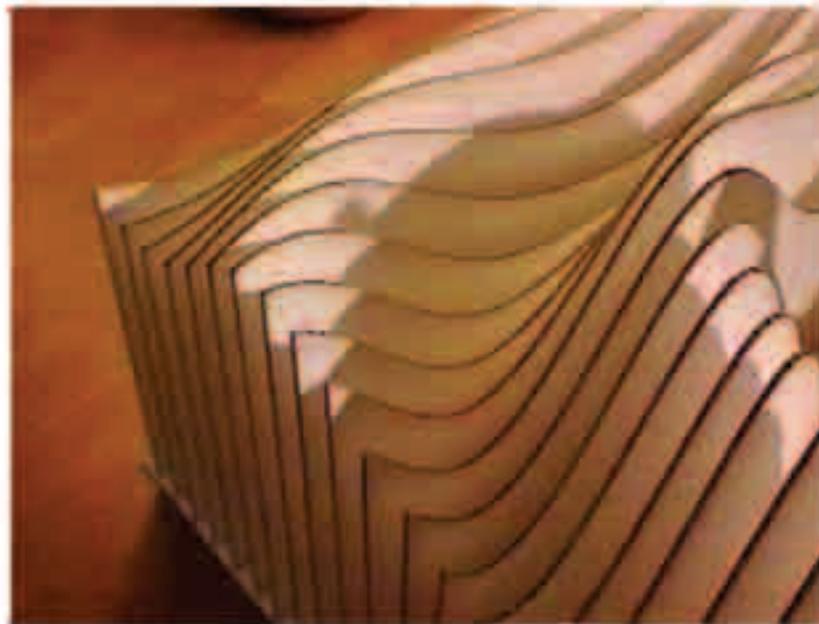
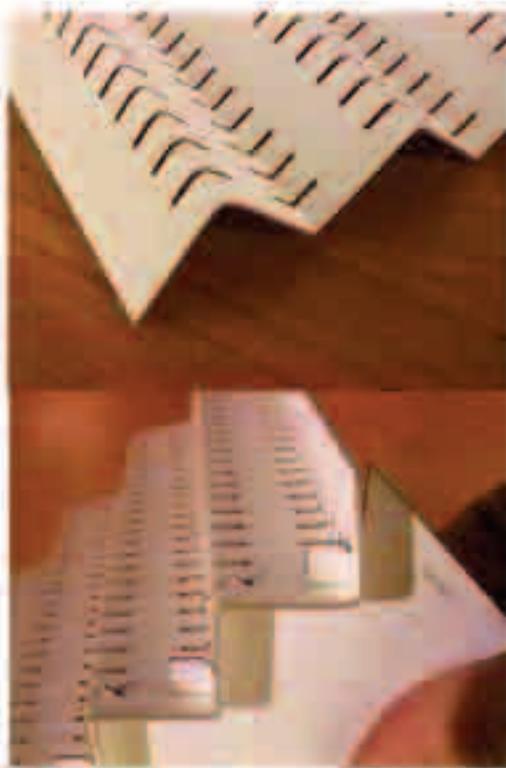
This installation at the Modern Museum of Art in Paris is an expression of glacial movements in Antarctica. The materials are aluminum honeycomb sheet, hanging string, and bottles filled with water. The aluminum sheets lay flat, but when lifted by the water bottle weight via strings, a volume is created upward. By tugging harder at different points of the surface, a varied and curved dome shape is produced.

The aluminum sheet is a single piece and demonstrates how the cutting of one plane can make a volume. Assembly of many pieces cut together is not necessary.

# Laser Cutting Precedent Study

Paul Haerberli November 1996

Jessica Kim





Precedent Study:  
Jameson O'Donnell  
October 31, 2006



<http://www.lasermagic.net/>



LaserMagic.net specializes in laser cut college design license plates. The license plates are made of shatter proof mirrored acrylic. The pieces are individually cut and then assembled and glued into the license plates. This creates the multi-colored designs seen on the left. The company takes orders for virtually every college in America and will custom-cut team logos into the license plates. They also fabricate license plate frames.

# Precedent Study :: Cooperstown Bat Company

Jim Stedman  
October 31, 2006



In 1998, I made a trip with my family to the National Baseball Hall of Fame in Cooperstown, New York. They have a large selection of assorted collectibles and wood bats. To get a bat engraved, you choose the model, what you want it to say, and sign your signature. You place the order and the bat is ready in a day or two.



Most people do not get to see the bat being personalized, but I got to see my brother's being made. They had spelled his name wrong so they sent us to their factory where we were allowed to watch it being made. Each bat starts with the Cooperstown Bat Company logo. The bat is placed in the machine and it seemed to check the alignment with the existing logo. Then, it began cutting and would turn the bat as it cut, starting with the oval with the date and then to the autograph and text under it.





MBT Architecture  
Scale: 1" = 30'  
Size: 30" x 30"  
Topographical Site Model of UC Berkeley CITRIS

This year's studio is about site and its relationship to the building. So I want to incorporate skills that would be learned in this class to studio design. First I would like to make a topographical model. It would be really nice to cut wood cleanly to get smooth lined contours. It is very laborious to cut cardboard piece by piece with exacto knife. I could reduce time by putting as many contour lines on one sheet of wood and cut them at one time. Also by making changed contour lines for building site, I don't have to cut the land on the site. It would create clean building square site like the picture shown above.



This 3D Pterosaur Puzzle is an example of how you can use two-dimensional pieces to build a three dimensional object. Each piece of the puzzle has slots for connecting to other pieces; all the parts fit snugly so the pterosaur stays intact. Mounting holes in the head and spine are available for hanging the completed 3-D dinosaur puzzle from the ceiling. This sample gave me an idea about how I can make a building model for my studio project by first making 2D walls and assemble them to create 3d building. Laser cutter will mark any necessary details to further embellish the model.



# City Of Sound “New London” project

The city of London is modeled in laser cut acrylics.



## Boathouse Dock

Scale version of cedar dock for studio project.  
Jameson O'Donnell  
October 31, 2006

-dock to serve crew  
boats and kayaks.

-made up of 2x8 cedar  
planking.

The dock was cut from a  
1/8 inch thick piece of birch  
ply. The boards were then  
engraved on the outline of  
the dock to suggest the  
orientation of the individual  
pieces.



# Laser Cut Mess Ups

Jessica Kim

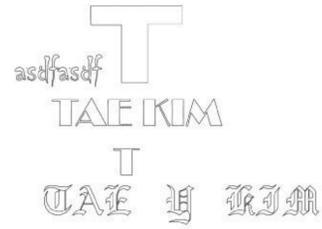


In this first assignment, the image of a banner was drawn in Adobe Illustrator. The two shamrocks and a rice bowl can be partially seen in the failed attempts of the project on the left. The problem that reoccurred several times was that the cardboard caught on fire in between the two end strips. It was interesting to see how the laser left a precise and clean image of the shamrock on the other side of the board while the interior was burning. As for the chipboard used in the first attempt, the incorrect line type was set in place, and small blips of the rice bowl can be located in the picture above. In the second attempt of using chipboard, a laser error occurred and produced a random diagonal line across canvas and concluded the assignment and help session.

DIGITAL FABRICATION CLASS 1

## TEXT LASER CUT

COMPUTER IMAGE

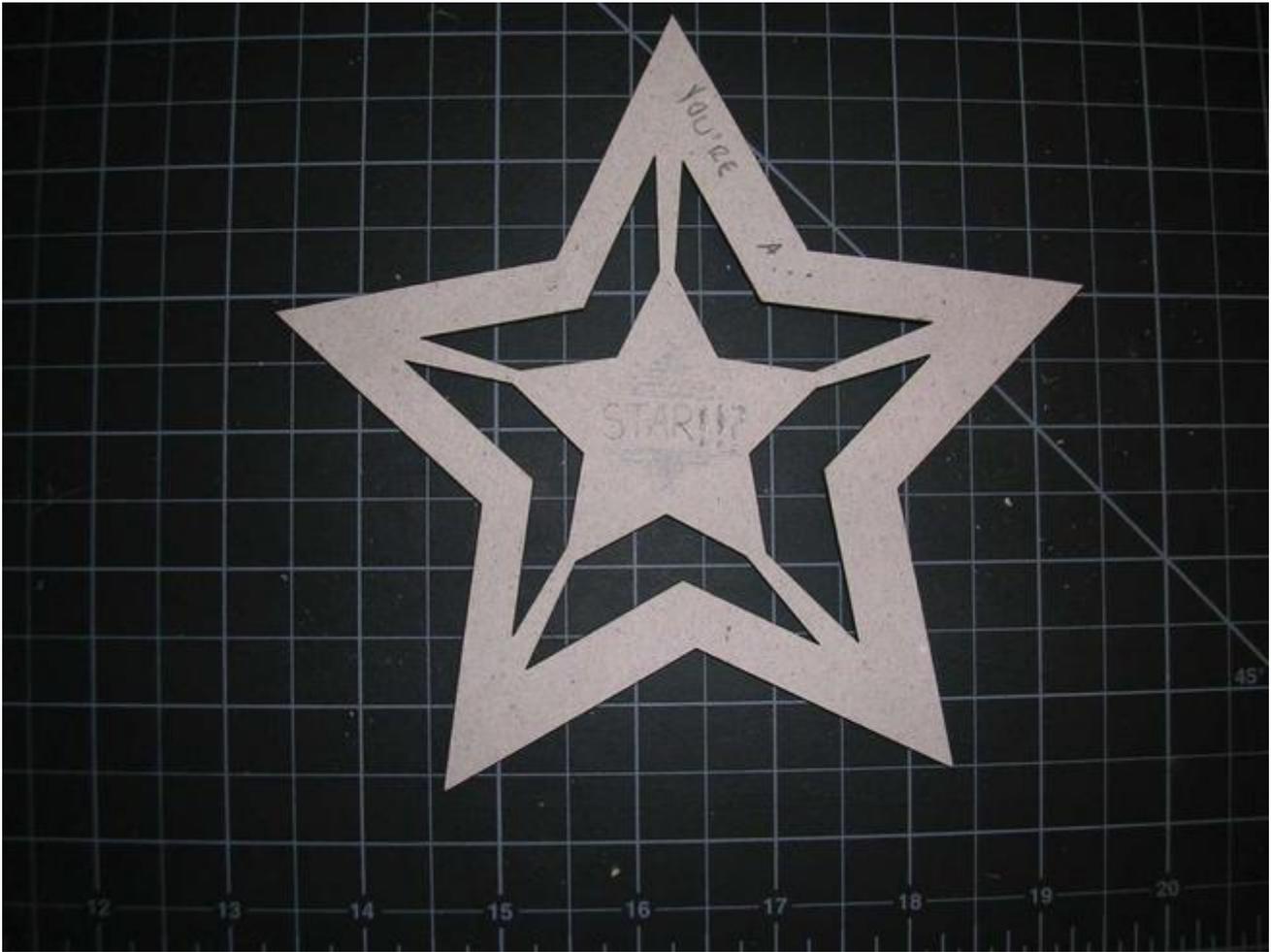


AFTER CUT ON CARDBOARD



I typed my name text in adobe photoshop and inverted it to get the outline of the text for laser cut. One font type was not available in corel draw which resulted in different outcome for the last line. I wanted to see if the laser cutter would cleanly cut out complex font type like "asdfasdf" and it did in perfection. After careful selection of options, laser cutter elegantly followed the lines and cut out the text. It was a fun and helpful experience to get to know more about the laser cutter and its capabilities. I'm confident that it would do any complex jobs if I set it up correctly. The cutting time was less than five minutes. I used the cardboard as a material for my project and laser cutter cut out without any damages.





The Star is an exercise in spatial dynamics and the relationship of figure to ground. It is both form and space, light and shadow.

I used the star tool in Illustrator to make it. The star form did not test the limits of the laser cutter, but it was a cut that would have been difficult by hand. Next time I would use more than one piece of material.

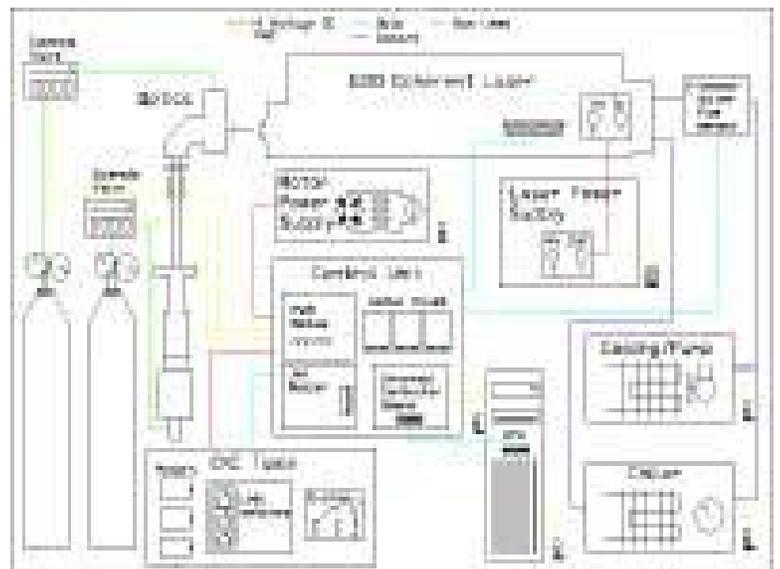
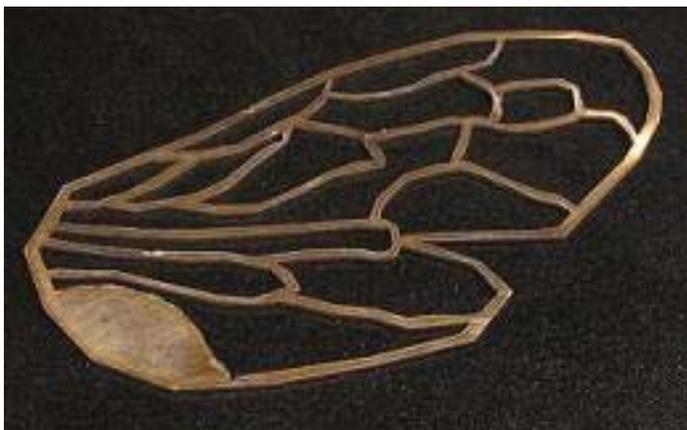
DAVID KENNEDY

# LASER CUTTING SHEET METAL

Greg Tanski



The general idea of this CO2 laser system is that a beam is directed down to a part for cutting. The part sits on a computer controlled platform which moves the piece around the stationary laser beam. Cutting is achieved by passing the beam through a focusing lens. A focused beam exits through the bottom of a cutting head nozzle. Gas, such as oxygen, is fed into the side of the chamber below the focusing lens. This gas exits the nozzle along with the beam and the laser beam/oxygen combination serves to vaporize the steel for cutting.



This system uses a 100 watt CO2 laser in combination with a CNC table to cut 1/8th inch thick carbon or stainless steel.



# JELLY/FISH

10.31.06

samuel espada  
digital fabrication

## Laser Cutting Assignment 1:

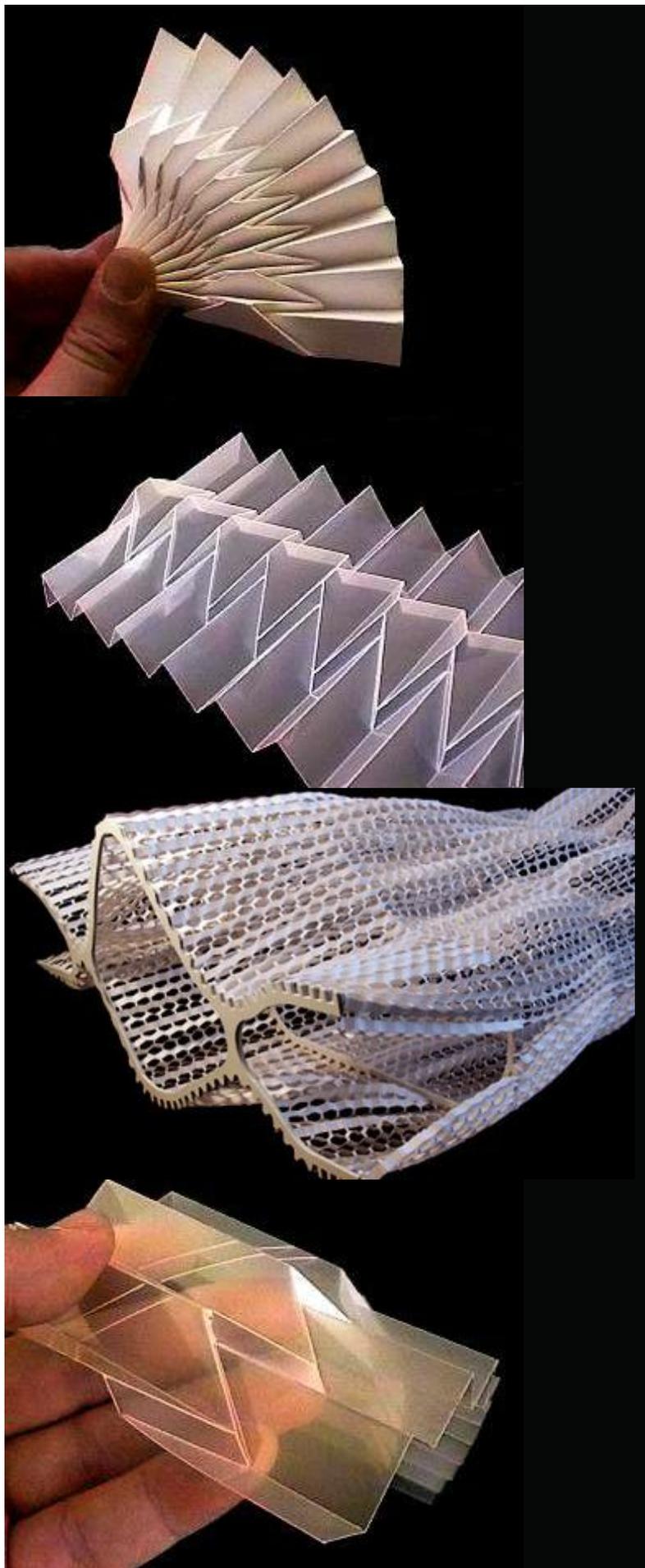
We were given the task to come up with some sort of drawing in order to use the laser cutter.

Figureground drawings are something that the laser cutter can produce and produce well.

I took a file of an underwater environment and cut it with the laser.

I am please with the results because the corrugated cardboard has an interesting affect where cut.





# PRECEDENT

10.31.06

samuel espada  
digital fabrication

## Laser Cutting Assignment 1:

Something I find intriguing with the laser cutter is, being able to turn a two dimensional object into three dimensions.

These are some images I found where others with simple cuts and scores were able to add that third dimension to a piece of paper or plexi.

## 8 Man Crew Boat



## Scaled 8 man Crew Boat

Jim Stedman

October 31, 2006



## Scale Figures



## Scale Figures with Crew Boat

Jim Stedman

October 31, 2006

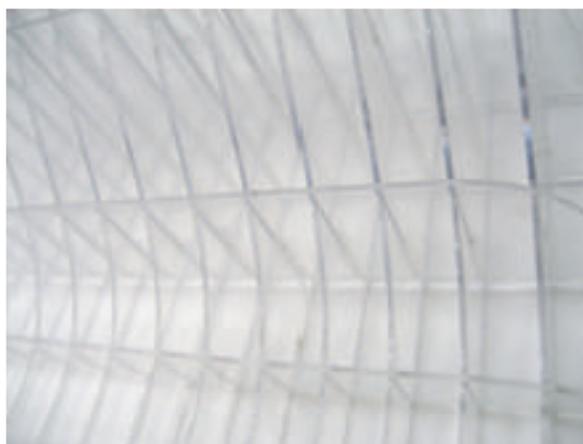
For the first assignment I cut out a crew boat and scale figures out of 1/8" basswood. The cut was successful for the most part. There were outriggers drawn on the crew boat but they proved to be too thin for the laser as they burned off. I traced a Tartans logo in Autocad and then hatched it to engrave. The hatch was very fine and the laser was too strong to give the engraved effect I was looking for. The outline is readable, but the interior burned through. The overall results were as I expected them to be.



FRUIT BOWL LANDSCAPE



Although I first thought to make a fruit bowl, I became more interested in this assignment as a terrain. I first drew the side curve and determined it should not be a free standing object but something that sits on a flat surface. If I had more time for this project, I would have made the surface curve in three dimensions. The difficult part of that, however, is to match up the slice cuts.



# LASER CUTTER SLICE FORM

PROJECT TWO SANDRA CORDOVA, NIKKI DEBOLSKI



THE GOAL OF THIS EXERCISE WAS TO USE THE LASER CUTTER TO CREATE A 3D SLICE FORM. FOR THIS PROJECT WE CHOSE TO DO SOMETHING FUN AND MODEL A GIN BOTTLE. THE PROCESS ITSELF CONSISTED OF SEVERAL STEPS USING FOUR DIFFERENT PROGRAMS.

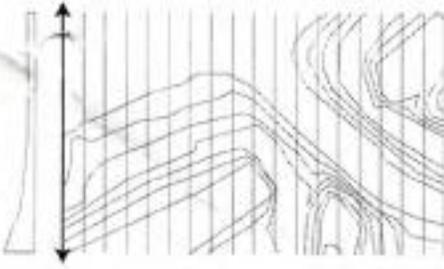
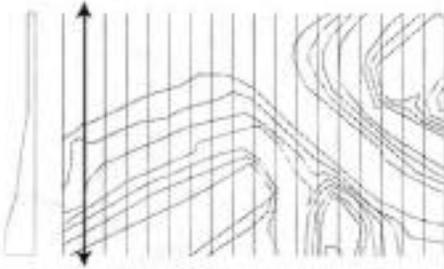
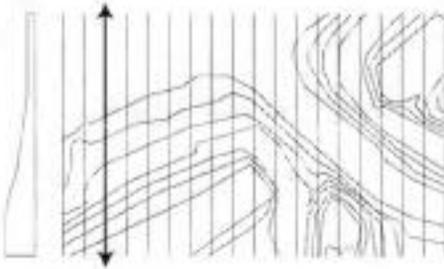
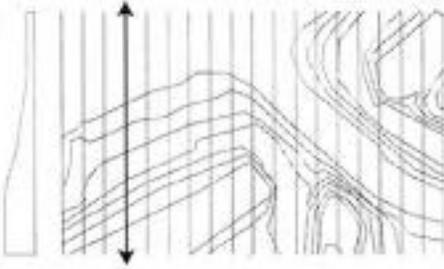
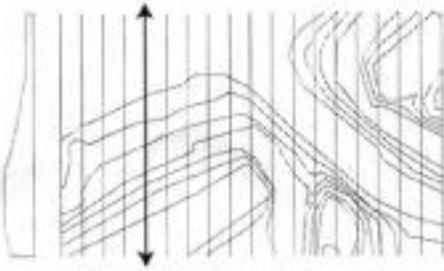
FIRST WE USED CAD TO CREATE A 2D DRAWING OF THE OBJECT. THE NEXT STEP WAS TO IMPORT INTO RHINO TO CREATE A 3D MODEL AS WELL AS CUT SEVERAL DIFFERENT CONTOURS THAT WERE THEN IMPORTED INTO CAD AND SEPARATED. NEXT, THE ENTIRE DRAWING WAS COPIED AND PASTED INTO ILLUSTRATOR. FINALLY, THE AI FILE WAS OPENED IN CorelDRAW AND CUT.

**SETTINGS:**  
CARDBOARD PRESET  
VECTOR IMAGE



P.S. DID YOU KNOW THAT GIN IS MADE FROM JUNIPER BERRIES?

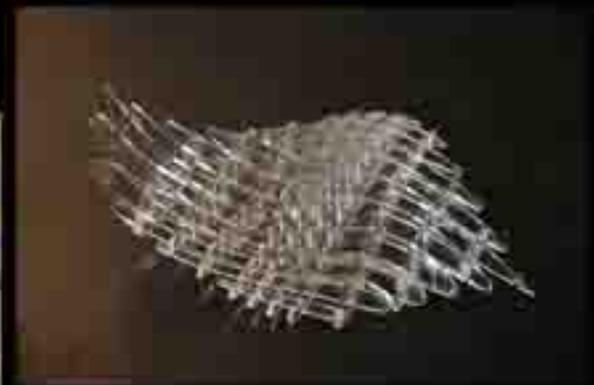
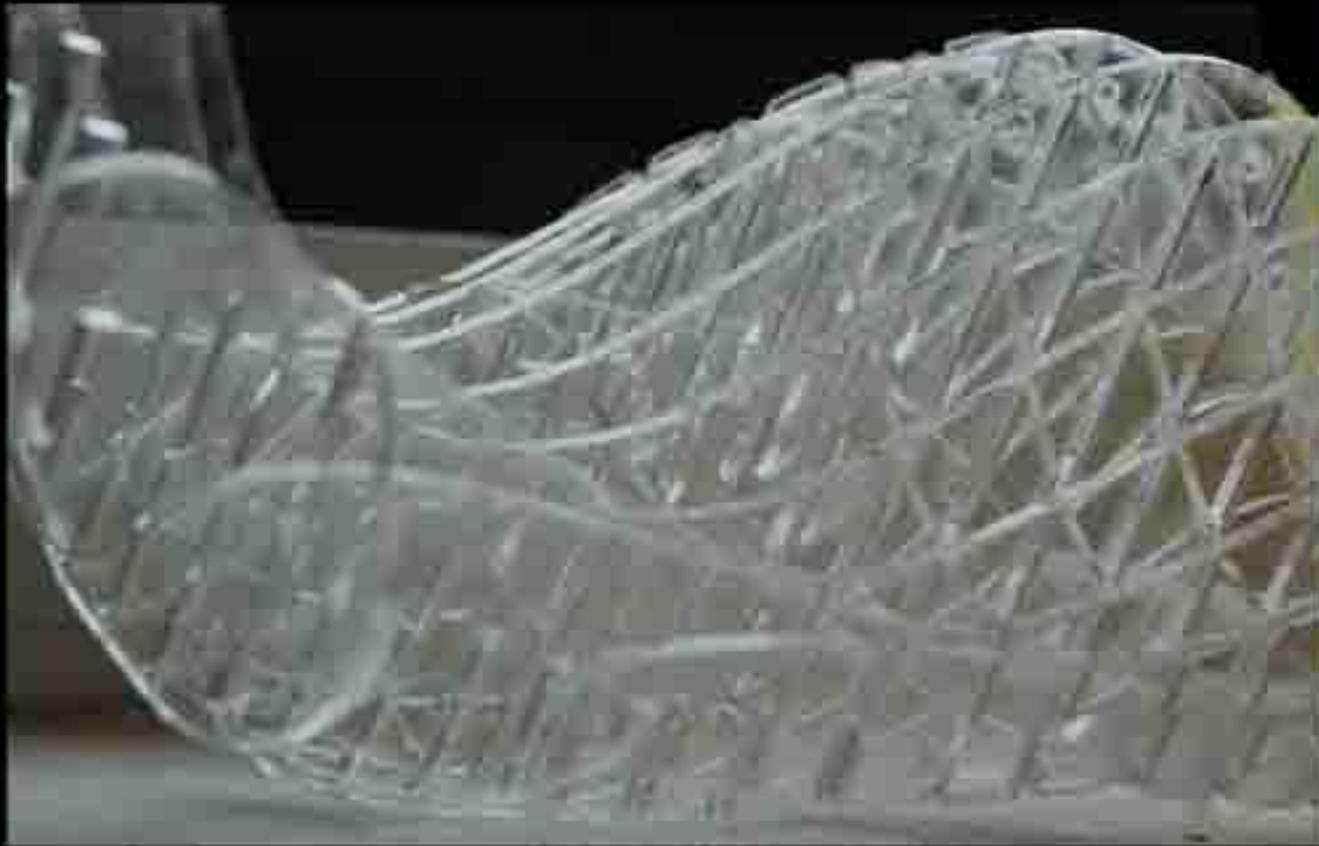
# Terrain Model\_1a



This is the first attempt at a 3D Slice form terrain model. "Egg crate construction is a valuable modeling tool depending on the scale and size of the model. Current sections do not afford the viewer an understanding of detail issues of the site, but does give an easily read overview for the surface. The proposed final will be in 1/8th scale and will stretch a rectangle approximately 500' X 800'.

Issue with this weeks project:

- 1) Notches for putting together the model were only made for the longitudinal sections. Making full construction impossible. A temporary solution has been found by creating a short comb that will, for the mean time, keep these pieces separate for uni-directional reading.
- 2) The time for cutting so many sections through a topo map was severely underestimated.



## Wavy Leaf

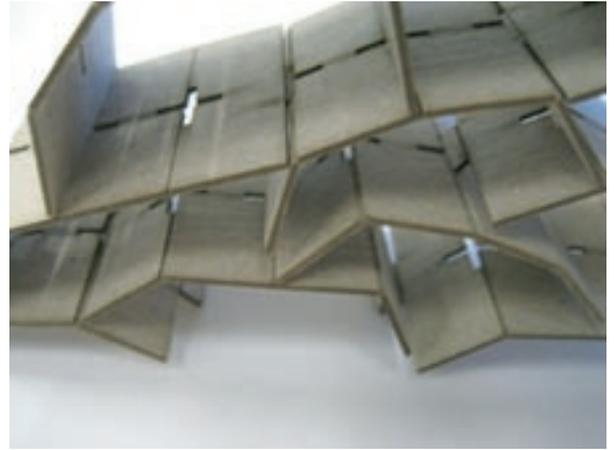
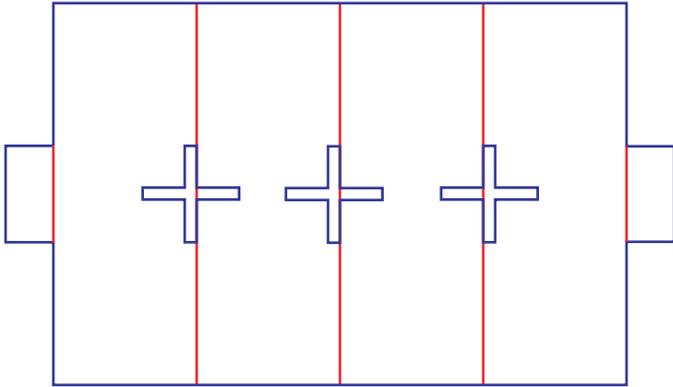
48-514: Digital Fabrication  
Louisa Jauregui::Jessica Kim  
11.07.06



This project developed through the exploration of positive and negative space. The object that we have produced expresses both of these qualities through its wave-like form. In developing a sliceform, the idea of occupied space increased in importance and influenced the execution of our project. By using plexiglass, the relationship between form and light is accentuated. The translation of light and color through its edges enable the movement within the piece to be more apparent.



Space permutation



This assignment uses a modular piece to make many permutable spaces that are formed when the pieces connect. Rather than a singular space that was pre-defined, I thought it would be more challenging and fun to figure out how to make space from a single piece, and how that space would not be constant. In order to do that, I made a piece that can fold and can be connected in different directions into other pieces. The construction becomes like a honey-comb except each hole is a different polygon.

I anticipated the piece would easily allow connections in two directions, but the proportion and dimension of the module made that difficult. It would not be difficult to fix that, however.

As I constructed various permutations with the module, the tension-compression guidelines became apparent. It thus became enjoyable to put it together, because the product was very unexpected. One aspect that I really liked was that a chunk of the structure could be detached, then attached to another area, and the tension-compression of the structure would shift around.

If I pursued this project, I would make the 3D connection possible. Also the connections were loose sometimes, which caused unwanted issues. The scoring lines were just right for the folds.



# Chicken->Egg<-Chicken



Is it a chicken that becomes an egg? Or an egg that becomes a chicken?

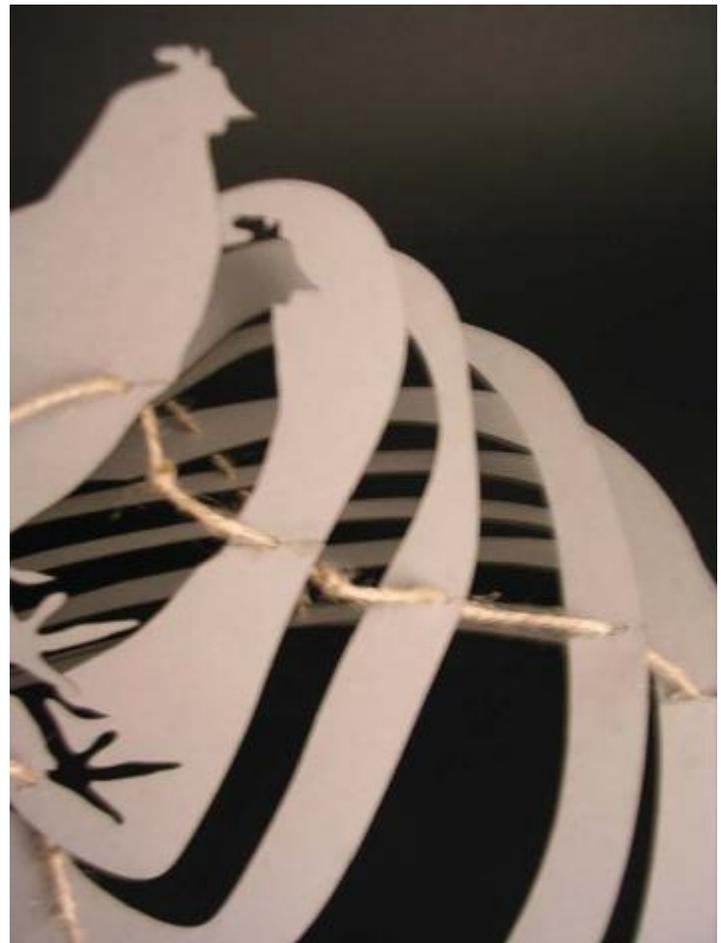
It doesn't matter.

What matters is that the Chegg uses multiple materials to exist dynamically. It can be flattened to two dimensions, or fully deployed in three dimensions.

The Chegg presented us with a few problems:

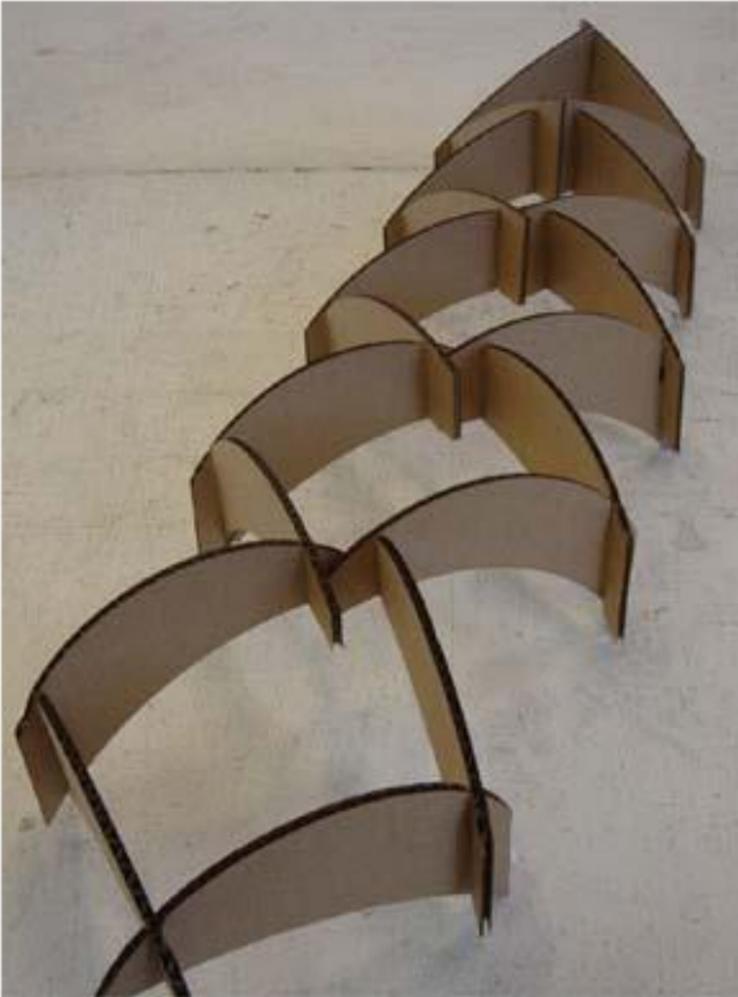
- Some splines were converted to polylines, creating jagged edges.
- It was difficult to accurately space the components along the string system.
- The metaphysics of the Chegg became overwhelming

Greg Tanski  
David Kennedy



# LASER CUTTER SPACE MAKING

PROJECT THREE SANDRA CORDOVA, NIKKI DEBOLSKI



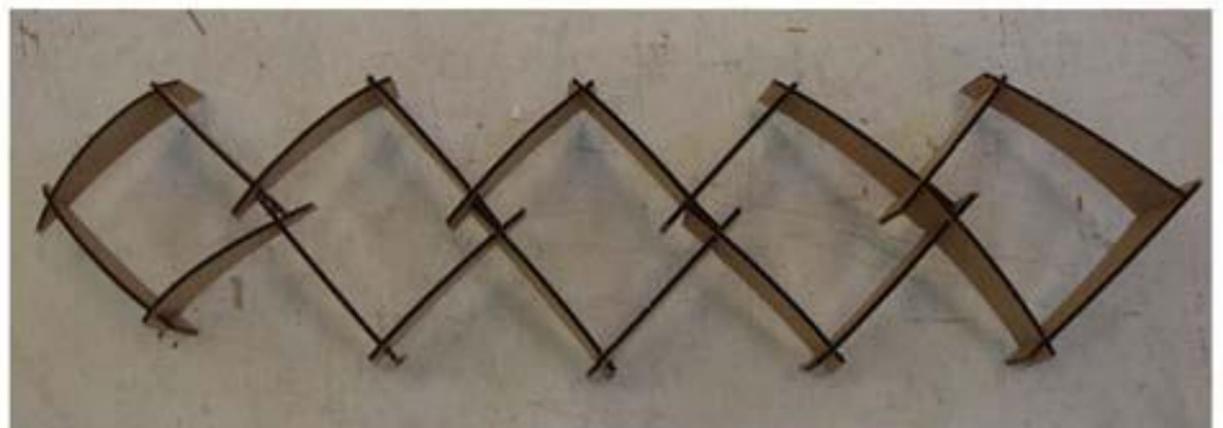
THE GOAL OF THIS EXERCISE WAS THE USE THE LASER CUTTER TO CREATE A SPACE OUT OF FLAT MATERIAL. LIKE THE PREVIOUS PROJECT, THIS ONE ALSO DEALS WITH SLICE FORMS. THIS PROJECT HOWEVER, IS NOT A SOLID, RATHER IT USED INTERSECTIONS TO CREATE A SPACE.

NOT ONLY DOES THE FORM INTERSECT TO CREATE UNIQUE POCKETS OF SPACE, BUT EACH FORM IS PROGRESSIVELY DIFFERENT TO CREATE A PROGRESSION OF FORMS.

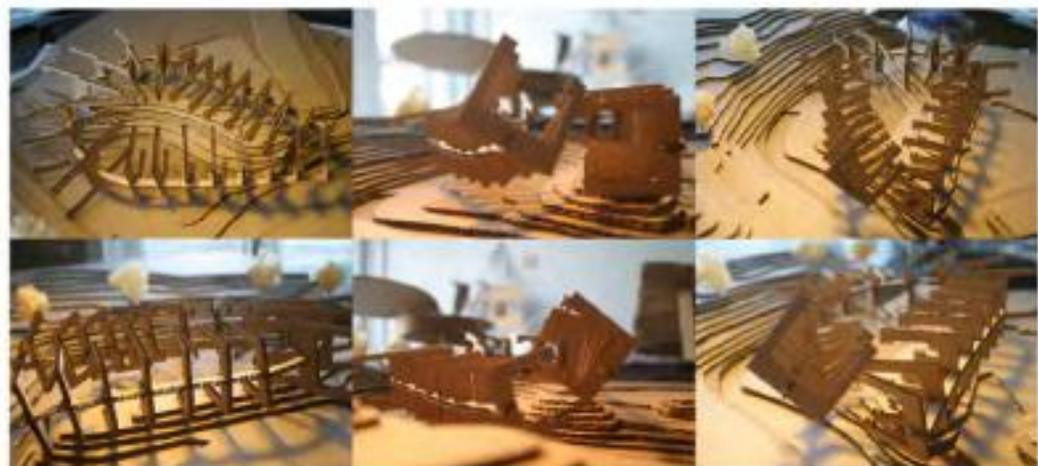
THE SHAPES WERE DRAWN IN 2D WITH AUTOCAD, THEN IMPORTED INTO CorelDRAW.



**SETTINGS:**  
CARDBOARD PRESET  
VECTOR IMAGE

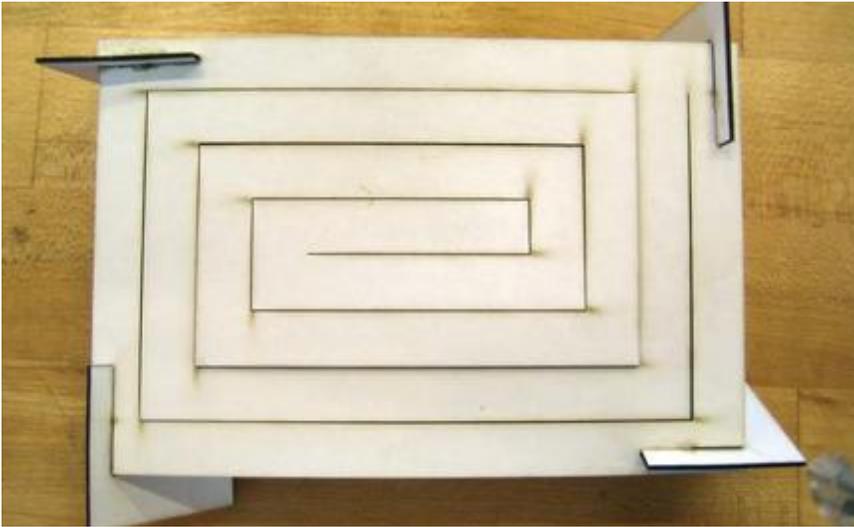


## DIGITAL FABRICATION WEEK 3 - SPATIAL CONSTRUCTION



This exploration was accomplished by using cardboard and the laser cutter to define space. C-shaped elements were carefully designed so that each one fits into the slots of U-shaped core circulation path and accommodate glass window to fit. The finished work expressed a circulation path space inside my building project and using the flexibility of cardboard the path could be bent and rotated slightly to express curvy form. The whole cutting process took around fifteen minutes.

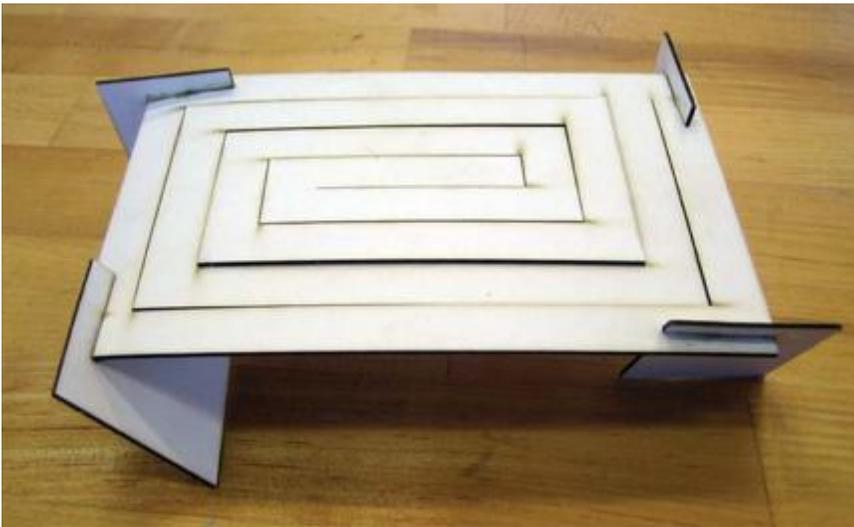
# CREATING SPACE



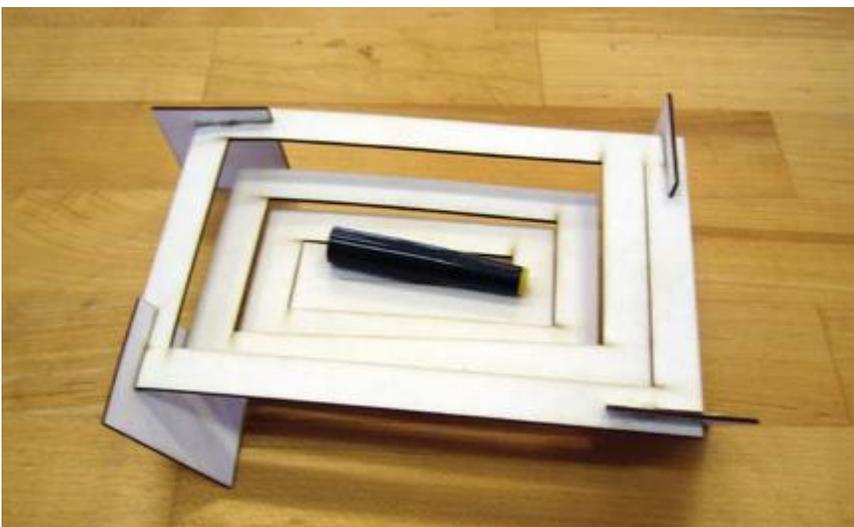
Our goal when approaching this project was to have a space created by the object inhabiting it.

We set out to laser cut a two-dimensional surface that would react to an object being placed in it.

Some problems occurred in the pattern that was to be cut. We tried a spiral pattern but the pattern did not react as much as we had hoped. We tried a few different thicknesses in the pattern and we also tried a few different types of material.



We would need a few more tests before we found a pattern and material that best suits this idea.



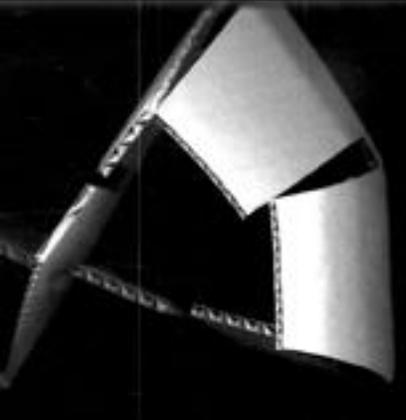
Abdulla Al-Shamsi  
Samuel Abel Espada



## DIGITAL FABRICATION WEEK 3



## SPACE EXPLORATION



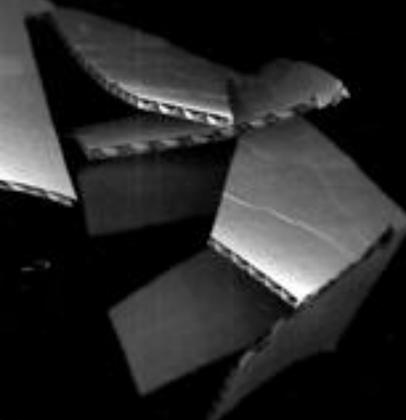
For this week, I wanted to explore how slits can be joined to form variety of different spaces. I cut out slits using the laser cutter on the cardboard and tried to form interesting spaces. I deformed cardboard a little to make more shapes. I liked the flexibility of cardboard which made it easier to build spaces. However, the project could have been better if I designed the slits that would perfectly fit together. It was so randomly cut that it looked a little disorderly. But I think this exploration gave me ideas or future project concepts that could improve and learn from this experience.

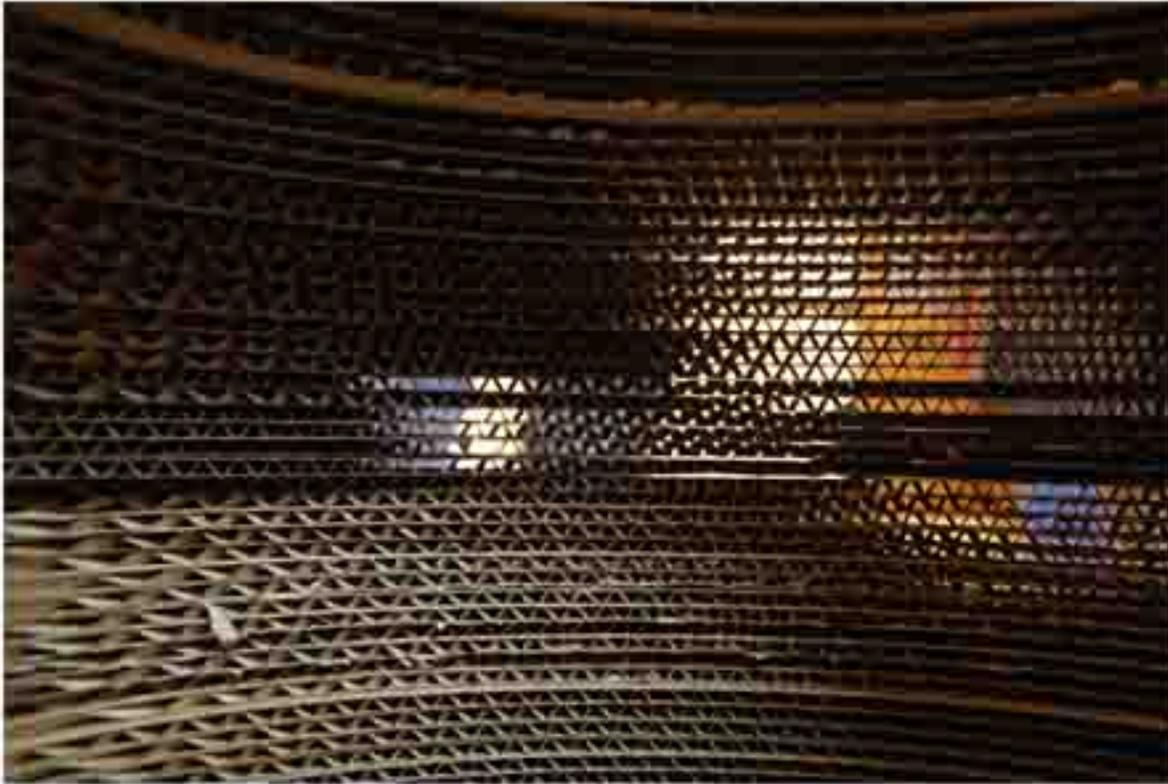


TAE YEOP KIM

FALL 2006

CARNEGIE MELLON UNIVERSITY





Topo Face  
48-514::Digital Fabrication  
Louisa Jauregui::Jessica Kim  
11.14.06

Instead of making an extraneous void or object, we have created an inhabitable space, which is manipulated by the user. The mask simultaneously defines space and alters one's perception of what is beyond the cardboard. The corrugation of the cardboard plays an important role in the function of this mask as it manipulates what can be seen and not seen. The perception of space is altered depending on both the orientation and length of the corrugation. The shorter the length of the corrugation, the broader the view; likewise the longer corrugations gives a more isolated view. The distance of the corrugated bands from one's eyes also affects the way space is perceived in that one sees more when the bands are pushed farther away, and the view becomes narrow as the bands are pushed closer.





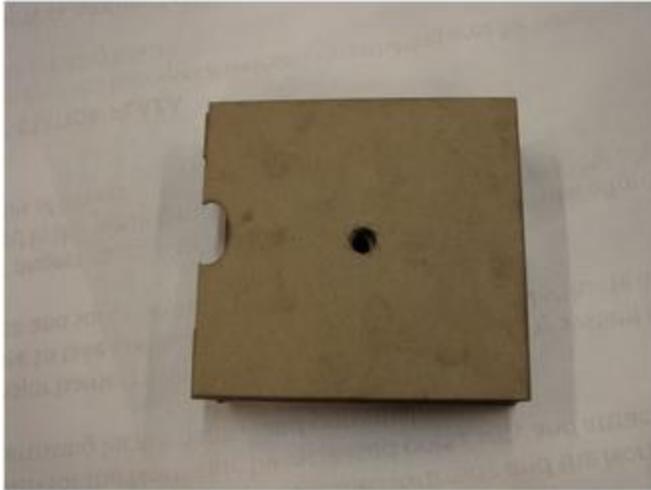
User Defined Evolution  
48-514::Digital Fabrication  
Louisa Jauregui::Jessica Kim  
11.21.06

Through this project we explored the idea of a three dimensional evolution through the conjunction of two dimensional pieces. In working with a circle with an eighth inch radial slot cut out, we experimented with the manner in which a form could evolve through the various opportunities of radial connections between pieces. Aside from this formation of a three dimensional whole from two dimensional parts, another element to this project is the ability for the user to define their own sequence of evolution through the given pieces; the radial nature of a circle provides numerous opportunities for connections. The only restrictions for future connections are those that arise from the placement of previous components.



# LASER CUTTER EVOLUTION

PROJECT FOUR SANDRA CORDOVA, NIKKI DEBOLSKI

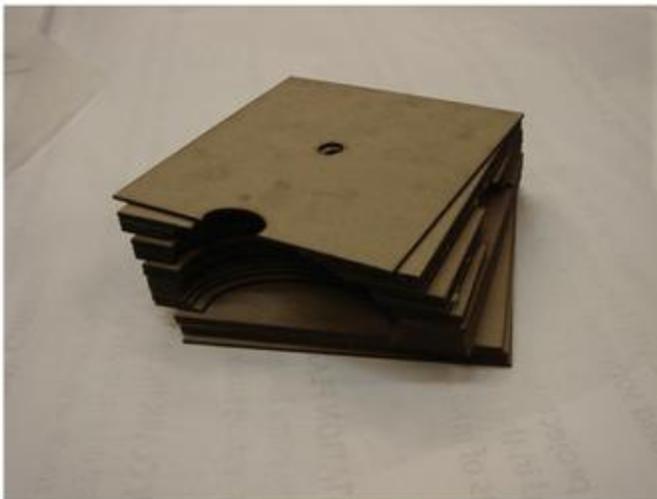


THE GOAL OF THIS EXERCISE WAS THE USE THE LASER CUTTER TO CREATE AN EVOLVING OBJECT. FOR THIS PROJECT WE TOOK INSPIRATION FROM THE RORSCHACH INKBLOT TESTS IN ORDER TO FORM A CUBE MADE OF 20 DIFFERENT EVOLVING FORMS THAT WHEN ROTATED AROUND A DOWL CAN BEGIN TO FORM VARIOUS SHAPES AND IMAGES.



WE ALSO DECIDED TO EXPLORE OTHER MATERIALS IN THIS EXERCISE CHANGING FROM CARDBOARD TO 2-PLY CHIPBOARD. THE RESULTS WERE VERY NICE, WITH THE EXCEPTION THAT THE BURNT EDGES SMUDGED VERY EASILY AND CREATED A SLIGHT MESS.

THE SHAPES WERE DRAWN IN 2D WITH AUTOCAD, IMPORTED INTO ADOBE ILLUSTRATOR AND THEN INTO CorelDRAW.



## SETTINGS:

MATBOARD (.175) PRESET  
VECTOR IMAGE



## From Drawing to Etching

This piece started as a hand drawing, a design for a T shirt silk screen. When it served its purpose as a template for the shirt, I felt that it had more potential and figured the laser cutter could bring it out. I was worried if the drawing was clean enough though, The human eye may not be able to register imperfections in the surface of the paper or when the image is scanned.

My fears were confirmed when I first scanned in the image, the scanner bed was filthy and left several swatches of dirt and score lines. I spent a few minutes cleaning up the image and when I felt comfortable about the quality, I transferred it into Adobe Illustrator.

At the laser lab, I put the image in the laser cutter as an etching and watched it fly through the image line by line. My eyes started to strain from just watching it.

Power 50 Speed 100  
and set to laser etching

Daniel Tse  
Digital Fabrication  
Dec 1 2006





## Laser Aided Design Application

After several failed trials of trying to etch the floor plates for each island block I decided that the entire effort put forth to etch the board shouldn't go to waste. I arranged all of the footprints of the individual buildings in Adobe Illustrator and let the laser cut the footprints right onto my hardwood boards so that I would have the template for all the buildings already on the wood.

Proved to save a lot of time by not needing to sand off the drawn on glued on template later on and allowed me to apply much more detail during the cutting process because of the clearly demarcated lines on the board.

Power 50 Speed 100  
and set to laser etching

Daniel Tse  
Digital Fabrication  
Dec 1 2006

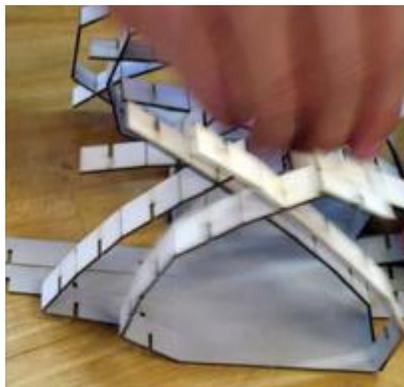
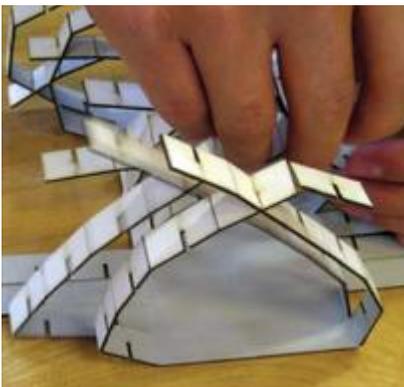


# EVOLUTION

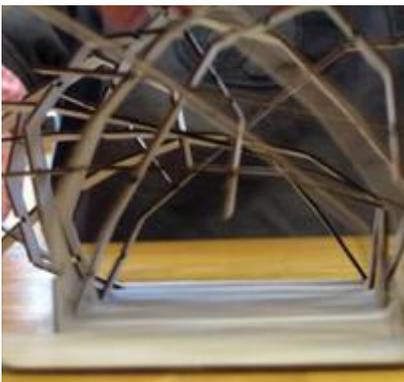
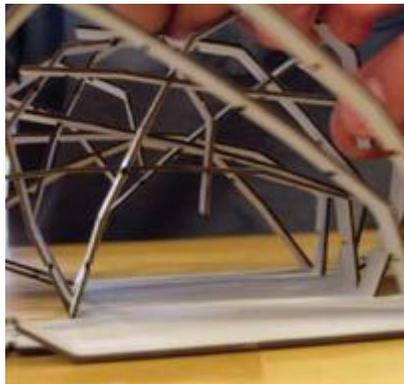
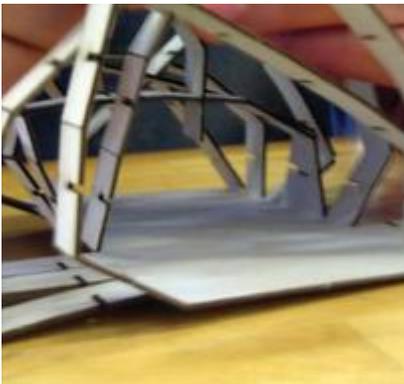


Again our exploration was about how a two dimensional surface can be affected or react to its context.

In this situation our focus was on how the end user can manipulate the surface. There are many possibilities as to what the end product can be, but at the same time the possibilities are limited to what was drawn.

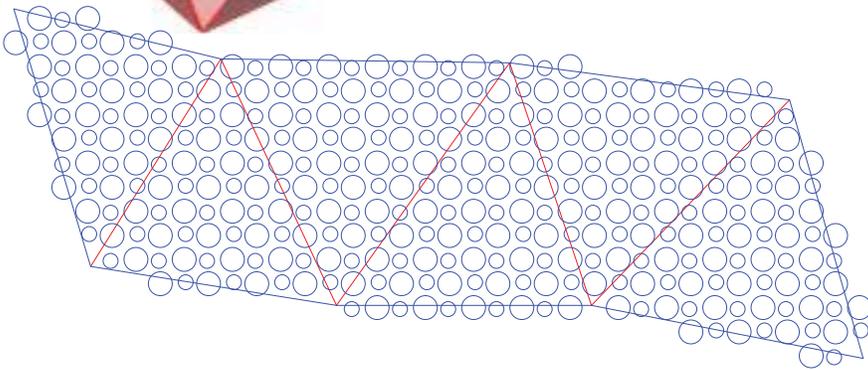
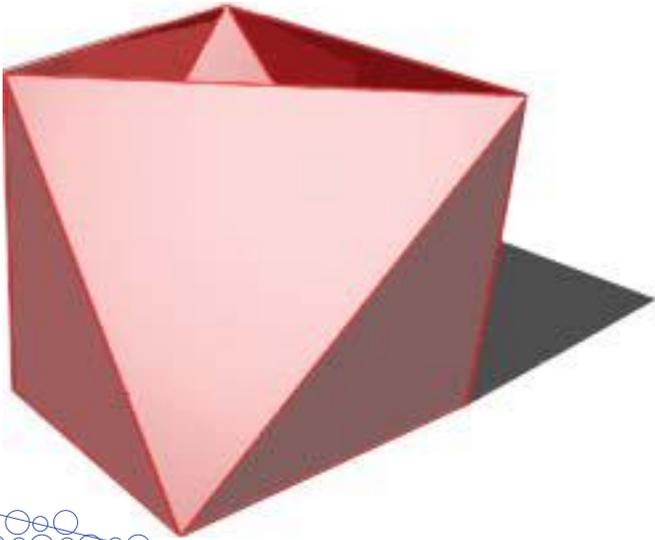


I was interesting to see that during the presentation of this project people folded it in ways I had not thought about. I had only envisioned the pieces "interlocking" once, but during the presentation people began two overlaps with one set of fingers.



**Abdulla Al-Shamsi**  
**Samuel Abel Espada**

# LAMP SHADES

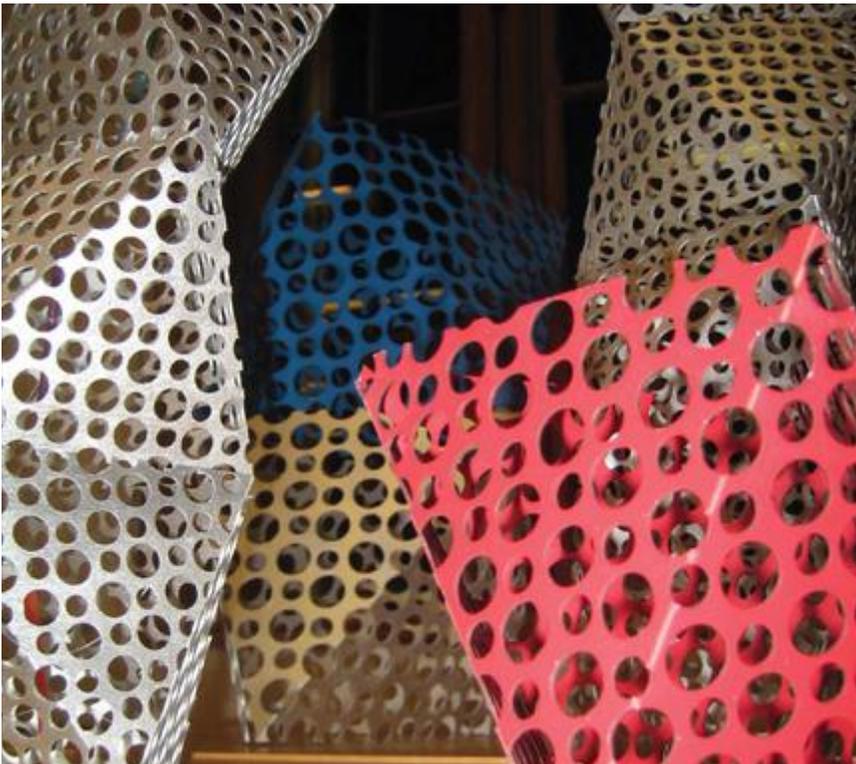


In the “lamp shades” project our approach was to have our two dimensional surface capture volume.

Rhino was used to make the form and then the surface was unrolled and projected to manipulate as a drawing.

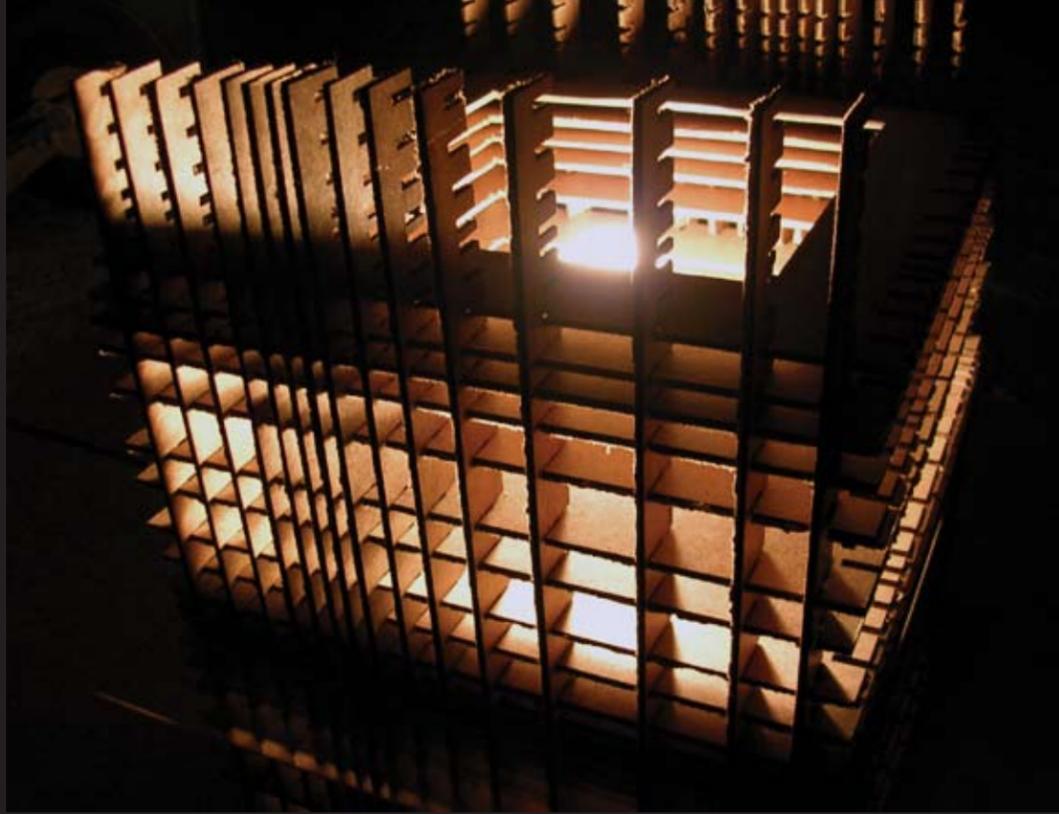
The pattern was then later added in Illustrator. After the reviews it would have been better had the pattern been generated by some software to create a variance.

The forms become more interesting when stacked on top of one another creating shapes that were not intentional.



Abdulla Al-Shamsi  
Samuel Abel Espada

The design process began by considering the transference of light through flat, opaque material. The test subject was a lamp. Lamps are typically made of two members: an opaque stand and a transparent/translucent shade. We sought to create one member that was both stand and shade, both opaque and translucent.



Gregory Tanski

David Kennedy

# THE CHAMP

The Champ is fabricated using slice-form joints, with two systems of orthogonal members in space.

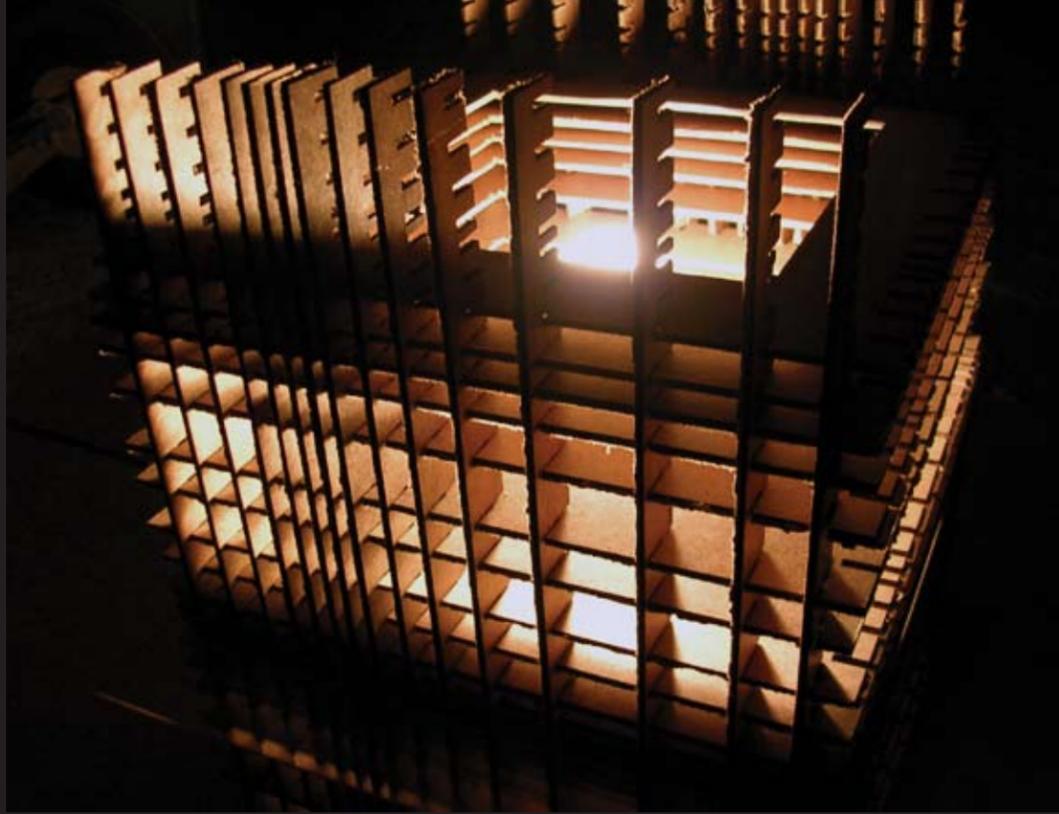
This method produces characteristic results. However, we modified the usual slice form and varied the spacing of the joints, in the x, y, and z axes. This produces a more dynamic lighting effect, where light distribution across the surface is not uniform.

The Champ is user-manipulable. The position of the light bulb is adjustable for different needs.

This also has the effect of changing the way the light interacts with the solid forms.



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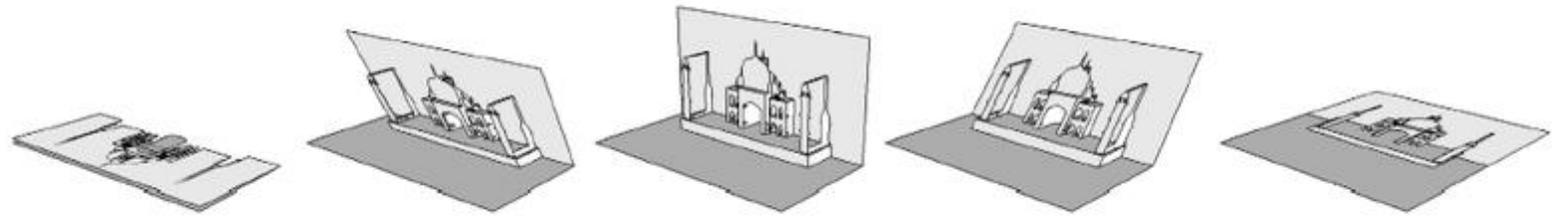
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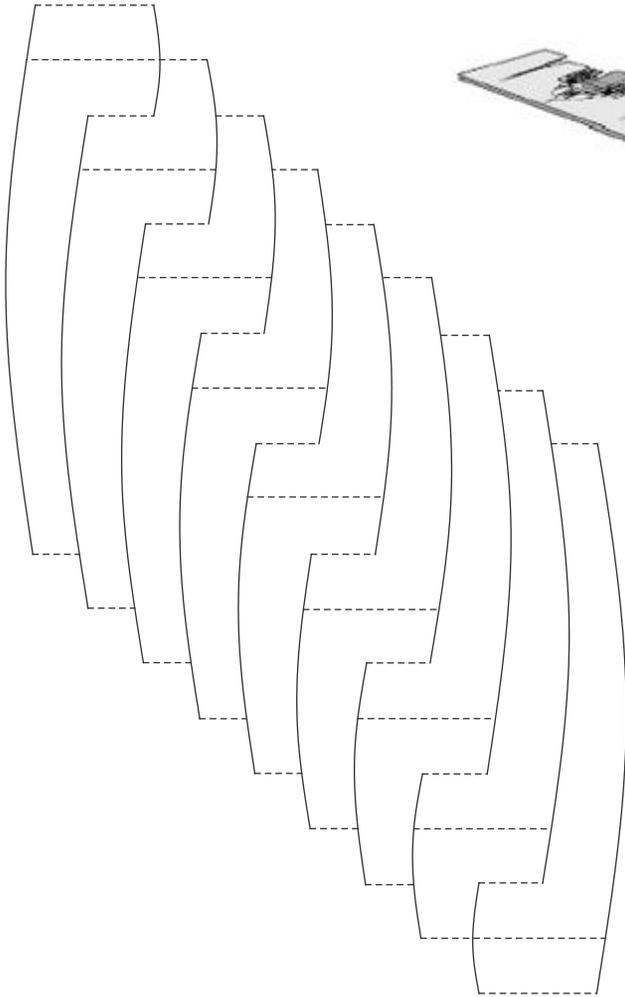


Animation of the folding action of origamic architecture as pictured here in the paper representation of the Taj Mahal.

digital fabrication\_origamic architecture  
zero degrees<math>\theta</math>ninety degrees  
kristina ricco

Designing with a laser cutter presents interesting restrictions on use given the tool's limited ability to cut normal to a surface. Inspired by the first year studio project, designing 3D space by cutting, scoring and folding, I chose to revisit these ideas using the laser. Folded lines have to be straight, given that curved planes do not fold very well, however cut lines could be curved at will. This restriction creates a parallel between the two actions of cutting and folding, where both exist at one of 3 values, 0, 90 or 180 degrees.

I hope to further explore some of these ideas within the realm of the increasingly popular study of mobile architecture. Other possibilities could include space saving furniture, which when not in use, stores flat. To make this transition, lines that are folded by perforation would become joints which would require hinges.

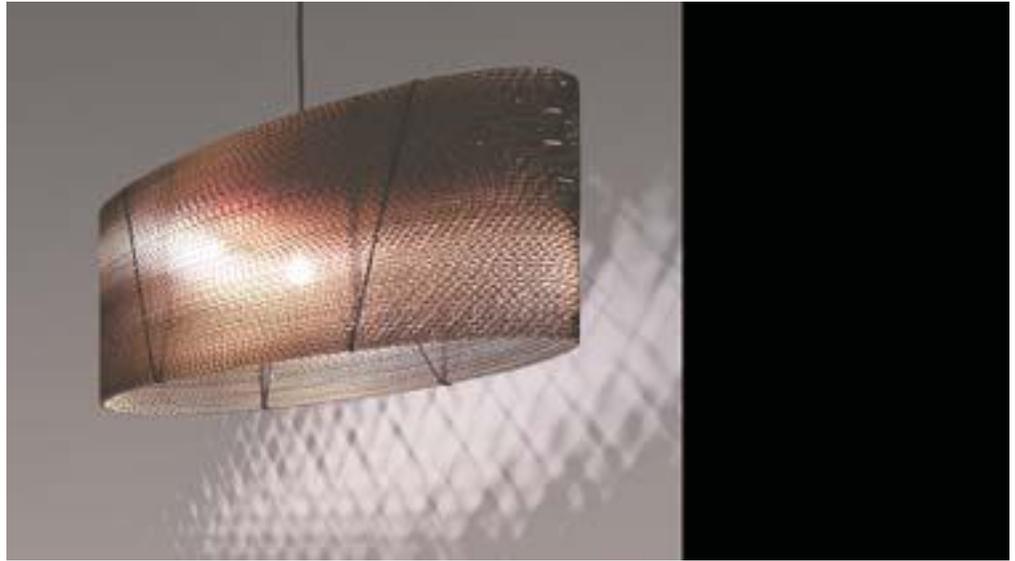


# PRECEDENT STUDY

THE CORRULAMP LIGHT SERIES IS DESIGNED BY THE ARCHITECTURAL RESEARCH OFFICE (ARO). IT USES THE LASER CUT CORRUGATED CARDBOARD AS A LAMP SHADE. THE LASER CUTTER IS NECESSARY TO CUT THE CARDBOARD INTO THIN AND UNIFORM SHAPES. WITHOUT A LASER CUTTER THE CLEAN CRISP LINES OF THE CARDBOARD WOULD NOT BE POSSIBLE.

THIS PROJECT INSPIRED ME TO FOCUS MY EFFORTS THIS SEMESTER ON CREATING THIN WALLED CARDBOARD STOOLS THAT CAN ACT AS LIGHT SCULPTURES.

THE MOST INTRIGUING PART OF THE PAPER LAMPS ARE THEIR STRUCTURE. THE CORRUGATION PREFORMS AS BOTH THE STRUCTURAL ELEMENT AND AS THE LIGHT MODULATOR.



# CARDBOARD STOOL[lamp]



THIS PROJECT WAS DEVELOPED AS A STUDY FOR A CARDBOARD STOOL THAT WOULD LIGHT UP. CONTINUEING WHAT WAS LEARNED IN THE PRECEDENT STUDY, THE MOST IMPORTANT ASPECTS OF THIS DESIGN ARE THE THICKNESS OF THE STOOL WALLS. THE THICKNESS DETERMINES BOTH THE STRUCTURAL CAPABILITY OF THE CARDBOARD STOOL, BUT ALSO ITS ABILITY TO FILTER LIGHT.

IN ORDER TO STUDY THE OPTIMUM WALL THICKNESS I ROTATED TWO CATENARY CURVES AROUND THE ACCESS. THIS ENSURED THAT THE ENTIRE WALL THICKNESS WAS HELPING TO SUPPORT STRUCTURAL LOAD. THESE EQUATIONS WERE DEVELOPED IN EXCEL AND DRAWN IN CADD.

I WAS ABLE TO TEST THE CAPABILITIES OF THE STOOL BY FABRICATING THE STOOL IN SECTIONS. I THEN ADDED SECTIONS WITH THINNER AND THINNER WALL

JEFF BOURKE



WEEK TWO



sheet number	'y' value	'x' value - radius of circle		
1	0.125	5.375		
2	0.25	4.86895		
3	0.375	4.2209		
4	0.5	3.44875		
5	0.625	0		
6	0.75	0		
7	0.875	0		
8	1	0		
9	1.125	0		
10	1.25	0		
11	1.375	0		
12	1.5	0		
13	1.625	0		
14	1.75	0		
15	1.875	0		
16	2	0		
17	2.125	0		
18	2.25	0		
19	2.375	0		
20	2.5	0		
21	2.625	0		
22	2.75	0		
23	2.875	0		
24	3	0		
25	3.125	0		
26	3.25	#NUM!		
27	3.375	#NUM!		
28	3.5	#NUM!		
29	3.625	#NUM!		
30	3.75	#NUM!		
31	3.875	#NUM!		
32	4	0		
33	4.125	0.997413975		
34	4.25	1.40694956		
35	4.375	1.718796875		
36	4.5	1.979731692		
37	4.625	2.207930893		
38	4.75	2.412746395		
39	4.875	2.599751386		
40	5	2.772588722		
41	5.125	2.933796834		
42	5.25	3.085229837		
43	5.375	3.228291882		
44	5.5	3.364077288		



**THICKNESSES UNTIL THE STOOL FAILED.**

**CONDUCTING THIS EXPERIMENT ALLOWED ME TO TEST THE FEASIBILITY OF MY IDEA BEFORE TIME WAS COMMIT ED TO THE DESIGN OF A STOOL FORM. I DISCOVERED THAT THE WALL THICKNESS NEEDED TO SUPPORT 200 LBS IS APPROXIMATELY 5/16” THICK. THIS THICKNESS DID NOT ALLOW LIGHT MODULATION TO OCCUR AT THE DESIRED LEVEL.**

**THE PROJECT WAS NOT A TOTAL FAILURE AS IT DID POINT ME IN ANOTHER INTERESTING DIRECTION. THE BEST ASPECTS OF THE STOOL MODEL WAS HOW THE CURVED GEOMETRY AND CORRUGATION CREATED A SOFT GLOWING FORM. THE LAMP DID NOT PRODUCE A LOT OF LIGHT, BUT THE SHADOWS CAST BY THE CORRUGATION WERE DELECITE AND PROVOCATIVE.**

**I DECIDED TO FOCUS MY NEXT EFFORT ON CREATING A LAMP THAT CAPITALIZED ON THE STRENGTHS LEARNED IN THIS PROJECT.**

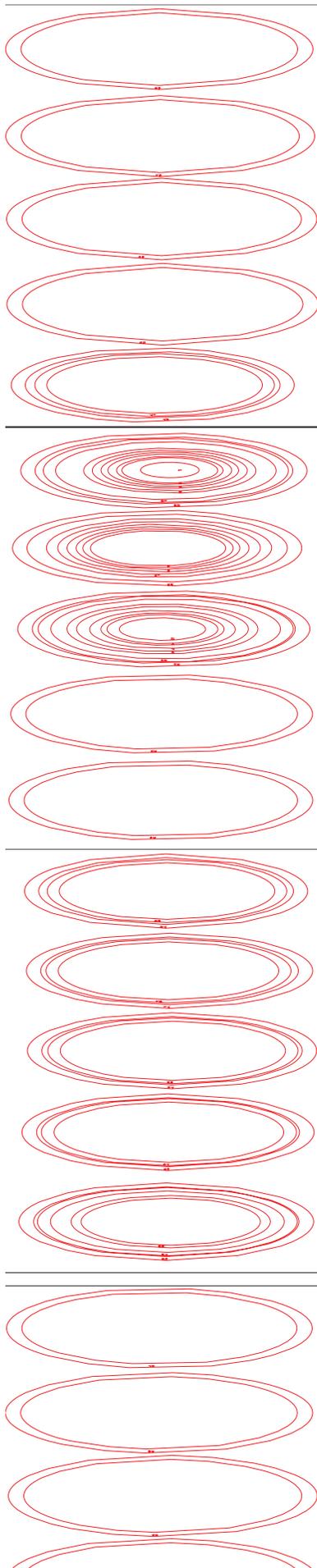
# CARDBOARD LAMP



THIS CARDBOARD LAMP WAS BUILT TO ACT AS A LIGHTING ACCENT. IT GLOWS SOFTLY WHEN THE LIGHT IS TURNED ON AND PROJECTS DELECITE SHADOWS AROUND THE ROOM.

THE GEOMETRY OF THE PIECE HELPS IT TO PROJECT LIGHT EITHER UP OR DOWN, ONTO THE CEILING OR FLOOR. THIS ALLOWS THE PIECE TO EITHER BE HUNG OFF THE CEILING OR TO BE LEFT ON THE GROUND TO ACT AS A ROCK.

THIS PIECE WAS SUCCESSFUL IN DEFINING A SURFACE THROUGH LIGHT AND SHADOW. IT LED ME TO MY NEXT PROJECT WHICH DEALS WITH CREATING SURFACES OF LIGHT AND SHADOW.

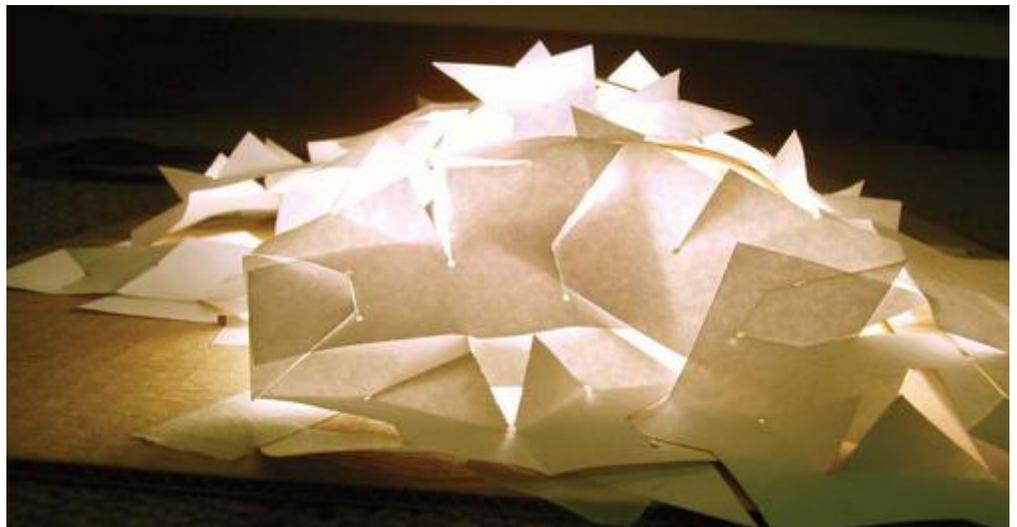


# MODULAR LEAFS

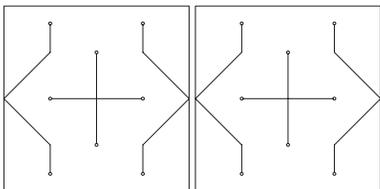
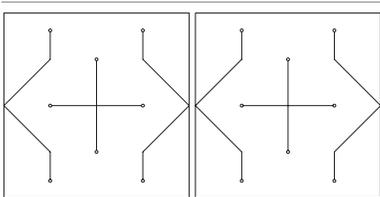
MY FINAL PROJECT CREATES A MODULAR SURFACING SYSTEM THAT CAN THEN BE USED TO MODULATE LIGHT. PAPER SQUARES ARE LASER CUT IN MASS QUANTITIES. THESE PAPER SQUARES SLOT TOGETHER AT ANY OF THEIR FOUR CORNERS. THE CENTER OF THE SQUARES ARE CUT TO FACILITATE FOLDING AND CREATING A HOLE. THE LIGHT IS THEN MODULATED THROUGH THE HOLE IN THE CENTER AND THROUGH THE GAPS BETWEEN THE SQUARE MODULES.



THE FLEXIBILITY OF THE MODULES ALLOWS THEM TO BE BENT AND FOLDED TO CREATE A WIDE VARIETY OF LOCKING CONDITIONS. THE INTERLOCKING NATURE OF THE MODULE SURFACE LENDS IT A DEGREE OF STRUCTURAL RIGIDIFY. LIGHT IS THEN MODULATED THROUGH THE PAPER ITSELF OR THROUGH THE HOLES IN THE PAPER.

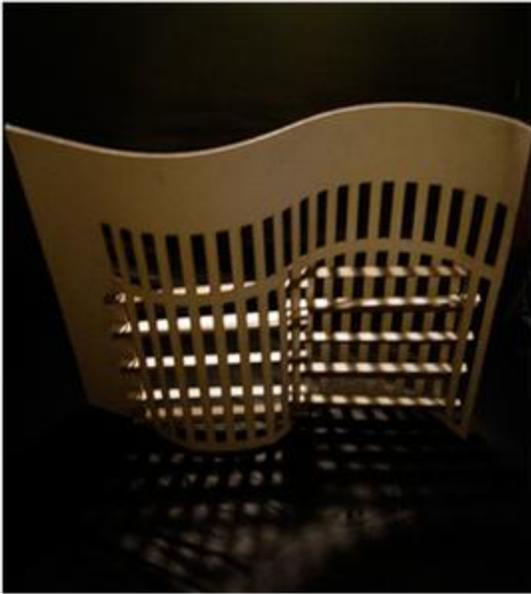


THIS SYSTEM ALLOWS FOR THE CREATIVE COVERING OF ANY SURFACE AND TURNS THAT SURFACE INTO A LIGHTING ELEMENT



# LASER CUTTER FINAL PROJECT

PROJECT FIVE NIKKI DEBOLSKI



STUDY 2

STUDY 1



For the final project, I wanted to explore how both the cut shapes as well as the material from which those shapes were cut out could be used together to create one object, in this case an exploration of screens.

In my study I created three different objects using different methods of assembly. The first screen (right most picture) was simply a study of the material scraps, which themselves alone start to create interesting forms. Most often the scraps are overlooked, but they can also result in being interesting projects.

The second study was an assembly of the desired pieces that were cut from the raw material. This screen was formed by joining two pieces of chipboard and matboard together in the center and having the other sides connected by a dowel.

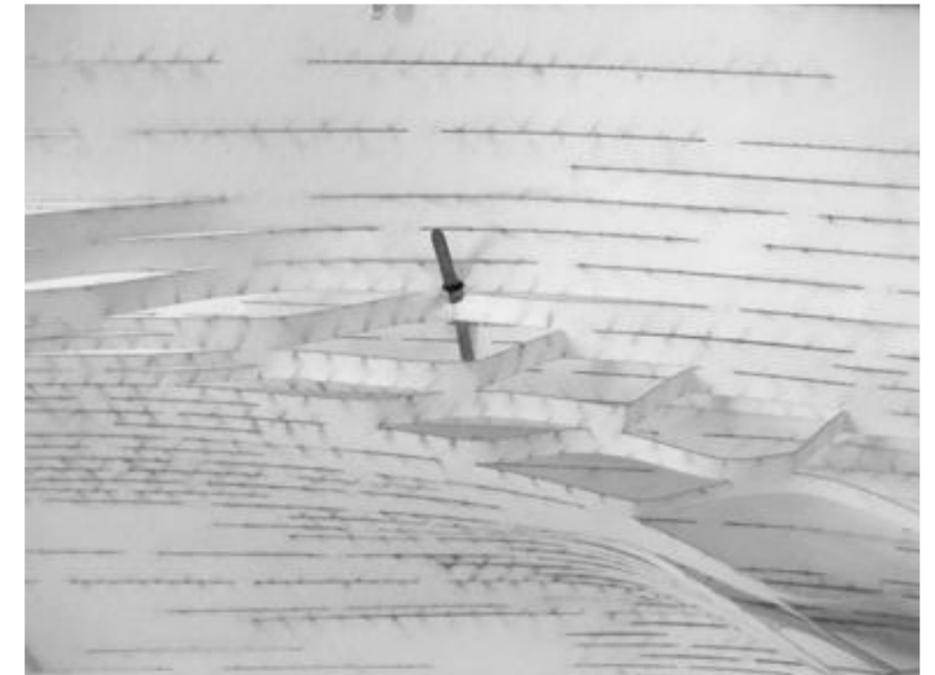
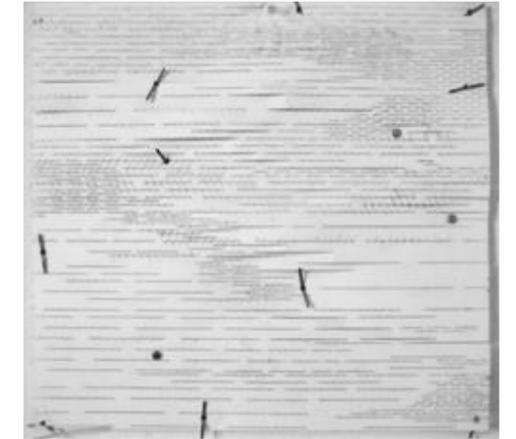
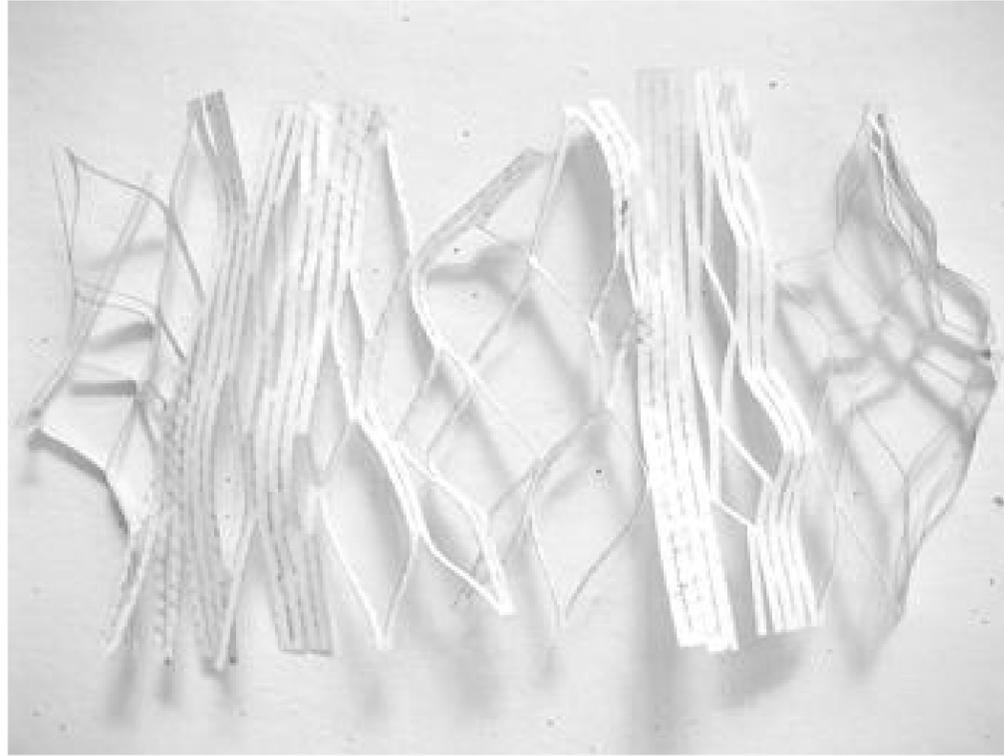
Lastly, and perhaps the most interesting, combines both the "waste" and cut shapes to create a screen that breaks away from the rectangle and starts to take advantage of other configurations. The curve actually was the unexpected (but intriguing) result of inserting the long strips of chipboard into the larger sheet.

I think that this exploration is a good example of looking at process as well as looking at both the resultant material as well as the leftover material as forms that could be used individually or combined to create interesting work.



STUDY 3

Technically, the process was simple. Using the preset plain paper settings on the laser cutter, the only consistent problem was small burn marks along the cut lines.



The project is developed by cutting lines in plain paper. Although the first goal of the project was to simply make volume by 2d materials, I became interested in the topic of material mutation via cutting. After four iterations, I was realized that the length and displacement between the cuts and lack of a margin on the paper are the factors that influence the stretched form. The first assignment acknowledged the paper as a single plane, but by the final project, I noticed the paper could warp on itself and be pulled in any direction. The combinations of stretching force and location are infinite. When the stretch is released, the paper wrinkles back to its flat shape.

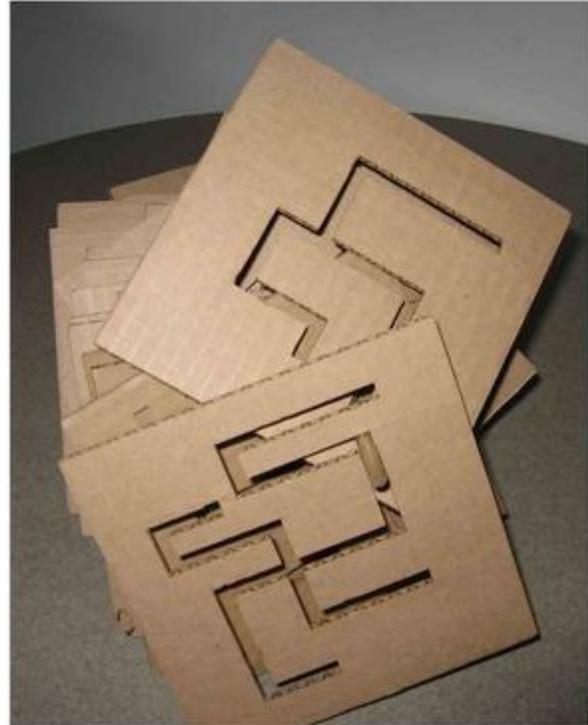
The last iteration of the project involved two of the cut papers connected together at pinned anchor points. Like this, the plane defined a more specific space and suggests the cut paper can be stretched from the same point in opposite directions.



Greg Tanski  
David Kennedy  
Digital Fabrication  
28 November 2006

## THE MAZZLE

In designing this week's project, our goal was to create something that could move in multiple directions. We decided to create something that was focused on a center axis to allow each of its parts to move independently of each other. The individual pieces share only one location where the dowel passes through all of them and allows each of the individual pieces to line up to create a rectangular prism.

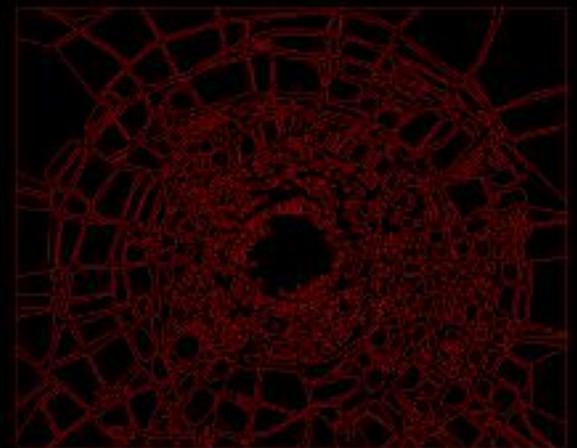


Upon completion of this project, we realized that some of the shortcomings were in lack of rigidity between the dowel and the planes, as well as the restraint of movement that the dowel creates.

# DIGITAL FABRICATION FINAL PROJECT

## BROKEN GLASS

The broken glass was created by using the transparent material(plexi), cardboard (support) and the laser cutter. The lines of cracks were drawn in autocad and then transferred to laser cutter. This was an intention to express accuracy and cleanliness of the laser cutter in a simple manner. It would have been better if a baseball was cut in half and glued to the center of glass. Also powders of shatted pieces could have been sprayed over the ground for display purpose. Title was engraved with raster cut on the left-over plexi. The final resolution was over my expectation. It looked very much realistic and fragile. I was once again appreciated by the power of the laser cutter and its capabilities. It was a fun experience.



# Digital Fabrication: Final Project

## Raster Image Exploration

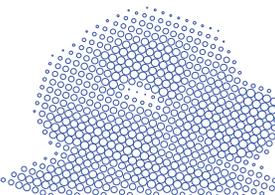
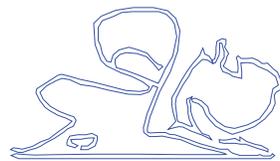
For the final project, I decided to explore what I find to be the most fascinating aspect of using the laser cutter. Using a digital image of a computer model made on 3D Studio Max, I imported it into Photoshop and applied different filters and effects in order to test which method would look best printed with the laser cutter.

At the time of printing, I played with the settings for doing raster images on cardboard. Printing two sets of the images below at 600dpi and 300dpi yielded different results. The higher the resolution on the image, the closer together that the laser burns the lines and it started to burn the cardboard slightly. By lowering the resolution, I was able to achieve the printed image without the burning. Changing the power settings also played a part of the process. At 5% power, the laser burned through the first layer of cardboard to reveal the corrugation underneath, giving me some very pleasant results. At 2% power, the image was lightly burned on the cardboard, and while not unpleasant, it wasn't as dramatic as the image at 5% power.

The accuracy of the laser was really showcased by this exploration, due to the fine detail that some of the images called for and that the laser delivered.

Overall, the images that looked best were the top right and the bottom right because of the detail and contrast. Sending in a regular raster image without touch-ups will not work because the laser can't tell the difference between different tones of grey or between colors. The best images are the ones that were completely black and white, usually made up of dots or dashes.

The laser portion of the project took about 2.5hrs.





Presence\_Absence  
48-514:Digital Fabrication  
Louisa Jauregui  
12.13.06

For my final project I have investigated the roles of positive and negative space as each relates to human occupancy. In this project, I have created a mass capable of disjoining to become two distinct volumes: mass and void. Although this formal presence and absence may seem obvious, what I have found to be interesting is the way in which an absence of form, such as the voids formed through separating this object, can become a present space to occupy. Thus, mass and void can be seen as relative terms, for what one may see as a void may be someone else's space; likewise, what may be defined as mass or presence, may be inhibiting one's occupation of some space such that this mass becomes a sort of uninhabitable absence.

In using polystyrene insulation, the surface is not only comfortable, but also possesses a texture that responds in interesting ways when exposed to light that may vary in intensity or color as shown above where natural light was shown upon it through a sheet of colored translucent paper. This material is messy in terms of how much it sheds little pieces of itself everywhere as styrofoam does; however, the laser cutter cuts it with ease and precision leaving a smooth, clean cut through the material.

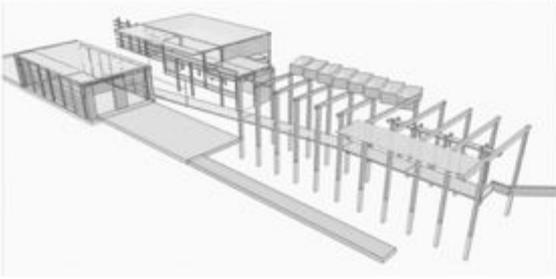
The object I have created was the result of displacing the arc of a circle by 1/4" and then inverting the direction of this displacement such that one half of the mass created through layering these panels becomes a convex, recessed form that allows someone to sit within it, and the other half forms a concave, mound-like form which can be leaned upon while sitting on the floor

# Explorations

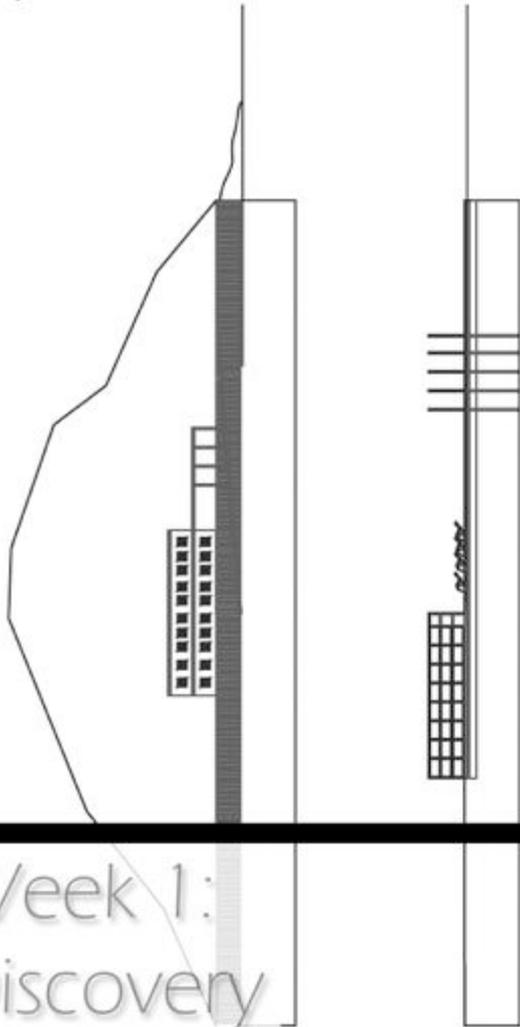
Christian Wagner

48-514 - Digital Fabrication

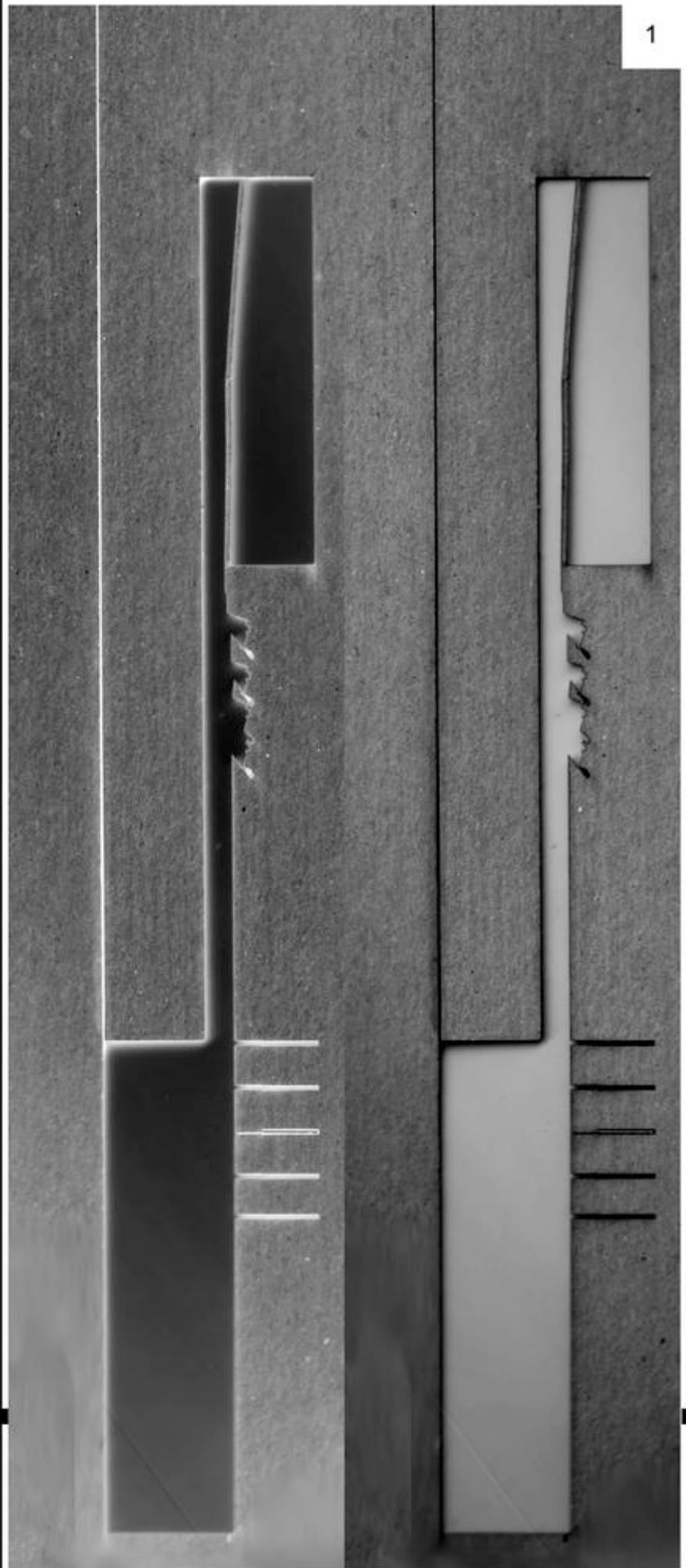
Fall 2006



This was the first attempt at the laser cutter. The idea I wanted to pursue was to create a series of sections that could show the difference between the Boat Storage Area and the boathouse. In doing this with different materials, one could see the relationship of the water to the adjacent buildings, as one floats and one is static. As a result, My line types overlapped and most of the spaces that were supposed to be engraved were fully cut, creating a negative image of my intent. For the next iteration, I plan on introducing the plexiglass material, and understanding how we can cut and paint to attain a translucent sections in order to depict movement over the course of time.



Week 1:  
Discovery



# Puzz 3D

Precedent Study



Christian Wagner

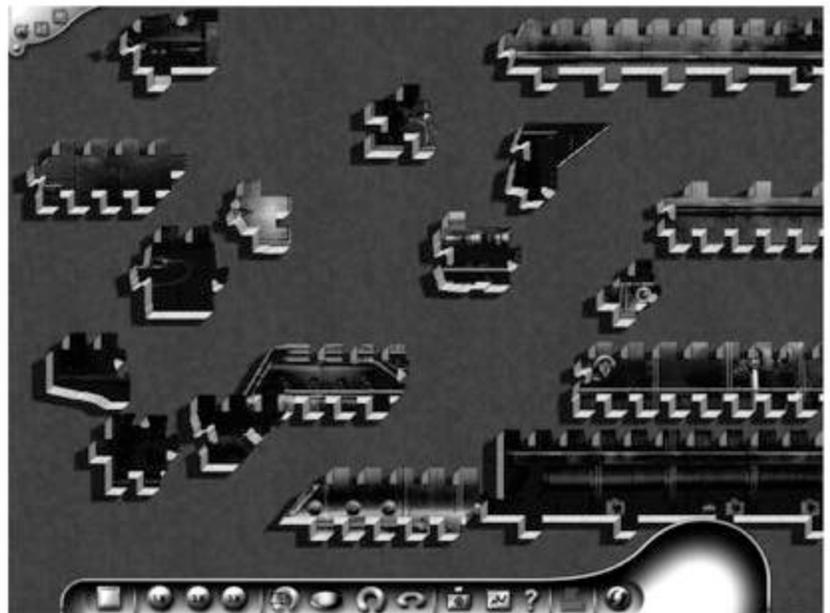
Fall 06- Digital Fabrication Media



Week 1:  
Discovery

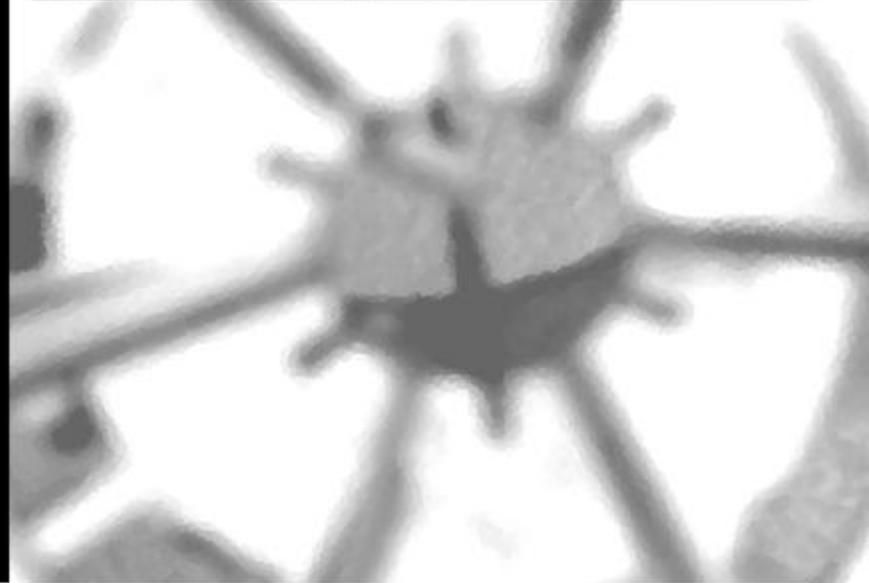


When I was little, I remember spending begging my parents to buy me the Vatican Puzz-3D, the hardest puzzle that existed at that time. From there, I worked to build the Taj Mahal. This, in combination to my fascination with Leggo's, made me realize that I wanted to be an architect more than anything in the future. Puzz 3D, however, couldn't have existed without its creator: the laser cutter. The laser cutter allows for flat surfaces to be broken up into pieces of a puzzle. This, to an extent, is the dematerialization of what a laser cutter can do. Instead of creating a form, it deforms a pre-existing form to satisfy the needs of the puzzle. This is a way to perceive this new technology as not merely cutting pieces and putting them together.



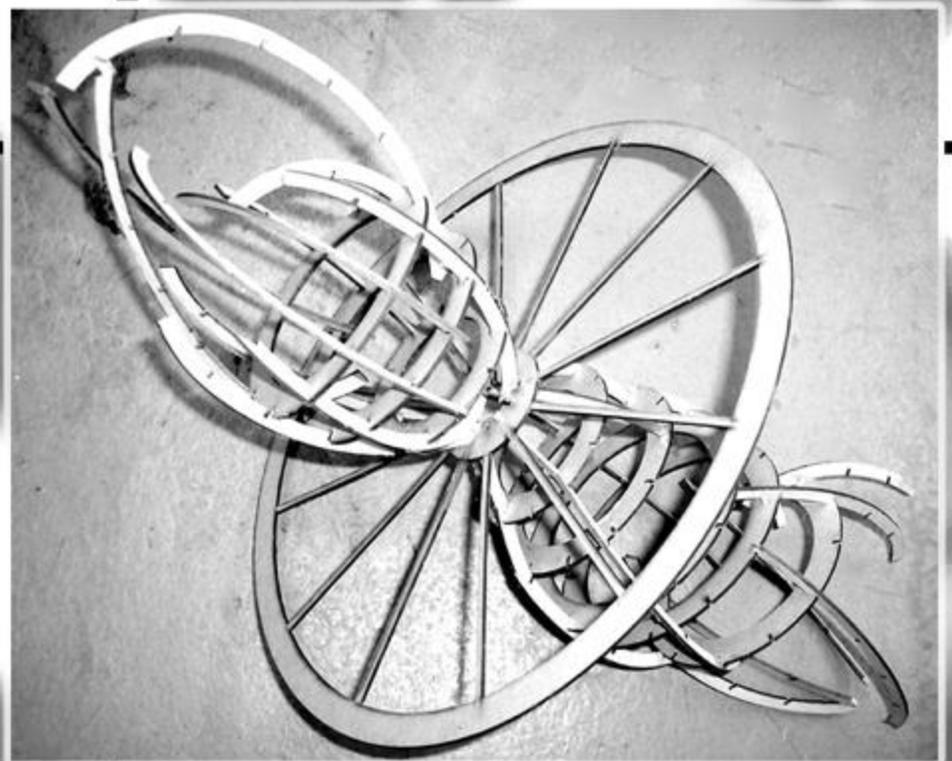
This assignment proved to be as much of a lesson on what not to do as a lesson on what to do. We approached the project by designing a series of vertical ribs and horizontal circles that would combine to produce an hourglass-like formwork when complete. However, we failed to take into account a few important properties of the material. First of all, it is important to allot for thickness tolerances in the material. Both the aircraft bass and the chipboard were supposedly 1/8" thick, and so we used autocad's precision to cut our half-flap slices to just that dimension. In practice, this made the joints so tight that it became very difficult to snap them together. Snap is the best word, because that is exactly what the basswood seemed to do every time we tried to force it into its slots.

If we were to attempt this project again, we would allow for thickness tolerances in the joints. Probably, a 1/64" increase in overall dimensions would fix the problem and allow for easier assembly. Another consideration for the future is the appropriateness of the material. Aircraft bass proved to be too fragile when cut into thin rib-like sections, especially after these ribs were perforated by half-flap notches.



## Week 2: Slice Forms **Slice**

Coleman Rusnock - Christian Wagner  
Digital Fabrication  
Assignment 2-Slice



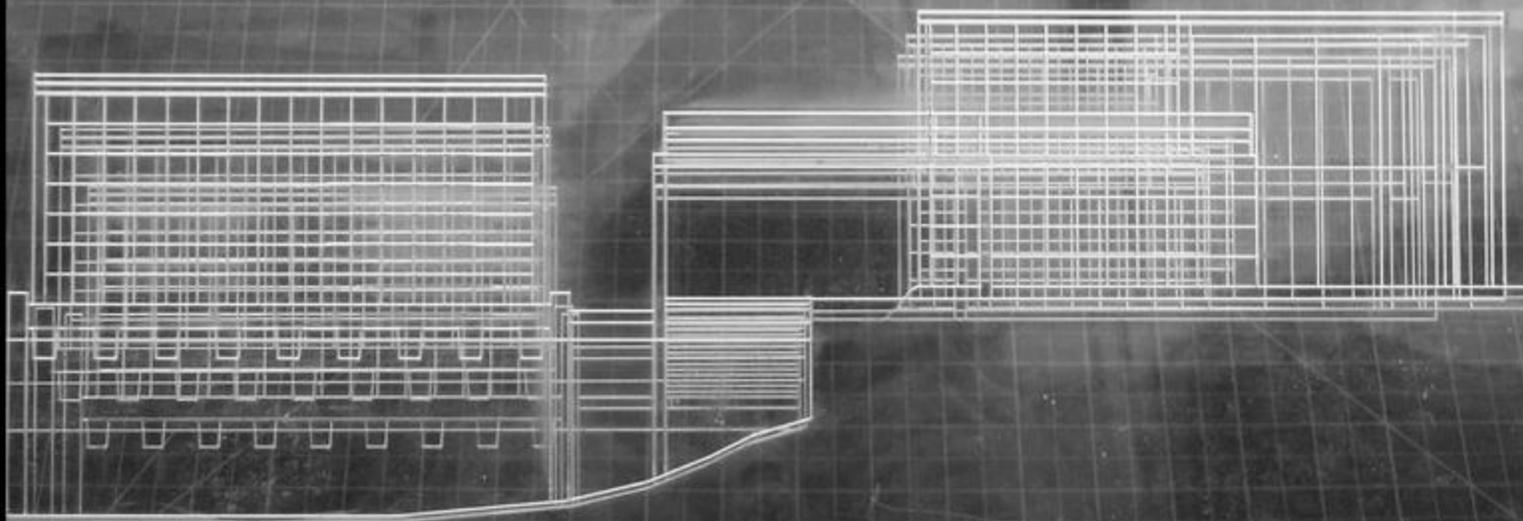
In the process of understanding the idea of form making with the laser cutter, one has to understand the limitations of working on a flat bed. How can we interpret flat planes in three dimensions? How does the laser cutter limit us in creating form? How can a seemingly static object be dynamic in creation?

In designing this nautilus, the material choice was the greatest limitation in how it attached to the steel rod. The relationship of the fins to the rod is currently an area that requires more exploration. In all, however, one was successful at understanding how a flat plane can be shaped in 3-D, through the process of CUT-BEND

# CUT-BEND



Week 3:



Christian Wagner  
Digital Fabrication

"Something that Changes over Time"

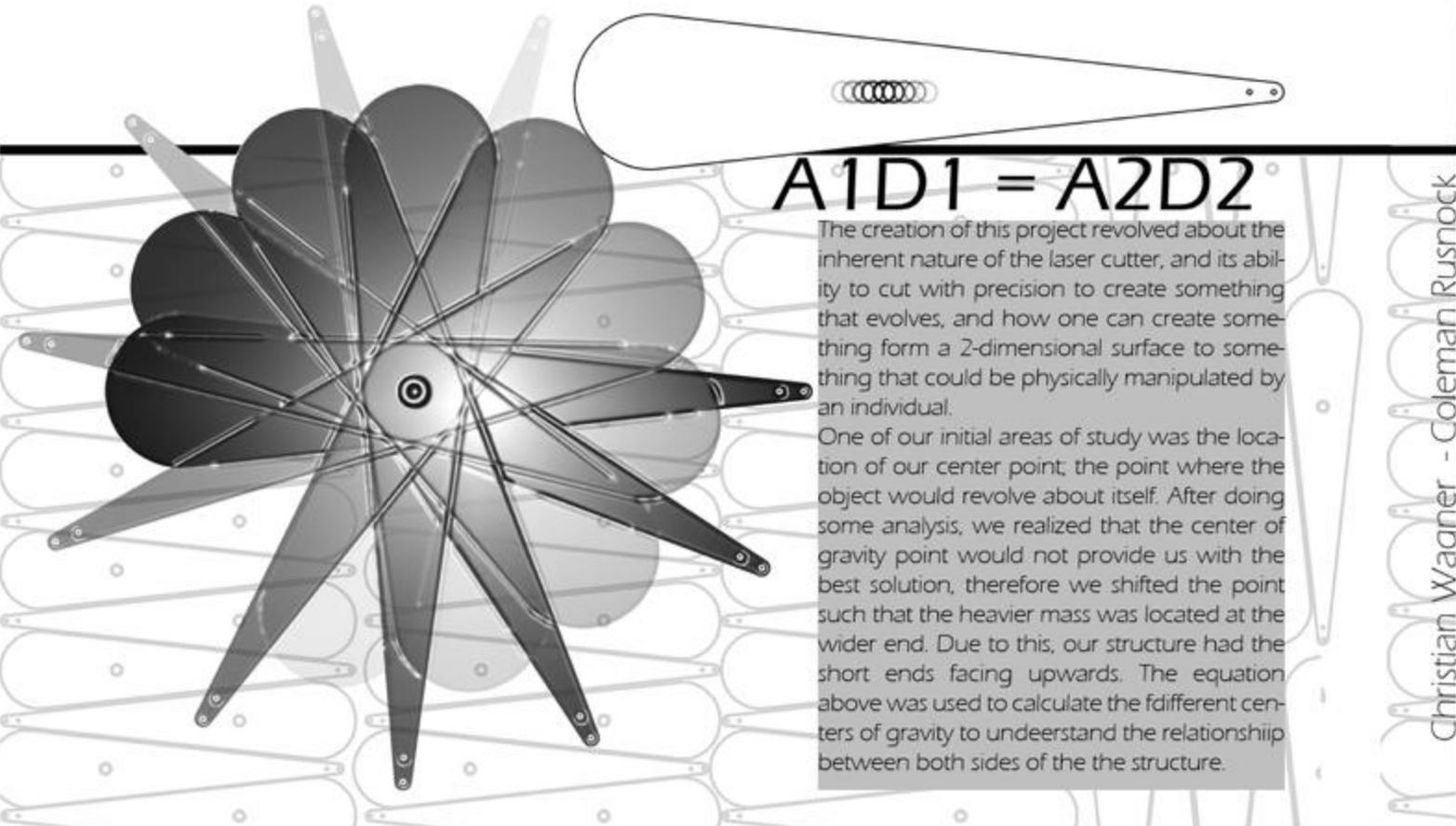
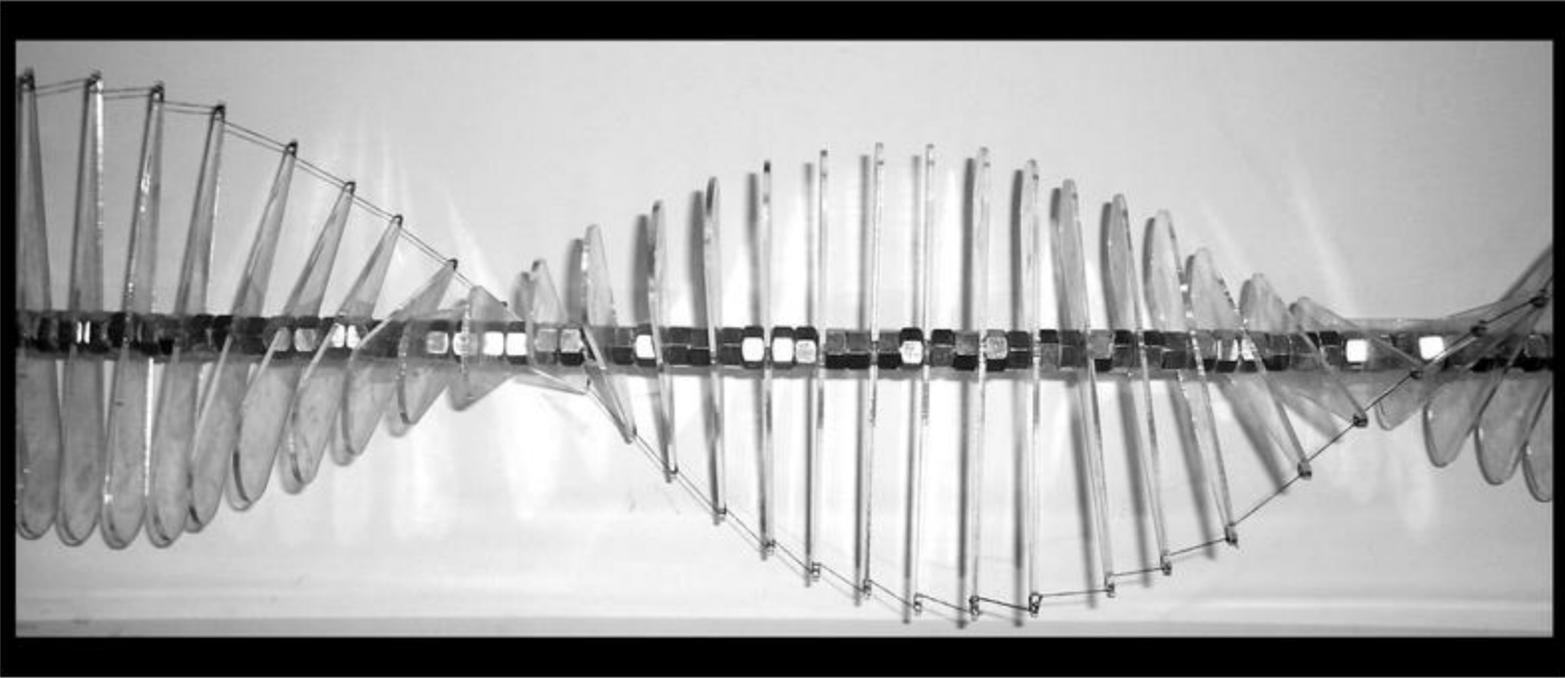
# Perceiving Space

## Week 4: Something that Evolves



My studio project this semester revolved around the idea of juxtaposing a floating element with a static element. In this process, I saw fit to demonstrate how these two buildings relate to one another in time, and how seasonal shifts in the river level would affect the overall structure of the building. Here, one can see how digital fabrication made it possible to overlay engraved sections to show the different flood planes and how the building would change over time. Engraving sections on plexiglass added another layer of information that wouldn't have been possible to convey by any other means.

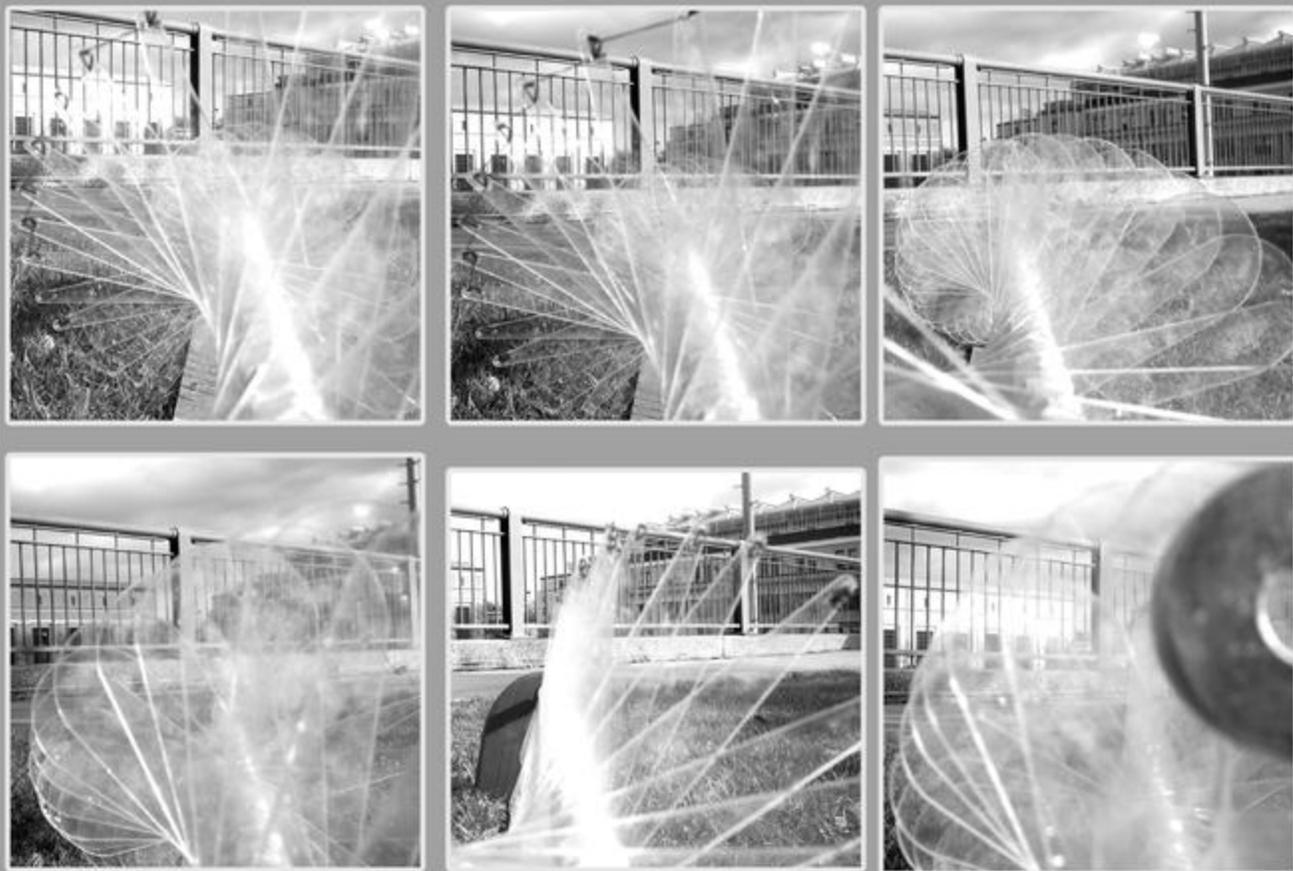
# Week 5: User-Machine Interaction



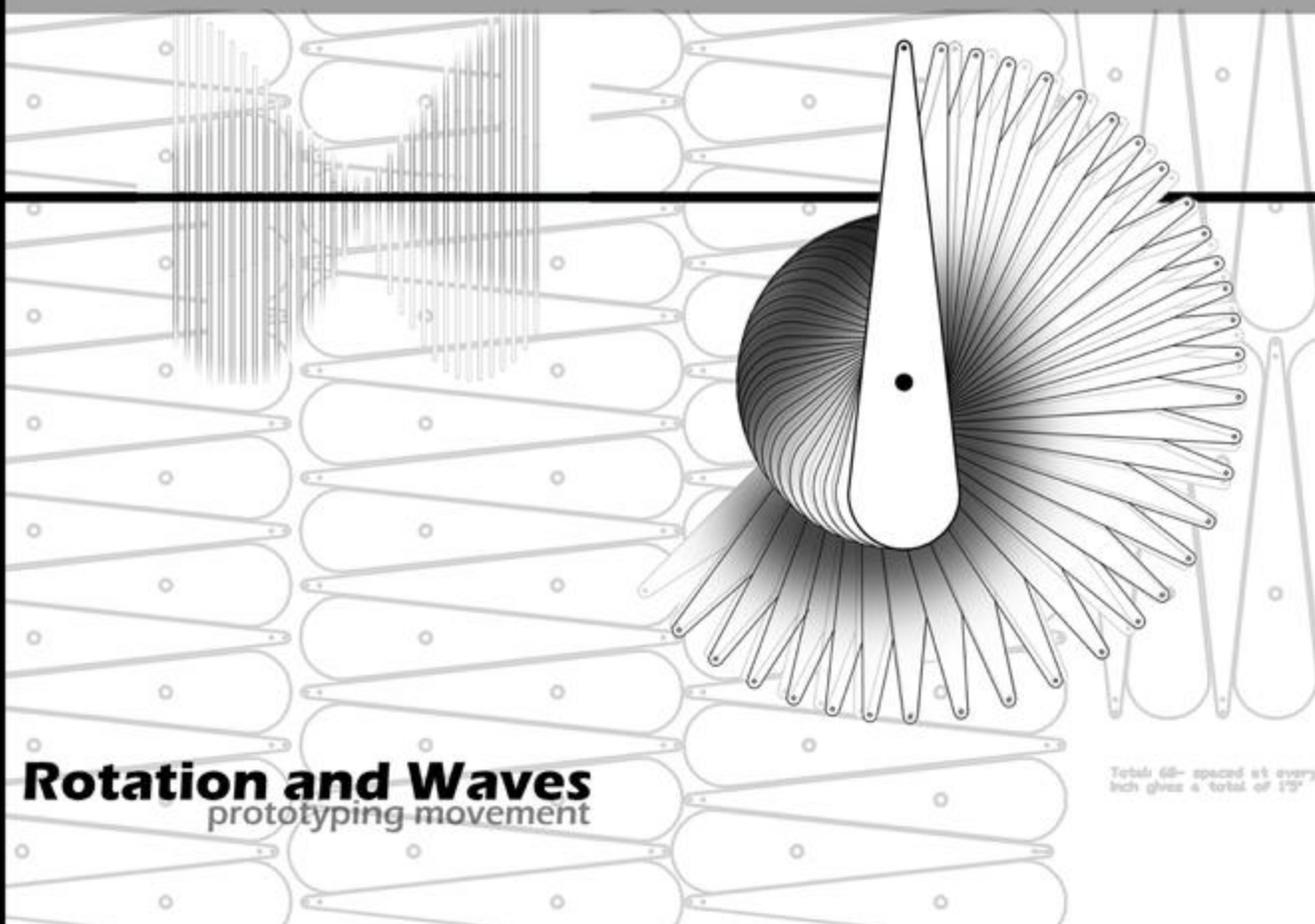
$$A_1 D_1 = A_2 D_2$$

The creation of this project revolved about the inherent nature of the laser cutter, and its ability to cut with precision to create something that evolves, and how one can create something from a 2-dimensional surface to something that could be physically manipulated by an individual.

One of our initial areas of study was the location of our center point, the point where the object would revolve about itself. After doing some analysis, we realized that the center of gravity point would not provide us with the best solution, therefore we shifted the point such that the heavier mass was located at the wider end. Due to this, our structure had the short ends facing upwards. The equation above was used to calculate the different centers of gravity to understand the relationship between both sides of the the structure.



# Week 5: User-Machine Interaction



**Rotation and Waves**  
 prototyping movement

Total 68- spaced at every inch gives a total of 17"