FIN 130 | UNIT 3 RESEARCH ASSIGNMENT | F2023

3D LINE APPLICATIONS IN ART + DESIGN

TOPIC: Integrating 3D + Media using computer-aided design

DALE GRAHAM

Review of links from class handout: What really got my attention?

- Stacked figures with spacers, and organic shapes with curves
- But also – geometric shapes – platonic solids, and polyhedrons
- Particularly large-scale, so you can climb/stand on them
- And even more particularly, when light used intentionally for shadows

Angulars from https://www.hybycozo.com/artists Curves from https://www.ignant.com/wp-content/uploads/2015/08/Oleg-Soroko_Design_1-1440x1304.jpg

Who brings all these together? How do they problem-solve?

The artists responsible for the polyhedrons on the previous page are Yelena Filipchuk and Serge Dubois. They each entered art from previous careers – hers in biology and biomimicry, his in industrial design. They cite math, science, and natural phenomenon as inspirations. They described their processes and problem-solving in a 2022 interview with ShoutOutLA:

- laser cutting technology – early experiments with the tech, had no resources, so lots of patience and experimentation with the tool
- “bolt of lightning” when you got those experiments to feel right
- Developed their own geometric vernacular as they figured out the rules they need to follow to see how 2D pattern communicates with 3D form
- First-ever installation was three platonic solids which are the most basic, universal polyhedra. Gradual expansion to more complex geometries: Archimedean solids → Catalan solids → stellated icosahedrons → then past classic geometry into abstract forms
- Recent experimentation with different materials and the evolution of LEDs over the past 5 years… “It’s an exciting process to try something for the first time and have it blow you away with an unexpected result.’

https://shoutoutla.com/meet-yelena-filipchuk-and-serge-beaulieu-artists-and-designers/

What informs their practice?

This is Yelena and Serge's recent (2023) installation at Wichita State University.

They gave an artist's talk at the school, describing their practice as "finding the resonance and proportion between a two-dimensional pattern and a three-dimensional shape… there is often a very simple mathematical proportion that informs the way we choose the pattern".

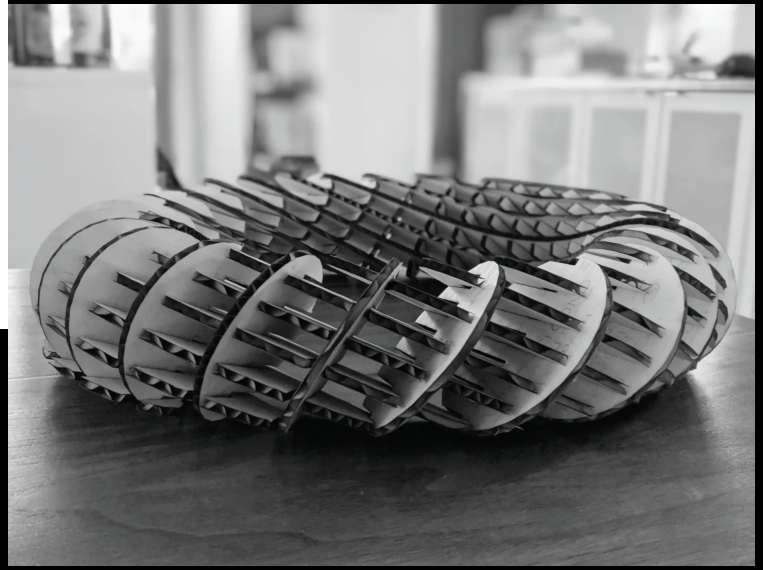
The dimensions they consider:

- Light
- Motion
- Interactivity
- Immersion

https://thesunflower.com/72133/showcase/72-sided-artwork-created-for-wichita-state-discussed-at-artist-talk/

On the other hand... equally inspired by these curvilinear shapes with spacers...

https://www.terraform-design.com/aevum



https://blog.claytonk.com/2019/10/28/laser-cut-torus/

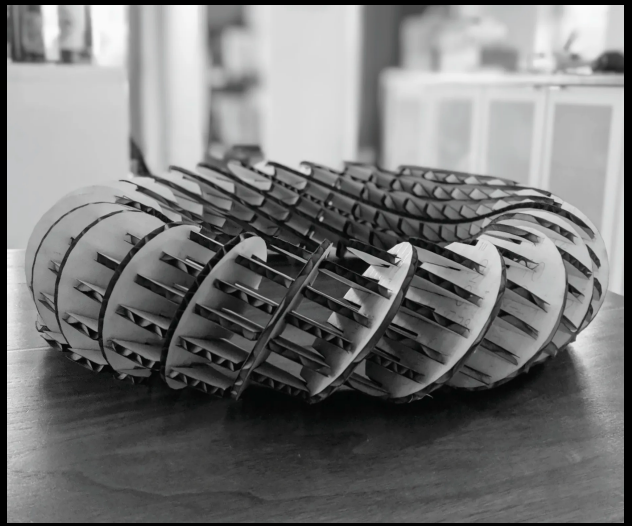
NIC FINE ARTS student work

So... what is practical for a newbie like me?

TORUS – I love this shape

Food for thought from Clayton K's website…

- His project - design and fabricate 3D object using a CAD and CAM (3D Printing or Laser Cutting)
- He used Fusion 360, Slicer, and a laser cutter
- His modelling program had a dedicated torus tool
- First attempt in Slicer used "interlocked slices" setting but it made a static, unsatisfying outcome
- Changed to a radial slicer which he thought better suited the circular model… "By adjusting the vertical and horizontal slice directions and the number of slices, I was able to get a pattern that rendered the shape well, had compelling visual appeal, and was 'only' 50 pieces.
- Exported the cut lines using Illustrator, matching material size



https://blog.claytonk.com/2019/10/28/laser-cut-torus/

Clayton’s TORUS – Laser Cutting Process

- Test run on laser printer with spare material: scaling incorrect, cuts not deep enough
- File edits to rescale
- Change laser settings: slower and hotter gave cleaner results
- Cut 6 sheets of cardboard, 10 minutes apiece
- Warped cardboard affects the laser’s focus and makes for less precise cuts
- In the end – minor mismatch in carboard thickness and the settings in Slicer made for more play between pieces, a more fragile final product.

https://blog.claytonk.com/2019/10/28/laser-cut-torus/

https://i0.wp.com/blog.claytonk.com/wp-content/uploads/2019/10/IMG_20191026_161806-1.jpg?ssl=1

Clayton’s TORUS – Assembly and finished views

ASSEMBLY:

- The etched piece numbers were vital to getting it done.
- Took much longer than he expected
- Needed help

https://blog.claytonk.com/2019/10/28/laser-cut-torus/

Fantasy shapes…

Shall I
fabricate
one of these??

Dale Graham, 2023