Computational Design + Fabrication: 2D Design

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Today

- News
- 2D Design
- 2D Rationalization
- Paper Review
■ lab 1 due thursday
■ section tomorrow 2-3p in soda 373
■ please do jacobs online training
■ review paper comments on thursday
- polygons
- flat sheets
- think boxes and clothing
- think plywood and cardboard
simplification
inexpensive
ecological
compact material
strength to weight
design constraints
developable surfaces
origami
plates
slices
panels
what’s the design algorithm?
how would you want to design it?
how do you break it down into bite sized chunks?
what sort of machine could build it?
how would you write assembly instructions?
Developable Surfaces
by Robert Stuart Smith
Developable Chair

Boat with Developable Surfaces

by Martin Watts
Sculpture with Developable Surfaces

by Antoine Pevsner
Origami Design Constraint

- folded from one sheet of 2D material
- straight of curve folds
- joints and joinery
- multiple pieces?
- foldability
source Yuji Fujimura
Folding Chair

by James Deiter
Klein Bottle House

by McBride Charles Ryan Architects
Origami Inspired House

by Yuji Fujimura
by Ron Resch
by Ron Resch
Curved Origami

by David Huffman
Calliper Curved Fold

by Polyscene
- designed using intersecting 2D plates
- material and assembly
- fewest pieces
Plywood Furniture

by Turner Collective
Earl-Pinto Kink Stool

by Alex Earl
Stools

Source: http://stefanopugliese.virb.com/2012-made-in-ch-i-taly-collection#/i/0
Geometric Shelving

source http://www.j1studio.com/furniture/tshelf/
Start It Up

by Che Eyzenbach
Chair with Developable Seat

source: http://federicoluismuebles.tumblr.com/page/4
- designed using combined slices
- material and assembly
- stacked, radial, waffle, etc???
- developable pieces?
Recompute

by Motoroso
Lounge Chair

by David Graas
Flow Furniture

by Che Eyzenbach
Flexible Love

by Expand Furniture
Panels

- 2D pieces of fabric
- sewn or welded together
- draped or inflated
Dress Design

by Zelda K
Tent
Stretch Tent tm

by branded tent
Inflatable Chair

by Anda Armchair
Inflatable Sculpture

by Bespoke Structure Design
Peace Pavillion

by Zundel and Cristea
Royal Artillery Barracks

by Magma Architecture
Inflatable Concert Hall

by Anish Kapoor in Japan
Bubble Building

by 3GATTI in Shanghai
Inflatable Robot Arm

by Pete Lynn and OtherLab
Inflatable Robot Hand

by Siddharth Sanan
Inflatable Walking Robot

by OtherLab
Next Time

- 2D CNC
- 2D Layout
- 2D Joinery
- Lab 1 Solutions
- Lab 2 Released