

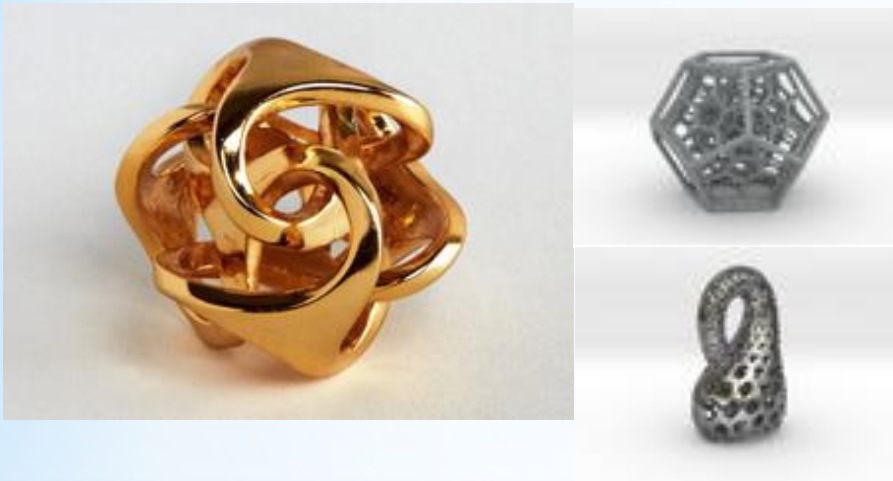
# 3D Printed Mathematical Art

Christopher R. H. Hanusa

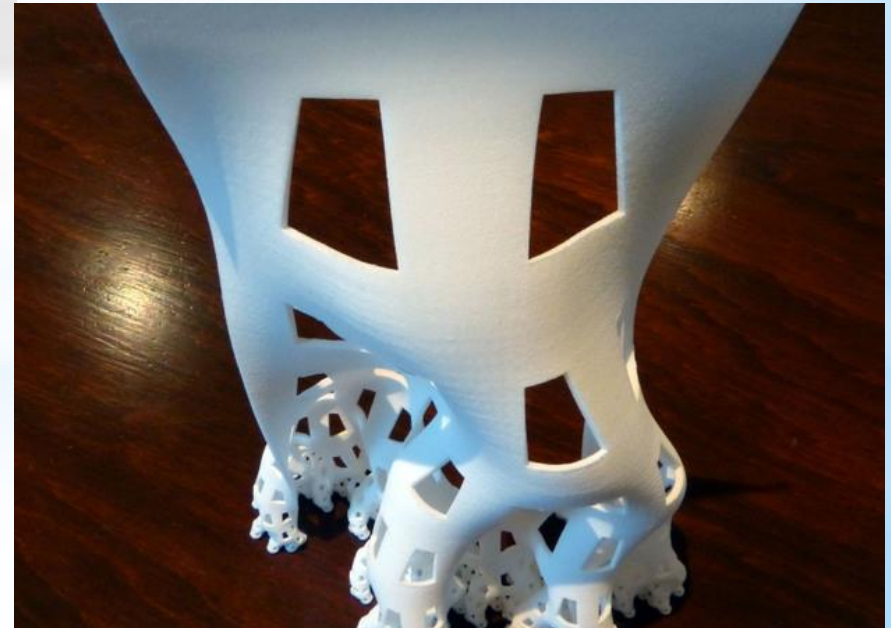
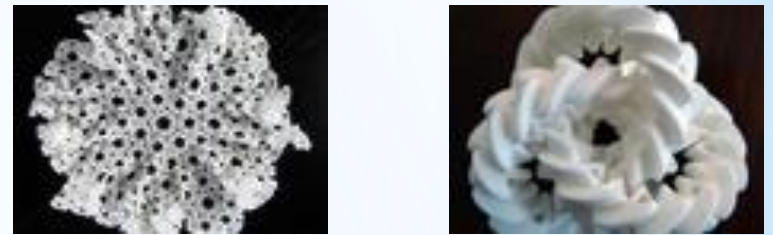
Queens College

# Mathematics + Art ?

Bathsheba Sculpture

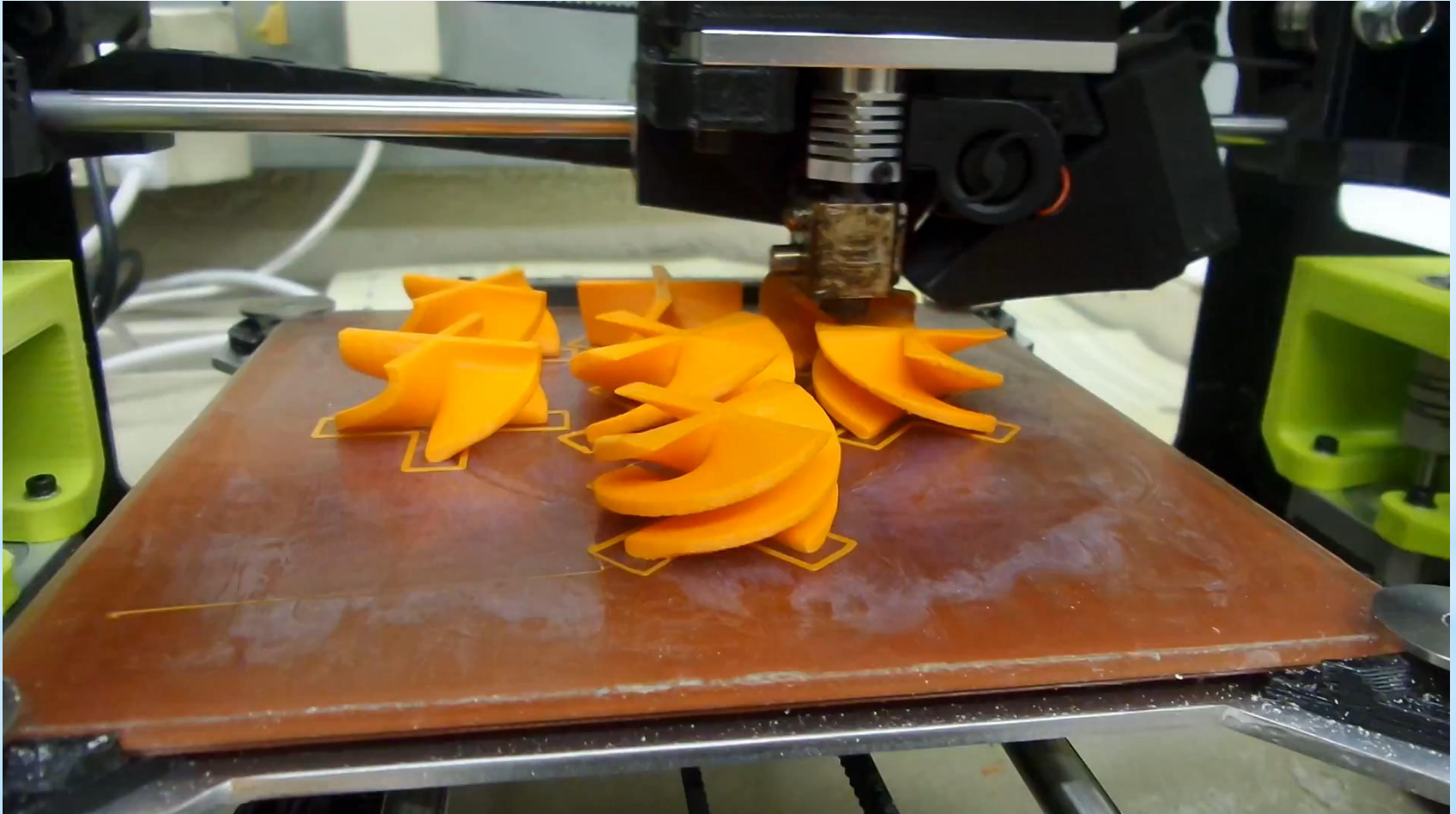


Henry Segerman



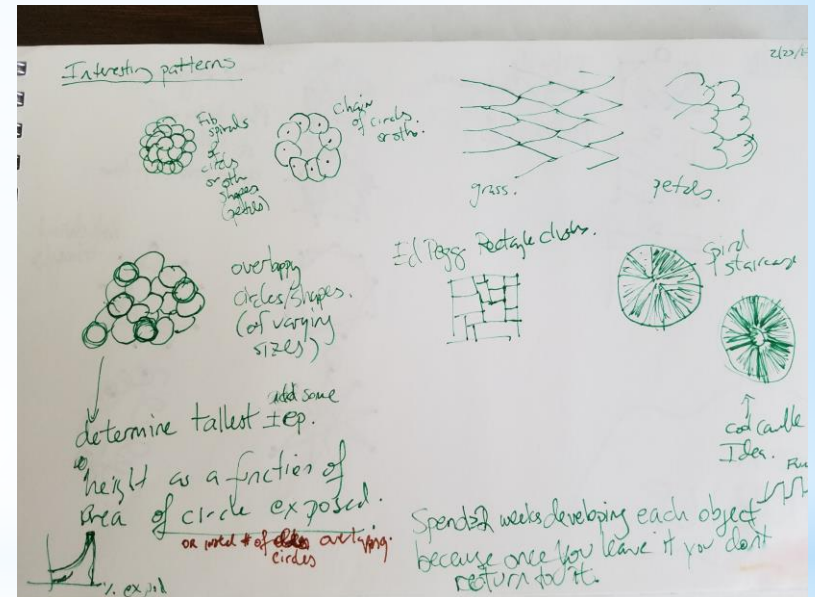
- Repetition
- Symmetry
- Geometry
- Higher Dimensions

# What does 3D Printing look like?



# 3D Printing is not just printing

Concept



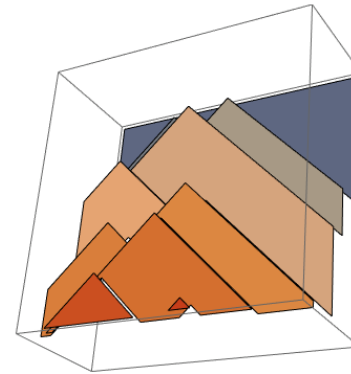


# 3D Printing is not just printing

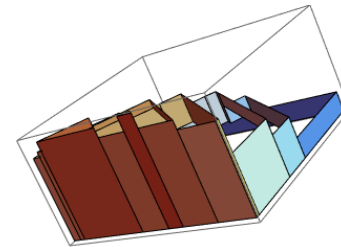
Concept

Design

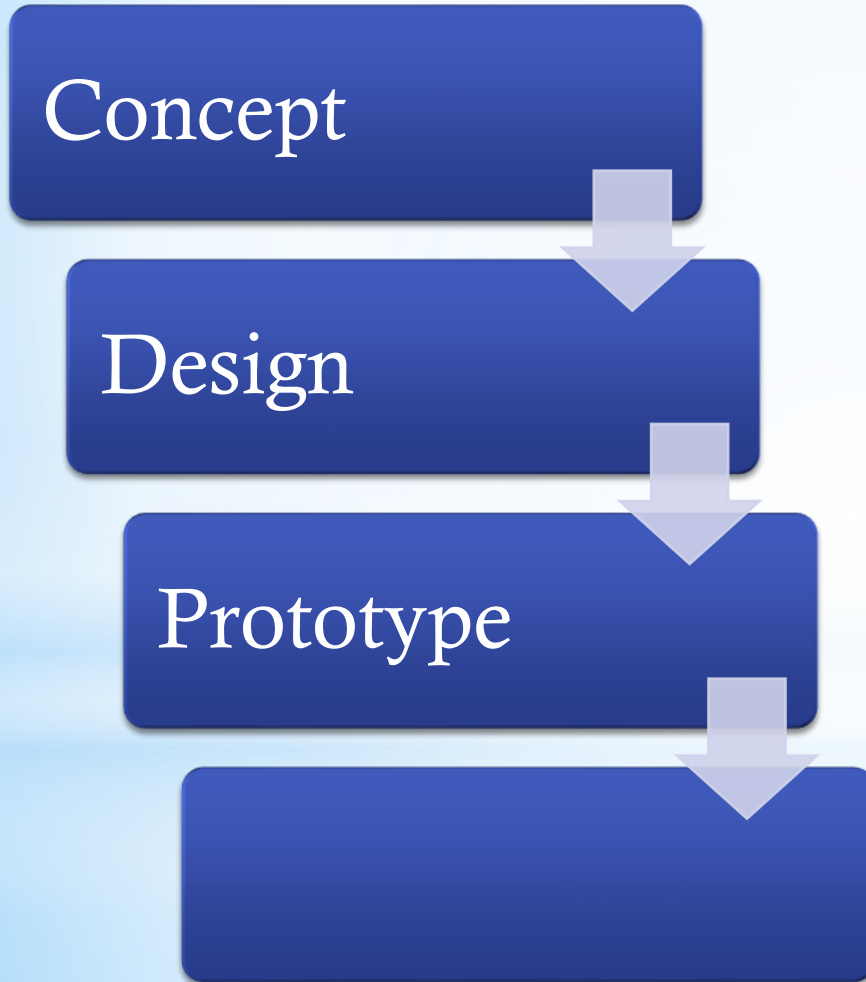
```
prims = MeshPrimitives[mesh, 2];  
f[x_, y_] := .5 - (y) / 2;  
fvals = Map[f @ RegionCentroid[#] &, prims];  
maxz = Max[fvals] + .1;  
minz = Min[fvals] - .1;  
flats = Graphics3D[Table[{ColorData["LightTemperatureMa
```



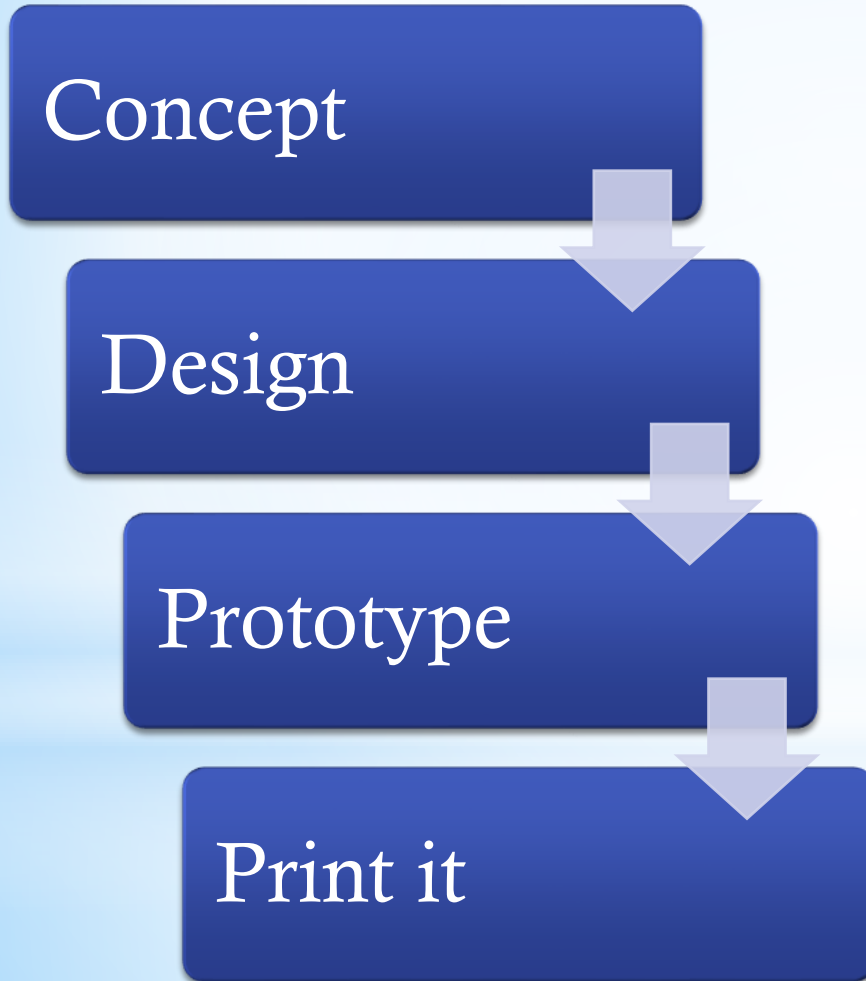
```
minz = Min[fvals] - .1;  
bdrys = Map[MeshPrimitives[BoundaryDiscretizeRegion[#,  
segs = MeshPrimitives[mesh, 1];  
polypairs = Map[Flatten[{Position[bdrys, #], Position[bc  
blankwalls = MapThread[RegionProduct[#, Line[Transpose  
(*Show[blankwalls] *)  
walls = Graphics3D[Table[{ColorData["LightTemperatureMa  
First@MeshPrimitives[DiscretizeRegion[blankwalls[
```



# 3D Printing is not just printing



# 3D Printing is not just printing



# At Queens College

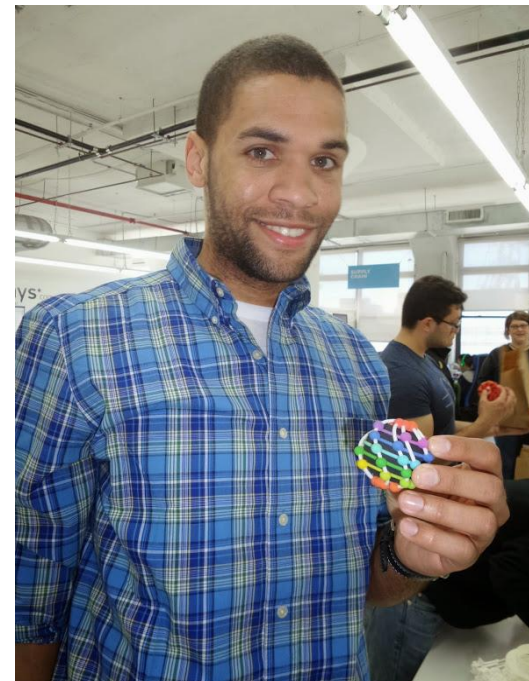
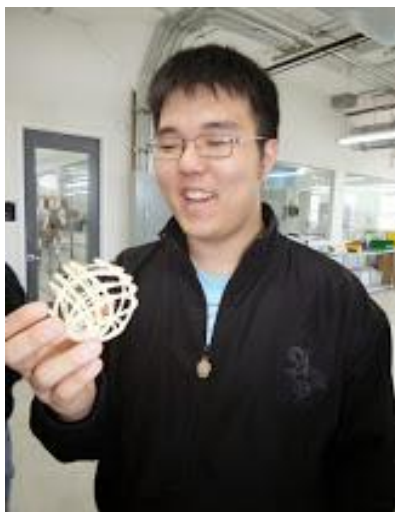
- Art: Prof. Greco
  - Arts 282 - 3D Modeling/Printing and Slip Casting
  - Also: 3D Modeling (Intro & Advanced)
- Math: Prof. Hanusa
  - Math 213 - Math with Mathematica - Spring 2018
- Coming soon to classes near you
  - Biology: Frog Model
  - Art History: 3D printed ancient sculptures
  - Dance: Costumes with LED Enclosures
  - Math: 142, 201
  - Printing parts: Physics CNC / Music Mic Part
  - Molds for casting







# Math 213



Trip to Shapeways  
April 29, 2015

# So you want to 3D print?

## Design your own models

- Tinkercad / Autodesk

## Find models to download

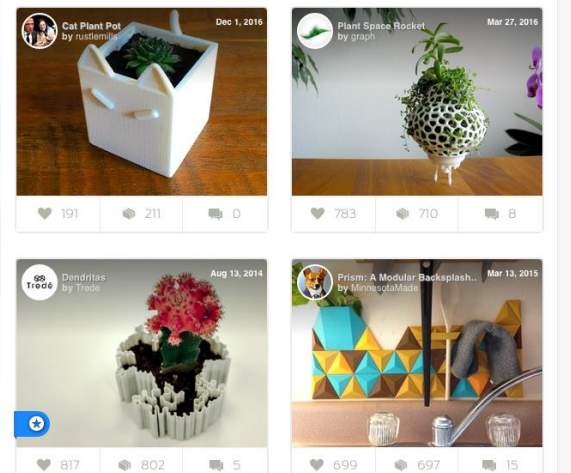
- Thingiverse

## Print your model

- 3dhubs
- Shapeways

## Go do stuff

- Makerspaces
- QC Computer Graphics Club  
(Prof. Greco Klapper 108)





# 3D Models!

