

# 3D Printing for Scientific & Cultural Heritage Collections

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@musebrarian

# Background



**Search This Site**

**CDP@BCR News**

Rocky Mountain Online  
Archive Launched

CDP Now CDP@BCR

CDP & AASLH Joint  
Workshop Schedule for  
2007

More CDP@BCR News...

**Funders & Sponsors**

IMLS  
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 University of Denver  
 Colorado State Library  
 Colorado Historical  
 Society  
 The Colorado Alliance of  
 Research Libraries  
 Rocky Mountain PBS  
 University of Wyoming  
 BCR  
 University of New Mexico  
 AASLH

**Search the CDP@BCR collections for:**

Photographs, maps, documents, sound recordings, objects from museums, libraries, and archives in the west.

*Heritage West*

[By Category](#) | [Advanced Search](#) | [Help](#)

**Newspapers**

**Search Newspaper Collection**

*Delivering  
Protecting  
Growing*




**CDP@BCR Workshop**



Digital Project Management and  
CONTENTdm: Ogden, Utah  
Oct 9, 2007

Introduction to Digital Imaging  
with CONTENTdm: Ogden, Utah  
Oct 10, 2007

[view all workshops](#)

**Best Practices**

Digital Imaging   
Dublin Core Metadata

  
Digital Audio 

**Lesson Plans**

Created by teachers  
for teachers.

[view all lessons](#)

**Become a Member**

The CDP@BCR offers  
customized membership  
benefits to fit your digitization  
goals. membership is based on  
a sliding scale to accomodate  
participation from institutions of  
all sizes.

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## Ridgway Brothers: Explorers, Scientists, and Illustrators



The artwork, correspondence, and research of the Ridgway brothers, John and Robert, late nineteenth century naturalists and illustrators of the American West.

### Subject Browse

Social Studies (1525 Collections)  
 Arts (525 Collections)  
 Language Arts (93 Collections)  
 Religion (80 Collections)  
 Vocational Education (69 Collections)  
 Physical Education (35 Collections)  
 Health (29 Collections)  
 Foreign Languages (28 Collections)  
 Educational Technology (27 Collections)

### Featured Content

#### SPAM Introduced

pmcollins

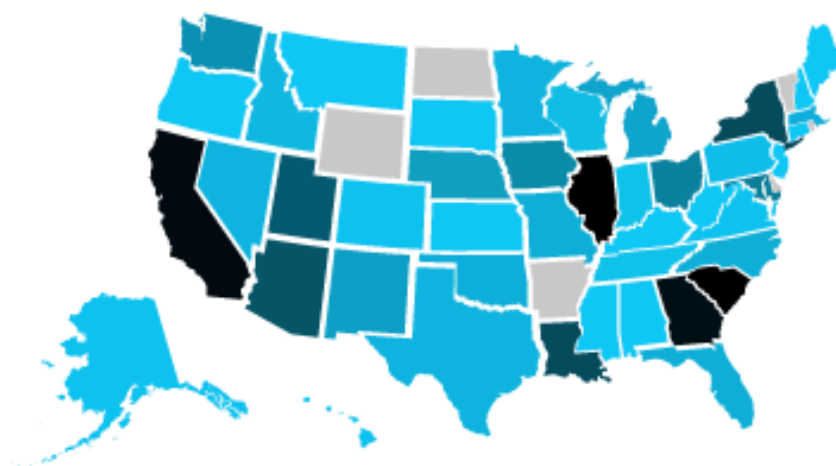


From the Collections of Spanish Heritage Center

On July 5, 1937, the Hormel Foods canned meat product SPAM came on the market. While it remains the target of many jokes, SPAM has been enormously popular since its introduction. Because it was easy to ship, SPAM became common fare for World War II soldiers. After the war, a musical group of 60 women [...] [more](#)

[From the Sewing Culture blog](#)

### Find collections from your state



### Browse by date

Pre-1800	1800-1849	1850-1899	1900-1929	1930-1949	1950-1969	1970-1999	2000-Present

### Browse By item type



### Stats

Items

**1,231,917**

Collections

**1,739**

Institutions

**1,494**

### Find us on Flickr

[www.flickr.com](http://www.flickr.com)





### Exhibitions

View all »



### Explore by Place

Clemson

Map »

## A Wealth of Knowledge

explore 7,701,227 items from libraries, archives, and museums

### Explore by Date

Timeline »

1946 1947 1948 **1949** 1950 1951 1952

### Apps

The DPLA is a platform. Developers make apps that use the library's data in many different ways. Here are just a few. [App Library »](#)

**FindDPLA**  
Eric Phetteplace and Jake Orlovitz

Want to see DPLA's related text and images for any

**DPLA Search Widget**  
Dean Farrell and Josh Wilson

Search the DPLA right from your webpage in three easy

### News

[Community Reps: A Handy Guide to Who They Are and What They Are Doing](#)  
Apr 28

[Meet a Community Rep: Lavanda Wagenheim](#)  
Apr 25

[All News »](#)

[@dpla on Twitter](#)

http://dp.la

Happening now: #IMLSFocus  
http://goo.gl/ap6M8E

1852 results for museum: Things ▾

Sort: Relevant ▾



New Museum Cookie Cutter Sep 21, 2011  
by NewMuseumChallenge

8 0 1



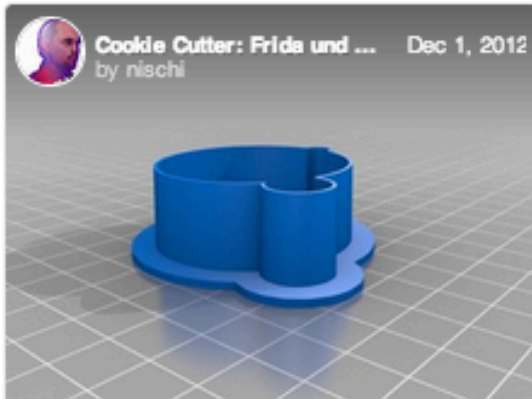
Trilobite (P149623) May 20, 2013  
by MuseumVictoria

43 31 0



New Museum Maracas Oct 31, 2011  
by beekeeper

2 1 0



Cookie Cutter: Frida und ... Dec 1, 2012  
by nischi

3 3 0



Tiny Teddy Mar 17, 2014  
by AMNHeducation

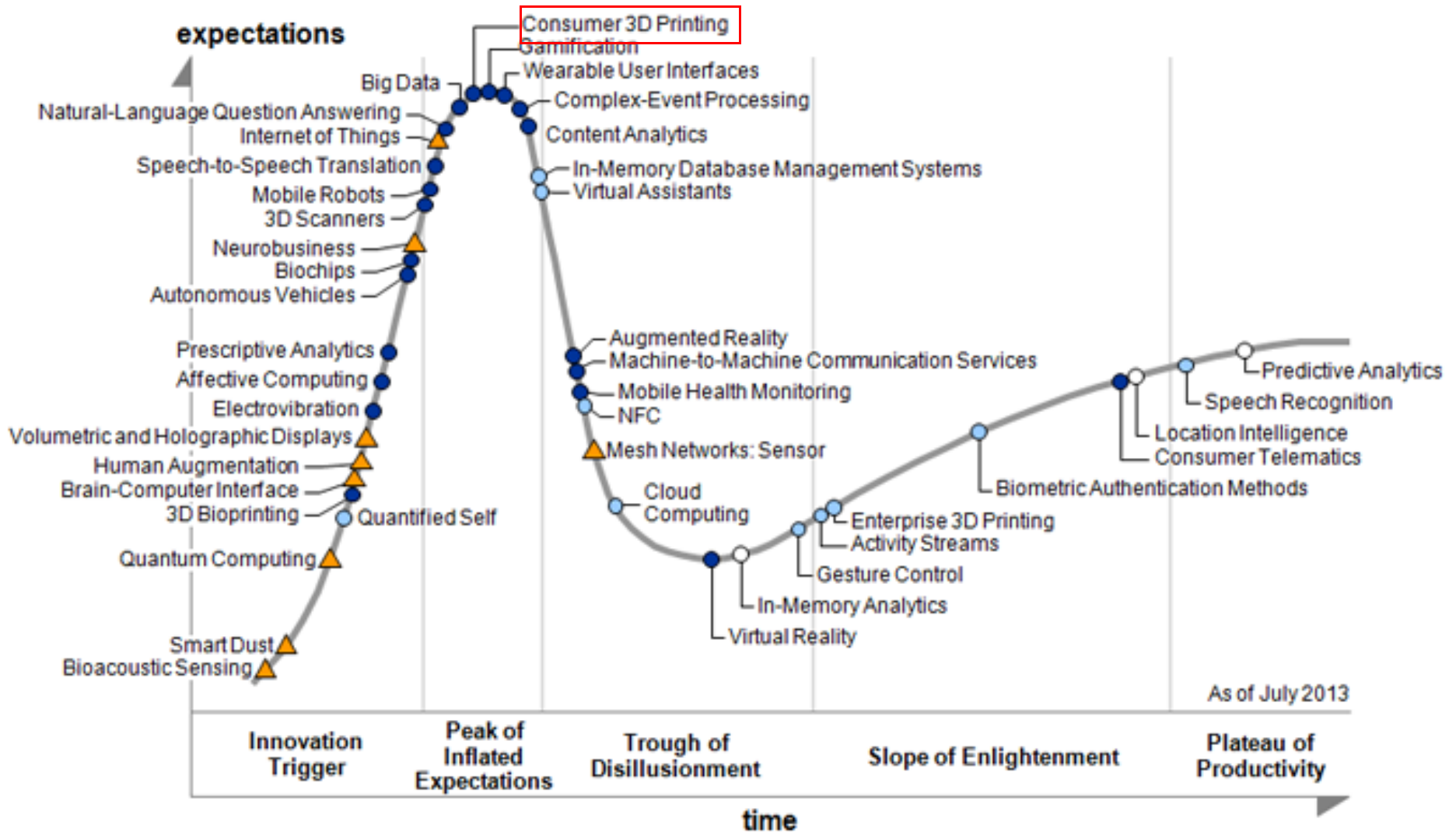
21 17 6



Art Museum May 16, 2012  
by President909

0 0 0

# 3D Printing Expectations



Plateau will be reached in:

○ less than 2 years

● 2 to 5 years

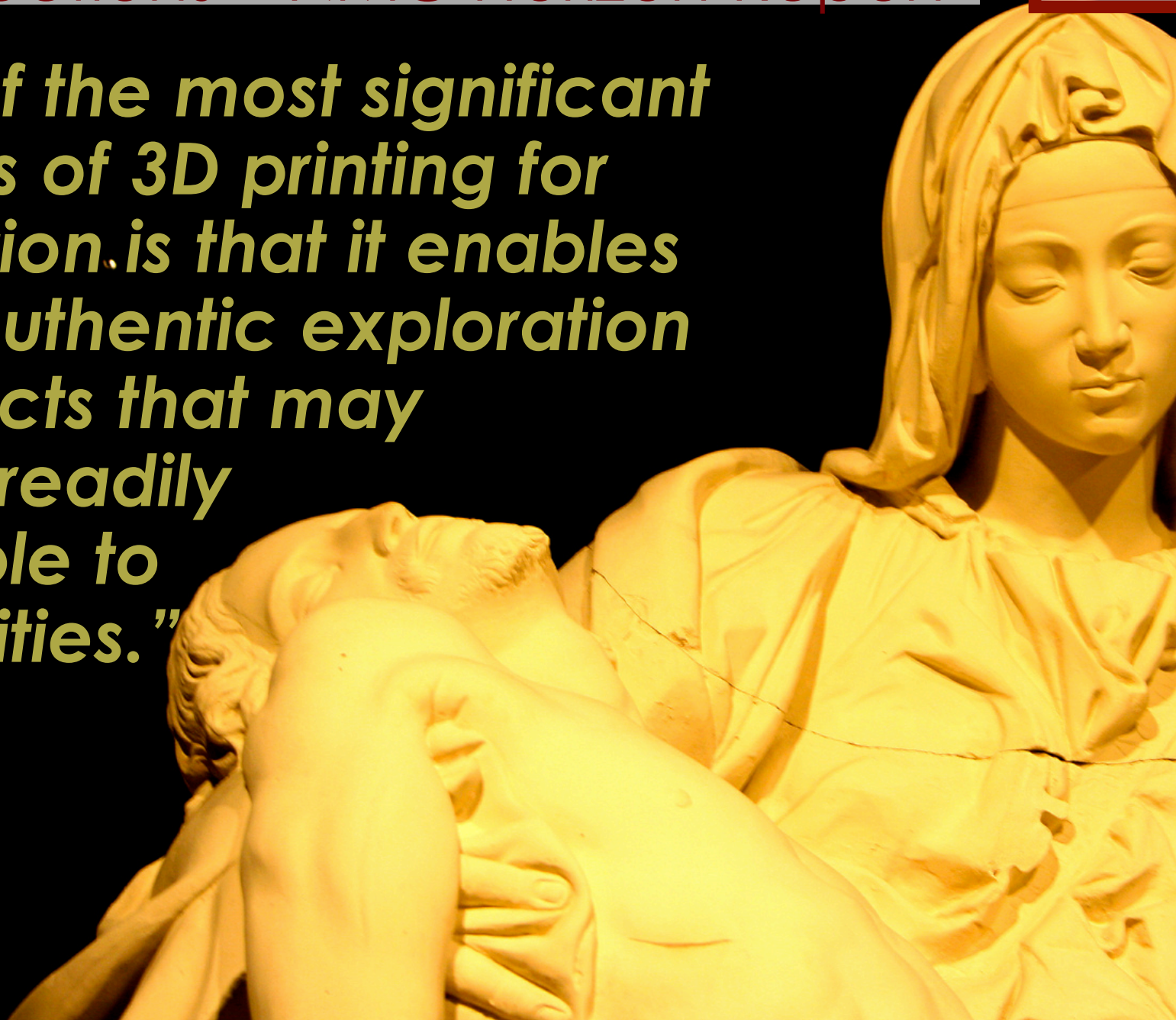
● 5 to 10 years

▲ more than 10 years

○ obsolete

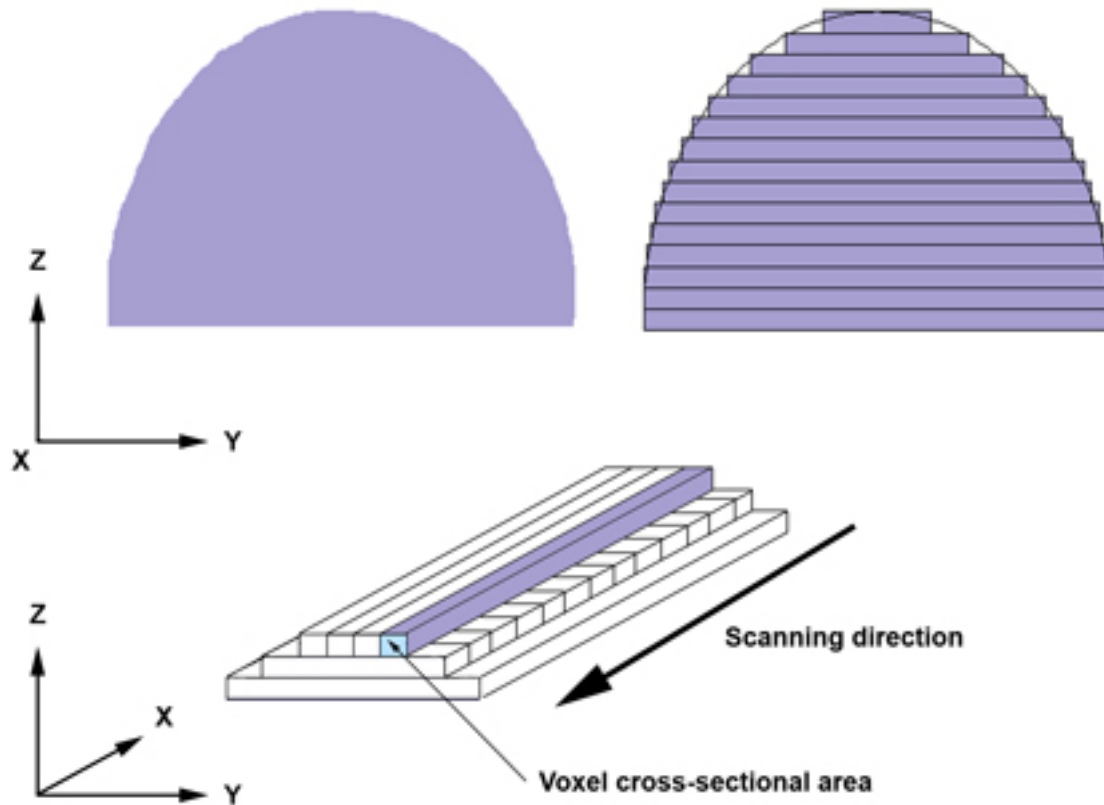
⊗ before plateau

***“One of the most significant aspects of 3D printing for education is that it enables more authentic exploration of objects that may not be readily available to universities.”***





# 3D Basics



- Plastic
- Powders
- Paper
- Ceramics
- Sugar

# Consumer Level (\$1200 – 3000)



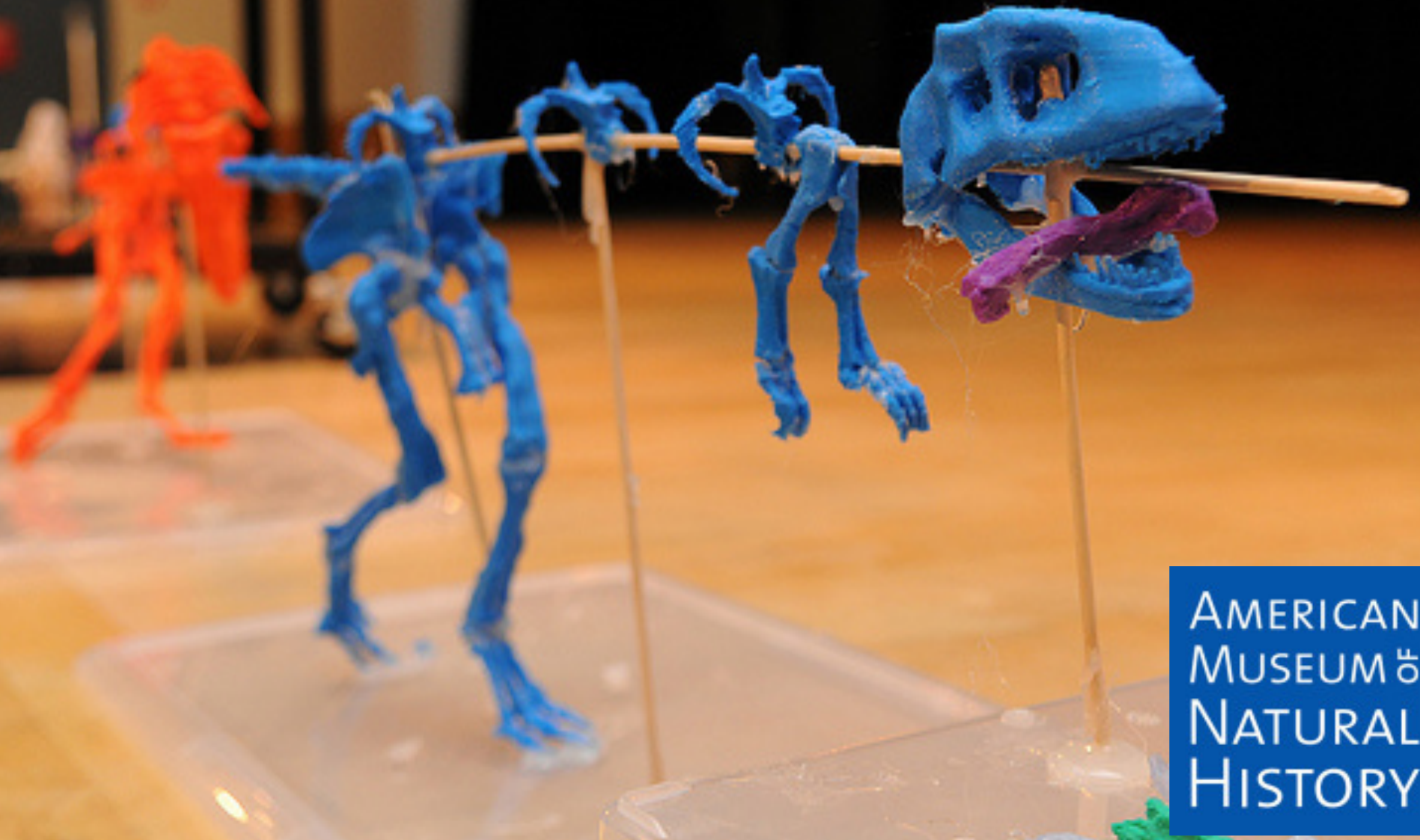
# Professional (\$5000-20,000)

10



# Library Makerspaces





# Museums - Education

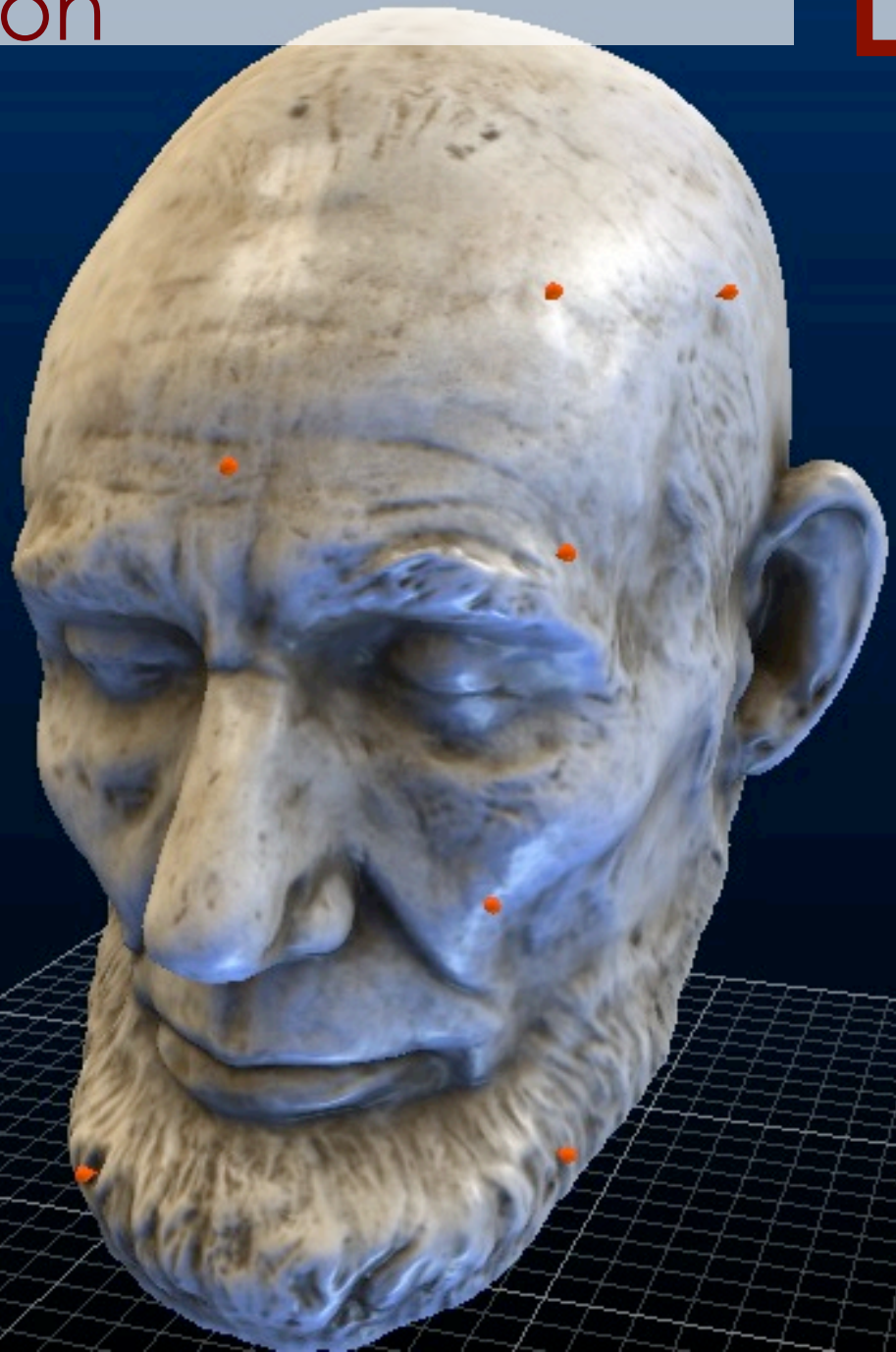
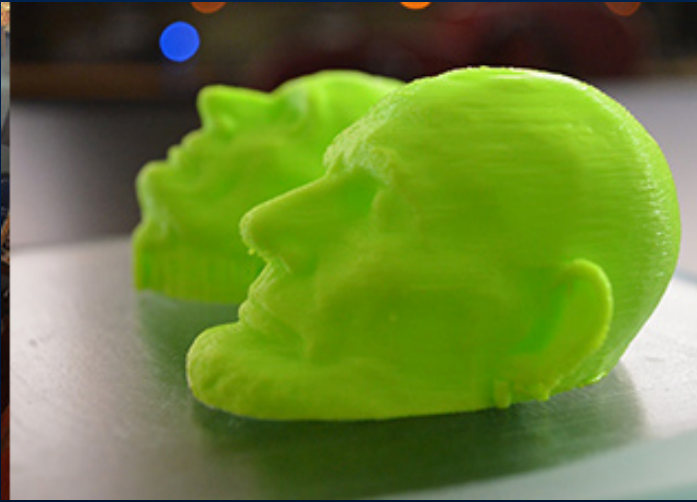


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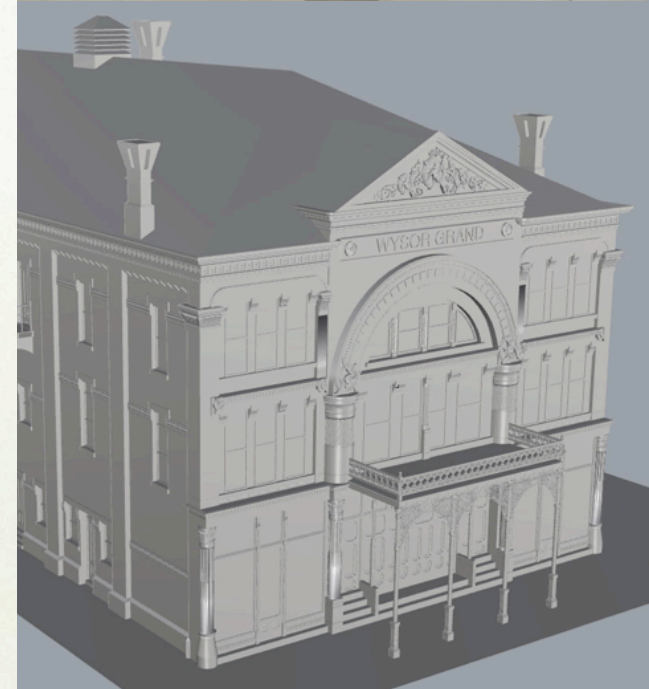
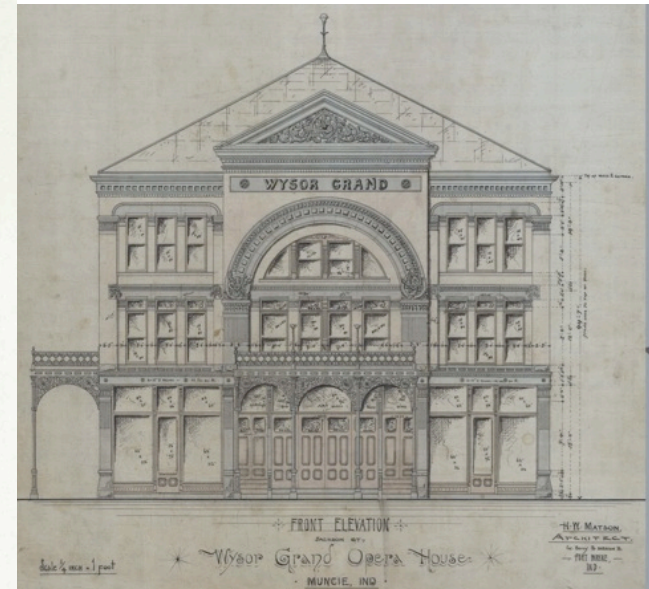
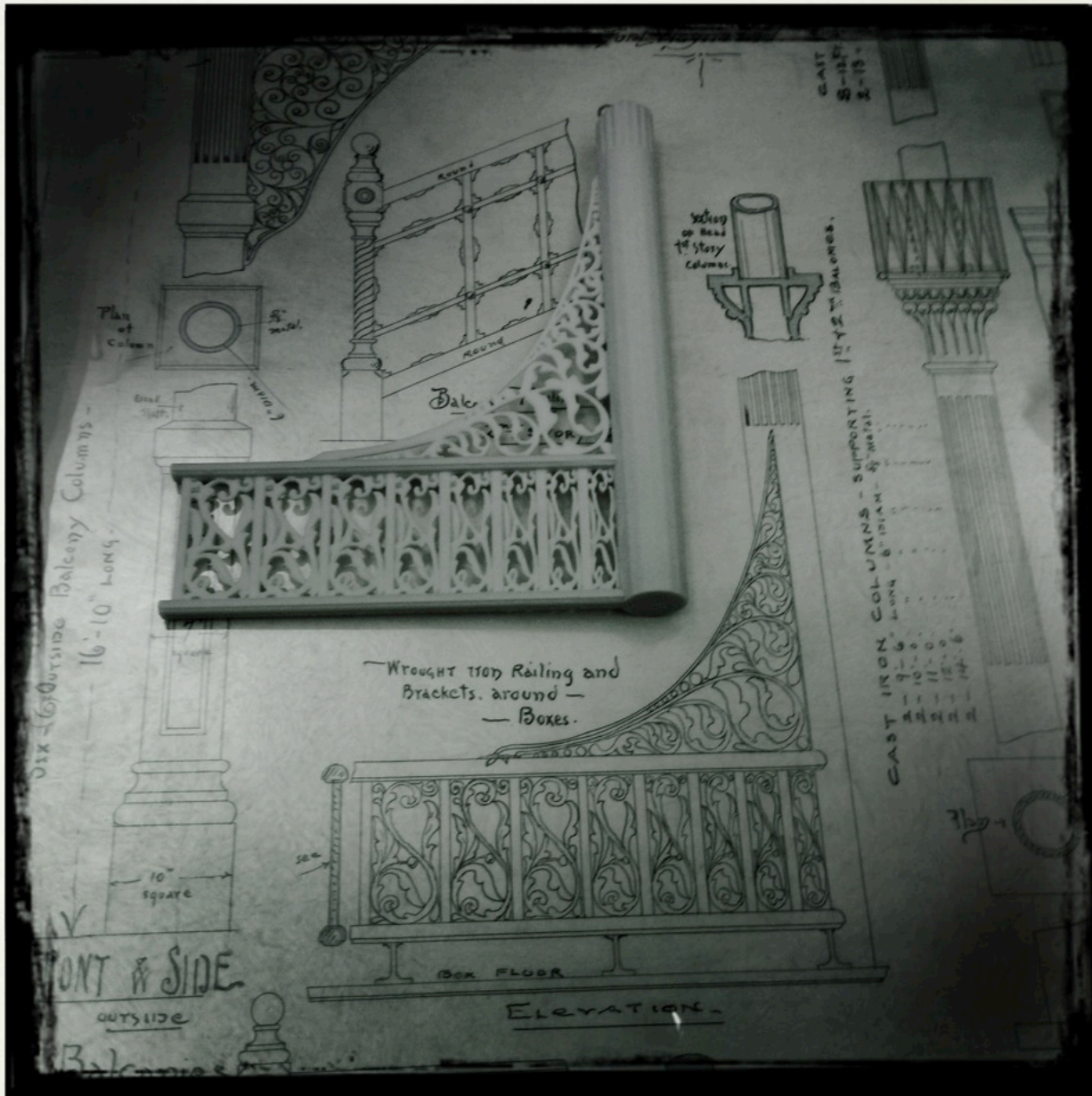
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# Archives - Education

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# “Making” as Citizen Science

## The Serious Leisure Perspective

(version February 2013)

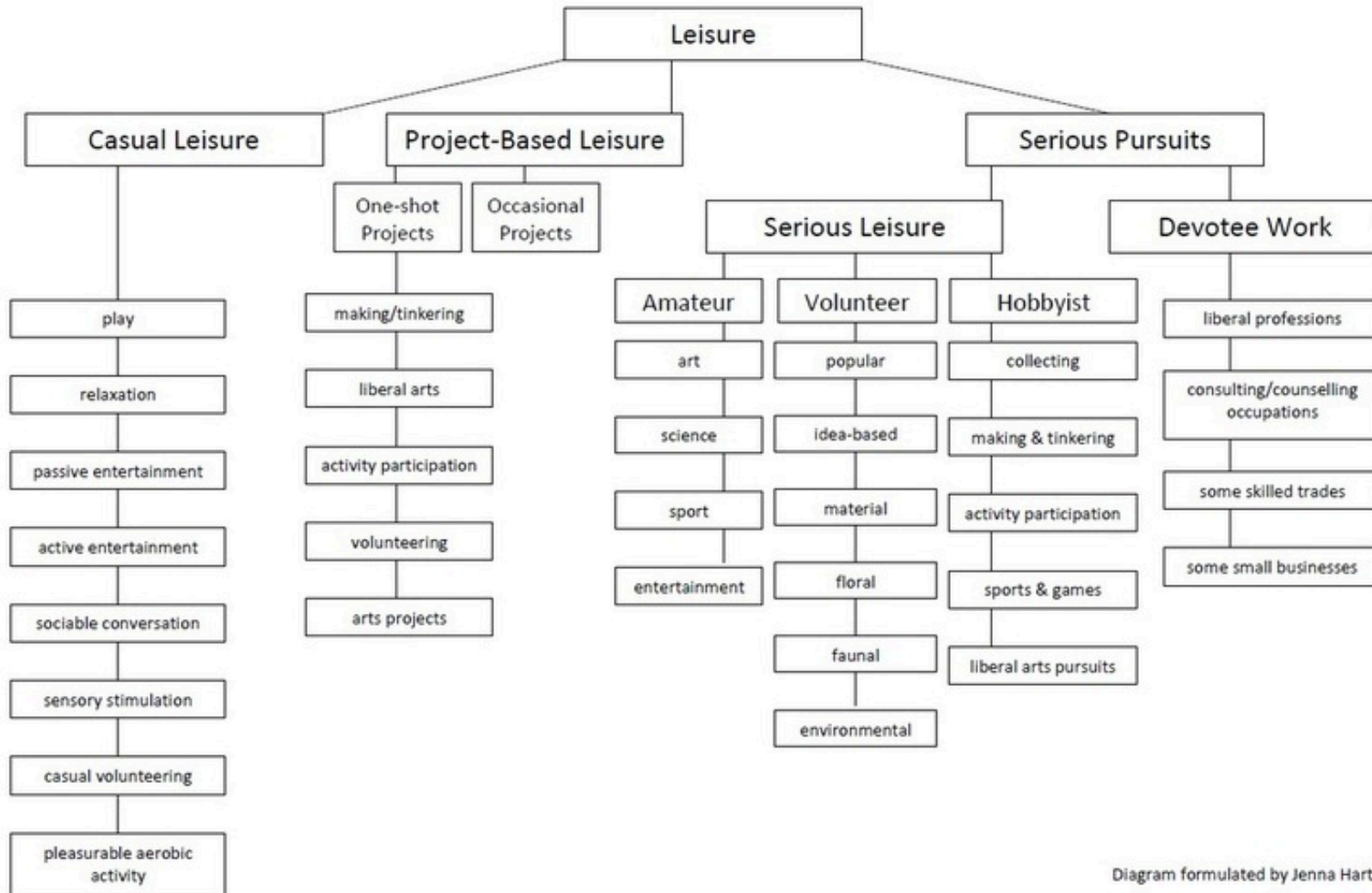


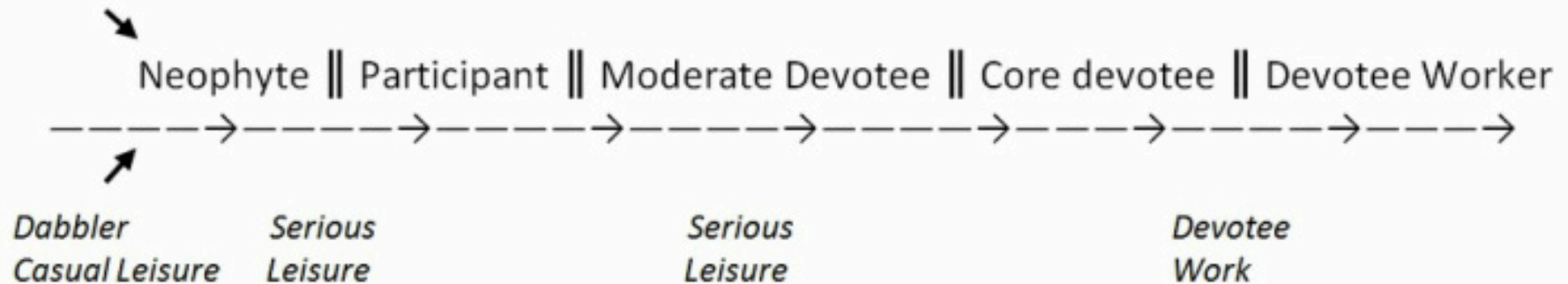
Diagram formulated by Jenna Hartel

# Serious Leisure Scale of Involvement

## SLP Involvement Scale

(version February 2014)

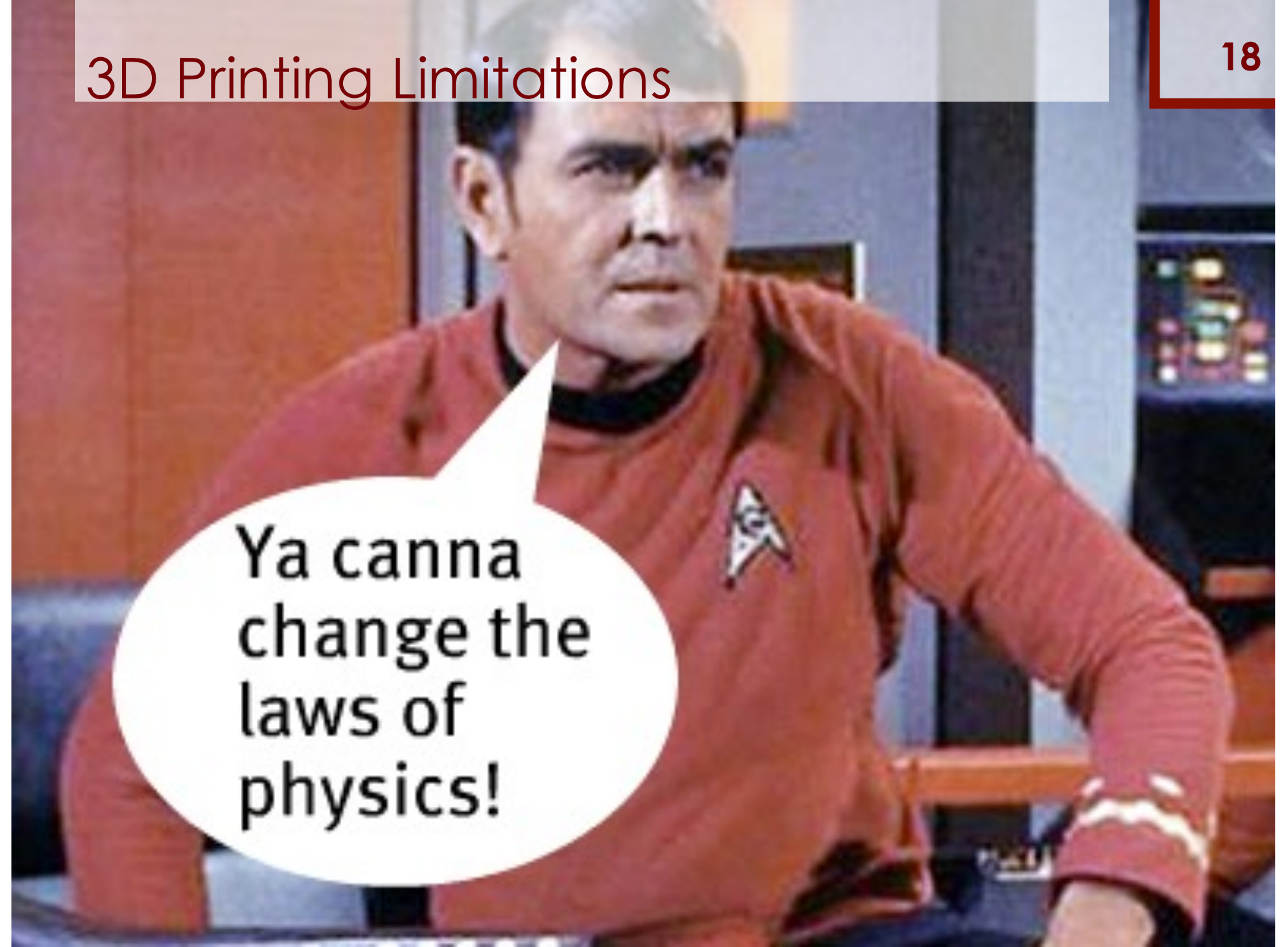
*Project-Based Leisure*  
*Project participant*



### Notes:

- Level of involvement may peak at any point on this scale.
- Some dabblers and project participants never become neophytes.
- Some neophytes before their involvement neither dabbled nor participated in a project.

# 3D Printing Limitations

A man in a red Star Trek uniform is shown from the chest up, looking slightly to the right with a serious expression. A white speech bubble is overlaid on the lower-left side of his chest. The background is a blurred interior of a spaceship.

**Ya canna  
change the  
laws of  
physics!**

# From 2D to 3D

- i What lessons from the last 20 years of 2D repository development are relevant for 3D?
  - i Need to build curriculum not just provide “resources.”
    - i Accommodating local contexts
  - i Need to build bridges across technology divides
  - i Need for user-centered research
- i How will we integrate 3D into 2D repositories?
  - i Motivations for integration?
  - i Already building new 3D silos.
  - i Interface requirements, etc. (human-computer interaction)
- i How do combined iDigBio collections fit into cross-domain public resources, like the Digital Public Library of America.



# Credits

- i “DIG photographer Stephanie Mitchell at the digital camera workstation. An array of the technical targets we used to characterize our systems are evident in the foreground.” RLG DigiNews 4(6) <http://goo.gl/4xHntE>
- i Met Museum 3D Hackathon  
<http://goo.gl/n3YYvq>
- i Pieta Reproduction by Rober Pahre  
<https://www.flickr.com/photos/rpahre/7196999710/in/photostream/>
- i International Open Data Day Hackathon at Edmonton Public Library Makerspace <https://flic.kr/p/kmYQnF>
- i NY MakerFaire – Capturing Dinosaurs  
<http://makerfaire.com/makers/capturing-dinosaurs/>
- i Art Mashup with Meshmaker  
<http://goo.gl/Z3G3QQ>

These slides are available on Slideshare <http://goo.gl/Vc6JBy>

i Smithsonian X3D – Lincoln Life Mask