

A REALLY MODERN DAY PROMETHEUS: COLLABORATIVE 3D PRINTED BUST OF THE CREATURE

Through modern day alchemy, we can imagine shapes and make physical, tangible structures of that. By using digital fabrication and rapid prototyping through 3D printing tools, we can be like Dr. Frankenstein, we can create. Specifically, this proposal to the Frankenstein Bicentennial Small Grants Program aims to leverage a decentralized network of community makers to collaborate together to imagine, make and assemble a physical likeness of Frankenstein's Creature, visualization in Figure 1. We aim to engage the public with this project and to investigate what it means to make and at what point a collaborative effort makes life together.

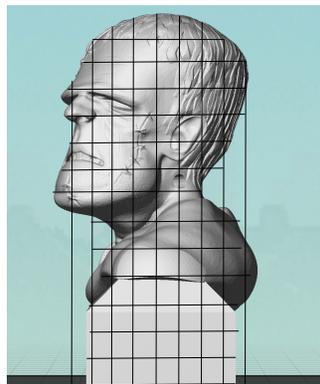


Fig 1. Mockup image of collaboratively built 3D printed bust of the Creature

This project will build on a crowdsourcing model developed by the community –based organization Digital Harbor Foundation in an initiative called We The Makers [1]. They have organized efforts to collaboratively built large busts of Edgar Allan Poe, George Washington, Benjamin Franklin, and Rosie the Riveter, shown below in Figure 2.



Fig 2. Collaboratively built 3D printed Edgar Allan Poe, George Washington, Ben Franklin & Rosie the Riveter [1] They design a sculpture (or scan an existing work), post small chunks to be claimed, then 3D printed and returned by mail by community volunteers. It gets assembled and put on display at

nation events like the World Maker Faire New York [2]. A compelling aspect of the project also has been the online documentation and community aspect of it. Figure 3 shows the original solid model scan of Benjamin Franklin and then how it gets spliced into smaller chunks.

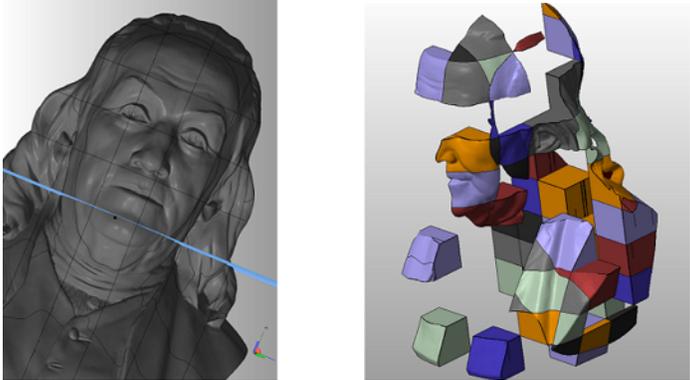


Figure 3. Solid model scan of Ben Franklin & visualization of pieces chunked, parceled out after digital processing [1]

We seek to leverage this existing model to spur creation of a large, crowdsourced, collaboratively built bust of the Creature. Phases to this project then would include selecting or creating a digital, solid model of Frankenstein’s Creature. Images of the Creature have evolved through multiple publications of Mary Shelley’s Frankenstein as well as through the current visage in the general public through the Universal monster movies, as shown in Figure 4. We will explore and select one (or more) prototypical images for the Creature to produce; examples in Figure 5.



Figure 4. Illustrations of the Creature (L-R): 1831 bookplate, 1823 play, 1930 movies (Karloff), 1964 (The Munsters) [3,4]



Figure 5. Frankenstein's Creature bust (National Museum of Cinema of Turin, Italy), 3D model (Thingiverse) [3, 5]

The solid model/scan will be spliced up digitally. We plan to engage student workers to help setup a website to facilitate information sharing and version control (checking out of pieces to 3D print) and manage the workflow.

For promotion, we have plans to announce this project at the end of September at the World Maker Faire New York. We will have a project website to inform and serve as a functional exchange of digital files. We will distribute electronically announcements and invitations to participate through channels (email lists, blog posts) that target educational makerspaces and community makerspaces. Through Maker Faire, the International Symposium of Academic Makerspaces [6], and the Nation of Makers group [7], we will seek to saturate those groups and individuals who have 3D printers.

Our anticipated outcomes output focuses on engaging hundreds of people/groups in the creation of the 3D printed bust of the Creature through amplifying and distributing out message and participating in the distributed job of printed pieces and mailing them in. There is a concrete outcome of a physical bust of the Creature too. The audience are both schools and students, and community members. We seek to reach as many people as possible, through the actual sharing in the creation, or to engage in the story of this task. By focusing attention on such a specific goal, we hope to attract a wide and diverse audience. It can also be a funnel to other parts of the Frankenstein project.

Our funding request is for the support of student workers to ramp up and facilitate the activities related to this project. We also ask for funds to support the purchase and sharing of PLA filament plastic for 3D printing and mailing costs (for a subset of people who engage in the project). Depending in the costs associated we may vary the size of the bust (expected to be 3' tall) and number of pieces within the 3D printed bust. Some money is budget for materials to underwrite those that otherwise could not participate. (We may save by combining or using other materials

for the inside structure that may not be visible.) We also want to create a display and travel case for the finished work.

We expect that the \$5k small grant will serve to be a catalyst to engage the public in volunteering their time and resources to participate. There may be additional opportunities to obtain sponsorship or in-kind donations of materials to help finish this project once it is announced. We may also consider non-traditional funding mechanisms like crowd-finding sites including ASU's Pitch Funding platform. We welcome additional ideas for funding opportunities or match funds related to the project.

We have a multi-disciplinary team across graphic design and manufacturing engineering with skills to carry this project out. We can access makerspaces across ASU (including The Polytechnic School's Innovation Manufacturing Hub makerspace [8], and TechShop Chandler [9]) and beyond (through a network of community and educational makerspaces in the Nation of Makers advocacy organization [7]) to enlist their help to 3d print a small part of a larger creation. In the act of collaborative creation, we also hope to capture an interesting and compelling story, and make connections for the public to the story of Frankenstein through the collaborative creation of a 3D printed bust of the Creature.

BIBLIOGRAPHY

1. We The Builders. Retrieved from <http://wethebuilders.com> August 25, 2017.
2. World Maker Faire New York. Retrieved from <http://makerfaire.com> August 25, 2017.
3. "Frankenstein's Monster." Retrieved from https://en.wikipedia.org/wiki/Frankenstein%27s_monster August 25, 2017.
4. The Munsters. Retrieved from <https://www.munsters.com> August 25, 2017.
5. Frank(enstein) Bust. Retrieved from <https://www.thingiverse.com/thing:1896696> August 25, 2017.
6. International Symposium of Academic Makerspaces. Retrieved from <http://isam2017.hemi-makers.org> August 25, 2017.
7. Nation of Makers. Retrieved from <http://nationofmakers.us> August 25, 2017.
8. ASU Manufacturing Research and Innovation Hub. Retrieved from <https://poly.engineering.asu.edu/research/innovationhub/> August 25, 2017.
9. TechShop. Retrieved from <http://techshop.ws> August 25, 2017.