

Scan to medal

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I hadn't originally thought of creating a medal to honor John Lewis. The portrait in the round that I made was the result of a conversation with my dearest friend Eugene Daub. We were both toying with the idea of somehow doing portraits and John Lewis emerged as a potential subject. We thought he would be an interesting subject because he was a special human being who deserved to be honoured as well as because he was a member of the House of Representatives of the United States.

Lewis was an American politician and civil rights activist who served as a representative for Georgia from 1987 until his death in 2020. He was a member of the Democratic Party and participated in the 1960 Nashville sit-ins, the Freedom Rides, and led the first of the three Selma-to-Montgomery marches across the Edmund Pettus Bridge. One of the marches precipitated an incident which became known as Bloody Sunday, in which state troopers and police attacked Lewis and other marchers. Among his many honorary degrees and awards is the Presidential Medal of Freedom given in 2011.

Having used scans of my figures in the past in the making of several medals, it occurred to me to use my portrait of Lewis as a foundation for a series of medals.

Image 1

These are photos of the clay sculpture I created using



images from several sources. It is life sized and was made using water based clay.

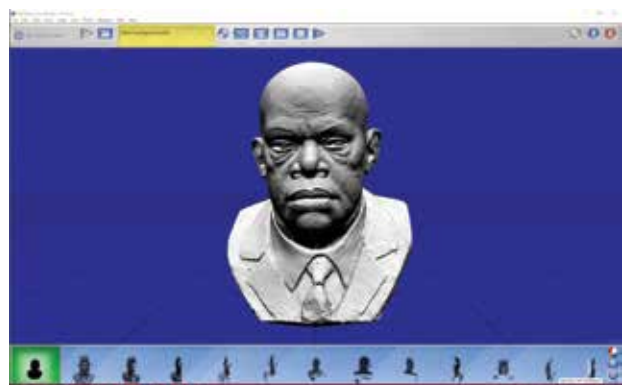
Image 2

This is an example of the scanner being used to record 3D data. It is a NextEngine scanner which I purchased quite a while ago.



Image 3

This is a capture image of the 3D scanning software. You will notice a series of images at the bottom of the screen.



These are areas of the scan that are created with each pass of the scanner light recording a specific part of the sculpture. These sections are aligned together to create the complete image at the top of the screen.

Image 4



This capture illustrates using the saved scan data and importing it into Zbrush, a 3D modeling program which facilitates more extensive reworking if so desired. Zbrush allows the user to change the material that is being modified to see what the final sculpt will look like. Here I am using a bronze material which gives me a better idea of how shapes will look in the final material.

Changing the material colour gives the user a better visual of the forms since light and colour reveal different characteristics of the surface.

Image 5



Here I have created a digital basin behind the portrait sculpture. This is the first step to creating a relief using Zbrush.

Image 6

Zbrush now has a command which allows the user to create a bas relief. The position of the model in front of the basin can be changed into whichever view the user prefers. In this instance, I decided to use a full front view. The amount of detail as well as the height of the relief can also be adjusted.

You can see the projected relief on the basin behind the full 3D sculpture.



Image 7

The relief sculpture shown using a bronze material.



Image 8



The other digital modeling program I use is called FreeForm. In this screen capture I am using a command to modify the proportions of the sculpture on the z axis, thus creating another version of a frontal relief. The light material is the compressed form after reducing the volume to 25% of its original dimension.

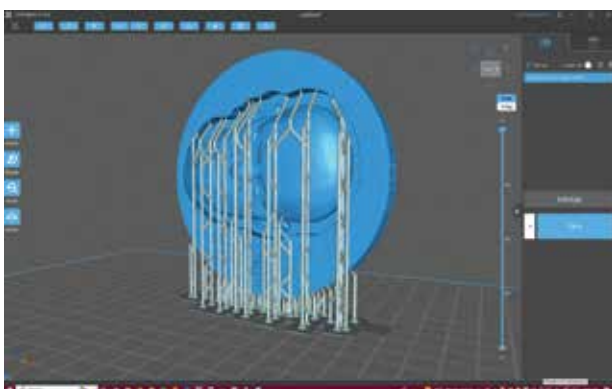
Image 9

Using FreeForm, I created a surround which will be used in the final medal.

I wanted to keep the relief high yet not have a very thick medal when finally cast. This surround lowered the model on the basin.

**Image 10**

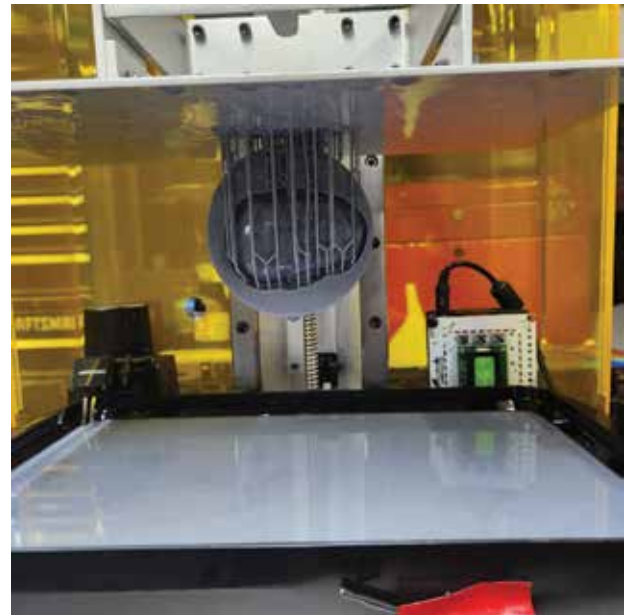
I can also create the lettering in FreeForm. Here I am using a font which is very bold which I felt would complement the strength of Lewis features. It's a simple operation which uses a positive or negative emboss as well as choosing the height and draft of the lettering. For a cast medal such as this, there is no need for drafting the letters, but when creating lettering for CNC cut medals or coins, the draft angle is critical for all of the elements of the design since incorrect draft will create striking difficulties during production.

Image 11

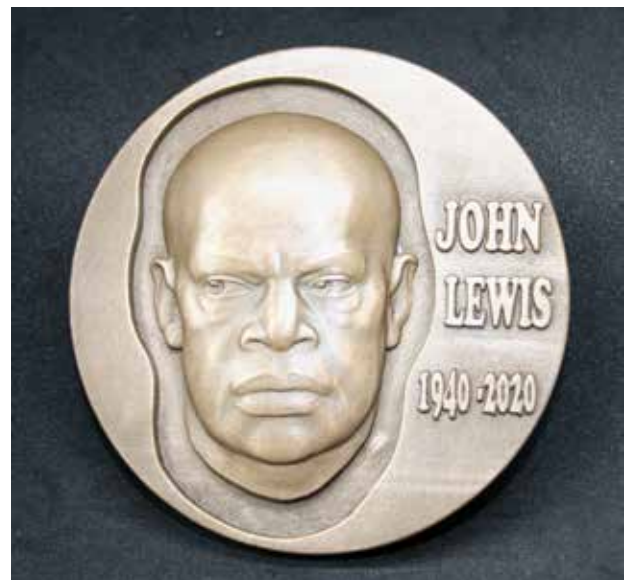
Having created the medal in the 3D modeling software, I now bring the data into the printing software.

Here you can see the supports necessary when using vat polymerization printing. With this technique, the model is hollowed out and then sliced into a number of silhouettes

which will be projected onto a screen. That projected silhouette is then hardened via the light source of the printer. Layer upon layer of this process creates the final prototype.

Image 12

This is what the print looks like while still on the printer bed after completion.

Image 13

I usually use a metallic wax on the final print in order to see the print more clearly. Here I am using a bronze colored wax to look for any imperfections I may wish to change. The resin print is easily sanded and can be modified if necessary.

Image 14

These are images of the final cast medal using a bonded bronze technique which employs a dark resin and atomized metal powder to produce the piece.



I create a silicone mold from the final print and then pressurize the mold when filled with the resin-atomized bronze mix. This prevents bubbles from forming in the cast.

The cast, after removal from the mold, is then brushed back with steel wool, which brings up the bronze filler. The result is similar in look to a simple liver of sulphur bronze patina which shows the modeling of the piece. The cast is then hot waxed and buffed when the wax cools.

Image 15

Since the resin printer is capable of creating any size required, here you can see the result of printing 3 different medals using the methods herein described, as well as 3 wearable pins of the same medals and a larger version of the three quarter medal.

