



ZBrush Summit 2023

# ZBRUSH TO MONUMENTAL BRONZE

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# AMERICAN FINE ARTS FOUNDRY, INC.

Located in Southern California, American Fine Arts Foundry is one of America's oldest and most revered fine art foundries, having produced some of the finest historical and contemporary sculptural work of the past 40 years. We have been the foundry of choice for important historical works such as the Leonardo da Vinci Horse and Rider, The Norman Rockwell Sculpture Collection, and the art deco sculptures of Erte, as well as many of the finest contemporary



**Angel Meza**  
Foundry Manager



**Chris Delling**  
Sales Director



# ZBRUSH TO MONUMENTAL BRONZE

- Typical ZBrush Workflows
- Typical Bronze Casting Workflows
- Considerations Before You Attempt to Blend The Two Workflows Together
- Process of Actually Blending The Two Workflows Together



# BATMAN AND WONDER WOMAN



**WHERE TO BEGIN?**

# ALEJANDRO PEREIRA

@ALEJANDROPEREIRASTUDIO



# ALEJANDRO PEREIRA

@ALEJANDROPEREIRASTUDIO



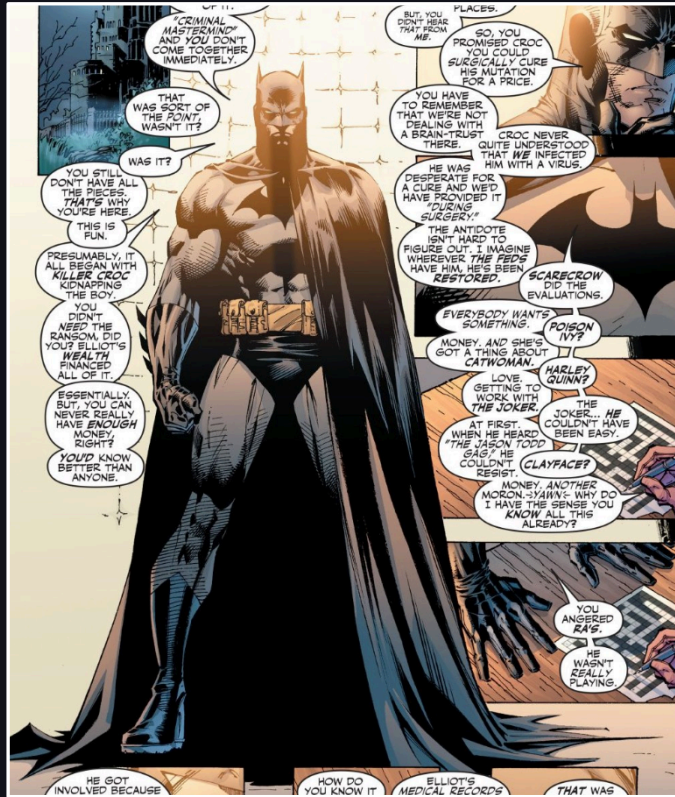
**ORIGINAL**



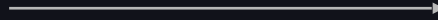
**NEW**



# BASED ON A JIM LEE SKETCH FROM HUSH



DIRECT



# JACK MATHEWS

@JGABRIELMATHEWS



**ORIGINAL**

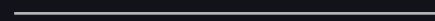


**NEW**

# BASED ON REBIRTH: WONDER WOMAN #18 BY JENNY FRISON



DIRECT



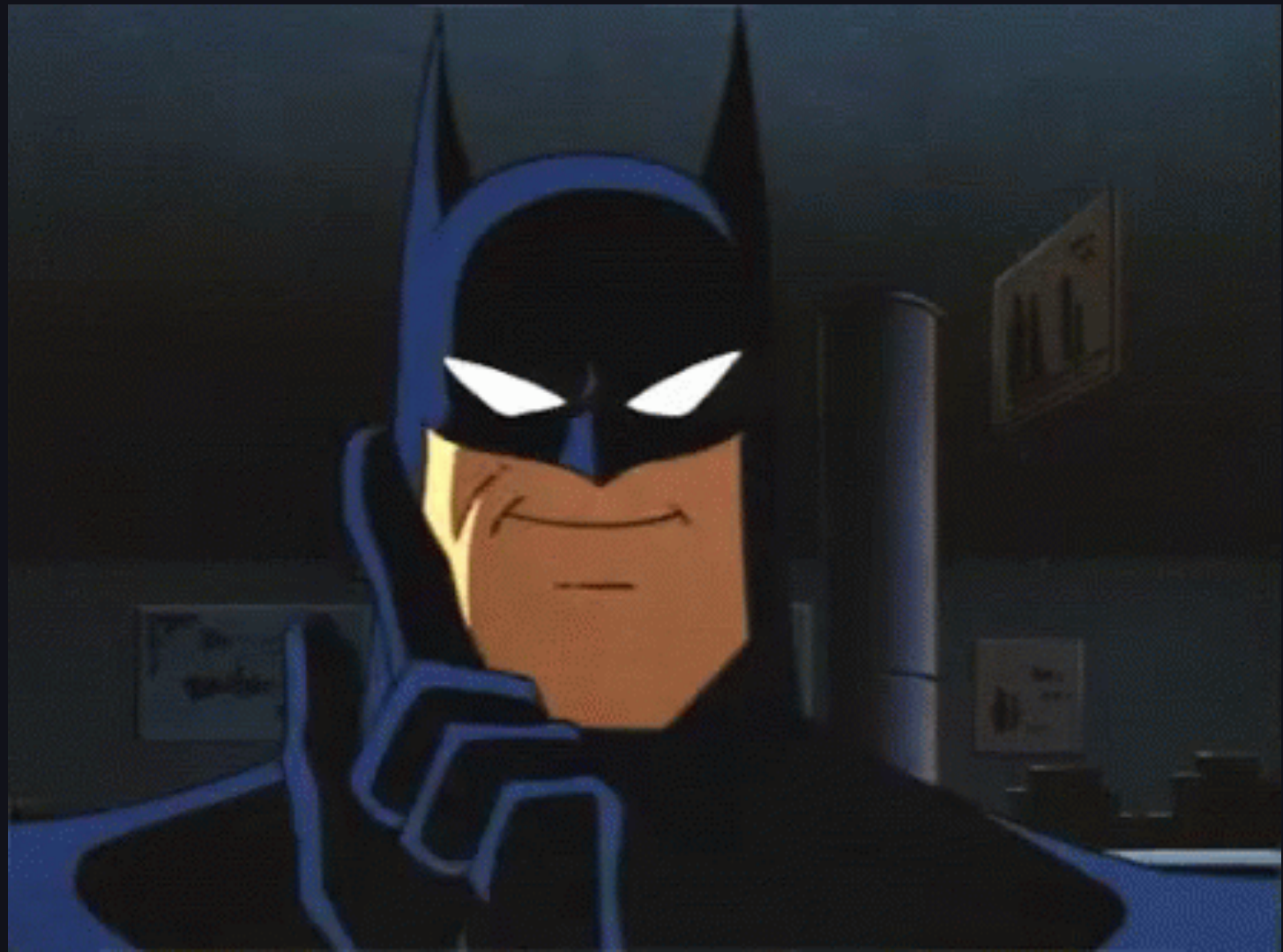


# ZBRUSH WORKFLOW

- 1. CUT UP AND KEY THE MODEL**
- 2. ENSURE THE MODEL IS WATER TIGHT**
- 3. SET THE THICKNESS**
- 4. MAYBE YOU'D USE MAGICS TO HOLLOW THE MODEL OUT**
- 5. SEND IT OFF TO THE PRINTER**
- 6. VOILA!**

MAKE IT **BIGGER**





# **BRONZE CASTING WORKFLOW**

- 1. MOLD**
- 2. WAX PULL**
- 3. WAX CHASE**
- 4. GATING**
- 5. SHELL**
- 6. BURN OUT**
- 7. METAL POUR**
- 8. KO & SAND BLAST**
- 9. ASSEMBLY & CHASING**
- 10. FINAL SAND BLAST**
- 11. PATINA**

# MOLD MAKING





# WAX GATING



# SHELLS





# METAL POUR





# SAND BLAST



# PATINA



**CONSIDERATIONS BEFORE YOU  
ATTEMPT TO BLEND THE TWO  
WORKFLOWS TOGETHER?**

# COMPOSITION



# ONE CONTIGUOUS SURFACE





# COMPOSITION

- Brought cape in closer to leg
- Removed utility belt and back detail
- Made cape single wall vs double wall
- Rounded off and added thickness to blades on gauntlet



# COMPOSITION



# RESOLUTION

- For Batman, Alejandro punched up the detail across the board, with special emphasis on the utility belt and cape

7.5ft



7in





# RESOLUTION

- For Wonder Woman, Jack did the same but also added additional detail in the new composition

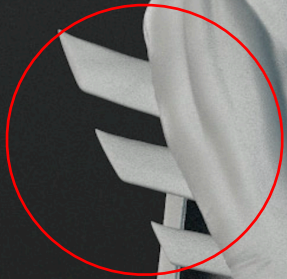
15in



7.5ft



# SAFETY



## Pinch Points and Sharp Edges

- Needed to round off and thicken the blades on Batman's gauntlets
- Needed to bring the cape closer to the top of Batman's calf to close off a potential pinch point

# SAFETY



## Sharp Edges and Pedestrian Hazard

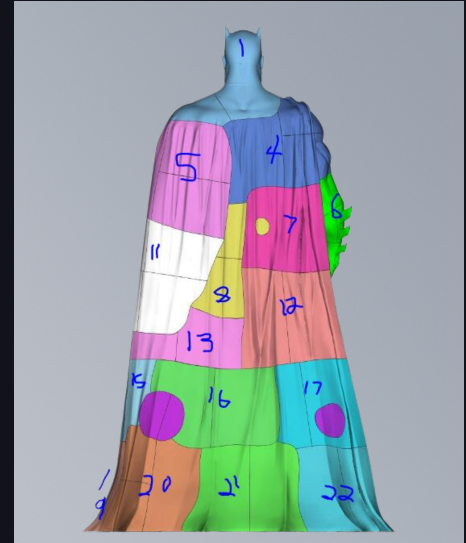
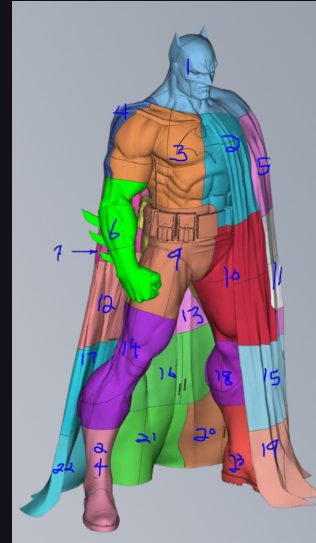
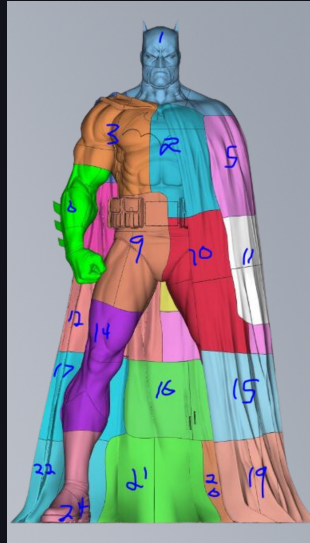
- Needed to completely remove the spear
- Also needed to completely remove the cape

**HOW DO WE ACTUALLY BLEND THE  
TWO WORKFLOWS TOGETHER?**

# SECTIONING THE PARTS

## Working with Form3D

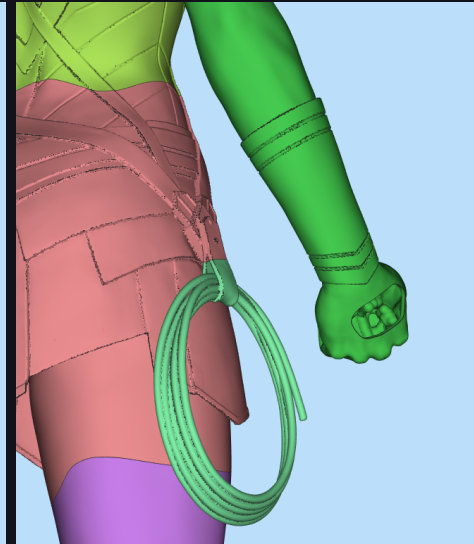
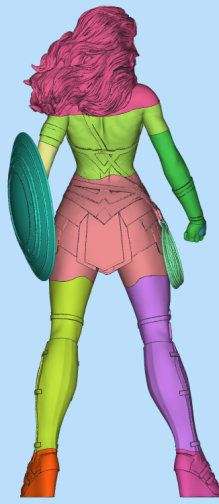
Since we have one contiguous surface to work with, we collaborate with our printing partner Form3D to determine where to make the cuts in a way that makes the most sense for future casting and welding.



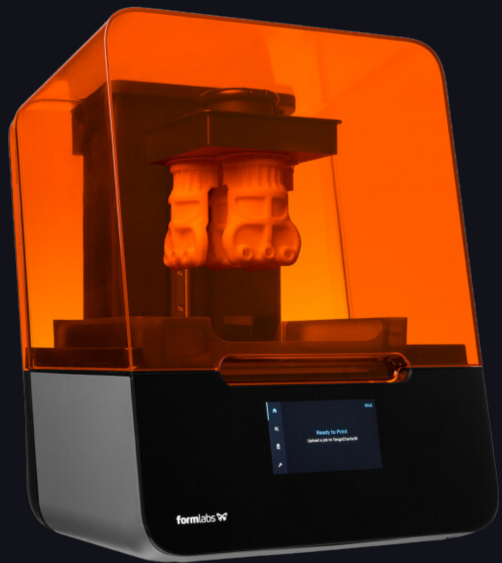
# SECTIONING THE PARTS

## Working with Form3D

Since we have one contiguous surface to work with, we collaborate with our printing partner Form3D to determine where to make the cuts in a way that makes the most sense for future casting and welding.



# PRINTING





# PRINTING

## Vx1000 Build Platform



01.

### **BUILD VOLUME OF 1000MM X 600MM X 500MM**

- Build platform is larger, allowing us to print larger panels

02.

### **RECOATER APPLIES PMMA (POWDERED ACRYLIC)**

- Applies uniform layer of PMMA at 100-150 micrometers

03.

### **PRINT HEAD DOSES THE BINDER (CYANOACRYLATE)**

- Vertical build speed of 18mm per hour

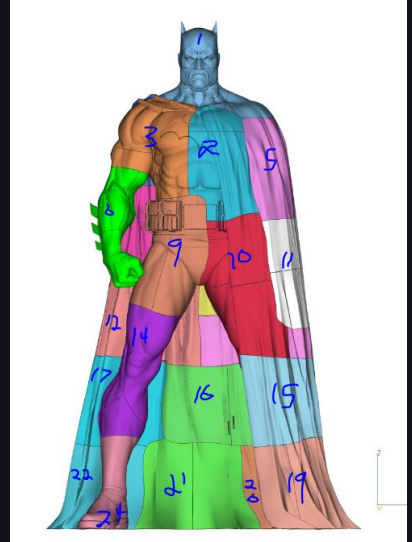


# PMMA PANELS

## Wax Infiltration

### Wax Infiltration

1. Makes the PMMA combustible so it can be burned out of the shell
2. Stiffens the material so it doesn't collapse during shelling
3. Gives us a surface that's easier to clean up like a traditional wax



# BRONZE CASTING WORKFLOW

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# THE FINISHED WORK

Installed outside of Burbank AMC 16

## Batman Installation

Here we see multiple images of Batman installed outside of Burbank AMC 16 on behalf of the City of Burbank and the "Visit Burbank" campaign.



# THE FINISHED WORK

Installed outside of Burbank AMC 16

## Batman Installation

Here we see multiple images of Batman installed outside of Burbank AMC 16 on behalf of the City of Burbank and the "Visit Burbank" campaign.



# THE FINISHED WORK

Installed outside of Warner Brothers Visitors Center

## Wonder Woman Installation

Here we see a couple of images of Wonder Woman installed outside of the Warner Brothers Visitors Center on behalf of the City of Burbank and the “Visit Burbank” campaign.





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