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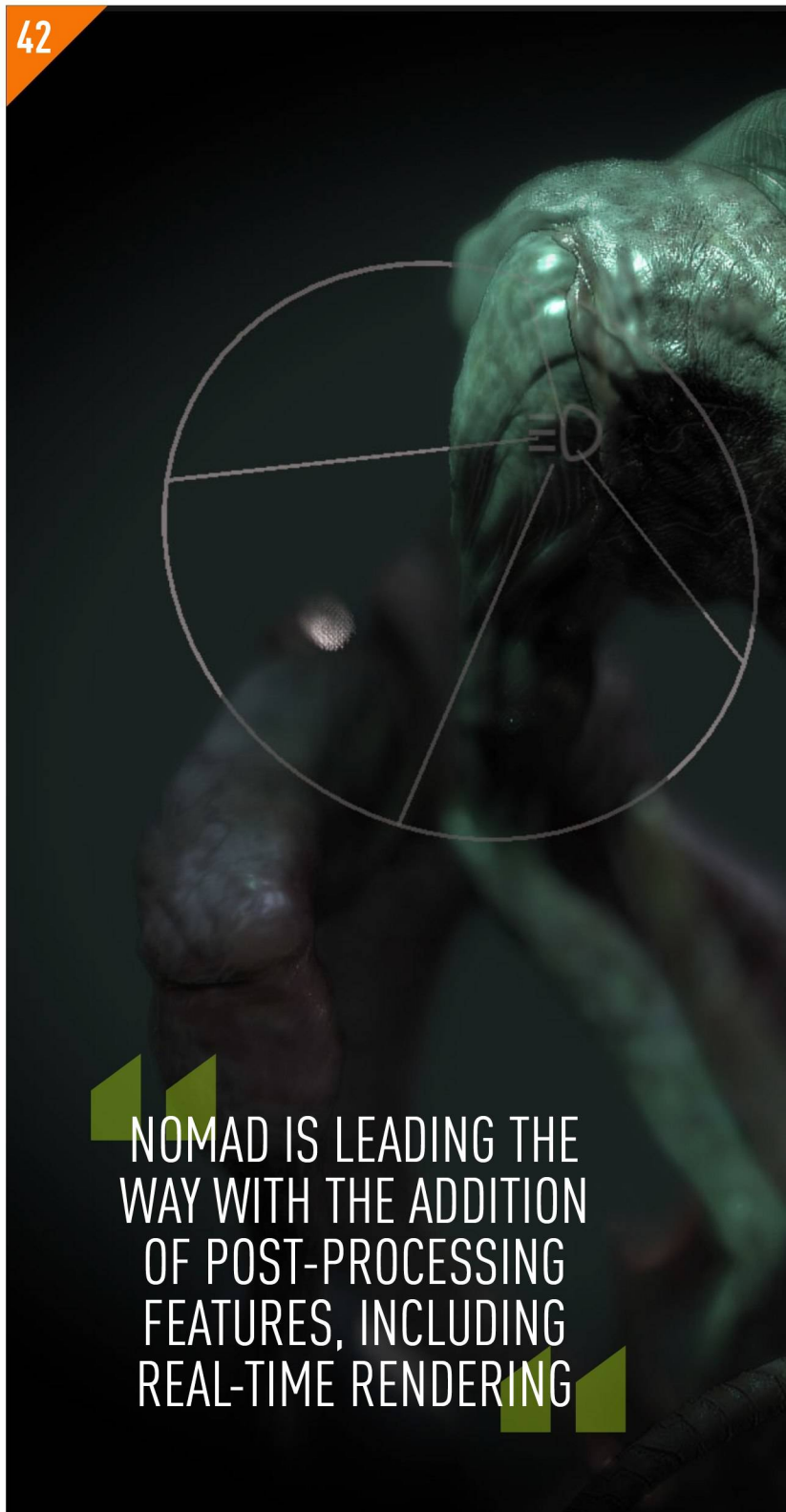
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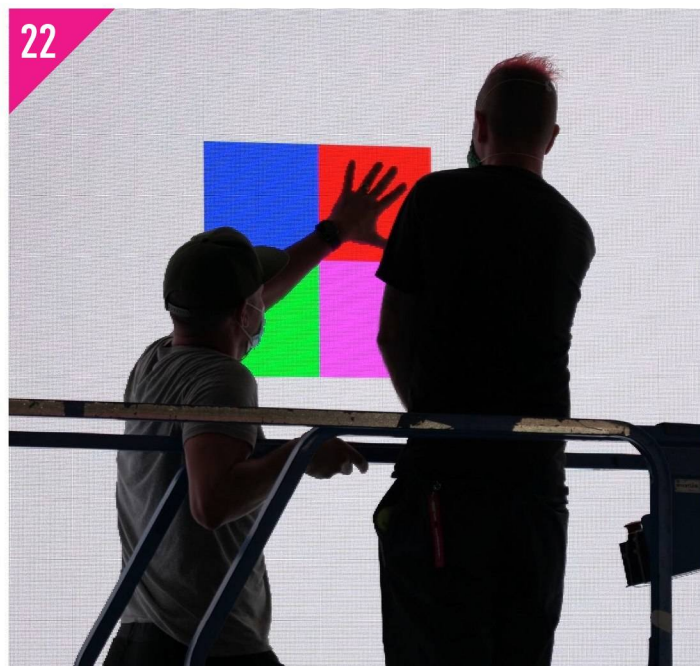
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3DS MAX | ADOBE ILLUSTRATOR

CREATE A LARGE COLLABORATIVE ART PROJECT

CG veteran and industry trainer Donovan Douglas explains how to organise and implement a large communal art project

I teach Graphic & Animation Design at Longwood University in the state of Virginia, USA. Dean Brent Roberts of Longwood University's Greenwood Library asked what I might propose for a large, empty wall at the back of the library. He told me as long as he had been there, the large wall space between the first and second floors had called out to him, begging to be adorned with some type of art. After speaking with several artists about this goal and getting no response, he then

approached me and I responded immediately with what I thought would look nice in that spot. I envisioned multiple panels fitted together to form a completed puzzle and executed by many artists. I could easily see it in my mind's eye, even as I stared at the blank wall. I set about organising what needed to be done in order to accomplish this goal. We were soon beset by the COVID-19 pandemic, which added a year to the process because we could not freely assemble, and so we

worked from home for much of the time.

Fortunately, the result was an exceptional endeavour that brought together the creative power of the university's Art, Theatre, and Graphic & Animation Design faculty and students.



AUTHOR

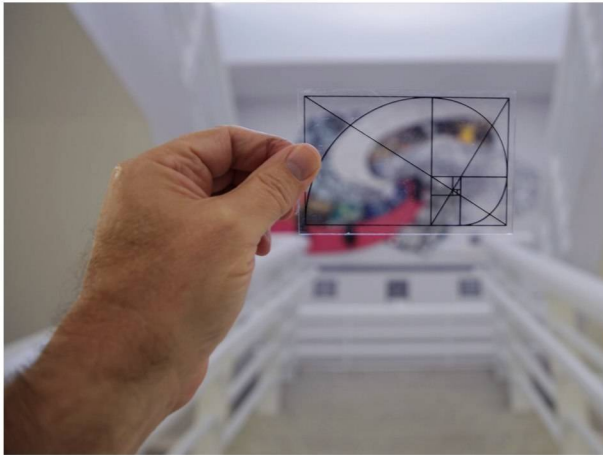
Donovan B. Douglas, MFA

Donovan teaches modelling and animation classes at Longwood University in Virginia. He has worked in 3D since 2002. 3ds Max, ZBrush, Mudbox, Maya, and Blender are his favourite 3D programs.
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01



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01 DEVELOP THE BIG IDEA

If you decide to embark on a project like this, I would suggest having it revolve around a theme of your choosing. You are not limited to using a design like mine. I have always been fascinated by the Fibonacci sequence and the Golden Ratio, which is also often referred to as Golden Mean or the Golden Section. Some years ago, I created a transparent plastic card imprinted with the Golden Ratio that I carry with me to look at various works of art. It helps me understand and see how different artists make use of this mathematical ratio.

02 PLAN AHEAD

In the very early planning stages, I thought about using up to 50 artists, all using only one of the smaller sections in each of the eight panel pieces. I soon realised that would be a logistical nightmare and possibly impossible to execute. I ultimately decided to focus on the eight complete swirls and limit the participation number to eight artists or artist groups per panel.

Establish rules
Explain clearly what the artist can and cannot do. For example, bolting items to the back of the boards could easily interfere with the hanging system.



02

There were seven other faculty members in our department who were interested in participating, so with one swirl left available, I also took part in the panel creation process. I decided to call the completed piece with all the panels Sectio Aurea, which is Latin for Golden Section. I picked that name because it so closely reflected the finished works of art.

At the very beginning of the design process, I approached our in-house student design agency, Design Lab. Their initial prompting led me to create the final design that incorporates the eight sections that swirl together to complete the form. The students in Design Lab also designed an informational brochure about the project.

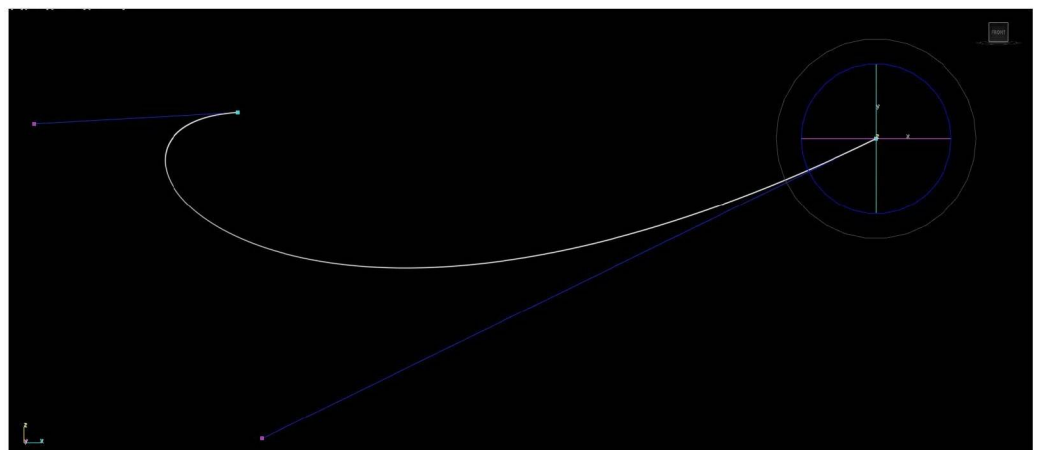
03 RESEARCH THE GOLDEN RATIO

I researched many examples of the Golden Ratio found in nature. A

walk through a local grocery store revealed examples of the Golden Ratio in the vegetable section. Even the galaxies in the night sky reveal Fibonacci relationships. Pine cones and many flowers also exhibit this pattern. This explains why my final design ended up looking vaguely floral. This old conch shell from my bookshelf is also a prime example of the Golden Ratio.

04 LAY OUT THE DESIGN

I used Autodesk 3ds Max for my creation process. However, this will work in any 3D program that allows you to create spline shapes. I used the spline tool to create a single curve in the front orthographic view. The curve corresponded to the reference images I had found that showcase the Golden Ratio. In order to maintain a perfect curvature, I used only two Bezier vertices per curve, one on each end, and adjusted

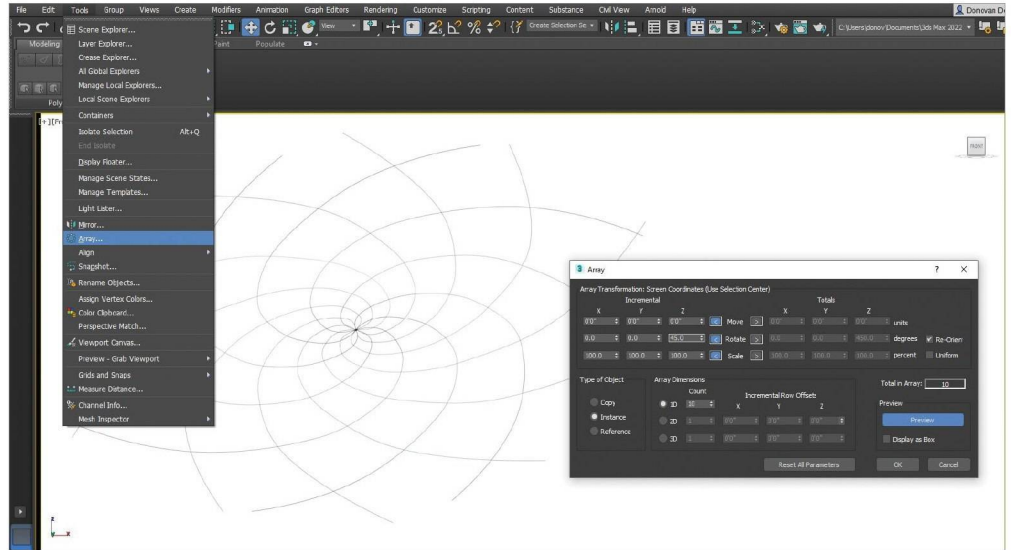


04

› the Bezier Handles accordingly to get the perfect curvature needed. I set the Interpolation value to 100 to ensure the smoothest line possible.

05 DUPLICATE AND ROTATE IN 3DS MAX

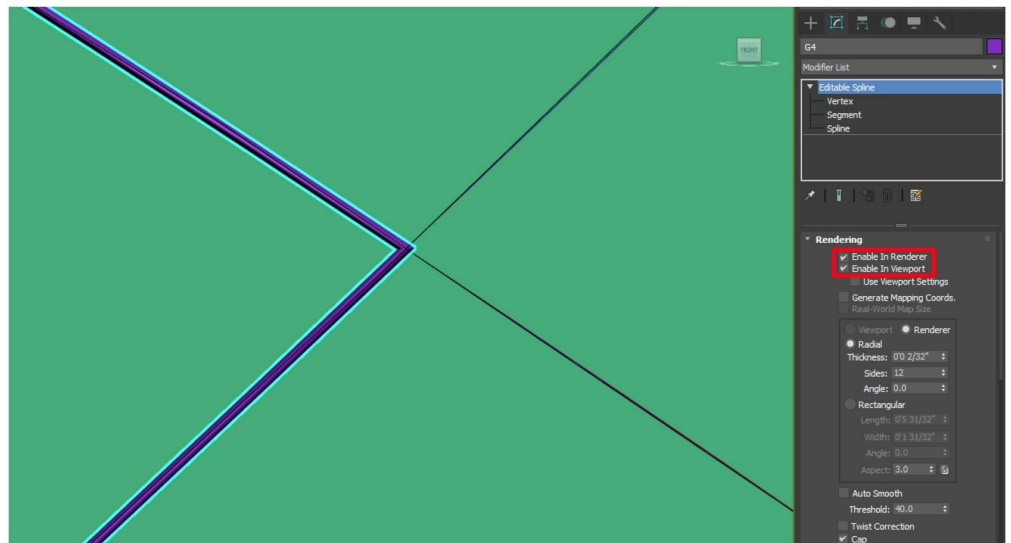
I selected one shaped spline and went to Tools>Array to rotate and duplicate the spline shape, first in one direction and then in the other direction after I flipped the curve. I changed the pivot points to the beginning of the curve to allow the splines to rotate correctly. When using the Array tool, I always click on the Preview button first to avoid making adjustments I cannot see in real time.



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06 ADD THICKNESS

At times the splines were difficult to see on my screen as I zoomed in and out, so I added some thickness. In the Modify panel under the Rendering dropdown, I selected the Enable in Viewport checkbox to add a small amount of thickness to the lines. I typically would leave Enable in Renderer unchecked, but in this case I wanted the splines with thickness to render. I set the thickness to a small amount in order to make the line more visible. As I worked back and forth on the different shapes, I could turn this on and off with ease. The extra thickness allowed me to imagine the space between each of the panel shapes that I would add in later.



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07 CREATE THE PANEL SHAPES

Once the overall design was complete I created a small, rectangular spline shape in each space in the design. I converted the rectangles to Editable Splines. I confirmed each corner had a Bezier corner vertex which allowed

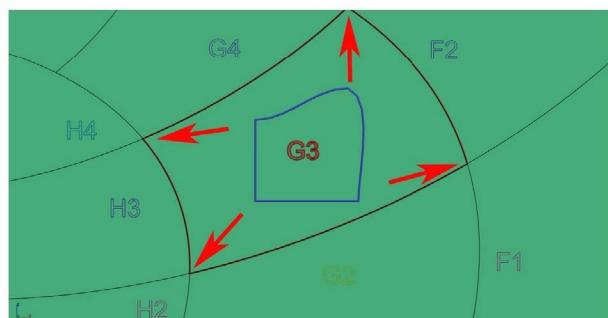
Anticipate problems and plan accordingly

I encountered many problems on this project, everything from missed deadlines to physical problems with both the boards and the wall. You need to persevere and work through the issues.

me to modify each one to fit the curved irregular shapes of the swirl. For the triangular pointed panel shapes that meet in the centre, I deleted one vertex from each of the rectangles that met in the centre so that only three remained. I carefully adjusted all the Bezier handles until I had the perfect shape for each panel section.

08 AIM FOR ACCURACY

I zoomed in as far as I could in order to micro adjust the overlapping Bezier curves, to get them to align to each other. After making a minor adjustment on one end, I invariably had to change the curvature on the other end, so it required several back-and-forth adjustments to finally get it correct. I also made sure that each edge from adjoining panels overlapped perfectly.

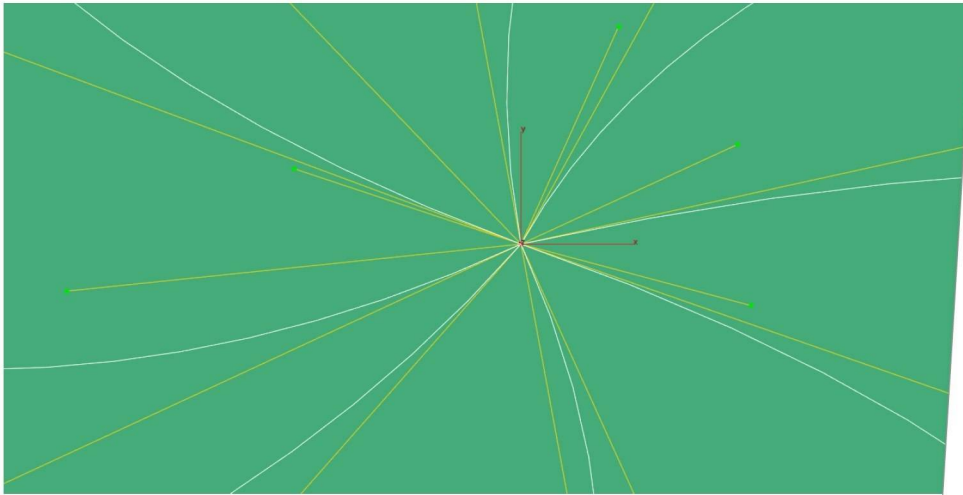


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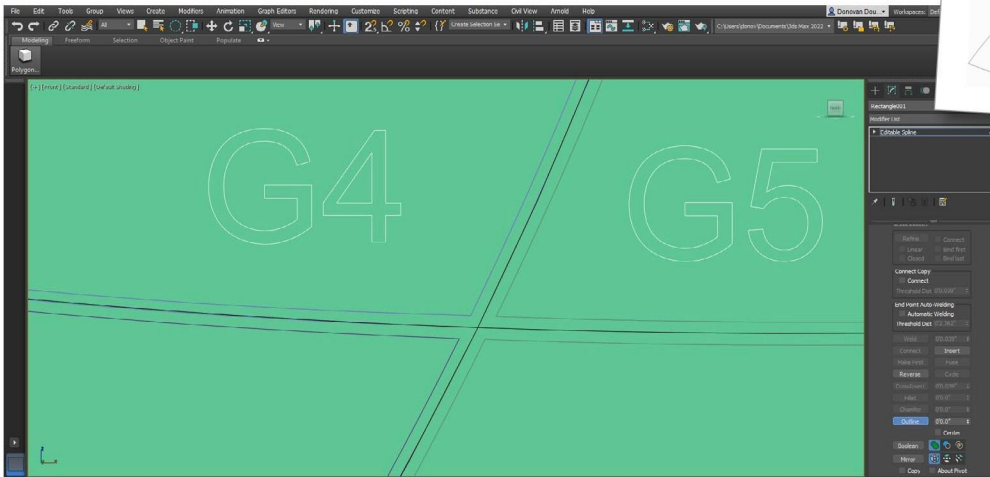
09 FINALISE THE DESIGN

I selected each of the panel shapes and in spline sub-object mode, I used the Outline feature to inset each shape to allow for a slight gap between all the panel pieces. I did this to make sure all the pieces would fit nicely together with a little breathing room and to allow for any variance that might occur in the hanging operation.

There were many variables that could affect how they fit together in the end. How the panel pieces were to be cut and what the artists might do with each panel were a concern of mine. I desperately did not want to make a mistake on the gap amount. I ultimately created a 5mm overall gap between panels which turned out to be ideal. I labelled each piece using a letter for the swirl and a number for the different parts of the swirl.



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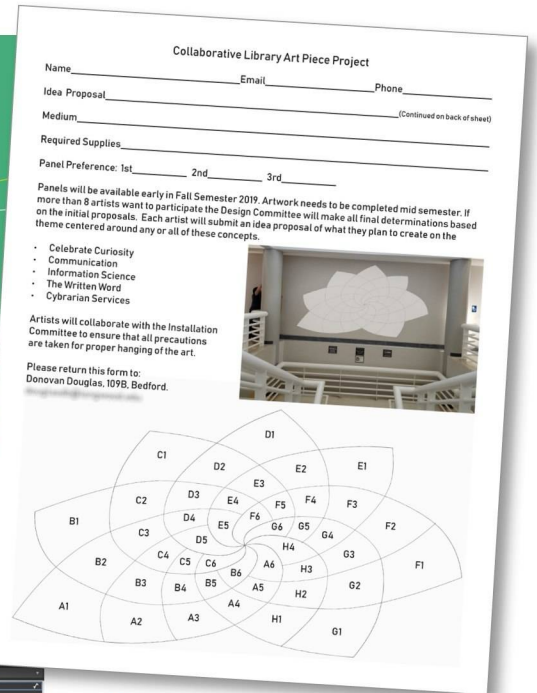


09



This project involved careful planning and preparation, taking into account material quality, logistical concerns, and how the final art pieces would look when assembled together

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10 INVITE THE ARTISTS

I created a form for the participants to fill out. I had them pick a particular swirl that they thought would best allow them to showcase their particular type of art. Part of the risk in doing a project like this is not knowing how the final assembled piece will look. I didn't hesitate to provide certain guidelines for the artists. In this project, the art needed to relate to the library in some fashion.

11 RESEARCH THE MATERIALS NEEDED

I needed to find a particular substrate board that would hold up after the artists had applied the various materials to it. I knew some of the pieces would be very heavy. I settled on a 3/4-inch (19mm) marine-quality, Medium Density Overlay double-sided plywood. The board needed to be resistant to moisture and strong enough to support a lot of weight. To help prevent warping, I painted the edges white to seal the boards.

12 IMPORT/EXPORT

I exported the final spline shape from 3ds Max directly as an Adobe Illustrator file. In Illustrator, I created an artboard that was to the real-world scale of the final size. If you are working in the UK, create 2,440mm x 1,220mm artboards in Illustrator. I was working in the USA so I created eight foot x four foot >

● The Pipeline

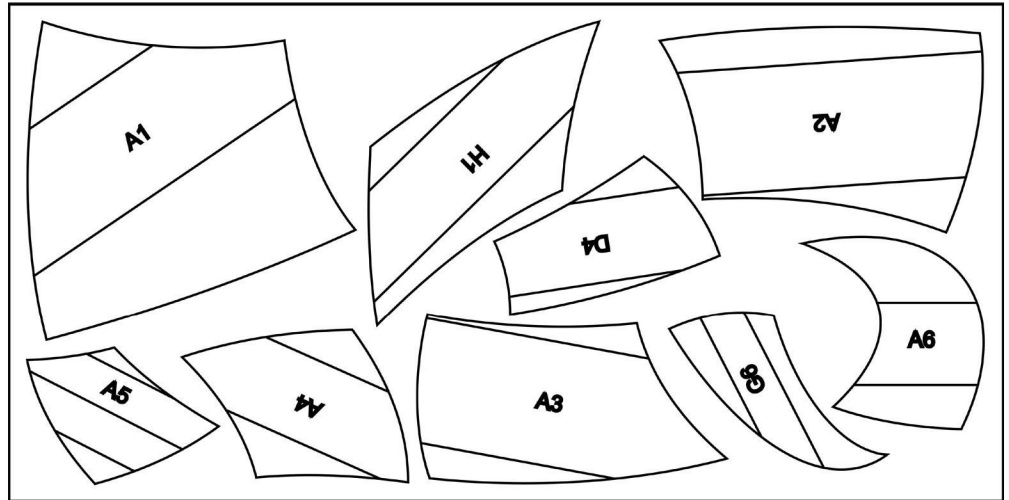
Create a large collaborative art project

➤ artboards. My available wall space was approximately three metres by eight metres. The finished art piece was a little less than three metres high by six metres wide. I laid out the various shapes to minimise wastage and to use the least number of boards possible, which turned out to be five in total.

13 COMPUTERISED CUTTING

In Illustrator I laid out the hanging system. I needed a computerised CNC machine in order to cut out the pieces accurately using my Illustrator files. Fortunately, I found one within one hour of the university. If I had attempted to cut all the pieces by hand, it would have invariably ended in frustration. Once I received all the cut pieces back, I laid them out on a theatre floor to confirm that they all fit together nicely. I also added the hanging bars before distributing them to the artists. The CNC machine cut small grooves into the back of each board, which enabled me to properly align the hanging bars.

I used an aluminium Z clip bar system to hang all the pieces. I made sure the bars were long enough to provide ample support for each piece, but short enough not to be seen when looking at the art from the side. The aluminium hanging bars on the wall needed



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to be painted the same colour as the wall. Since I was working in feet and inches, the grooves were cut exactly four, or a multiple of four, inches apart (10.16cm).

14 CHECK PROGRESS

I checked on the artists' progress regularly. I had to allow for a reasonable amount of time for all the artwork to be completed. I originally thought it would take from three to six months. It turned out to be significantly longer because of the pandemic, which affected all the initial deadlines. The project took two years to complete, from the start of the initial idea to seeing the finished pieces hanging on the

The artists

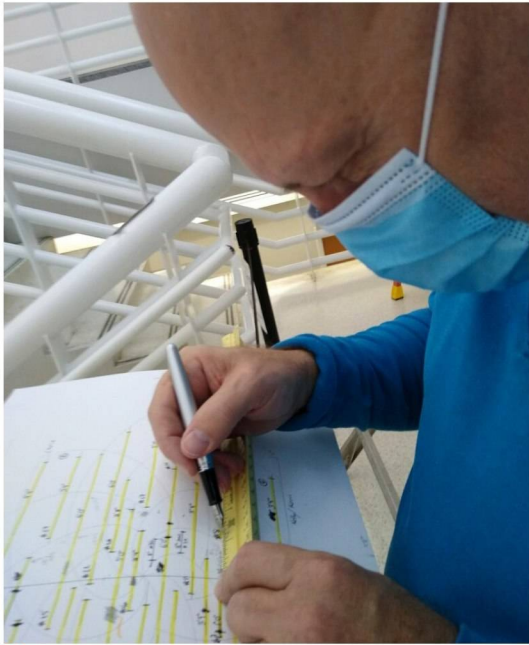
This collaborative art project features the work of Donovan B. Douglas, Christopher M. Register, Angela Bubash, Leslie Cook-Day, Jay Simple, Alex Grabiec, Kerri Cushman, Kelly Nelson, Adam Paulek, Rachel Ivers, Bev Roberts, Lucy Carson, Matt Keener, Emily Grabiec, Mack Lenhart, Stephen Marion, Laura Oertel and Riley Winkles

wall. Some artists needed a little more urging than others when they came up against a deadline I had established. The deadlines for various stages of the process ensured it ran smoothly.

The first part of the process was getting all the artwork back from each artist. The second half of the process was getting the work hung, insured, and then creating a brochure. Once all the artists returned all the panels, I could plan accordingly and set a date for the hanging of all the pieces. I printed out a scale version of all the pieces together, along with where the hanging bars were attached on the back as a template to know where to hang each piece.



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15 THE HANGING PROCESS

I worked with Andy Campbell, a professional carpenter from the Theatre department, to hang all the artwork. I had my measurements written down on paper and I read the numbers to him as he stood on the ladder and proceeded from the bottom to the top, hanging the aluminium Z clips.

Andy properly secured the hanging system to the wall to support and account for the different weights of each art piece.

Unfortunately, I mis-measured two of the hangers that were at the very bottom, which caused the hanging system to be seen from behind the artwork. So Andy removed the pieces and remeasured and recut some of the hanging bars to accommodate for the errors. The mistake areas on the wall were easily repaired and patched. Andy also discovered that the wall was not perfectly flat, so he had to adjust some of the hanging hardware to alleviate that problem.

16 FINAL ADJUSTMENTS

We soon discovered that lifting panels and locking them onto mounted wall hangers needed to be done slowly and deliberately. If we had accidentally dropped even one piece, it might have impaired our progress for months as the art was repaired. We confirmed that each piece was sitting firmly on the hanging bars. The entire piece of art was like a giant puzzle, shifting pieces to the left or right to make them fit snugly.

Wait patiently

Be prepared to be pleasantly surprised. The entire premise this concept is built on is that you will not know what the final assembled artwork will look like until each artist has returned their completed panels.