

Haven Hinds

Honors EDP Distinction

To achieve my Emergent Digital Practices Capstone Project, Flower Study, and create a book on extinct flowers using multiple mediums, I embarked on a journey that combined digital modeling, graphic design, and interactive storytelling.

I chose to delve into the study of flowers due to my profound connection with them, cultivated through a childhood surrounded by flowers and a current hobby of arranging them. Flowers, with their ability to evoke happiness, pleasant visuals, scents, and memories, hold a unique place in human experience. They are known to reduce stress, improve mood, and enhance concentration, underscoring their significance in our lives. Exploring extinct flowers, once vibrant and now lost forever, presents an opportunity to cherish and learn from the past. The medium of a book was a deliberate choice, aiming for both educational value and interactivity. A digital format ensures accessibility to a wider audience, transcending geographical limitations. Unlike traditional printed books, a digital book hosted on iPads allows for easy updates and expansions, preserving the material without physical wear and tear over time. To initiate the project, I set clear parameters, starting with 3D modeling using Blender—a versatile software known for its robust features. My initial plan was ambitious, aiming to model twelve flowers corresponding to the zodiac signs and months of the year. However, given the constraints of an eight-week timeframe, I revised the scope to six flowers to allow for deeper exploration and attention to detail. Research played a pivotal role in selecting flowers with captivating histories and unique attributes, prioritizing those resembling traditional flowers with distinct colors and identifiable petals. Each flower was meticulously researched for its significance in medicine, symbolism, and cultural context, aiming to create a connection for readers beyond mere aesthetics. By integrating digital

modeling, graphic design, and storytelling, I sought to create an immersive experience that invites readers to cultivate their symbolic gardens—choosing flowers based on their stories, symbolism, and individual charm. Through this project, I aimed to showcase the beauty of extinct flowers and ignite a renewed appreciation for their rich histories and cultural significance.

I utilized Blender to create 3D models of each flower, starting with the Taihaku Cherry Blossom as my first project. The flower takes shape gradually as I meticulously craft it piece by piece.

Importing a flat cherry blossom petal image, I form a plane and mold it to match the petal's contours. I adjust the geometry, pushing and moving parts to give the petal a natural curve. Using the extrude tool, I extend the sides slightly to add dimension and thickness. After finalizing the petal structure, I duplicate it four times and arrange the petals to fit seamlessly together. Then, I apply the materials and textures using the same cherry blossom petal image, modified with a displacement modifier. I create a unique texture effect by associating an empty object with the texture coordinates, allowing for dynamic adjustments. Additionally, I apply a subdivision surface modifier to enhance smoothness. The resulting cohesive texture complements the bright and slightly translucent appearance reminiscent of Taihaku Cherry Blossoms. Moving on, I craft the pistil and stamen by forming long cylinders for the filaments and ovals for the anthers, each tapered at the top to match the petals' curvature. I then proceed to model the stem, shaping it by extruding and scaling a circle with five vertices. Ripping and scaling edges allows me to achieve pointed ends, and I continue to scale and extrude to create a puffy center and cylindrical stem.

Instead of using an image texture, I employ UV texture mapping and painting techniques to add color, applying three shades of purple and pink at the top and green at the bottom. Once the flower was complete, I focused on creating branches composed of cylinders textured with branch image textures. To enhance the texture's physical appearance, I add a displacement texture,

which manipulated black and gray tones to achieve a bumpy effect. Displacement and subdivision surface modifiers further enhance the texture, while an array modifier with merge enabled extended the branches seamlessly. With the main flower and branches finalized, I duplicated the cherry blossom multiple times to create a full image of blossoms on branches. Prior to arranging the scene, I set up the main camera angle, ensuring detailed focus on the flowers nearest to the camera. This strategic approach managed render time efficiently while maintaining essential components across all flowers. Finally, I integrated the color spaces created as images into the world background, transforming the scene into an encompassing sphere within Blender's environment. I adjusted additional camera angles and warm lighting specifically tailored for the flower, rendering images with and without the world background to obtain PNG images with a transparent backdrop. I began modeling the Ghost Orchid flower in Blender by starting with a plane. The structure of this flower was more intricate compared to the Taihaku Cherry Blossom, which allowed for a unique modeling approach. I focused initially on the center petal, adjusting edges in edit mode to create a smaller top and bottom with protruding wings. After deselecting portions of the petal, I pushed down the remaining section, while curving the winged sides inward to enhance the flower's dimension. Next, I individually modeled five pointed, tapered petals extruding from the center. Each petal required organic shaping, beginning with the top two, followed by the middle two, the middle top petal, and concluding with the bottom two, which required more time due to their curved and elongated shapes. To refine the center petal's shape, I extruded a small portion at the top and used sculpting tools along with subdivision surface and solidify modifiers to achieve a smoother appearance. The top five petals underwent sculpting to add creases, utilizing the same modifiers as the center petal. Additionally, a flattened UV sphere was sculpted and placed atop the center petal to complete the structure.

For materials, considering the flower's natural white color with possible green variations, I opted for a white material applied to all petals. The circular piece at the top of the petal was crafted using UV mapping and texture painting, featuring a cream base color with light brown spots. After completing the flower, I constructed a vine wall on a cylinder using Blender's Ivy Generator. Each ivy group was generated separately to create variation, filling out the cylinder. The cylinder was given a brown material resembling tree bark, while the vines received a muted green material. Subsequently, I duplicated and resized the flower to create a cluster of four flowers, carefully positioning them with various camera angles and lighting setups. To enhance the scene, I added a green tint to the lighting, complementing the flower and vine colors. Finally, I incorporated a purple color space into the world background before rendering the images. This meticulous process in Blender resulted in a detailed and visually captivating depiction of the Ghost Orchid flower.

When working on the tiny Youtan Poulo flower, less detail was required. I began by creating the petal shape from a plane, manipulating the edges to form a distorted baker's hat appearance. The center was adjusted downward slightly to achieve a rounded middle. These flowers have a white, somewhat translucent appearance, so I enhanced the white material with a noise texture for added dimension and translucency. After completing the petal, I duplicated it four times and arranged them together. The only other visible aspect of the flower is the stem, which I modeled using a cylinder. I ripped the edges at the bottom to create a texture resembling two chopsticks joined together, matching the flower's stem appearance. To provide a setting for the flowers, I created a leaf from a plane, shaping the edges to have pointed tips and wavy sides. The leaf was given a green material with a spotted noise texture to mimic the natural texture of a leaf. For

lighting, I used warmer yellow tones to highlight the lightness of the leaf and add warmth to the flowers.

I duplicated the original flower approximately sixteen times, as these flowers typically grow in large groups. They were arranged closely together on the surface of the leaf. By adjusting camera angles, I varied the positions of the flowers to achieve a sporadic yet organized growth pattern. Finally, I incorporated a blue and yellow color space into the world background and rendered the images to capture the composition. This streamlined approach in Blender resulted in a cohesive and visually appealing depiction of the Youtan Poulo flower group on a leafy surface.

Modeling the Jade Vine flower proved to be the most challenging due to its unique shape and distinct elements. I started by creating a plane and manipulating the edges to form a hooked tip and a wider, rounded bottom. Achieving the rounded shape required additional sculpting, particularly focusing on sculpting the wider bottom to resemble a pillow-like base. Applying a solidify modifier to the petal introduced a split effect, prompting further sculpting to refine and smooth out any protrusions or irregularities between the two halves. Once the main petal structure was established, I proceeded to create the other two components of the petal. The long, canoe-shaped portion was crafted using a Bezier Curve and a solidify modifier, while the rounded, peanut-shaped segment consisted of a stretched and sculpted cylinder, complemented by a torus to connect it seamlessly with the main petal and the canoe-shaped portion. Each component received a subdivision surface modifier to enhance smoothness and detail. The next phase involved tackling the materials. The flower's coloration was complex, requiring multiple gradient textures to achieve the desired appearance. The main petal, canoe petal, and torus connector were assigned a greenish-blue hue with hints of greenish-yellow, while the circular portion featured a dark purple with a greenish-white gradient. To complete the scene, I created

the purple vine on which the flowers grow. Using a larger cylinder, I added segments to create a slightly bent appearance, tapering the top and bottom by resizing the points to form slightly pointed tips. I replicated this process on smaller scales to create thin branches with pronounced bends, duplicating them numerous times to populate the vine with branches. After duplicating the flower approximately twenty times to fill out the branches, I arranged the camera angles to optimize lighting. I opted for a slightly warm, yellowish light to accentuate the green tones in the flower's materials. By incorporating an environment texture into the world color space, I refined the lighting and camera angles to achieve the final renders of the Jade Vine flower scene.

The Chocolate Cosmos flowers presented intricate challenges, particularly in texture detailing. I began by crafting the simple petal shape resembling an elongated chef's hat using a plane. Manipulating the edges, I tapered the flower with wavy top and bottom edges featuring an inward curve. To enhance texture and create creases, I utilized the sculpt tool to refine small areas. Adding a subdivision surface modifier smoothed the petal, while a solidify modifier provided slight thickness. With the petal perfected, I duplicated it approximately nine times and arranged them into an open flower formation. Achieving the deep red velvet texture of the petals involved several steps. Initially, I employed an image texture of red velvet. To refine color and texture, I incorporated a shader to deepen the color, alongside texture coordinate and mapping adjustments to amplify the velvet appearance. Once the material texture was finalized, I fashioned a center ball using the same material, serving as the base for the tiny white pollen flowers. These flower shapes were created from spheres with deform modifiers, allowing for unique, flower-like forms. The pollen pieces were duplicated about a hundred times, with size and rotation variations to achieve differentiation and natural clustering. The center ball was filled nearly to the top, leaving a small circle open to mimic the flower's appearance. Crafting the leaf

involved manipulating a plane, resizing different points to achieve the desired shape. Adding depth and texture, I applied noise texture and color ramp to a green material, enhancing dimension with a solidify modifier for thickness. A cylinder was utilized for the stem, featuring a lightly colored wood texture achieved with a creamy tan material and noise texture. This stem was inserted into the center ball, with leaves arranged at the top below the petals after duplication. The completed flower was duplicated three times and strategically placed in space, leveraging camera angles to highlight texture and detail. The final touches included incorporating a pink and red color space before rendering the detailed images of the Chocolate Cosmos flowers.

I modeled the Shurui Lily, which features a unique structure. Beginning with a plane, I crafted the petal into a long, narrow shape by resizing different lines. I adjusted points to create slight curves and formed a pointed tip at the top. After pushing back the center slightly, I added a subdivision surface modifier to enhance detail before moving on to the flower's center. For the pistil and stamen, I used a flattened UV sphere. A lengthy cylinder represented the filament, while an elongated cylinder formed the anther with a tilted, pointed tip. The pistil, crafted from a tall cylinder, featured a V-shaped top extruded to a flat form, placed centrally within the UV sphere base. Surrounding the pistil, I duplicated the stamen filaments. With the flower's center completed, I duplicated the petals and arranged them around it, using cylinders for stems and extruding and rotating them to support the droopy flowers. Additionally, I modeled a leaf from a plane, smoothing it with a subdivision surface modifier before duplicating and attaching it to the stems. In terms of materials, simplicity was key except for the flower petals. Stems and stamen filaments sported a brown material, the pistil's material was a pale neon green, and the stamen's anther featured a burnt orange hue with a noise texture and color ramp to simulate pollen. The

leaves were given a leafy green material with a noise texture and color ramp. Utilizing an isolated image of the Shurui Lily's petal, I applied a stripy light pink and white material using UV texture mapping and texture painting. To maintain a solid white appearance inside the flowers, I ensured the image texture only affected the outer petals, adding slight translucency for realism before focusing on lighting and camera angles. Cooler white lighting illuminated the flower's middle, enhancing visibility within the droopy shape. Blue and pink lights were employed to maintain the petals' pink color with a blue tint, influencing the color space added as an environment texture to maintain fidelity to the original flower. Renders were captured at different angles, both with and without the background, showcasing the detailed modeling and intricate textures of the Shurui Lily.

I crafted a unique color space background image for each flower, ensuring they maintained a cohesive style while differing in color and aura size. These backgrounds were inspired by the colors of the flowers or the colors they symbolized based on their story or personality. Using Affinity Designer, I initiated by creating a new artboard and covering it with a white background. I then assigned the chosen colors to rectangles, applying a Gaussian blur to each. This blur effect transformed the rectangles into soft, blurry circles resembling concentrated spray paint or aura images. An intriguing aspect of applying these backgrounds in Blender was the unpredictability of their placement. I often found that the final result provided a better mix of colors than I initially envisioned, adding depth and richness to the visual compositions.

When designing the book and page layouts, I explored various ideas and sources for inspiration. I began by browsing editorial magazine layouts on Pinterest, drawing elements from different designs that appealed to me, such as chrome letters, bright text, and cover page layouts. I particularly liked the concept of dedicating a full page to each flower's name, color space, and

renders with translucent backgrounds, inspired by spreads featuring text on one side and a corresponding image on the other. This idea also influenced the overall ordering of my book, where images preceded descriptive text, allowing viewers to appreciate the flower's visual aspects before delving into detailed representations. The front page was crafted as a collage showcasing all the modeled flowers. Each image was rendered with a transparent background, enabling me to layer the flowers together on a clean white backdrop. To maintain simplicity and highlight the flowers, I positioned the title and my name in the top left corner. Following the cover, the information page retained the white background and featured only text. This page served as a preface, offering viewers an introduction to the book, and encouraging them to connect with the personalities of the flowers showcased within.

The creation of chrome letters for each flower's name served two important purposes: it enhanced the personality of the flower and contributed to its uniqueness. To begin, I typed out the words in Adobe Illustrator and then utilized the liquify tool to manipulate them. This allowed me to pull and push the edges in various ways, creating distinct versions for each flower name while maintaining a cohesive method. Once liquified and shaped to my liking, I exported the text as an obj. file. Next, I imported the obj. file into Blender, placing the text into 3D space. While I colored the text within Blender, achieving the chrome effect required applying a chrome image texture as an environment texture to the world. I adjusted the direction and intensity of the chrome effect based on the specific flower and the color of the letters. After setting up the scene, I made the world environment transparent in the film settings and rendered the words as images using a camera positioned directly in front of the text. This process resulted in visually striking chrome lettering for each flower's name, adding a dynamic and personalized touch to the book's design.

When compiling information on the flowers, I aimed to incorporate a diverse range of sources to provide readers with accurate and engaging content. My goal was to present educational material in a lively and accessible manner, making it enjoyable for all types of readers, including those who prefer concise information. The structure of the information was organized into short, sectioned paragraphs to cater to varying reading preferences and to prevent overwhelming readers with excessive details. Each flower's entry typically began with essential details about the flower and its natural habitat. The subsequent paragraph explored additional facets such as medicinal uses, folklore associated with the flower, its symbolic meaning, and whether it emitted a scent. In the third paragraph, I delved deeper into the flower's history, its current conservation status (extinct, endangered, or potentially resurrected), and the personality traits I attributed to the flower. To wrap up the book, the final two pages featured my sources, presented with chrome lettering to match the book's design aesthetic. The citations were formatted in a simple, alphabetical MLA style, ensuring transparency and credibility of the information provided. The final product of this digital book is intended for viewing in the book app of an iPad. The book was created in Affinity Designer which allowed me to export it as a PDF. The PDF can be opened in the book app so viewers can swipe through and flip the pages of the book as they would with other digital books. I created this project with the intention of having two iPads in use so that more than one person can experience this digital book at a time. This could be individuals who are not connected or friends, family members, and significant others who want to immerse themselves in the book at the same time.

In a gallery setting, this piece would be arranged using four duplicated components. The primary elements required are two iPads with the book app installed and the PDF accessible through the app. The specific model of the iPads is not critical as long as they support the app. Additionally,

anti-theft cases are essential to secure the iPads and prevent theft. These cases would be affixed to two podiums, each 42” in height and preferably tilted for optimal viewing. Alternatively, if podiums are unavailable, the piece can be installed on a wall, ensuring consideration for various heights and accessibility needs. For optimal viewing, the iPads should be staggered in height—one positioned higher for taller viewers and another at a height suitable for someone in a wheelchair or a child. Furthermore, chargers and discreet white extension cords are necessary to keep the iPads powered throughout the gallery hours. The cords should be inconspicuously attached to the podiums to minimize distraction from the artwork.

Throughout the Emergent Digital Practices Capstone class, I actively sought and incorporated feedback during critique sessions to refine my project. While I implemented many suggestions, I chose to retain certain elements that aligned with my artistic vision. For example, I maintained the original page order of the text and image pages despite suggestions to reorder them for conventionality. This decision contributed to the unique presentation and surprise reveal of my book. Initially, I planned to feature twelve flowers, but reducing the number to six allowed me to dedicate more effort and detail to each model. While I would have expanded the project with more time, I am satisfied with the current selection of flowers as they fulfill the book's purpose effectively.

Creating this book involved utilizing multiple mediums, including research, 3D modeling in Blender, and graphic design in Affinity Designer and Adobe Illustrator. Access to diverse software was crucial for developing engaging digital content, such as the 3D chrome letters.

Looking ahead, I plan to exhibit this project in the Davis Gallery of the Shwayder Art Building at the University of Denver from May 23rd to June 16th, 2024. Additionally, the book will be

accessible on my portfolio website, www.havenhinds.com, under the graphic design section, enabling digital viewers to explore the book and its exhibition presentation.

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