The Myth of Persephone & 3D Animation as a Cinematic Art Form

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgements</td>
<td>3</td>
</tr>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Concept</td>
<td>6</td>
</tr>
<tr>
<td>Design</td>
<td>8</td>
</tr>
<tr>
<td>Storyboarding</td>
<td>13</td>
</tr>
<tr>
<td>Modeling &amp; Rigging</td>
<td>19</td>
</tr>
<tr>
<td>Animation</td>
<td>25</td>
</tr>
<tr>
<td>Reflection</td>
<td>28</td>
</tr>
<tr>
<td>Bibliography</td>
<td>30</td>
</tr>
<tr>
<td>Appendix (Storyboards)</td>
<td>31</td>
</tr>
</tbody>
</table>
**Introduction**

I have always created my own stories and characters. My early interest in creative writing inspired a passion for storytelling. As I have matured, I am drawn more to the visual arts. This has shifted my focus from telling stories with words to communicating with images.

My initial interest in animation was inspired by American animation classics such as *Snow White* as well as more contemporary works such as *Frozen*. I became interested in 3D animation as I observed how the technology evolved and afforded a level of detail that is often impractical with traditional animation. As computer-generated movies moved from the plastic-like textures of *Toy Story* to more complex and detailed imagery, I began to recognize the potential of computer-generated animation as a storytelling device.

This passion for animation intensified when I learned about Blender my sophomore year of college. A later course in Autodesk Maya introduced me to 3D modeling. This experience led me to contribute to my fellow students’ multimedia thesis project by creating a city street using Maya software (Najjab and Meeker 43). This work, in turn, led me to pursue my own senior thesis project.

My project was a year-long endeavor culminating in a 3D animation created with Autodesk Maya. My goal was to enhance my technical skills and understanding of the individual components of 3D animation while furthering my development as an artist and visual storyteller. To this end, I also intended to reflect upon the following questions: 1) How can I use visual imagery to tell a story? 2) How and why do stories change over time? 3) How can I tell a story using 3D animation technology?
Concept

Over the summer, I brainstormed ideas for my thesis. I knew I wanted to create a short animated film, but I didn’t have a story or concept yet. As I struggled to come up with a simple story to tell, I realized I could also adapt an existing story. After all, many of the Disney movies I had watched growing up had been inspired in one way or another by European fairytales. One story that I liked that wasn’t that well known was the Greek myth of Persephone.

The myth explains the origins of the seasons: Demeter, goddess of the harvest, had a daughter named Persephone who was kidnapped by Hades. Demeter, in protest, caused all of the crops to die until her daughter was given back to her family. Hades finally agreed to allow Persephone to return to the Mortal Realm with Demeter, but because Persephone had eaten fruit from the Underworld, she was required to spend part of each year in the Underworld with Hades. During this time, Demeter causes the crops to die again, leading to fall and winter, and when she returns, the crops grow again, leading to spring and summer.

I’m not sure what exactly draws me to this myth. There are many aspects of the myth I find interesting: the relationship between Demeter and her daughter, the contrast between the Mortal Realm and the Underworld (also called Hades, but I’m referring to it as the Underworld as not to cause confusion between the place and the character), the myth’s role in explaining the origin of the seasons, and Persephone’s transformation from the unnamed Kore to Persephone, Queen of the Underworld.

One of the biggest challenges I faced in creating this film was identifying which aspects I wanted to focus on. At the beginning of the year, I thought I had a fairly straightforward goal of adapting the story to an animated format. I knew there were certain changes I wanted to make—specifically giving Persephone more agency in the story—but I thought I would make an otherwise faithful adaptation of the myth. It wasn’t until I was planning out the story in detail
and creating the storyboards that I realized that there was a lot I still needed to figure out. Simply having an idea for a story in my head was one thing; actually drawing it out on paper and planning out shot for shot how it would look was another.

Another challenge was working within the time constraints of the project. Although I created a timeline at the beginning of the year, it didn’t take long for me to fall behind schedule. Several parts of the process of creating a 3D animation, such as rigging, were tasks I had limited or no experience doing previously; I found that those tasks took much longer than I expected, causing me to drift further behind schedule. I finished Fall semester without a completed storyboard, and I realized I needed to significantly rework and simplify my story. While I had originally intended for my film to be around four to five minutes in length, I attempted to shorten it to less than two minutes, as that seemed like a much more realistic goal. I also eliminated all of the characters except for Persephone herself.

When I submitted my thesis proposal at the beginning of the school year, I wrote that one of the questions propelling my thesis was, “How and why do stories change through retellings?” Ultimately, many of the creative decisions I made in creating my film were made not due to conceptual ideas of how I wanted to retell the myth, but due to working within limitations I faced.
Design

One of the first steps in developing my film was creating the designs of the characters and settings. I drafted the character designs before I had finished my storyboards; as a result, I ended up creating designs for characters that ultimately did not appear in the final film.

Character Designs

In designing the main three characters (Figure 1), I tried to draw upon what the characters were traditionally associated with. Persephone, for example, was associated with the pomegranate, flowers, and springtime. Demeter was associated with the harvest, the cornucopia, and grain in particular. Hades was associated with death and wealth.

For Persephone’s design, I focused on flowers, and tried to design her dress to look as though it were made of flower petals, with a belt made of wood. For Demeter, I chose a green color scheme, as that is often associated with nature. I also drew her with a crown made of leaves.

When designing Hades, I tried to draw inspiration from the Greek character, and avoid modeling him after the Christian Devil. I did this because I thought conflating characters from two different religions to be odd, and because conflating Hades with the Devil made his character seemed unabashedly evil, while my interpretation of the character was that he was more morally gray. I also wanted to make him look regal, in reference to his role as the ruler of the Underworld.
While I was creating the character designs, I also debated on how realistic or cartoony I wanted the characters to appear. I originally drew them in a more realistic style, but then redrew them in a more cartoony style (Figure 2), as I thought the simplified version would be easier to model and animate. Ultimately, when creating my model for Persephone, I went back to my original drawing and used that as a reference instead. As I will discuss in my section on modeling, I only made two significant changes when I created my model of Persephone: I eliminated the flowers in her hair and I changed her skirt.

*Figure 1. (a) Persephone, (b) Demeter, (c) Hades*
Background Designs

I decided early on that the short would have two settings: a forest in the Mortal Realm, and the Underworld. I didn’t want the Underworld to be a scary place. I wanted the Underworld to look like an underground cave with crystals, in reference to Hades/Pluto’s association with wealth and minerals. I also wanted there to be a river, in reference to the Styx river.

I wanted to contrast these settings as much as possible, which I accomplished mostly with lighting and color. While the forest would look very natural (Figure 3), the Underworld would have very dramatic lighting (Figure 4). The forest has greens, yellows, and light blue, while the Underworld has mainly dark blues, purples and pinks. I also tried to use red sparingly, so that the pomegranates would stand out more.

Originally, I was going to create a different version of the forest for each season, but I decided to take this aspect out of the story before I began modeling.
Figure 3. The Mortal Realm (top, original concept art; bottom, rendered model)
Figure 4. The Underworld (top, original concept art, bottom, rendered model)
Storyboarding

The storyboard evolved over many iterations as the story changed. As discussed previously, one difficulty I encountered was with the length of the story. While a five-minute short does not sound very long, I soon discovered that it was unrealistic for me to animate it by myself within the timeline. So, something I had to consider when creating my story was how to tell a story within only a few minutes. This made me realize that telling the myth in its original form was not feasible, as it was too complicated. As such, as I went about creating and revising the storyboards, I continually simplified the story until its final version.

Version 1

My initial concept was to tell the myth in its entirety. Persephone and Demeter would be introduced, their relationship would be established, and then Persephone would go to the Underworld. Demeter would realize Persephone was missing and cause the winter to occur. Persephone would meet Hades in the Underworld, and then, upon discovering that Demeter had caused the crops to die in the Mortal Realm, would return to her mother, bringing spring to return.

My intent was to stay faithful to the original myth with one notable exception: instead of being kidnapped by Hades, Persephone would wander into the Underworld under her own volition. I wanted to make this change because I wanted Persephone to have more agency than she did in the original version. In the original, she seemed to me like more of a pawn of the other gods rather than her own character. Homer’s version describes the story from Demeter’s point of view, and doesn’t show Persephone’s time spent in the Underworld. The focus is more on how Demeter felt about her daughter’s kidnapping, not Persephone’s own feelings.

I hoped to remedy this in two ways: first, by telling the story from Persephone’s perspective, showing her exploring the Underworld and meeting and interacting with Hades.
While I did not plan to have dialogue in my story, I hoped that I could portray how Persephone was feeling through her expressions. Second, I wanted to change the story so that both Persephone’s arrival and departure from the Underworld would be her own decision. Not only is she kidnapped in the original story, but she is only allowed to leave after Zeus convinces Hades to let her go, with the promise that she will return for part of the year. In my original version, Persephone would be exploring the woods and come across the entrance to the Underworld accidentally, and decide to return to her mother at the end of the story.

This version was never completely storyboarded. In fact, at the point I had reached when I stopped this version, Hades and Persephone hadn’t even met yet. The storyboards took longer to create than I thought they would, and I kept changing the beginning before I could even reach the end (Figure 5). Aspects of the story that had seemed clear in my head became very murky once I had to actually draw them out. I knew that I wanted Persephone to return to the mortal realm once she learned what her mother had done, but how would she find out? The fact that there was no dialogue in the story made this more complicated, as a character couldn’t simply tell her what was going on.

Figure 5. Discarded storyboards from Version 1 (a) Cerberus from the Underworld (b) Stairs from the Mortal Realm to the Underworld (c) Rabbit (d) Demeter
Version 2

This version was created during Winter break. At this point, I realized I had to simplify my story greatly. I decided to remove Hades and Demeter entirely, and focus solely on Persephone. I also eliminated the seasons changing throughout the story, instead deciding to set it during the end of winter. The completed storyboards (Appendix) served as the foundation for the animatic and eventual 3D modeling.

The animated short tells the story of Persephone, Goddess of Spring, trying and failing to end winter and cause spring to appear. Persephone is shown in a forest in the middle of winter, with bare trees and snowing covering the ground. Although she tries in vain to use her magic powers to make the snow melt and the flowers bloom, nothing happens. Frustrated, Persephone storms off, and comes across a flower in the middle of the forest—an unusual sight in the middle of winter. Persephone picks the flower from the ground, and the ground beneath her suddenly gives way, sending her down into the Underworld. Persephone wakes up to find herself drifting in a boat steered by Charon, the ferryman of the Underworld. She leaves the boat to explore the Underworld and comes across spirits who resemble featureless silhouettes. Persephone tries to communicate with them, but they do not seem to notice her. She stumbles across a garden, which contains a small pond and a towering pomegranate tree. Persephone takes a pomegranate and eats it. She looks into the pond and sees herself sleeping back in the forest instead of her reflection in the water. As she reaches out to touch the water, she is transported back to the forest and wakes up.
Differences between animatic and final product

Several scenes were altered or removed from the final version due to time constraints (Figures 6-8). The character of Charon and the silhouettes in the Underworld were eliminated, and a short sequence from the forest scene was deleted. Compositions of various shots were also altered slightly.

Figure 6. A scene that was eliminated from the Final Version
Figure 7. Storyboard excerpt from Final Version
Figure 8. Example of storyboard (top) as compared to final version (bottom)
Modeling & Rigging

Modeling Persephone

I made two significant changes in modeling Persephone: I changed the design on her skirt and I eliminated the flowers in her hair (Figure 9). I changed her skirt because of technical difficulties. During the rigging process, I skinned her shoes, the top part of her dress and her belt to her body mesh. That way, those meshes would move as she moved her feet and torso respectively.

However, this did not seem practical for the skirt of her dress. It seemed inevitable that as she would move her legs to walk that the mesh of her legs would have to collide with the mesh of her skirt. For this to happen in a somewhat realistic fashion, the most practical way seemed to be to make the skirt mesh an nCloth and make her body a passive collider. nCloths are simulations created by Maya that simulate how different types of cloth would interact with
objects (called passive colliders). That way, whenever the mesh of her legs interacted with the mesh of her skirt, it would move the way cloth would.

However, there were certain drawbacks to this approach. Maya would handle the calculations involved in simulating the cloth, but this took a considerable amount of time and processing power to do. Furthermore, the simulations would not always occur the way I wanted them to, which meant I would have to make small adjustments in the different properties of the nCloth shape (such as rigidity or friction) and then run the simulation again and again, and this was both frustrating and time consuming. I did not have experience using nCloths before this, and my lack of knowledge on the subject made it harder to correct errors (Figure 10).

I also had specific issues with the original mesh for the skirt. It was two sided, which caused it to interpenetrate. I realized that it would not be necessary for the skirt to be doubled sided, and that it would work considerably better if it only had one side. I also found that the skirt would slide off her body.

I also had issues with the slit in her skirt. In modeling the skirt, I made the opening too wide, and as such in the nCloth simulations it looked less like a skirt and more like the bottom half of a bathrobe.

I decided to remodel her skirt to a very generic skirt, without the slit. I finally figured out how to stop her skirt from sliding down, by creating a dynamic constraint between the waist of the body mesh and the top of her skirt. In retrospect, I probably could have made the slit in her skirt stick together more with a dynamic constraint.

I don’t think the change in Persephone’s skirt made a significant difference to the character, so I am fine with the completed version. I do think it is a bit unfortunate that the curved part of her skirt is gone, as that was intended to look like flower petals. However, the
blouse of her dress still has the petals, so that aspect of her design is still retained to a certain
degree.

Figure 10. Examples where nCloth did not work as expected

I decided not to model the flowers in Persephone’s hair because I thought her design
looked complete without them and did not think they added anything to the character.

A small detail I added in modeling the character was adding irises to her eyes. In my original
design, I drew her with black pupils without specifying what color her eyes would be. I decided
to make them blue, as I thought it looked good with her color scheme.
Modeling Environments

After I created my model for Persephone, I started to work on modeling the environments concurrently with rigging Persephone.

Materials and Textures

I did not focus too much on the textures for my models. Most models had either a Blinn, Lambert or Phong shader. For the water in the river and the pond in the Underworld, I used Maya’s built-in ocean shader. I used UV mapping for Persephone’s face to so that her lips and cheeks would be red. I also used UV mapping for the flower petals in the beginning of the film. However, I used this method sparingly as I found it very difficult and time consuming.

Rigging Persephone

I found rigging Persephone to be very difficult. I did not have experience rigging before this project. I used a tutorial from Lynda.com to help me rig Persephone. The process of rigging involves creating a skeleton for the model and then attaching the skeleton to the mesh so that when the animator moves the skeleton, the part of the model that corresponds to that bone of the skeleton (referred to as a joint in Maya) moves with it. Attaching the skeleton to the mesh is referred to as binding the skin in Maya. After using the Bind Skin method, the animator must then go through and adjust the skin weights. The skin weights dictate which vertices are affected by which joints. For example, vertices on the shoulder would likely be affected by both the joint for the collar bone and the joint for the upper part of the arm. Each vertex can be affected by multiple joints, so long as the number that corresponds to it (the weight) adds up to 1. The skin weights can be adjusted by either using Paint Skin Weights or by adjusting the vertices manually in the Component Editor. I think many of problems I experienced with my rig was due to the
skin weights being wrong. I think if I had had more time to work on the rig, I could have fixed some of the problems I had.

One difficulty experienced was with Persephone’s legs. I found that when I tried to bend her legs beyond a certain point, they would bend in strange ways (Figure 11). This was frustrating, as there were many scenes where Persephone was sitting or kneeling. However, I tried to use her skirt and place the camera in a way that would cover this up.

I also found that when I tried to tilt her head, her eyes would not always move with her head like I expected them to (Figure 12). I am not sure why this is the case. However, I simply needed to move them over and set a keyframe whenever I tilted her head.
Figure 11. Rigging troubles

Figure 12. Eyes not moving as expected
After I completed modeling my scenes and finished rigging Persephone, I began animating.

For Persephone’s facial expressions, I used blend shapes (Figure 13). This involves creating different versions of a model and using blend shapes to be able to change to those different versions on the same model, by using a panel with sliders (Figure 14). These expressions included things like blinking an eye, smiling, frowning, and sneering. With blend shapes, these expressions could be combined in various ways. I also used blend shapes for the eyebrows and eyelashes.

Figure 13. Various models used for blend shapes
I also used blend shapes for the flower petals and stem seen in the first shot of the film. I also used blend shapes to create the effect of the ground caving in at the end of the forest sequence.

I also tried to use blend shapes for the pomegranate that Persephone eats in the Underworld. However, this did not work, as the eaten model had a different number of faces and vertices as the whole model and as such, I would get an error message when I tried to create a blend shape. Ultimately, I got around this by using the two models in different scenes. When Persephone takes a bite out of the pomegranate, I used the uneaten pomegranate model, and the camera is angled so that the viewer cannot see the part of the pomegranate that is being eaten. In the next shot, I used the eaten pomegranate, and continued to use it for the rest of the Underworld sequence (Figure 15).
One area where I ran into difficulty was when Persephone had to interact with other objects that were also animated, such as in the scenes where she had to pick up a daffodil or a pomegranate, or when she sat in the boat. Picking up an object would be more difficult than I expected, because the object would sometimes move at a different speed than Persephone’s arm, and I would have to set many key frames so that the object wouldn’t float in the air or go through her hand. I also had a difficult time keeping the speed of the boat and Persephone consistent. I used a motion path for Persephone and the boat. While this made Persephone’s movement a lot smoother, she still slides back and forth a bit.
Reflection

Some advice I would give to aspiring animators is to plan ahead as much as possible. This can be done by creating a checklist of everything that needs to be done in the process of creating the film. It is also useful to figure out which parts of the film are most important and prioritize those in case one doesn’t have time to create the entire animated sequence. Also, some advice for animating would be to figure out the timing as much as possible when creating the animatic, before starting to actually animate in Maya. When I created my animatic, I didn’t actually know how many frames each action would be, and instead had to figure that out through trial and error while animating in Maya. In retrospect, I think it would have been much easier if I figured out the timing beforehand, instead of guessing. Additionally, I think it would be very helpful to have someone or some people to show the in-progress animation to and solicit feedback from them. I think it would be especially useful if the person or people giving the feedback had experience in animation, as their critiques would probably be more useful.

Working on my thesis was often a very intimidating process. While I learned a lot, it seemed as though the more I learned, the more I realized how much I didn’t know. Working on this project alone made me appreciate even more just how collaborative animated movies are.

In creating my thesis, I was more focused on honing my technical skills than in having a clear conceptual piece. However, one question that I have been considering since my thesis proposal is: how and why do stories change through retellings? I think in the process of working on my thesis, I got a clear answer.

My finished film bears little resemblance to my original concept. Persephone is there, the setting is the same, and the pomegranate is there, but the story is much less concrete. Early in the process of developing my story, I considered what changes I would make and why. I wanted Persephone to have agency that she did not have in the original. But I struggled with what the
“point” of my story would be. Would it be a love story? A tale about the relationship between mother and daughter? When Persephone ate the pomegranate, would she undergo some type of transformation, physical or otherwise?

Ultimately, changes in my story were led not by a particular theme or character arc I wanted to portray, but practical matters. My lack of experience in animation and time constraints were the two biggest obstacles in working on my thesis, and what most motivated changes to the story. My thesis film may look different from my original intention, but I am fine with that. Despite the many frustrations I experienced over the year, working on the film confirmed to me that I did want to be an animator. And while I may be somewhat unsatisfied by how certain shots turned out, I am ultimately proud of what I was able to accomplish. While I was working on my film, I was also applying to graduate programs in animation. While I do not yet know where I am going next year, I am excited for the future and for future endeavors as I continue to work on my animation and storytelling skills.
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