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THE SPOON THEORY

by

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BFA University of Central Florida 2020

A thesis submitted in partial fulfillment of the requirements
for the degree of Master of Fine Arts
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in the College of Arts and Humanities
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ABSTRACT

The Spoon Theory is a 3D animated short film that tells the story of a dancer struggling with an invisible disability. There is a variety of media that focuses on the struggles of the disabled, however *the spoon theory* focuses on a different aspect by exploring disabilities that are not easily seen. The film uses visual symbols to communicate these hard to discern conditions, creating a visually interesting spectacle while effectively conveying an important message. *The Spoon Theory* invites the viewer to experience a different perspective on life and raise awareness about the unknown struggles of others.

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Thank you to Hannah Lawley for educating me on the spoon theory and making me aware of the struggles that you experience. This film would not exist without you, and I hope this film can help other people become more aware of your experiences.

To my cohort, thank you for all your help and encouragement, you all made working on this project a lot more fun and I am glad we were able to support and learn from each other.

To my parents; thank you for supporting me my whole life and believing that I can accomplish anything I said my mind to. Your support in my life has allowed me to grow and develop with confidence in my skill and abilities. I love you.

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CHAPTER ONE: INTRODUCTION

The topic of disabilities is receiving more and more attention in media, including feature films, video games, books, shorts, and more. Most people will encounter these media daily, making it a powerful way to educate and share messages. Because of that, the growing representation has resulted in people becoming familiar with a wide variety of disabilities, thus fighting ableist views and empowering those struggling. Most of the representation for disabilities focuses on stereotypical physical and mental disabilities, leaving out a large group of people suffering from invisible disabilities. *The Spoon Theory* represents this group, focusing on telling their story and presenting that a disability is not always identifiable by physical or mental cues. Animation opens the door to convey this problem in a creative, relatable, and easily understandable way.

Disability in film stereotypically follows the story of discrimination. An example of a film that showcases this topic is the short film *Ian*, which tells the story of a young child in a wheelchair that faces bullying, discrimination, and isolation as he's trying to make friends with fellow children on a playground. Despite these struggles, he overcomes his fears and realizes his disability is not something to be afraid of. Invisible disabilities follow quite the opposite narrative. Because the disability isn't easily identifiable, the initial prejudices may not surface. People expect those who struggle with chronic illnesses to be capable of average physical activity because they cannot see the disability the individual faces. This can save them from the discrimination that those with easily identifying disabilities might face, but replaces these negative reactions with disbelief and inconsideration towards their struggles. The lack of attention in media contributes to ignorance and misunderstanding from people who do not have or know someone who has an invisible disability. *The Spoon Theory* utilizes narrative to demonstrate the internal struggle of the main character. This challenges the stereotypical view and allows for a new viewpoint to be explored.

To accurately convey this message in *The Spoon Theory*, it is necessary to explore the struggles of those suffering from invisible disabilities and to understand how their experiences differ from other disabilities. My own exposure to friends who are directly affected by invisible disabilities were important influences on *The Spoon Theory*.

CHAPTER TWO

The Spoon Theory

The Spoon Theory is based around the concept of “The spoon theory”. This theory was introduced as a method people with invisible disabilities use to explain how they experience their struggles in everyday life. In 2003, blogger Christine Miserandino was the first person that used the spoon theory to explain her chronic conditions caused by lupus to her friend. (Pugle, 2022) Spoons happened to be present at the dinner table and became the representation of energy in her story to explain the difference between being healthy and being sick, the need to make choices. (Miserandino, n.d.) People suffering from a disability typically have a set number of spoons each day. The number of spoons available for a day can vary, sometimes providing them with more energy to complete tasks in a day, other times leaving them with little energy. With every task performed, a spoon will get taken away. A task as simple as getting out of bed or making breakfast may be customary for healthy people, but for those bearing a chronic illness these straightforward tasks can cost a spoon. Once there are no spoons left, the energy they have available is spent and any other tasks will become difficult to accomplish. Those suffering from chronic illness will frequently use the spoon theory as a method to easily communicate their limitations with those around them. The Spoon Theory intends to utilize this theory and visually represent the spoons to spread awareness of the daily lives of those suffering from chronic illnesses. (Cristol, 2021)

The idea of *The Spoon Theory* was born after witnessing the personal struggles experienced by a friend. Having an inside view of the experience and how chronic illnesses can affect a person on a day-by-day basis demonstrated how severe the influences these diseases are on a person’s life and led to the realization that most people don’t consider illnesses they cannot see as authentic. Many who suffer from invisible disabilities get treated like their illnesses aren’t real because they’re not easily recognized.

Through research, it became clear that invisible disabilities were rarely covered in modern media like film, game, and television. When thinking about disabilities in entertainment media, characters in wheelchairs, amputees, or mentally unstable individuals that struggle communicating or are prone to overstimulation are depicted. Some characters in animation that fill this role are Quasimodo in *The Hunchback of Notre Dame* or Toph Beifong from the animated series *Avatar: The Last Airbender*. Although the representation of these kind of disabilities allowed for wider acceptance of the disabled and the idea that a disability does not equal incapability, most people are not confronted by the topic of chronic illnesses, auto-immune diseases and other disabilities that are not easily identifiable by looking at a person. Thus, the concept is difficult to understand without personal experience despite the number of people who suffer from these conditions. In the U.S. it is estimated that ten percent of people suffer from a type of invisible disability. (Feder, 2022) *The Spoon Theory* is a film that represents this group of people and educates the viewer on the topic while encouraging acceptance, understanding, and validation.

To accurately depict the spoon theory, research was conducted to understand both the physical and mental struggles of the disabled. There are a wide variety of illnesses that fall into the category of invisible, each one each one with its own experiences and struggles. The common trait of all these conditions is that they are invisible. *The Spoon Theory* uses the symbol of spoons to create a story that is applicable and relatable to any invisible condition a person experiences.

CHAPTER THREE

Story

The Spoon Theory intends to provide a clear view of the experience of someone struggling with an invisible disability. Rather than focusing on the outside perspective of disabilities, the story showcases the internal struggle and fear of not being understood. Because invisible disabilities are hard to identify by looking at a person, *The Spoon Theory* takes the approach of highlighting the experience of a flare up. The story features two characters, Hannah and Rylee, and contrasts them against each other through visual design and symbolism. Hannah suffers from an invisible disability and experiences a flare up during an important dance recital. *The Spoon Theory* follows the narrative of her concealing her disability out of fear of judgement from the public and her friend, as well as her coming to terms with her experience and being more open about it. *The Spoon Theory* intends to utilize her personal experience as a method of educating the viewer on the experience and encouraging those in similar situations to feel acknowledged and not fear judgement.

The Spoon Theory takes place in a performance setting. Dance has always been an art form that allows a performer to express themselves and their experiences in a visually creative and emotional way. Not only does it open a world for creativity, but this environment also provides a very realistic setting that most might not expect disabilities to exist in.

Symbolism

To effectively communicate the narrative of the spoon theory, a variety of symbolisms and motifs are featured in the film. Following the name of the theory and the film, spoons are the most important motif. It is important to note why. The spoon has long been a cultural symbol for nourishment and unity. (Celestial, 2022) For this reason, the spoon became the perfect symbol to use to represent energy.

Additionally, spoons are a symbol that universally have a similar meaning in most cultures, making them easy to understand and explain. Although the spoon theory and spoons are not an official medical term, they became widely used by those suffering from invisible disabilities. (Cristol, 2021) *The Spoon Theory* aimed to directly reference the spoon theory by utilizing the spoons as one of its main symbols, intending to make the spoon theory easily recognizable. The spoon is also a symbol for giving and receiving, as well as supporting and caring for one another, inciting the audience to consider and accept the group of people affected by disabilities, and for those struggling to accept themselves as well. (Celestial, 2022)

The spoons are not the only important motif in *The Spoon Theory*. It was important to visualize the loss of energy and the effects the disability has on the main character throughout the film caused by the disappearance of the spoons. Plants and flora have long been associated with life and are widely used in a lot of media. For example, in Disney's *Moana*, Te Fiti is the goddess of life, represented as an island full of blooming flowers and green growth. With flowers representing life and health, they are used as the supporting motif to enhance the visual impact of the spoons. The gladiolus is a flower that symbolizes strength, victory, and pride. Deriving its name from the Latin word 'gladius' meaning 'little sword', the flower has a strong feeling of strength. (McClenaghan, 2022) In *The Spoon Theory*, the gladiolus first appears during the start of the film as Hannah and all her spoons first appear, representing her strength and confidence as she feels energized and ready to perform. To support the loss of her energy as the film progresses, the flowers slowly wilt and die as her spoons disappear, symbolizing her loss of strength and impact of her disability. This progression gets supported by the appearance of thorns on the flower stems, creating the atmosphere of being trapped in a cage. Different colors of gladioli have their own individual symbolisms. The Spoon Theory utilizes classic pink gladiolus flowers, representing femininity and gentleness, and yellow and orange gladioli, representing positivity and happiness. All these colors support Hannah's mindset as she experiences her story. With the return of

her strength and positive mindset towards the finale of the story, all the gladioli bloom once more surrounding the setting in a bright and colorful atmosphere. (McClenaghan, 2022)

Characters

The characters are a vital part in conveying the message of the film. *The Spoon Theory* emphasizes the contrast of life between a healthy character and one suffering from an illness. Although at first glance the characters might appear on equal grounds, it's necessary to add subtle signs in the character designs that establish their differences. The advantage of the environment setting allowed for many creative ways to explore this. The character's stage costumes are a vital part of this exploration.

Hannah's costume follows the concept of a bird, specifically the wren. Birds are said to hide their illnesses, closely referencing the situation in which Hannah has put herself. They are also a strong symbol for freedom, despite their often small and fragile appearance. The wren symbolizes happiness despite their small and fragile form. Additionally, it is said that if one dreams of a wren trapped in a cage, it signifies the fear of exposing one's vulnerability. (Wilde, n.d.) A wren appearing in one's dreams can also be an encouragement to keep going and overcome the things one might be struggling with. (Wren, n.d.) Through this, the wren became the perfect animal to represent Hannah's struggles, giving her a sense of fragility.

To emphasize and contrast with Hannah, Rylee's costume and character utilizes a complete opposite concept. While Hannah's birdlike resemblance represents her fragility and trapped like nature, Rylee's costume takes on the form of a lion, focusing on the known cat and bird relationship. The intention in using this relationship is as a visual representation for healthy and sick. The lion is often seen as a symbol of strength. Initially it can be perceived as the healthy looking down on the sick, representing the conflict that can occur from the misunderstanding between healthy people and people with disabilities, as well

as the oppression that can occur, where people with illnesses are seen as less or weak. As the film reaches its conclusion the narrative changes to have the lion's strength be a support pillar instead.



Figure 1 Character render

Representation of femininity

Both characters explore the stereotypes around femininity to further push the contrast between the two. Hannah is portrayed as a stereotypical female, appearing gentle and almost fragile. In film, this stereotype is often perceived as weak and helpless. The intention is to portray quite the opposite, however. Those with disabilities are often seen as weak and helpless. Although Hannah appears frail, her confidence and determination to overcome the obstacles in her way will prove that she is in fact a very strong and capable character. *The Spoon Theory* intends to utilize Hannah to not only break the stereotype but uses it to break the common misconception about the disabled. In contrast, Rylee is portrayed as a stereotypically strong female character, referencing a more masculine look. Her character in the story, similarly to Hannah's, disproves this stereotype. Although visually she takes on that bold and

strong character type, she shows her caring and more motherly characteristics towards Hannah throughout the film.

Environment

The Spoon Theory takes place inside a theater. During the concept design stage, a variety of environments were explored. In an earlier pitch, the story took place in a practice room, which created a more intimate and private setting for the characters. During development, this setting was adjusted to a live stage to illustrate that those suffering from invisible illnesses are encountered anywhere. Utilizing a more public and exposing setting for the story helps support that fact. A stage is a spot where a dancer, actor, and other performers express their vulnerability to many eyes. It is also a spot where things can be hidden and lies can be told without anyone knowing. In this story, Hannah is trying to play the role of a healthy person, denying her illness out of fear of judgement and misunderstandings. She takes on the role of a dancer who uses her dance to tell her story, a stage was the perfect environment for her. Using a theater stage as the setting of the story was also beneficial in other ways. A stage is a setting that can be transformed into any environment. Using creative lighting and other stage props, the environment can be used to further enhance the progression of the story. In *The Spoon Theory*, this is done by allowing the flowers to become part of the stage decorations and using the stage lighting to shift the mood by adjusting lighting colors and intensity throughout the film.



Figure 2 3D stage environment

Merging 3D and 2D

The medium of *The Spoon Theory* is mainly 3D animation; however, it is necessary to set the flower and spoon elements apart from the rest of the environment. These elements are intended to only reflect Hannah’s experience and are a direct symbol of her disability. Because of this, they should be invisible to everyone else. The film depicts this by only showing the spoons and flowers in shots where Hannah is the focus. In addition, the spoon and flower elements are stylistically separated from the rest of the film. Where the rest of the film takes a more realistic approach, the texture of the spoons and flowers are intended to be more stylistic and two-dimensional. Using a completely different style, it becomes clear that these elements are not present in the same world and are a visualization of Hannah’s personal world and experience.

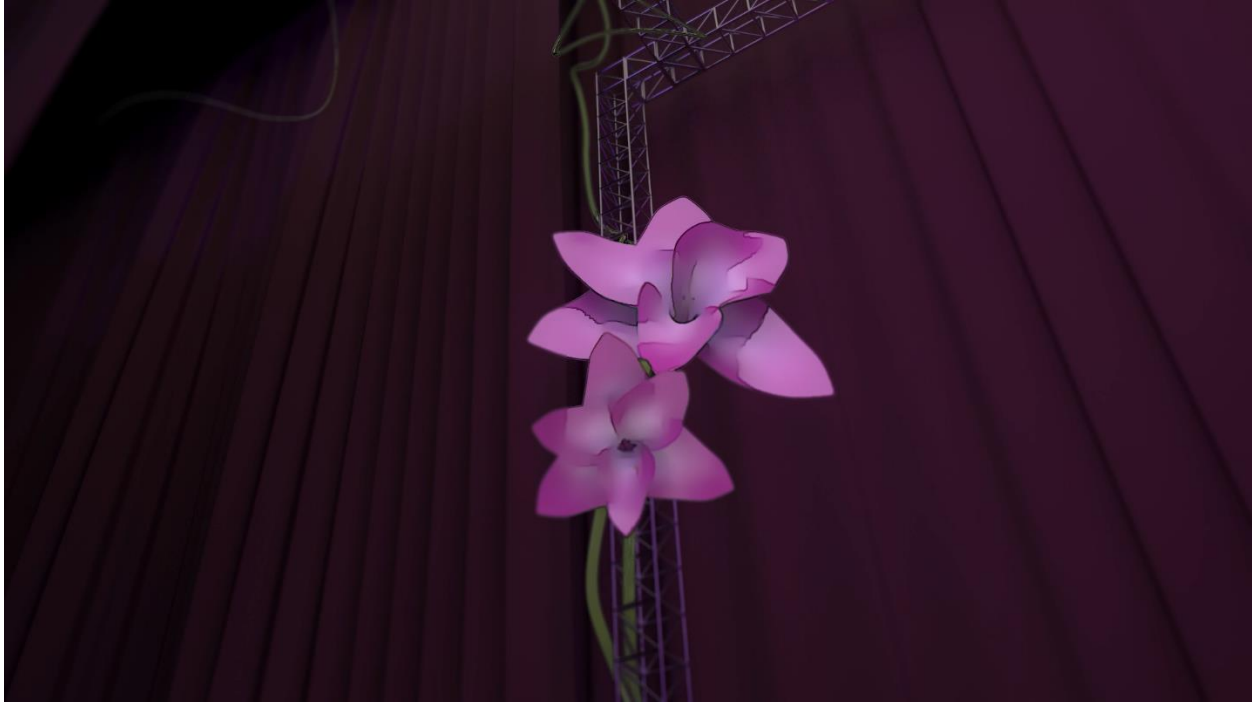


Figure 3 2D elements in 3D space

Music

Because *The Spoon Theory* uses dance as its main topic, the music in the film is a very important aspect. The choreography, story, and music had to come together to create one cohesive piece. The music complements and enhances Hannah's development throughout the film. During the start of the performance, the music is very calm and limits the number of instruments used to soft strings and a flute. The melody is slow and gentle to match Hannah's calm and collected performance during this part of the film. As Hannah continues to lose spoons, the music intensifies through the addition of instruments, using bolder tones of brass instruments and an increased tempo and volume to indicate Hannah's increasing distress through the loss of her spoons. The music continues to build up until it stops abruptly at the climax of the film alongside the disappearance of Hannah's final spoon, signifying that her struggle reached its end. At the resolution of the film, the music shifts from a slow and sad sounding tune into an upbeat finale set on by her acceptance of her friend's help.

The composition was created by Dane Bryant Frazier, who composed the song alongside the creation of the choreography and timing of the film to ensure that the sound and visuals complemented each other. He captured the message of the film.

CHAPTER FOUR

Expressive rigs

The character rigs were an important part of the production. The character rigs had to support a wide range of motion and be capable of fluid animation to support natural body movement in dance. Since the character is positioned in a variety of dance poses, I chose to add key poses for hands and feet that would simplify the animation process. Specifically, setting the foot to be on pointe, as it requires a very specific shape that remains consistent and accurately references real dance. Research was done into the placement of the character weight and the shape of this foot pose to assure its accuracy. These settings were created using set driven key and added as additional attributes in the foot controller.

An Essential Introduction to Maya Character Rigging (Briggs, 2021) showed how to create a basic hand rig using set driven key and creating key poses to be manipulated using the attribute editor. Instead of fully relying on attribute settings for curling fingers, more accuracy and freedom was required for the hand rig than using the key poses. Since the character will perform dance moves, the fingers must be able to move more freely and be easily manipulated in any direction to properly capture the feeling and emotions of the dance. This was created by creating controllers for each individual finger joint, and placing the set driven key functions on an offset group that allowed each finger joint to be moved independently while simultaneously still functioning with the attributes that were preset for the finger positions. (Christie) This allows for the fingers to be positioned in any pose and adjusted freely, while also being able to have pre-posed hands available for ease in animation.

Because most of the film includes dance, the characters needed to be very expressive to properly evoke the correct emotions that are being felt during the performance, especially Hannah, whose emotions and struggles grow immensely during the film. To achieve this, a flexible facial rig was created that allowed the animator to really exaggerate the character's expressions.

To create the facial rig, in addition to referencing *An Essential Introduction to Maya Character Rigging* (Briggs, 2021), Josh Sobel's *Expressive Facial Rigging* tutorial (Sobel) was strongly followed. Both these resources provided a solid foundation and setup for a highly flexible and expressive facial rig.

The facial rig makes use of a variety of components that are all connected using blend shapes. There is an overall base rig applied to the head geometry using controllers that allow the jaw, overall eyes, lower and top head to move. The set up was created by skinning the head to several joints that were placed in the head for the upper half of the head, lower half of the head, eyes, and jaw area which are constrained to the controllers. Because the set up utilizes joints rather than blend shapes, it allows more flexibility and exaggeration of movement. Controllers can be translated, rotated, and scaled. A secondary joint rig is applied to a duplicate of the main head geometry and connected through a blend shape. This rig utilizes the same method as the main geometry, but instead focuses on smaller sections of the head, like the nose, chin, cheeks, and overall lips, allowing them to be translated, rotated, and scaled individually. By placing the joints on a duplicate geometry, it allows for skin weights to easily be painted for these smaller sections without affecting the skin weights of the base rig. (Sobel)

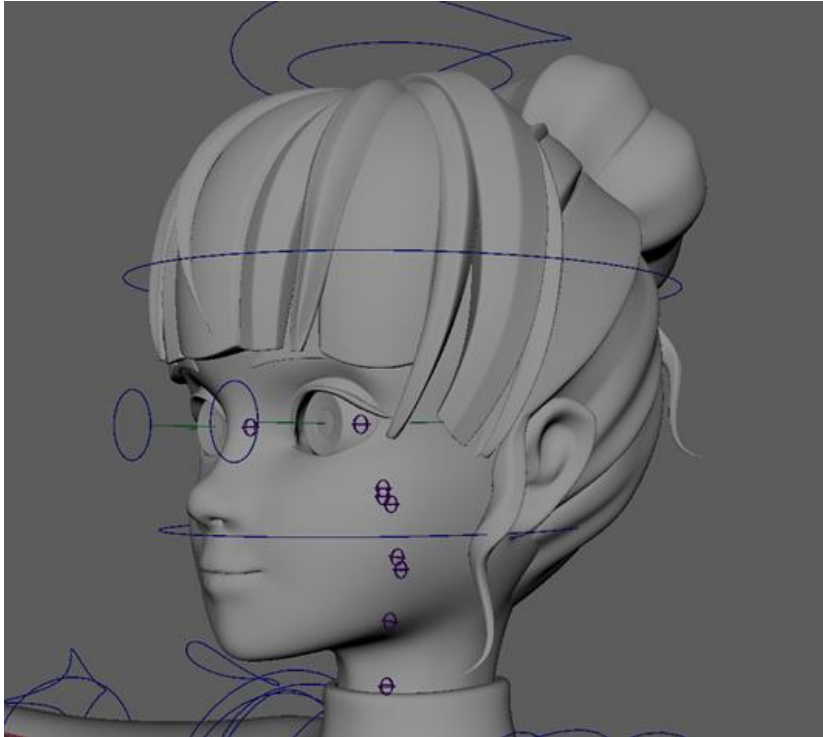


Figure 4 Head base rig by Sanne Methorst

Another duplicate of the main head geometry is used to create the eye blinking rig. The eye rig is created by using joints that lay on the eyelids and crease, which connect to joints that are positioned in the pivot of the eye. The eyelid geometry is then skinned to the joints, which allows the lids to smoothly deform around the eye as they pivot around the same pivot of the eye. When utilizing this method, an issue with the eye position in the socket was discovered. It was necessary to rescale and slightly reposition the eyeballs to correctly sit in the socket. Once the rescale and reposition was accomplished, it was discovered that the joint needed to move as well. To avoid reskinning the entire face, a new joint was created in the correct position of the eye pivot. This joint was then added as an influence on the skinning. To transfer the skinning weights that were previously done, all influences were locked except for the old and new eye joints. This allowed transfer of the data from the old joint to the new joint, which then allowed deletion of the old joint.

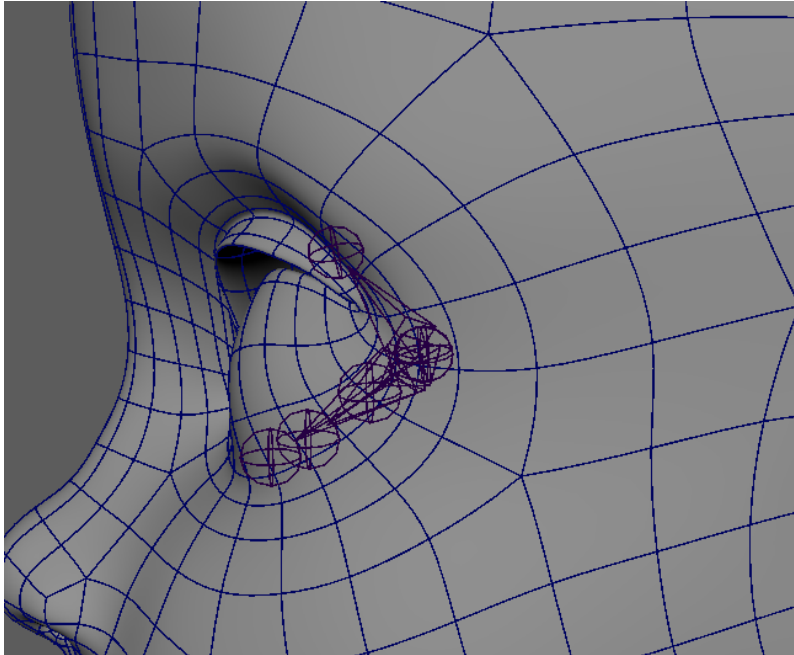


Figure 5 Eye rig by Sanne Methorst

Flower rig

In order to accomplish the complex animation needed for the flowers, a separate model and rig was required for each individual flower petal. Initial efforts involved using nonlinear deformers to make the petals curl and stretch, to create the effect of a flower blooming. Issues arose because this method limited the flexibility of the petals and caused interpenetration of the geometry. Alternatively, an FK joint rig was created similarly to the rig created for the character's hands, allowing broader flexibility through the ability to manipulate the petals in individual areas. By placing each controller in two offset groups, the controllers were movable into various angles of the petal joints, while also allowing addition of an attribute to activate a bloom using a set driven key. This attribute was added to a main controller to which all the individual petal groups are constrained to a parent and scale constraint, allowing the entire flower to be moved and scaled as a whole. The benefit of individual Forward Kinematics *FK joint rigs for the petals is that each individual petal can also be moved on its own. There are some shots in the film

where the flowers wilt and fall which made it necessary for the petals to be animated separately from each other.

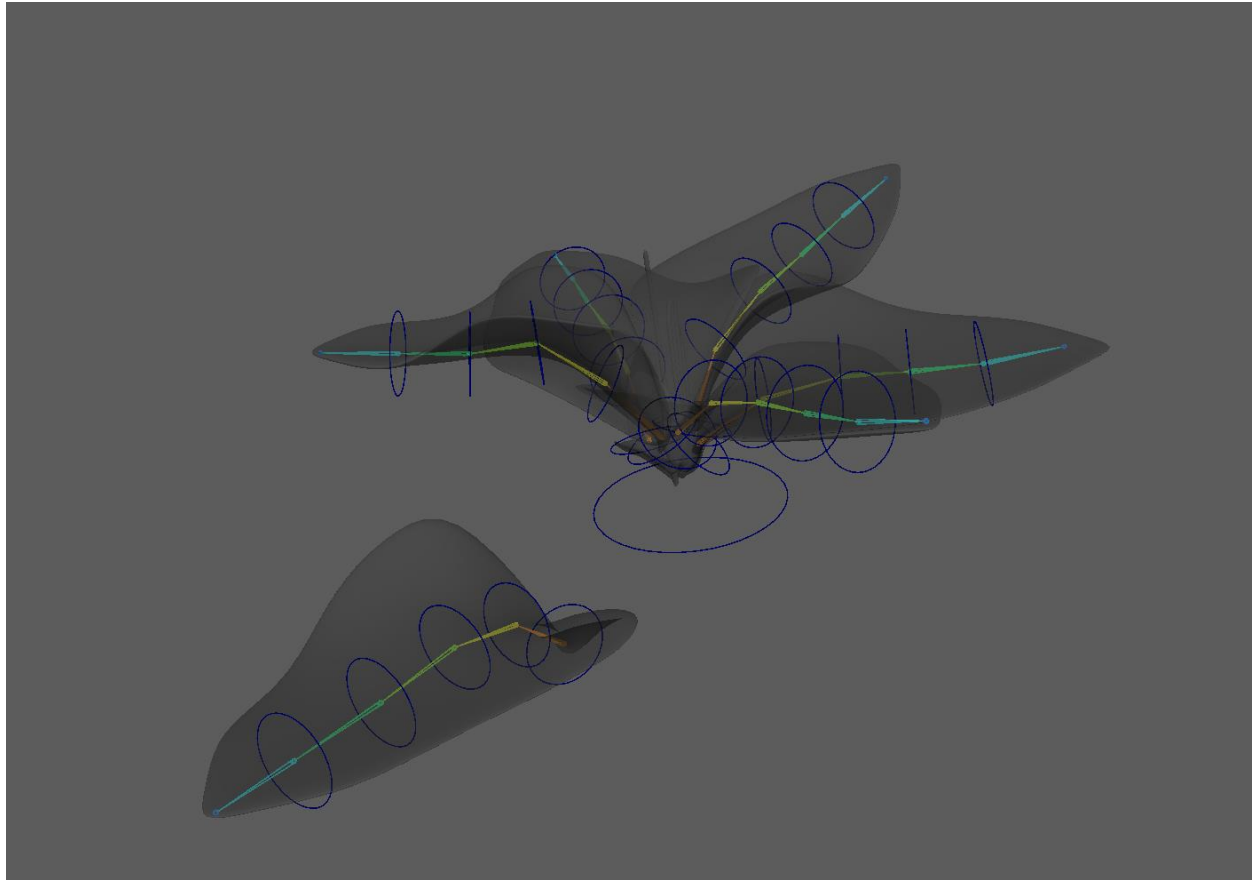


Figure 6 Flower rig with detachable petals by Sanne Methorst

2D look in a 3D world

To emphasize the fact that the flower and spoon elements are only present in Hannah's personal world and not visible to others, it was important to visually separate them from the environment. Separating the looks by merging 2D and 3D animation felt like an interesting idea to explore. During production this caused a couple concerns when it came to the completion of the film. Although the spoons and flowers should look like they're in a separate world, they still needed to look like they belong in the same space. Finding the balance between merging styles became a big technical challenge to

overcome in *The Spoon Theory*. A variety of different ideas and experiments to finalize the look were tested.

In the early development of *The Spoon Theory*, the intent was to hand draw the animation, creating a 2-dimensional cartoon look for them. Having that flat and stylistic look seemed interesting to explore. This idea came with a variety of challenges. How do you make the hand drawn style fit inside the style of a 3D environment? Hand drawing each frame is time consuming and can only be done in post as it relies on camera and character animation to be fully finalized. These challenges led to exploration of alternative measures to achieve a similar effect utilizing 3D models and a post-production method was applied, allowing the effect to be built alongside the rest of the environment and blending in more smoothly.

This new avenue of exploration brought its own challenges. I initially explored toon shaders in Renderman. Toon shaders in Renderman are relatively new. There is not a lot of documentation about how to achieve the desired results. This approach required time consuming experimentation. Although a result similar to the desired look was achieved, it created problems of its own. Toon shaders only render as separate Arbitrary output variables "AOV", meaning they require post-production assembly to create the result intended. Additionally, they raise the rendering time, causing extension of the production completion.

Experimentation, however, led to the idea of fully developing the 2D effect in post-production using effect filters and compositing. A painterly looking texture for the flowers and spoons was created inside of Substance Painter, using brushstrokes and a high specular material that interacts creatively with light. The 3-dimensional spoons and flowers were rendered inside a separate pass. During the rendering process, a holdout is applied to the character and environment models, which allows them to function

like a mask in the compositing process. Concerns about rendering time proved to be unnecessary because the render times of these passes were very low.

To complete the effect in post-production, sketch effect template that was developed by Red Giant was considered. (INSERT CITATION) This template was created to turn live action footage into a sketched drawing animation, replicated from the music video *Take on Me*. Although the template worked perfectly to create the effect from the spoon renders, after compositing it into the film the effect felt out of place. The look is based on very quickly shifting through hand drawn pencil strokes, which despite providing an interesting visual, was distracting from the characters. Instead, an After Effects cartoon filter was manipulated to create a soft and subtle looking painting style. An important aspect of a cartoon style is the implementation of line. To replicate that effect, the After Effects find edges effect was used to add line to hard edges. This effect was applied to a duplicate of the original composition and blended using a multiply blending mode, creating the look of hand drawn linework. The final look resulted in a soft painterly style, while maintaining its 3-dimensional presence. allowing the elements to differentiate from while still integrating with the 3D elements.

CHAPTER FIVE: CONCLUSION

The Spoon Theory tells the story of a dancer overcoming her fears of revealing her struggles with her invisible disability. One of the film's goals is to spread awareness and educate people about how those struggling may experience their chronic illnesses in everyday life. Utilizing art and animation to relay important messages to others is inspiring and fulfilling to me as a creator. In the future I would like to continue making films that cover important topics in a fun and entertaining but educational way.

Although disabilities are a highly covered subject in films today, the topic of invisible disabilities is a category not often featured. *The Spoon Theory* began as a film to highlight this important topic after personal interactions with a friend struggling with fibromyalgia. Seeing her daily challenges and learning about the concept of the spoon theory through her, I was inspired to make a film that teaches this to more people to battle the misconceptions and prejudices that people like her go through in their life.

The production of *The Spoon Theory* inspired me to investigate every aspect of the 3D animation pipeline. I have gained a stronger understanding of each part of the pipeline, learning through my mistakes and successes. Before I started this film, I only felt confident in a small part of the 3D animation process and felt very uncertain about taking on the entire production by myself. I am glad I decided to accept the challenge and learn more about aspects of the production. I now feel more confident in my abilities. Completing this film allows me to analyze areas where I can still improve, how I would approach things differently, and where I feel I succeeded. This gives me a great foundation to build upon with future work.

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