CREATING AN EDUCATIONAL TOOL, UTILIZING DESIGN INTENSITIES FOR THE SET
DESIGN PROCESS OF 3D COMPUTER ANIMATION

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ABSTRACT

The design of the setting of an animation is a vital element in the telling of the story. A well conceived set design can add richness to any animated film from student short to feature length blockbuster. The set designer must learn to balance the design of the set with the needs of the story. This can be particularly challenging to the novice set designer. Therefore it is beneficial to the novice to understand the process of set design thoroughly before producing an animation of their own, or entering the workforce. There is a vast amount of information available on theatrical set design and on film set design. Currently, there are few examples of discussions of this topic as it relates to CG animation. This information can be a great help to the young set or production designer who must learn both the analytical and practical aspects of the set design process simultaneously. The intent of this study is to present a methodology that will help the novice set designer balance the design of the set with the needs of the story.

The study begins with a brief history of set design to explore its historical significance and how this relates to the contemporary animation set design process. This process is further defined through interviews conducted with animation professionals in the area of production design. The next step incorporates this information and the concepts of design intensities into an educational tool for the pre-visualization of set designs. The educational tool combines creative research methods with the analytical nature of design intensities to help the novice to focus and make design choices that relate to and support the narrative. The educational tool is then explored in the set design process of a short animation as a means of providing an applied example. The prototype of the educational tool is then tested on animation production design
students with no previous CG set design experience. Both positive and negative results of the use of the tool are examined in the conclusion, along with suggestions for the next steps in the development of the educational tool.
DEDICATION

Dedicated to my family
who have always been my steadfast supporters.
ACKNOWLEDGMENTS

I wish to thank my adviser, Maria Palazzì, for her insight, support and encouragement both on this thesis and with my film. I also would like to thank Dr. Wayne Carlson and Dan Gray for their comments and suggestions. I have enjoyed all of the conversations that have occurred during the development of this thesis.
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CHAPTER 1

INTRODUCTION

Scene or set design is the design and implementation of what is often considered the background in a film, play or animation. It may be a landscape, a piece of architecture, or an abstract place. As the great scénographe, Adolphe Appia said, “...where the actor's feet are.” However, Appia is describing much more than a mere background. The place where the actor's feet are can tell the viewer much about the character and situation surrounding the story. It not only explains where and when, but also describes the essence of what is being told. The same holds true for the setting of CG animated films.

1.1 Challenges for the Young Set Designer

The design of the film is of great importance to those producing it. Animation houses invest large amounts of time and money into these designs. A well conceived set design can add richness to any animated film from student short to feature length blockbuster. Therefore it is beneficial to a novice set designer to understand the history and process of set design thoroughly before producing an animation of their own, or entering the workforce. Of ten undergraduate animation schools surveyed, only four had courses related to set design. These were the School of Visual Arts, UCLA, Sheridan College and Ringling School of Art & Design. Additionally, while there are many books and articles on the “making of” specific films and animations, there are few that describe the broad picture of the animation set design process itself. Inspired 3D Short Film Production, by Jeremy Cantor and Pepe Valencia does devote a chapter to art direction.
However, many of the suggestions presented could lean toward a generalized, cookie-cutter approach if not considered carefully within the context of each narrative.

The design of the film takes place during the preproduction phase of its creation. This preproduction process can last a year or more on a feature length animated film. A CG animation can have 3D set pieces as well as 2D backgrounds just as their theatre and film counterparts do. These elements can be combined very effectively to create depth, dimension and detail. However, just as a simple set is not always the best set, the most elaborate set is not always the best solution either. The set designer must learn to balance the design of the set with the needs of the story. This can be particularly challenging to the novice set designer. Each narrative will have its own set of practical needs. They may involve time period, or the description of a particular location. The set also adds emotional and metaphorical meaning to a story.

Metaphor can be added through the manipulation of basic design elements such as color, line, and balance, as well as through the manipulation of perspective and depth. In addition to these analytical aspects that relate directly to the narrative, the student is also learning the practical aspects of the set design process. These include researching, sketching, building models, drafting and painting. Keven Lock, theatre set designer and art director for ABC’s Good Morning America (see Appendix C for full interview), describes the challenges faced by theatre set design students by stating:

In my experience students have the most challenges arriving at an appropriate design idea. Students with limited experience of the theater and its history often pursue outlandish, un producible ideas that ignore the specific ideas and problems presented by a particular work, whereas students who come to the task equipped with a more practical knowledge of the theater often struggle with divorcing their imaginations from the chains of practicality to let themselves formulate something imbued with creative juice. I find that the other area students struggle with is developing the skill to efficiently and succinctly communicate their design idea. I’m talking renderings, models, elevations here. While some students come to the task equipped with the necessary presentation skills and some even a real talent for drawing or painting, other student designers, and not necessary untalented ones, fall down hard here.

The student must learn the analytical aspects and the practical aspects of the set design process simultaneously. The novice set designer is confronted with all of these challenges at once and needs a way to sort them into a manageable set design process that results in a
cohesive set design. This study will attempt to present the concepts of animation set design in a systematic way that is easily understood and implemented by novice set designers of 3D computer animation. This study will discuss the following points:

- The animation set design process as described by animation professionals, and the similarities and differences it has with theatre and film set design.
- The potential use of film design intensities, as described in *Sets in Motion*, by Charles and Mirella Affron, in the development and implementation of set designs for animation. Additionally, these design intensities will be incorporated into a prototype for an educational tool for novice production designers. The tool combines creative research methods with the analytical nature of design intensities to teach the student how to design a set that relates to and supports the narrative.
- The application of the set design process and the use of design intensities in a short animation

1.2 Goals of the Set Designer

The set design created for a play supports and enhances the story. A great set design has many qualities.

- At its most basic level the set design allows all of the aspects of the story to be told. Actors can enter and leave the stage, hide from or interact with each other where required. Transitions can be made from scene to scene. It is functional.
- The set provides a sense of place. This place can be realistic and familiar or new and unknown. It need not be literal. It may be a metaphorical place found only in our imagination. This sense of place, whether realistic or abstract, can provide information about the characters that the audience would not otherwise know.
- The set design also adds to the emotional understanding of the story through the use and manipulation of basic design elements such as color, line, shape, texture, balance, and contrast.
The set design should be aesthetically pleasing. This does not necessarily mean it is pretty to look at. It does mean that the lines and forms created by the design are compelling as they relate to the overall composition of the stage. These compositions can support, or contradict the emotional qualities of the story being told.

Depth and a sense of perspective are often considered important goals of a set's design. However, the set designer may want to manipulate this as well. Perhaps the space should feel confined and repressive because of a difficult situation in which the characters are involved.

British designer Robert Mallet-Stevens summarizes the role of the set by stating:

A film set, in order to be a good set, must act. Whether realistic or expressionistic, modern or ancient, it must play its part. The set must present the character before he has even appeared. It must indicate his social position, his tastes, his habits, his lifestyle, his personality. The sets must be intimately linked with the action.3

Figure 1: The theatre of Dionysus in Athens, Greece. Image source The Hellenic Ministry of Culture, 18 April 2006 <<http://www.culture.gr/2/2/1211/21101a/e211e0C.html>>.

1.3 Scenic Design's Theatrical Origins

The set design process has its origins in the theatre, and dates back thousands of years. One of the earliest recorded productions is of a 2000 B.C. Egyptian passion play that honored the
The process of play production has been built upon over the centuries passing through many styles along the way. These have included the open air amphitheatres of the Greeks and the thrust stage of Shakespeare’s time (Figures 1 and 2). The proscenium arch stage was first filled with flat painted wing and drop scenery and later with realistically constructed three-dimensional sets (Figures 3 and 4). In the fifty year period leading up to the invention of the kinescope theatre practitioners worked to produce the most realistic stage plays possible. Audiences craved exotic locations, realism and spectacle. Set designers used techniques such as trompe-loeil painting, moving scenery and complex lighting effects to create these productions. They also paid close attention to all of the details of architecture, props, furniture and other set dressing.

Figure 3: A late 18th century wing and drop stage setting, painted in trompe-l'œil, from the Swedish Court Theatre. Image source Glynne Wickham, *A History of the Theatre* (Cambridge: Cambridge University Press, 1980).

Figure 4: Production photograph from Act V of *Romeo and Juliet* performed at the Lyceum Theatre in 1882. Image source Glynne Wickham, *A History of the Theatre* (Cambridge: Cambridge University Press, 1980).
Many set designers at the turn of the 20th century strived to move beyond spectacle, or an adherence to absolute realism. The movements of Naturalism and Symbolism were reactions against this Realism. For the Symbolists the creation of mood and atmosphere was more important than that of depicting an actual place or time. Adolphe Appia (Figure 5) was a proponent of a set that

"...expresses the inner qualities of the play rather than realistically representing an environment... His scenic environment, freed from the necessity of providing a representational background for action, becomes a visualization of the mood and atmosphere of the text, which is completed in the imagination of the spectator. An embodiment of emotion through form, colour and texture... Whilst the setting is not literal, it is designed to reflect the atmosphere of the environment as the character perceives it..."[16]

Figure 5: A sketch by Adolphe Appia for a forest in Parsifal. Image source "Theatre is Style: Adolphe Appia and Edward Gordon Craig." City College Manchester, 16 April 2006 <http://www.citycol.com/perfoest/Appia%20and%20Craig.htm>.

Appia also strived to unify all of the elements of the theatre. These were the vertical painted scenery, the horizontal floor, moving actors and light. Appia and others such as Edward Gordon Craig were among the first to design these more evocative sets.
"With Robert Edmund Jones American stage art came of age.\(^\text{10}\) Jones did not believe in spectacle for the sake of spectacle. He was a true believer in collaboration and his designs unified the whole play. He created simple geometric sets that worked with the lights and costumes, which he frequently designed as well (Figure 6). He thought of the set designer as a poet, or as someone who looked for a way to visualize the essential or universal quality of the play.\(^\text{11}\)


Jo Mielziner’s set design for the original production of Death of a Salesman (1945) has become synonymous with the play (Figure 7). The play requires multiple acting areas which in some scenes are used simultaneously. Mielziner covered much of the skeletal framework of the house with gauzes that could provide intimate or exposed spaces depending on the lighting.\(^\text{12}\)
The buildings of the surrounding city crowd in on the Loman family. The drab desaturated palette reflects the characters’ dreary existence, but can be transformed again with lighting.


The American musical was extremely popular during the middle third of the 20th century. Oliver Smith designed many of these original productions including *West Side Story* (1957). Musical sets have the additional requirement of needing to function for their musical numbers. The sets for these interludes need to move on and offstage quickly as they are often only used for the duration of a single number (Figure 8). Smith also worked with choreographer Agnes de Milie,
designing many of her ballets, including *Rodeo*. The settings for *Rodeo* have a rich color palette and stylization that evokes the American west without the use of Realism (Figure 9).

Figure 6: Rendering of the opening street scene from the 1979 revival of *West Side Story*, designed by Oliver Smith. Image source Tom Mikotowicz, *Oliver Smith: A Bio-Bibliography* (Westport, CT: Greenwood Press, 1993).

Tanya Moiseiwitsch was largely responsible for the re-introduction of the thrust stage into North American theatre productions. In 1953, working with Festival co-founder Tyrone Guthrie, Moiseiwitsch designed the stage for the newly formed Stratford Festival of Canada (Figure 10). She later designed a similar stage for the Guthrie Theatre in Minneapolis, Minnesota (1963). She often used this very traditional thrust stage form. Her scenic elements were grounded in a reality of time and place, but they were also imbued with the individual qualities of the play. She had the ability to incorporate metaphor into her designs through a "more abstracted and emblematic approach."

Figure 10: Moiseiwitsch with her model for the Shakespeare Festival Stage at the Stratford Festival of Canada. Image source Stratford Festival of Canada, 17 April 2006 <http://www.stratfordfestival.ca/imagegallery/archives.cfm>.
During this same period, Josef Svoboda was working as a scenographer in Europe. Svoboda created unit sets with mobile scenic elements that could be moved to transform the stage space. He also integrated film and light projections into his scenery to further these transformations. The result was an incredible ability to create mood and atmosphere. Figure 12 shows four production stills from *Pelias and Meleagre*. Here Svoboda used a cyclorama (an upstage screen) that would accept front and rear projections. The hanging forms would also accept these projections. This design solution enabled him to transform the space and create dramatic depth.
While these designers worked in a variety of styles, they all strove to create designs that unified the production and evoked the truth of the story being told. The theatre set designers mentioned here are a mere sampling of those who influenced theatre set design in the past. This history, and those that follow, is not meant to be comprehensive or inclusive, but to provide some outstanding examples as a starting place for further exploration of the subject.

1.4 Early Film Set Design

Art Director and film historian Leon Barsacq said, "...Melies invented the [film] set."

Georges Melies began his career in the French theatre. Starting in 1896 he began to create short films based in the illusionist style of his theatre works. The 51' x 23' film studio he built in his backyard contained many theatrical conventions such as traps in the floor and a fly system to suspend actors in the air. Barsacq continues, "[Melias] used the scenery technique then current in
the theatre. This consisted of painting trompe-l'oeil perspectives that created an impression of relief and suggested depth. These were painted in gray scale. Melies also paid close attention to the design of his props and furniture to assure they would relate to his stories. Melies created both realistic historical recreations such as The Coronation of King Edward VII, and fantastic fictions like Four Hundred Pranks of the Devil. As film production houses developed and expanded in France, set designers and painters were recruited from the theatres and opera houses of Paris. Many of these designers were inspired by and copied Melies. These set designers were also among the first to incorporate miniature models of backgrounds into their sets. Over time, set designers began to incorporate more and more three-dimensional scenery into their designs.

Echoing the theatrical traditions of realism and naturalism, fully three-dimensional constructed scenery came into popularity in the early 1900's. Art Director Enrico Guazzoni is credited with the beginnings of this tradition in Italy. The sets for Caligari (1913) are designed in this tradition and are considered a landmark for film scenery. Barsacq states,

The film architects sought to stress the fabulous and exotic aspects of the opulence of Carthage...The perspective is accentuated by a succession of columns and statues, or by openings, bays and doors, creating an impression of depth. The stairs and landings provide different levels for staging the scenes. For the first time, rules governing constructed scenery were developed to replace the methods of trompe-l’oeil painted décor.

These sets are said to have inspired D.W. Griffith's Intolerance (1916) and were the first of the great historical spectacles. Film sets in the United States also leaned toward this realism. Realistic, historical dramas and westerns were extremely popular. Some of the interest in 3D scenery may be the result of the entrance of architects into the field of film set design. In less than twenty years film sets went from flat painted scenery to fully dimensional constructions.

In opposition to these grand historical narratives, the concepts of Expressionism evolved. This movement was predominant in Germany starting around 1916. The Cabinet of Dr. Caligari (1920) was one such film. Barsacq describes the painted sets for Caligari as "a long way from the painted scenery used at the beginning of the century. Everything has been subordinated to visual effect, to create a nightmare atmosphere, to arouse anxiety and terror. Caligari" was the
antithesis of realism (Figure 13). This illustrates the range found within film set design at a point when the film industry was only 25 years old. Within this wide range of styles the set designers and art directors all sought to create sets that supported the stories being told. They continued to adapt and evolve techniques originating in the theatre to frame and describe their characters and their worlds.


As film sets grew in size and scope so did the staff that produced them. These production teams aided the evolution of the set design process by fine tuning the process for the camera's point of view. Barsacq explains the difference between theatre and film scenery by stating that,

it is no longer the spectator who follows the action taking place on the stage in front of him, but the camera, which penetrates the intimate world of the characters and accentuates this or that facial expression, this or that aspect of an object, setting, or landscape. The film set serves as a frame not only for the movements of the actors, but also for those of the camera, which passes through doors, accompanies an actor going up stairs, takes the place of the actor by leaning over the bannisters... The ability to isolate or enlarge a detail, the mobility, precision, even the indiscrimination of the camera eye, constitute cinema perspective."

The camera, acting as a framing device, can reveal the details of a character's environment at the most appropriate psychological moment. Animation shares this concept of the camera with film.
This is more difficult to do on the stage of the theatre. Keven Lock talks about the differences between theatre and filmed media in the following way:

it's the product that differs. When designing for the theater I'm more concerned with overall composition. This is because I'm often creating a set that is a discrete object, which is to say that unlike in film or tape you see the shape and edge of everything, and because the composition of a theatrical set has to work harder to direct the attention of the viewer aided only by the lighting. In camera media our attention is directed for us. Camera media, of course, becomes more about detail, and generally is more subtle in terms of overall style than work for the theater.22

1.5 Early Set Design in Animation

1.5.1 Traditional or 2D Animation

Animation developed during the same period as film. Many early experiments with animation were combined with live action. The artists often used locations and simple sets in the live action segments to aid in the telling of their stories. The sets helped to locate the action, but evoke little additional mood or atmosphere. In many cases the action involved the artist interacting with the animated characters and objects. In newspaper artist James Stuart Blackton's Enchanted Drawing (1908), Blackton interacts with the props he draws for his character. He removes a bottle of wine and a glass from the drawing, drinking from it when it becomes real in his hand. Blackton then draws in a top hat for his character, reaches in and removes it to wear himself.23
French caricaturist, Emile Cohl produced *Fantasmagorie*, the first fully animated film on standard picture film, in 1908. In Cohl's film, the characters, set pieces and props are all animated. Objects morph into one another continuously. A cannon becomes a bottle for a clown to climb into. The bottle then blossoms as a flower, revealing the clown again (Figure 14). Here the set pieces are an integral part of the story. They work not only as props for the characters but also become characters themselves.

Winsor McCay's use of scenery evolved over the course of his career as a comic strip artist and animator. Although McCay used very descriptive locations for the live action portion of his films, his first animation *Little Nemo* (1911), contained no sets or backgrounds of any kind within the animation itself. *How a Mosquito Operates* (1912), incorporated very simple settings such as a branch, an apartment hallway and a bed. These sets provide a very simple description of where the action is taking place, but are weak in terms of compositional use or character description. *Gertie the Dinosaur* (1914) provides a leap forward in terms of McCay's use of scenery. The setting is compositional interesting with strong diagonals and a sense of depth. It also provides elements for Gertie to interact with. She exits her cave, eats a tree and drinks up the lake inhabited by a sea monster (Figure 15). The settings for Gertie on Tour (1918-21) are even more developed. The backgrounds are very detailed and descriptive and provide...
compositional interest through line and contrast (Figure 16). This evolution continues with Bug Vaudeville (1921). McCay’s set for the opening scene provides an inviting park landscape (Figures 17 and 18). The arched opening created by the curve of the tree and the bushes in the foreground frame the hobo against the soft background in the distance. McCay uses layers, much like a theatre set, to create a focal point within his set. As the hobo begins to dream, the setting becomes a vaudeville stage complete with an act curtain and backdrop, again created with layers much like a real theatre stage.

Figure 15: Two stills from Winsor McCay’s, Gertie the Dinosaur (1914). Image source Animation Legend Winsor McCay, DVD, SlingShot Entertainment, 2001.
Figure 16: A still from Winsor McCay's, *Gertie on Tour* (1918-21). Image source *Animation Legend Winsor McCay*, DVD, Blingshot Entertainment, 2001.
1.5.2 Stop-Motion Animation

One of the first stop-motion animations was James Stuart Blackton’s, *Process, Nickel*, or *Smoke Fairy* (1909). This short live action film tells the story of a fairy that starts a little
trouble. The fairy, played by a live actress, is composited to appear about 6" tall. As the story progresses, Backton’s matches, pipe and cigarettes all climb back into their cigar box, while a cigar rolls itself from dry flower petals. The initial setting is very simplistic consisting of a table and some overstuffed chairs. It is the large scale props used for the smoke fairy sequences that are interesting. The actress is surrounded by over scaled set pieces and props (the matches). These pieces help to convince the viewer of the fairy’s diminutive size and relate to the objects that will be animated in the stop-motion sequence.

Lotte Reiniger’s, The Adventures of Prince Achmed (1926) used 2D silhouettes to tell its sweeping story. The backgrounds contain intricate detail and pattern that evoke both architectural and landscape settings. The settings, also created with silhouettes, are very theatrical in their form. The setting in Figure 19 is reminiscent of a theatre cut drop in the way it frames the characters with pattern and shape. Additionally, the patterns and shapes chosen for the settings transport the viewer to the lands of The Arabian Nights. The settings are not only evocative of time and place but are also compositionally beautiful.


1.5.3 Walt Disney

Walt Disney and his studio were instrumental in the advancement of the art of animation. Their incorporation of storyboards into the production pipeline provided the set designer with a
plan for what needed to be designed. Disney also became known for their incredible settings and background painting. One technological innovation that aided Disney in creating these beautiful settings was the multi-plane camera. Disney's multi-plane camera was developed by William Garity and was finished in 1937. The camera was developed for *Snow White*, but was first tested on a silly symphony titled, *The Old Mill*. The camera could hold up to seven layers of painted backgrounds. These were painted on glass in oils. Each layer had areas left open and unpainted. This allowed layers of animation or additional background to show through.

![Figure 20: A still from the opening shot of *Bambi*, Walt Disney (1942) showing one of the multi layered backgrounds. Image source *Bambi*, Dir. David Hand, 1942, DVD, Walt Disney Pictures, 2005.](image-url)
The multi-plane camera enabled Disney to create settings with incredible depth and perspective. This sense of depth mimics that which can be achieved in the theatre through the use of scenic elements such as scrims, cut drops and translucent painted drops. In Disney’s Bambi (1942), the translucent drops are painted on glass (Figure 20). The use of the dark silhouetted layers in the foreground provides a center of focus for the viewer similar to that created with a theatrical cut drop. This illusion of depth gives the audience a sense of the expansiveness of the forest appropriate to the story of Bambi. Additionally, this opening image suggests what it is like to live in the forest. There is a continuous cycle of life. There are young tress, very old trees and fallen dead trees. The light filters through these trees, leaving dark places where predator and prey can hide. The forest is rich, beautiful and full of life, but it can also be dangerous and unforgiving.

The other important aspect of the design of Bambi is the style of the painting. The backgrounds are painted in a very impressionistic style. Disney wanted to evoke the feeling of the forest not depict every leaf. Disney artist Tyrus Wong, who had been trained as a landscape painter, created concept sketches in a more impressionistic style (Figures 21 and 22). This style was not only more evocative than realism, but also allowed the characters to stand out from the backgrounds. The final painting style of the settings is credited to Wong." This rich hand painted style gives the film a lush, warm quality that draws the viewer into the world of the forest. It is also able to evoke the more sinister qualities of the forest where appropriate.
Figure 22: A still from *Bambi*, Walt Disney (1942) and a detail showing the impressionistic style of the background painting. Image source *Bambi*, Dir. David Hand, 1942, DVD, Walt Disney Pictures, 2005.

1.6 Computer Generated 3D Animation

*Toy Story* (Walt Disney Pictures/Pixar Animation Studios, 1995) was the first feature length CG animated film. The settings for *Toy Story* are richly dressed and detailed and give the viewer a strong sense of place. Andy’s bedroom (Figure 23) is filled with toys, books and games. The set dressing is used to create interesting, dynamic compositions within the frame. For example the race tracks in Figure 23 create strong diagonals which frame Buzz and give him his launch path. The color palette is cheerful and inviting. Even the headboard of Andy’s bed is designed with smooth, curving shapes (Figure 24). These compositions, playful in nature, add life to the story by enriching the world of the story. This child’s world, and the world of the toys, is enhanced by the inclusion of these elements. There are also multiple exterior locations. These are also richly treated to describe a suburban neighborhood (Figure 25). The concepts of depth, specificity, composition and character description, which originated in the theatre, are all present here.

As computer technology has improved the ability to create more elaborate sets has also increased. Tools for lighting and shading have become more complex and sophisticated. As staff numbers increase, artists are able to focus more completely on design details while computer scientists focus on the technologies. Crew members have become more skilled not only in technical issues but also in design issues.

Blue Sky Studios' *Robots* (2005) has very elaborate settings. The intricate designs of the sets are integral to the story centered around a world inhabited by robots (Figure 26). The settings have a sense of playfulness and intricacy common in many musical theatre productions.
The plan for Robot City is based on the inner mechanisms of a watch with many mechanical layers. Building facades are based on found objects such as an outboard motor and a coffee pot. All of the sets have detailed mechanisms and surfaces. Author Amid Amidi recounts Production Designer William Joyce's concept for Robots by stating, "...the Blue Sky designers took their primary inspiration from the anonymous, mechanical designs of the Machine Age." Joyce himself was influenced by a museum catalog on the Art of the Motorcycle. Joyce says, "There were a lot of close-ups of the motor and the assembly, and you could find faces and body parts in the photos. It really turned the corner for us."37


The level of detail put into CG sets has increased dramatically over the years. These sets utilize composited layers of 2D and 3D elements to create a sense of depth much as a theatre set would. Composition and line quality are very important here. The forms, such as those in Rodney's approach to Bigweld Industries have a playful quality that smile at the visitor, suggesting the personality of the company's founder, Bigweld (Figure 27).
These sets are designed and created by a large staff of artists. As a set’s complexity increases so does the cost of the film. More intricate sets and richer textures and lighting require more work hours and longer rendering times. As technologies improve the opportunity to create more complex sets increases. The set designer’s job has grown in scope as well. When Pixar created Tin Toy in 1988 it had one set, a simple living room interior. Compare this with Pixar’s The Incredibles from 2005 which had 130 sets. These ranged from James Bond style criminal hideouts on tropical islands to domestic interiors.

1.7 Thesis Overview and Organization

Productions, both large and small, must be carefully designed and planned by knowledgeable designers. This planning is crucial to the designer’s ability to include and complete all of the descriptive detail necessary to fully tell each individual story. Faced with a wide range of possibilities and challenges, students need a method of analyzing the script and focusing their design choices as they begin their set design process. The following chapters will present an overview of the animation set design process and the concepts of design intensities and will introduce them to novice set designers through the creation of an educational set design tool.

Chapter 2 introduces terminology common to the set design process in animation, film and theatre. It also presents the animation set design process itself, as described by professional animation production designers and art directors. Chapter 3 presents a proposed methodology to be used by novice set designers as they begin their set design process. This methodology will assist the novice in their analysis of the script and of their subsequent design choices. Design intensities and their application to CG animation are introduced as part of this strategy. The chapter also discusses the creation and testing of a prototype for an educational set design tool which incorporates this methodology. Two prototypes are explored. This exploration includes the testing of the second prototype by animation set design students. Chapter 4 provides a discussion of the production of an animated short titled, Joe. This short provides an additional test.
case for the tool and its concepts. The initial testing of the educational tool and its concepts produced both positive and negative results. Additional testing is recommended. Chapter 5 concludes the discussion and presents suggestions for this additional testing and research.
CHAPTER 2

AN OVERVIEW OF THE ANIMATION PRODUCTION DESIGN PROCESS

2.1 An Introduction to Set Design and its Terminology

There are many specific terms used to describe the set design process and those who are involved in it. Some terms are specific to theatre and some have equivalent words for the mediums of animation and film. Some of these terms are summarized in Table 1. An understanding of these terms will aid the novice in recognizing the similarities and differences that are to be found in the production pipelines of the three mediums and how they relate to CG animation through practices in both theatre and film.

A set or scenic designer is the person responsible for conceptualizing, and developing the design of the setting for a theatrical production such as a play, ballet, or opera. This process includes sketches, models and the drafting of orthographics. The production designer performs the same duties in the world of film and animation. The art director works very closely with the production designer in facilitating the execution of the design. The art director is instrumental in coordinating the design work between the various departments, such as props and set dressing in film, and layout or lighting in animation. Kathy Altieri, a Production Designer at DreamWorks Animation SKG, describes her job in the following way:
The Production Designer is responsible for overseeing the look of the film and maintaining it throughout the whole process. This includes design, color styling, modeling, etc. Determining the look is a collaborative process. The difference between the Production Designer and the Art Director is that the PD has the final call on the global vision. The AD is responsible for the day to day running of the department, working hand in hand with the PD to oversee the whole process. Additionally, the PD is more involved with the studio as a whole when it comes to casting decisions, software needs, and as the artistic representative for a body of artists. He also has (with the director and VFX Supervisor) the final call on every shot in the film.

In both theatre and film there will be a separate costume designer. In animation the production designer may be creating character and costume designs, or a separate character designer may be performing these duties. In film, the term set designer refers to the person who completes the drafting for the construction of scenic elements. This study will refer to the Production Design process, but will be focusing on the set design aspect of this process.
<table>
<thead>
<tr>
<th>Term</th>
<th>Animation</th>
<th>Film</th>
<th>Theatre</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Director</strong></td>
<td>Determines and approves concepts and story choices from initial concept, design to final editing. Oversees the entire production.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Set Designer</strong></td>
<td>not commonly applied</td>
<td>Drafts the designs for sets that will be built based on the production designer's concepts</td>
<td>Design the settings and backgrounds for the entire production.</td>
</tr>
<tr>
<td><strong>Production Designer</strong></td>
<td>Designs the settings and backgrounds for the entire production.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Art Director</strong></td>
<td>Assists in the conceptualization and coordination of the designs among the various departments.</td>
<td>Assists in the conceptualization and coordination of the designs among the various departments.</td>
<td>not commonly applied</td>
</tr>
<tr>
<td><strong>Costume Designer</strong></td>
<td>not commonly applied</td>
<td>Designs the clothing worn by the actors.</td>
<td>Designs the clothing worn by the actors.</td>
</tr>
<tr>
<td><strong>Character Designer</strong></td>
<td>Designs the look of characters including costumes.</td>
<td>not commonly applied</td>
<td>not commonly applied</td>
</tr>
<tr>
<td><strong>Visual Development Artist</strong></td>
<td>Designs concepts for elements within the production such as characters, sets, props, etc.</td>
<td>Designs concepts for elements within the production such as characters, sets, props, etc.</td>
<td>not commonly applied</td>
</tr>
<tr>
<td><strong>Digital Effects Supervisor</strong></td>
<td>Supervises the creation of the special effects.</td>
<td>Supervises the creation of the special effects.</td>
<td>not commonly applied</td>
</tr>
<tr>
<td><strong>Front-end Supervisor</strong></td>
<td>Supervises technical aspects such as tool development at the start of the pipeline. Includes rigging &amp; texturing.</td>
<td>not commonly applied</td>
<td>not commonly applied</td>
</tr>
<tr>
<td><strong>Back-end Supervisor</strong></td>
<td>Supervises technical aspects such as tool development at the end of the pipeline. Includes lighting &amp; compositing.</td>
<td>not commonly applied</td>
<td>not commonly applied</td>
</tr>
</tbody>
</table>

Table 1: Common terminology used in the field of set design for animation, film and theatre.
<table>
<thead>
<tr>
<th>Term</th>
<th>Animation</th>
<th>Film</th>
<th>Theatre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layout Artist</td>
<td>Creates the camera moves within the set. (rough layout) Places props and set dressing into the CG sets. (final layout)</td>
<td>not commonly applied</td>
<td>not commonly applied</td>
</tr>
<tr>
<td>Set Dresser or Final Layout Artist</td>
<td>Places props and set dressing into the CG sets.</td>
<td>Places props and set dressing into the sets and locations.</td>
<td>Places props and set dressing into the sets on stage.</td>
</tr>
<tr>
<td>Look Development</td>
<td>Design of the look of the textures, colors and surfaces, of an object or character.</td>
<td>not commonly applied</td>
<td>not commonly applied</td>
</tr>
<tr>
<td>Scenic Artist or Scenic Painter</td>
<td>not commonly applied</td>
<td>Paints all of the scenery and props for the production</td>
<td>Paints all of the scenery and props for the production</td>
</tr>
<tr>
<td>Texture Artist or Surfacer</td>
<td>Paints all of the textures and surfaces of the 3D models</td>
<td>not commonly applied</td>
<td>not commonly applied</td>
</tr>
<tr>
<td>SFIN, or shot finalling</td>
<td>Lighting &amp; compositing of characters, sets, props &amp; fx</td>
<td>Lighting &amp; compositing of character, sets, props &amp; fx</td>
<td>not commonly applied</td>
</tr>
</tbody>
</table>

**Visualization Tool**

| model sheets                      | Orthographic drawings (drawn to scale; created for each 3D model) | not commonly applied-Referred to as orthographics or drafting       | not commonly applied-Referred to as orthographics or drafting       |
| color scripting                   | Plotting the color palette as it changes scene by scene           | not commonly applied                                                | not commonly applied                                                |
| sequence keys                     | A key moment from a scene or sequence is rendered in color to represent the general feel of that scene or sequence. | A key moment from a scene or sequence is rendered in color to represent the general feel of that scene or sequence. | not commonly applied                                                |
| foam core models                  | Scale model of a set or location built from foam core board        | Scale model of a set or location built from foam core board          | Scale model of a set or location built from foam core board          |

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2.2 The Animation Production Design Process Described

In animation, as in film, the set design process is commonly referred to as production design or art direction. As in the theatre, the production design for an animation starts with the story. The designer may come in to a production when the story is just an outline or at its final draft. After preliminary meetings with the director and producers, the design team will begin research. This step may occur simultaneously with the creation of rough concept sketches. These will be preliminary drawings that evoke mood and shape. Some of the more formal elements of design, such as line, texture and shape, may begin to be addressed here. These sketches will evolve and become more refined until the final design solution is attained. Figure 28 shows a series of concept sketches for the Nomanisan Lagoon, from The Incredibles (Pixar Animation Studios/Walt Disney Pictures, 2005). The series begins with shapes and textures that evoke a mood, and progresses to a full color rendering of the lagoon. As sketches such as these progress, members of the design team continually meet with the director and producers to discuss ideas and make revisions where necessary.
Another important element in animation production design is the color script (Figure 29). This series of paintings will describe the color palette as it changes over the course of the story. The color script may be broken down by scene or even further to include story beats or mood changes within scenes. The result is a storyboard of the color palette. In addition to charting the change in mood, the color script also guides the artists in the development of surface textures and lighting. Janet Lucroy, lighting designer on The Incredibles, described the color palette for that film in the following way:
In the prologue, during the glory days of the Supers, it was incredibly saturated—almost over the top with the purest colors. Fifteen years later, in Bob’s office at Insuricare during the time the heroes have to suppress their powers, the palette is very desaturated; all the colors are drained out and it’s almost monochromatic. As the story progresses we introduce color back in or pull it out to support the action of lack thereof. By the end of the film, when the family is functioning as an integrated unit and has balance in their lives, the color is naturalistic and balanced. Of course, this is done with a relatively subtle hand. The audience should feel they’re in a different place physically or emotionally, but not that their perception is being manipulated by color. The stylistic choices are made to support the story, not upscale it.12

Figure 29: A section of Production Designer Lou Romano’s color script for *The Incredibles*. Image source Mark Cotta Vaz, *The Art of The Incredibles* (San Francisco, CA: Chronicle Books LLC, 2004).

Model sheets are created to describe props and set pieces in space. These are equivalent to orthographic drawings (drafting) in theatre and film. The theatre paint elevation has its equal in animation color callouts (Figure 30). Here surface textures are described through renderings and

36
photo reference. These practical elements help the designer to coordinate the production phase of the design process and keep all of the artists on the same page.

![Image](image.png)

*Figure 30: Color callouts for Jack Hammer's Shop exterior, from *Robots*, Blue Sky Studios/Twentieth Century Fox (2005). Image from *The Art of Robots*, by Amir Amid.*

### 2.3 Interviews with Animation Professionals

During the course of the study, interviews were conducted with animation industry professionals. These interviews provide a description of the animation set design process. The participants were chosen from professional animation production houses. The interviews are broken down into two groups of participants. The first group is composed of animation production designers and art directors, and the second of set dressers and layout artists. Interviewing these two groups reveals the perspective of the person developing the design concept (the Production Designer, or Art Director, depending upon the company in question) as well as that of the person implementing the design (the Set Dresser or Layout Artist). The companies represented are DreamWorks Animation SKG, Blue Sky Studios, Walt Disney Feature Animation and Pixar.
Animation Studios. The questions are designed to obtain information on each artist's design process, as well as the pipeline used at their respective studios. The interview questions can be found in Appendices A and B, and the full interviews in Appendices C and D.

### 2.3.1 Interview Summaries: Production Designers/Art Directors

**Steve Martino, Art Director, Blue Sky Studios**

Steve Martino, Art Director for Blue Sky Studios' *Robots* (Fox, 2005), provided a thorough description of the animation pipeline as it relates to design, as well as giving good insights into the set design process itself. For example, in describing his relationship to the Production Designer, Martino states,

> ...I collaborate with him on objectives of the particular assignment with an eye towards maintaining a cohesive spirit to the overall film. On the set, prop and character design assignments I take my lead from his initial sketches or our verbal discussions about what we are trying to achieve. With the rest of the conceptual design team I work with them through brainstorming sessions, rough sketches and regular design rounds to help shape several options for the Director.  

Martino goes on to describe how he works with the Director.

> I work with the Director in review of the script and storyboards for a particular sequence or setting. He sets the specific story objectives for all of the action and how the environment will be used to support them. I also work with the Head of Layout to understand how the staging of action within the environment will affect the final design or set dressing of the location.

The flow chart in Figure 33 represents the set design process at Blue Sky Studios.
One interesting point relating to Blue Sky’s process involves a very traditional tool from theatre set design, the foam core model. After the set has been preliminarily visualized in a 3-D computer software package, a foam core model is built to scale to present at meetings with artists from other departments such as lighting and effects. Traditional methods are utilized alongside high tech to facilitate communication of the design concept. The scale model helps the artists to visualize the space. Having the model as a tangible object at the meeting allows the artists to pick it up and view it from all angles. Asked to rate five factors that might influence design decisions (composition, character development, production costs, and story/narrative development), Martino responded:

Story is number 1! Everything that we design in the film is in support of the story that we are trying to tell. In each shot there is something that is most important and the composition of the shot is designed to maximize the audience’s understanding of that moment. Sometimes this can be the set or the world that the character is in, but most often the setting is there to enhance and support the emotion and action of the character(s) in the shot. Composition affects both the practical aspect of readability of action (drawing the audience toward what you want them to focus on) and the less formal aspects of mood and tone. 31
Figure 33: Flow chart of the set design process at Blue Sky Studios. The chart was developed by the author and derived from the interview. At Blue Sky the lead design role is held by the Production Designer.
Kathy Altieri, Production Designer, DreamWorks Animation SKG

Altieri, Production Designer on DreamWorks, Over the Hedge (2006), stressed the collaborative nature of her position. "...This is a collaboration with the whole art department. The 'we' grows slowly over time."24 The research and conceptualization phase of the design process can go on for a year or more. "It may start with vague sketches and becomes more specific until we're deciding that the set has 10 trees and 7 rocks and the log goes here."25 The research can come from anywhere, but is specific to the production.

It depends on the film (genre). It can be anything and everything. For example, for Spirit we looked at the National Parks to try and capture the grandeur of the American West. It's a matter of picking the artist who best addresses your needs. We chose N. C. Wyeth and Frederick Remington. For the Prince of Egypt, we looked at epics, David Lean, desert photography, Egypt and old world references.26

When asked how the viewer perceives the design of the set Altieri responded, "...they are influenced by it as much as they are by the music."27 The flow chart for the set design process at DreamWorks can be found in Figure 35.

Flow Chart for the Animation Set Design Process—DreamWorks Animation SKG

Figure 35: Flow chart of the set design process at DreamWorks Animation SKG. The chart was developed by the author and derived from the interview. At DreamWorks, the lead design role is held by the Production Designer.
Dan Cooper, Art Director, Walt Disney Feature Animation

The supervisory structure and job titles are slightly different at WDFA. There the Art Director has the lead role with the Production Designer working under him. Though with regard to Chicken Little (2005), Cooper said that "we [the Production Designer and Cooper] just worked at the same level." The Production Designer develops sets, and a Character Designer will develop the look of the characters. Cooper was Co-Art Director with Ian Gooding, on Chicken Little. Organization and design continuity are aided by a software system that catalogues the most recent versions of models, scenes and shots. Cooper says that the technology they use just gives him "more possibilities." Figure 37 shows the flow chart for Disney's set design process during the production of Chicken Little.

Figure 37: Flow chart of the set design process at Walt Disney Feature Animation. The chart was developed by the author and derived from the interview. At Disney, the lead design role is held by the Art Director.
2.3.2 Interview Summaries-Set Dressers/Layout Artists

Two additional interviews were obtained as part of the study. Set dressers and layout artists implement the designs conceived by the production designers and art directors. These artists place the camera, props and set dressing into the 3D environments. These interviews include Nick Walker of Pixar/DreamWorks (DreamWorks' northern California studio) and Elizabeth Torbit of Pixar Animation Studios. Walker and Torbit's complete interviews can be found in Appendices D.

The Torbit interview was taken from Pixar's website. It has a different set of questions, but provides valuable information. For this reason, a Pixar flowchart was not developed. According to Torbit, the set dresser works closely with both the director and the production designer.

Working with the production designer and director, we choose and place all the props--vegetation, furniture, etc.--in the 3-D movie sets. Everything you see in the foreground and background has been placed by a set dresser. Our goal is to best support the film's characters and their needs...which props will best tell the story of a character or something about the character's personality. Also, simply making sure animation has the props that the characters need to interact with.\textsuperscript{40}

In CG animation a shot's composition can be viewed in progress as camera position, models, characters and set dressing come together in the Layout Department. The scenes can be viewed and adjusted for optimum use of the 3D space with constant reference to the narrative as well as to design continuity. Nick Walker states,

Much of that effort comes from the vision of the Production Designer. Beyond that preplanning, we'll make modifications in order to aid our desired compositions in an effort to better support the narrative. More simply put...we start with the Production Designer's ideas, and then move stuff so that it works with the film structure created by the rough blocking.\textsuperscript{41}

When reading the interviews of Walker and Torbit, many similarities are present between their respective studios. For example, in both cases the artists follow their shots through the entire animation pipeline to ensure design continuity. The practical aspect of shot continuity is also a key component of the set dresser's job. The set dresser must make sure that props remain in the same position from shot to shot. Characters may pick up a prop and move it. The set dresser must also keep track of the old and new position of the prop.
2.4 Comparing the pipelines

There are similarities as well as differences when looking at the pipelines of the companies represented in the interviews. In the flowcharts the production pipeline is broken into three phases. These phases, devised by the author, occur in all three flowcharts.

- Phase 1-Includes the initial analysis of the script, research, and dialogue between the director, production designer, art director, producer and story team.
- Phase 2-Begins the concept development portion of the process. The design team creates concept sketches (from rough to final), color scripts, color keys, and model sheets and scale models.
- Phase 3-Designs have been approved and production begins in this phase. The production designer continues oversight throughout the production phase until the film is completed.

These phases are cyclical in nature. Steps in the process will overlap and loop back on one another as concepts are refined or story needs change. For example, artists may need to loop back from phase 2 into phase 1 to find additional research while they are working on concept sketches. The first two phases show many similarities across the studio pipelines. Phase 3 starts to show some distinctions.

Great amounts of energy are put into maintaining design continuity at all the animation studios. Communication is fostered in many ways. A vast amount of research is compiled and presented on web browsers for easy access by the crew. Sketches, color samples, prop and model sheets and even scale foam core models go into art packets that are created to keep the large crews all on the same page. Regular production meetings are held on a departmental and full production level. Additionally, the Production Designer/Art Director will make regular rounds in the departments to critique in progress work.

The set dressing, or final layout of the shots is directly overseen by the production designer at all three studios. This will generally occur after rough (camera) layout is complete.
Both Cooper and Altiere pace rough layout outside of their direct supervision. Martino on the other hand placed it more directly into his process. He stated,

"I work with the Director in review of the script and storyboards for a particular sequence of setting. He sets the specific story objectives for all of the action and how the environment will be used to support them. I also work with the Head of Layout to understand how the staging of action within the environment will affect the final design or set dressing of the location."

The lighting is also supervised by the Production Designer/Art Director. There is a "Lead Lighter", but that person will work under the supervision of the Production Designer/Art Director. The ability of the lighting to focus attention in a particular area makes it an integral part of the final composition.

Another difference that appears between the studios in Phase 3 involves texturing, or shading of the models. At Disney, and DreamWorks this task is completed by the texture artist or surfacer. At Pixar, the set dresser is applying textures that have been developed by shader writers. These shaders are generally procedurally based. Toth explains,

The art department creates "shader packets" that show what types of textures we have to work with. After we put all the props in place, we apply all the graphics, such as a soda can label, and textures, such as a prop that has different types of wood to choose from. (Wood could have a walnut, ash or maple texture and either long or short grain variants.) We apply shader textures to architecture, foliage and props of all types.

When asked to rank four potential design influences (composition, character development, production costs, story/narrative development) in their order of importance, all three designers rated story/narrative development as number one and composition as number two. Both Altiere and Martino rated production costs third, while Cooper did not rank cost, placing character development third. (See Appendix C, question 8) Though the designers ranked cost low on the scale, they do not disregard it. Martino explains,

"I put production costs at the bottom of the list, because I feel that you can achieve the more important aspects of story and composition in many ways. The challenge to the designer is to be clever enough to succeed in these objectives within any budget constraint. This is not to say that you ignore budget constraints, but that you understand the parameters well enough to design successful story and composition solutions within them."
In the following chapters, the concepts and principles of the set design process of the interviewed studios are combined with the theatre set design concepts known by the author to create a set design tool for student set and production designers. This educational tool will also incorporate design intensities as a means for evaluating a script. This tool will provide a structure for the novice to begin the set design process.
CHAPTER 3

A PROPOSED STRATEGY FOR NOVICE PRODUCTION DESIGNERS: AN INTRODUCTION TO DESIGN INTENSITIES AND THE EDUCATIONAL TOOL

The animation production design process has a very well developed pipeline. This pipeline is largely adapted from the theatre set design process. However, the novice production designer is generally quite unfamiliar with either process. All production designers must face the limitless choices available to them as they begin the design process. This blank canvas can be daunting to the novice production designer. As a method of presenting novices with a structure to begin the production design process for CG animation, an educational tool has been developed. This tool includes the concept of design intensities. Design intensities provide a framework for novice production designers as they begin to analyze the script and make design choices. The goal is to learn to make consistent choices that support the story.

This analytical tool helps in several ways. It serves as a method of self-criticism. Many students work independently on projects where they perform many roles including that of production designer. Design intensities serve as a filter for them to evaluate their own choices. The levels of design intensity provide a set of criteria that is based on the set’s relationship to the narrative. The novice set designer can use these criteria as a guide to make consistent design choices. Design intensities provide a focus for the student as they begin their process. Other valid methods are available and could have been chosen for this study’s analytical tool.
3.1 Design Styles

Traditionally, set design is discussed in terms of its style, or period. When considering period, the reference is to the time period in which a particular play was written, such as Elizabethan drama. Plays written in specific time periods are often associated with a specific type of stage design. For example, plays of the Elizabethan era, such as Shakespeare’s work, were all produced on very similar stages. The stage is often of the thrust variety, with upstage levels, or platforms, that include balconies, with an inner above, and inner below (Figure 2).

Some examples of theatre styles include Naturalism, Constructivism, and Futurism. In many cases the style of the design is closely associated with the style and theme of the acting and writing, as in German Expressionism. Many of the styles are also allied with movements within the material arts, such as painting and sculpture. Surrealism is an example of this. In some cases a style that is not related to the narrative is imposed upon a script during pre-production. This may or may not give successful results depending on the skill of the director and designer involved. Design intensities offer another perspective for discussion and analysis that is directly related to the narrative. It should be noted that different styles may occur within the levels of design intensity.

3.2 What are Design Intensities?

During the process of researching production design in animation, the search was broadened to include production design for film as well as theatre set design. During this phase, the book, Sets in Motion, by Charles and Mirella Affron was discovered. The theory behind this book is being presented as part of this study because it provides a strong framework in which to present set design principles and principles for script analyzation to students.

When designing a set for animation, theatre, or film, the script is the starting place. The clarity of the narrative, which is supported by the mood and atmosphere, is crucial. The narrative encompasses the story that is being told including the plot and character development. Mood and atmosphere are related. They describe the thoughts and feelings that the story and its
environment evoke. The set design works to support these elements in the script. In this supporting role, the set design has three functions. As described by Charles and Mirella Affron, the setting has a decorative function, a localizing function and a symbolic function. These functions work to support the narrative by describing the character's environment and by creating mood and atmosphere.

- The decorative function provides striking images.
- The localizing function tells where and when the story takes place.
- The symbolic function provides metaphors for ideas and feelings.

In the Affron's book, set design is broken down into five categories of design intensity. Design intensity is, "the interdependence of the setting and the narrative, and the effect of that interdependence on the viewer." Each intensity level contributes a varying amount of influence on the narrative. In considering this influence, the decorative function, the localizing function and the symbolic function are also analyzed. Each level will contribute a varying degree of influence on the three functions of the set. For example, some levels will be highly decorative, while others are highly symbolic. (See Table 3) The five levels of design intensity are as follows:

- set as denotation
- set as punctuation
- set as embellishment
- set as artifice
- set as narrative

The Affrons use these design levels to evaluate films that have already been released. This study uses the levels during the pre-production process as a method of script analysis. Pre-production is the time when the story is being refined, designs are being created and storyboards are being developed. The design team, the director and the producers work together to develop these elements into a cohesive whole.

The art of designing a set (for animation, film or theatre) is a fluid process. Scripts may change and evolve, new ideas may occur, budgets may change, or new inspiration and meaning
may be revealed. The intent here is not to suggest that a production designer should select a
design level and stick with it no matter what. The young designer should use the levels as a guide
in the process of analyzing the script and visualizing the design. The production designer should
always remain flexible and open to new ideas and solutions.

3.2.1 Set as Denotation

The denotive set provides information about the time period and location of a scene,
but in a more generic, or common way. This level provides little additional information about the
characters. Only the most basic information is provided with the set functioning as a background.
The sets may also appear to be interchangeable.

In the Figure 38 stills from the film, *The Maltese Falcon* (1941), we see Brigid's apartment
and Gutman's hotel room. The furniture styles tell us time period, but the settings provide little
information about the characters, and could be interchanged without affecting the story. 48

Figure 38: Two stills from *The Maltese Falcon*, Warner Bros. (1941). Image source C. Affron.
Mirella J. Affron, *Sets in Motion: Art Direction and Film Narrative* (New Brunswick, NJ: Rutgers
University Press, 1995).
Figure 39 shows a theatrical production of Shakespeare's, Richard II. The time period of King Richard II is depicted in this fairly traditional representation of a castle. However, there is little additional information that might suggest the tone, or symbolism of the story.

Figure 39: Production still from Richard II, the Virginia Shakespeare Festival set design by Shana McKay Burns. Image source, collection of Shana McKay Burns.

Similarly, in the short animation, *Baby Changing Station* (Figure 40) the setting is very general, providing the most basic elements of a restroom. The color is neutral and there is little detail to suggest what the character's world outside the restroom might be like. The Walt Disney animated feature film, *Dinosaur* (Figure 41) also uses the denotative level. The film’s sets are very straightforward and simple in style. They provide the story with a sense of place. When considering the levels of design intensity, the designer should also keep the three functions of the set in mind. These are the decorative, localizing and symbolic functions. In *Dinosaur*, these functions provide the following information:

- **decorative**-The sets provide attractive backgrounds, but are not overly decorative.
- **localizing**-The sets place the story in simple landscapes of the story's time period.
- **symbolic**-There are scenes where the set contributes to the mood of the story in a symbolic way. For example, during the dinosaur’s migration, Aladar and his friends are separated from the rest of the herd. They travel through a treacherous rocky area where they have a confrontation with two carnivorous dinosaurs that have been trailing them. The color palette shifts to cool grays and the rocks and cave they stay in are rough and jagged. This is a distinct contrast to the lush green home Aladar came from and the valley they find in the end. The shift in palette and line quality adds to the tension of the scene.

![Figure 41: Still photos from Dinosaur, Walt Disney Studios (2000). Image source Dinosaurl, dir. Eric Leighton, Raph Zondag, 2000, DVD, Walt Disney Pictures, 2001.](image-url)
3.2.2 Set as Punctuation

The punctuative set also provides time and place, but in a much more specific way. More details about class and ethnicity are revealed, as well as details about the characters. The set will also contribute more to the overall composition of the frame.

In these two images from *Far From Heaven* (Figure 42), time and place are depicted as in the first level. However, here the location is more specific. It is 1957-8, in Hartford, Connecticut. There is a clear distinction between the affluent, predominantly white part of town, and the poorer side of town where the Deagans, an African American family, live.

![Image of the Deagan's house](image1)

![Image of the Deagan's house](image2)

**Figure 42:** Production stills from *Far From Heaven*, Focus Features (2002). Image source *Far From Heaven*, dir. Todd Haynes, 2002, DVD, Universal, 2003.

In the next two images (Figure 43) the set provides strong compositional elements within the frame. Barriers are created between people with strong, rectilinear forms. Additionally, levels are created by steps and staircases. These levels suggest hierarchy. In many scenes Julianne Moore's character Kathy, is placed on a lower level in the frame.
The following still (Figure 44) is another situation where characters are distanced from each other through use of the set. Dennis Quaid's character is only visible in the mirror's reflection.

The animated short, Aunt Luisa, Blur Studios (2002) is another good example of the punctuative set. The furnishings of Luisa's home are specific, and show her long history with the house. The set is used to create dynamic compositions within the frame. In these two stills from the short, architectural elements create a frame within a frame for the character (Figure 45). The
sofa also creates a strong diagonal element that gives the composition depth (Figure 46). Some of the ways in which this set's functions are supported are as follows:

![Image](image_url)


![Image](image_url)


- **decorative:** The sets provide interesting backgrounds as well as contributing strong compositional elements to the frame. (See Figures 45 and 46)
- **localizing:** The detailed sets describe a suburban house that was furnished in the 1940's and 50's and has been comfortably lived in.
- **symbolic:** The palette is warm and makes the house feel lived in. The stylized angles and strong diagonals of the set add to Luisa's skewed perspective.
The feature length animated film *Toy Story*, Pixar Animation Studios/Walt Disney Pictures (1995) is also within the punctuative category. The colorful sets locate the story within a middle class suburban neighborhood. Set pieces such as window frames, toys and furniture are often used to frame the characters, creating dynamic compositions.

### 3.2.3 Set as Embellishment

The set as embellishment is often inspired by art historical references. They are often period pieces. Since the story is set within a specific time period, the set becomes more necessary to describe the narrative of the film. These sets can be very decorative and often of an epic scale. The Affrons describe these sets as often colossal. References to a specific time period aid in defining the character and his world. For example, the environment may clarify the social climate, or living conditions of the era.
Set in the 17th century, *Restoration* (Figure 48) depicts a wide range of social classes present in England at the time of the plague. Shown here is the court of King Charles II. *Aida* (Figure 49) set in Egypt during the time of the Pharaohs shows the grandeur of the period. In both examples, specific decorative details are included to place us in the time period and *Aida* has the colossal scale. *Ice Age* is another example of the set as embellishment, though a slightly different example. The time period itself cannot be described as highly decorative, but it is very specific.
and the scenic elements, such as the delicate autumn leaves and the expressively shaped glaciers become very decorative elements in the frame. The settings also have the colossal scale found in this intensity level (Figure 50).

Figure 50: Production still from Ice Age, Blue Sky Studios/Fox Animation Studios (2002). Image source Ice Age, dir. Chris Wedge, 2002, DVD, 20th Century Fox, 2002.

- decorative-The sets provide strong decorative elements. These include the delicate fall leaves covering the trees. The set for the cave of ice is grand and cathedral-like with icicles that shimmer with light. The glaciers and rocks of the landscapes create strong compositional elements.
- localization-The sets place the story in a world of the historical past.
- symbolic-The striking lines of the glaciers and rocks appear like teeth in the landscape. They add to the harsh environment while dwarfing the characters.

3.2.4 Set as Artifice

Grouped into two subcategories, the set as artifice includes the movie musical where a set's sole purpose may be the big musical number.
In the film, *Chicago*, the local jail is transformed for the hard edged number, "Cell Block Tango" (Figure 51-left). Like their theatre predecessors, these sets appear to heighten the spectacle of the musical numbers. These sets are in a separate world from the locations of the plot. However, they can also function to reveal information about a character’s motivations or the emotional reality of the world surrounding them. In the musical number, "Razzle Dazzle", Richard Gere’s song shows the courtroom as the circus that it is (Figure 51-right).
The second category within artifice includes science fiction and fantasy. Here “new worlds and realities” are created. 50 They are unfamiliar and clearly fictitious, though often highly naturalistic. Films such as Blade Runner and The Matrix trilogy (Figure 52) are two examples.

In animation, Monsters, Inc. (Figure 53) provides a strong example of the set as artifice. The opening scenes place us on a charming city street that we might call our own. However, once we enter the headquarters of Monsters, Inc., and more specifically, the door vault, we see that the setting provides us with the new reality we’re looking for. Through these doors, one can be sent to the other side of the world in a moment.


- decorative: The right hand still from Monsters, Inc. (Figure 53) depicts the main floor of the factory. It has many decorative elements. The layout of the windows and the textures and materials that make up the walls all provide an interesting sense of texture and pattern in the background. The architectural elements provide strong, interesting diagonals for the composition of the frame.

- localizing: The interior space tells us we are in a factory setting, but in a world that is unfamiliar to us. The individual doors suggest the world of the child that is present on the other side.

- symbolic: The same background elements that provided decoration also have a metaphorical side. The space is organized into regular, repeating modules. The
patterns present in these elements are all based on grids and rectilinear shapes. This suggests that the environment is regimented and rather strict. The metallic surfaces reinforce this feeling.

3.2.5 Set as Narrative

The fifth level, set as narrative, may include aspects of the first four. Its main qualification is that it is a unit set. This category has a strong connection to theatrical sets which often use one primary set that contains smaller sets within it. Most of the story will take place in one primary location. This may range from an entire town (or community such as Middle Earth of the Lord of the Rings trilogy), to a single interior. The set describes the characters and their daily life in great detail. The characters’ relationship to their environment is a crucial component in the development of the story.


In Master and Commander: The Far Side of the World, the ship is the unit set that forms such an integral link with the narrative. The daily lives of the men completely revolve around the
H.M.S. *Surprise* and keeping her afloat. The interiors of the ship are not designed for the actors' comfort. They are designed to realistically depict the conditions under which the men live. In Figure 54 the hold of the ship is flooded after a battle. The ship supports the sailors' lives, but can also take them away. Additionally, the set provides strong compositional elements within the frame. The vertical beams and use of levels frame both the Captain, on the upper level, and the ship's carpenter in the flooded hold.

The play *K2* (Figure 55) is a clear example of the theatrical set as narrative. The play is about two mountain climbers who fall down the side of the mountain known as K2. They are trapped on a ledge and one of the climbers is injured. The entire play takes place on this ledge. The mountain is integral to the story just as the ship is in *Master and Commander*. The men’s survival is completely dependent upon it.

In the animated short, *Un Amour Mobile* (Figure 56), the setting is a revolving mobile. The set spins and turns in the air working to introduce two potential lovers. In the end they are flung together as the mobile crashes about. Here, the set is what brings the two together.

DreamWorks/PCi’s 1998 animated feature, *Antz* (Figure 57), depicts a colony of ants that are completely dependent upon each other and their home. This home, the physical colony, is the set as narrative. Again, as in the previous examples of the ship, or the mountain, the story of the ants focuses around the colony and their dependency upon it.

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- *decorative*: The undulating lines of the organic forms in the background and lamps from *Antz* (Figure 57) provide a rhythmic decorative element.
- *localizing*: The materials of the set and set dressing in the bar suggest an organic place built by the ants.
- *symbolic*: The warm palette suggests that the bar is a comfortable place where the workers go to unwind. The curvilinear shapes also add to this feeling.

In defining these levels of design, the Affrons describe how the design can influence the narrative. They suggest that the relationship between design and narrative should not be a subordinate one. It should be an equal exchange between the two elements.51

There are some potential drawbacks to the use of design intensities. These concepts were originally developed to be used as a method of evaluating the set designs of completed films. The set design is evaluated, placed into a category and discussed in terms of its relationship to the narrative. In this study design intensities are adapted to be used in the pre-production phase of animation set design. Since design intensities were developed for a post-production evaluation it is possible that it will not be completely suited for this pre-production use. The categorical structure of the levels may prove too rigid for the set design process which needs room to evolve and change. For this reason the concepts of design intensities should be used in
a flexible way. The intention is not for the novice production designer to choose an intensity level and stay with it no matter what. The intention is for the student to look to the levels as an initial guide from which to start. If the chosen level seems inappropriate or stifling as the design progresses the student should move to another more appropriate level rather than trying to force the design to suit the level.

Additionally, there is some overlap between the criteria found within the five levels. For example, the three films of The Lord of the Rings trilogy (New Line Cinema, 2001, 2002, 2003) could fit into two categories: set as artifice or set as narrative. The world of Middle Earth definitely qualifies as new and unfamiliar. However, this world also exerts a great deal of influence on the characters making it a strong candidate for a set as narrative. If one also considers that the set as narrative may include elements from the other levels (such as artifice), provided the set is a unit set (Middle Earth is a very large unit set), then these films must be moved to the set as narrative category. This overlap could result in some confusion for those unfamiliar with the concepts. Therefore these concepts should be thoroughly presented to the novice.

3.3 Applying Design Intensities to Animation

As a method for testing the adaptability of design intensities for CG animation, ninety-three films were evaluated and categorized by intensity level. This step had two goals. The first was to familiarize the author with the concepts of design intensities. The second was to see if these concepts, originally developed for live-action film, were applicable to animated films.

3.3.1 How the Animations were Evaluated

In considering design intensities in relation to animation, several points are evaluated. For example, film starts out as inherently naturalistic in its depiction of real people and their environments. Theatre and animation on the other hand are inherently stylized to varying degrees. This could affect the interpretation of the set design and therefore the application of the
design intensity levels. There is some overlap in the categories. In these cases, all of the
elements of the design are considered and the film is placed in the strongest possible category.

Upon further review of multiple animations, the stylization question did not appear to be
problematic for categorization. However, the type of stylization of the animated film does indeed
have an impact on the overall design. The stylization can act as an additional factor in
determining the design's overall impact on the narrative.

In classifying the animations, the total design, with consideration of specificity of the time
and place depicted, compositional elements, and details depicted as well as their necessity is
considered. Subsequently, style was then analyzed. The goal was to determine how the style
added, or subtracted from the overall design effect. In some cases, the style pushed the design
into another level. For example, Gone with the Wind in Sixty Seconds (2003) was initially placed
into the denotative category based on its simplified forms (Figure 58). After consideration of the
style and use of the set, and its additional influence on the narrative (adding to the farcical quality
of the story), the animation was moved into the punctuative category.

Figure 58: Production still from Gone with the Wind in Sixty Seconds, Sheridan College (2003).
Image source Animation Theater Program, Part 2, DVD, ACM Siggraph Video Review issue 146,
2003.
3.1.2 Application results

For this study, five levels of design intensity were applied to 93 animation and live action films. Animations were selected for review based on historical and artistic significance, as well as box office grosses. Only computer generated 2D animations were included in the study. Feature films were selected based on the top fifty highest box office grosses. Any animations that fell into this category were omitted to prevent duplication. Appendix F lists the films and animations that were viewed for this study. The animations break down into the levels found in Table 2.

<table>
<thead>
<tr>
<th></th>
<th>Animated Short Film</th>
<th>Animated Feature Film</th>
<th>Live Action Feature Film</th>
<th>Total</th>
</tr>
</thead>
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<td>3</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>Punctuative</td>
<td>8</td>
<td>6</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>Embellishment</td>
<td>1</td>
<td>2</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Artifice</td>
<td>7</td>
<td>2</td>
<td>16</td>
<td>25</td>
</tr>
<tr>
<td>Narrative</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td>14</td>
<td>50</td>
<td>93</td>
</tr>
</tbody>
</table>

Table 2: Frequency of design intensities for animation and film.

When looking at all of the categories combined, the punctuative level appears most often. However, when just animated shorts are evaluated, the denotative level appears most frequently. Many of the shorts that appeared at this level were student and low budget productions. The conclusion drawn from this may be that students are in need of more guidance in relation to their exploration of set design and how it relates to the narrative of their films. There may be good reasons for choosing the denotative level for an animation, but the production designer should also consider other options that may support the story more fully.

After evaluating these films and animations based upon their design intensity, the degree to which each design intensity level contributed to the three functions of the set was evaluated.

The previous set design examples contain qualitative information about these functions within the discussions of the individual figures. The next step was to determine a quantitative measurement of each intensity level’s contribution to the set design (Table 3). The degree of contribution is
rated from 0-3, where three is the highest degree of contribution. Several of the design intensities show a range of contribution.

*Design intensities* are a logical method of describing how the design influences narrative. Discussing design in terms of style has the benefit of familiarity. It also can be related to similar movements in other art mediums. However, this discussion may not directly relate to the narrative. Design styles can fit into the various levels of design intensity. For example, a set that is in the category of artifice can also be in an Expressionistic style. Overall, the categories of *design intensities* provide a strong framework for discussing set design.
Table 3: The degree of contribution of each design intensity level to the three functions of the set design. The scale is 0-3 with 3 as the highest degree of contribution.

3.4 Creating the Educational Tool

3.4.1 Defining the Steps in the Set Design Process

In an attempt to summarize the set design process into a pipeline that is easily understood by the novice set or production designer, a flow chart of the animation production design process was created. This flow chart (Figure 59) was distilled from the information provided by existing knowledge of the theatre set design process, the interviews of animation
professionals, the study of design intensities and the design of the animated short. This process is broken down into steps and is the result of a distillation and combination of the flow charts from the individual animation houses and the theatre flow chart (Appendix E). The flow chart in Figure 59 synthesizes the commonalities found within these pipelines and incorporates the levels of design intensity into a single set design flow chart. This flow chart can be used by students to learn about the set design process.

The flow chart focuses on phases 1 and 2—the pre-production portion of the process. As described in the chapter 2 interviews, the production phase can vary between production houses, but the pre-production phase has little variation. Also included in the flow chart are the previously described steps such as practical needs, practical research, mood research, etc. Some of these steps, such as practical needs may become automatic and subconscious to an experienced set or production designer and may not be specifically described by individual designers in the same way. Therefore, these steps are specifically described in the flow chart to aid the novice production designer in learning the process. By including these steps the students’ attention is drawn to their necessity. The steps are as follows:

- **Practical Needs** refer to one of the very first steps in the design process—determining what the story needs in order to be told. These are very basic needs of the script. After reading the script, these needs are listed scene by scene.

- **Practical Research** is any research done regarding practical issues. It also includes historical research on what an object looked like in a particular time period or in a specific part of the world.
  - The designer may use collages, scrapbooks and notebooks to assemble their research for this and the following step.

- **Research for Mood** is any type of research that provides inspiration. It can be anything that evokes the mood and tone of the story. It may include, but is not limited to, painting, sculpture, photographs, film or animations. This research also relates to another step in the process, metaphor.
• **Metaphor** is the meaning that is behind the images you choose. Metaphor can relate to individual scenes or the whole story. It is found in all the elements of the design, such as the quality of line, the balance of the frame, the objects sitting on a table, or paintings on the wall. Layers of meaning can be added to a story through the use of metaphor.
  
  o The designer will produce concept sketches, color scripts and color callouts during this step.

• **Blocking actions** is the process of laying out the movements of the characters within the space. Working with the director, the characters actions are determined and choreographed within their environment. In animation the actions are also being composed within the frame. The meaning of the composition should also be considered here. (For example, one character can be on a higher level than another to create a sense of hierarchy. Here a staircase may be appropriate.)
  
  o The designer will produce orthographic drawings, models and model sheets during this step.

• **Aesthetics** for this study will refer to the composition of the frame. What makes the frame interesting or appealing from a design perspective? Is the frame balanced? What type of line quality does it have? Are the important elements placed in the dominant positions of the frame? (The rule of thirds should be considered here.) The designer must also balance the aesthetics of composition with the other steps such as metaphor and blocking. Maybe there is a specific reason for the frame to be unbalanced.
  
  o The designer will produce concept sketches and models during this step.

• **Transitions** are the points where the viewer enters or exits a scene, or location. In theatre these moments happen in real time in front of the audience. Filmic media has the benefit of editing techniques such as cuts, dissolves and wipes. These edits can instantly move the story from one time or location to the next. Transitions should be
carefully considered by the designer. An appropriate set design can add or distract from the transitional moment. For example, in some instances the story may call for a shocking transition from one scene to the next. This can be accomplished with a cut, but can be enhanced by the design of the set that is cut to.

- The budgeted Cost is a factor in any production from small community theatre productions to blockbuster features. Often, compromises must be made due to budget constraints and manpower. Dialogue between the designer, director and producers should be constant to avoid any pitfalls.
  
  - Organization of all of the above elements will be key to keeping on budget as well as having a continual dialogue with the director and producers.

3.4.2 Prototype 1

An educational tool was developed to introduce students to the animation set design process. The tool combines the information gathered from the interviews, and presented in the flowcharts, with the concepts of design intensities. The educational tool was developed for novice production designers with no previous set design experience. Prototype 1 (Figure 60) of the tool explores a portion of the steps laid out in the set design process flow chart. It covers practical needs (known as functionality in the first prototype), research for mood, practical research, blocking actions, metaphor and aesthetics. The students are exposed to specific concepts relevant to each part of the flow chart.

step 1-script analysis-The tool begins at the top of the flow chart, with a script that is supplied through a linked document. The student reads the script before moving on with the tasks.

step 2-selection-The student conducts preliminary research in the research-practical tab. The student selects images and drops them onto the canvas. By providing the student with a set of images that has been classified they are shown a method that will keep their design choices consistent.

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step 3: categorization. The tool then evaluates the selection and assigns it to a design
intensity level through the graph at the bottom. The graph bivalve lead the student to information on
the design intensity levels.

step 4: self-evaluation. The student can then read about the level and use the information
to further develop choices. Often students work on independent projects where they perform
many roles without the benefit of collaborators who can respond to their ideas. The information
provides a guide for the student to self-evaluate their choices. The student then moves on to the
next tab to complete the subsequent tasks. Prototype 1 of the tool kit can be found on the CD
included with the copy of this thesis owned by the Department of Industrial, Interior and Visual
Communications Design, the Ohio State University.
Figure 59: A final flow chart for the set design process in 3D computer animation.
3.4.3 Refinement-Critique of Prototype 1

Upon evaluating the first prototype, it was found, by the author, to have a rather rigid layout. The original intent was to have similar collaging type tasks for each tabbed step (re-function). As the flow chart and tool evolved, it became evident that the tool needed more flexibility within each step's task layout. A more customized approach to the tasks was needed to accommodate each step's qualities. Also, prototype 1 has separate links for instructions and the flow chart. This makes for a crowded and confusing screen displaying multiple windows. The next
step in the tool development is to give each step its own webpage. This new format accommodates instructions for the specified step, the tasks themselves and the flow chart on a single page. The tasks themselves are also more developed in prototype 2.

3.4.4 Refinement-Creating Prototype 2

Concepts for creating interactive or e-courseware were researched to improve the function of the tool. In *e-Learning and the Science of Instruction*, the authors discuss cognitive processes as well as basic design principles for courseware. Three goals of e-learning are as follows: providing information to the student; teaching the student to perform procedures; teaching the student to perform principle tasks. The three types of e-learning are information acquisition, response strengthening, and knowledge construction. The goals of the set design tool fall within the concepts of the first and third categories as described. With regards to the types of e-learning, the tool's goals again fall into the first and third categories.

The set design tool aims to provide the student with information on the set design process and to teach the student how to perform tasks related to the analysis of the script. This information is provided through the presentation of the set design process flow chart and its related definitions. The students are also educated about design intensities through a linked page that provides explanations and visual examples. They perform three tasks related to three steps in the set design process. These tasks are further described in the following sections. Knowledge construction occurs through the completion of the tasks which help the student build a framework that they can use and refine as they continue with future set design projects. One additional idea that will be included is a list of learning objectives for the student to review at the beginning of the training. This provides the student with an outline of the goals they are striving towards.

The flow chart (Figure 59) in prototype 2 is slightly revised from that found in the first prototype. The term function was found to be easily confused with the three functions of the set design. Therefore, the term was changed to practical needs. The overall set design process is further subdivided into three phases. The first phase covers script reading, practical needs,
practical research, research for mood, and the relationship of these steps to the design intensities. Phase 2 covers the conceptualization phase. This includes the creation of sketches, plans and models. Phase 3 is the production phase. Phase 1 is the focus of prototype 2. The phase 1 portion of the flow chart is included on the tool pages to help the students remember where they are in the process (Figure 61).

Figure 61: The phase 1 portion of the flow chart which will be included in the prototype tool.

3.4.5 Who Will Evaluate the Tool?

The usability of the tool is evaluated by animation production design students. Students enrolled in the course, Concept Development for Sequential Imaging (AC 730) are potential users of the tool. There are several questions to consider when analyzing the results of the student test. They include the following:

- Did the student have a process to use for making their decisions?
- Did the student identify the sets and props that are essential to perform the narrative?
- Was the student able to convey the images chosen to the narrative? (Was there an evocation beyond "I like this picture."

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• Was the student able to connect the concepts presented within the design intensities with their method of analyzing the script? (Did design intensities help or hinder the student?)

During step 1 (Pre-Evaluation) of the test, general questions are asked to determine each student’s pre-existing knowledge of set design. These questions are asked before any other information is presented. The students give written responses. The objective of this step is to establish a baseline of information on what the students know and think about the set design process for animation. This information is compared with the students' responses at the end of the study. The questions for step 1 are as follows:

1. How do you define set design?
2. Have you ever designed a set for animation, film or theatre?
3. How important do think the set design for an animation is?
   not important | | | | very important
   moderately important
4. Why? Please comment on your answer to question #3.
5. What is the most important factor to consider when designing a setting?
6. What steps would you take when beginning a set design for an animation?

Detailed information on the tool is presented in step 2 (Knowledge Acquisition). This includes the concepts of design intensities, and of the function of the tool. (Prototype 2 of the tool can be found on the CD included with the copy of this thesis owned by the Department of Industrial, Interior and Visual Communications Design, the Ohio State University.) This step’s objective is to explain the set design pipeline to animation production design students to provide them with a foundational understanding of the process, to present the concepts of design intensities as a framework for analyzing design decisions based on the specifics of the script, and to explain the function and use of the tool as a structure for beginning the set design process. The information that is presented is put into practice with the exercises presented in step 3.

In step 3 (Performing Principle Tasks), the students read and discuss a short scene for a proposed animation. For the purposes of this test the story of Little Red Riding Hood is being
used (Appendix J). The story was chosen for several reasons. The story is well known, but does not have an iconic design attached to it. The story can be read in short amount of time and has a straightforward plot that is easily comprehended within the time allowed for the test. Additionally, there are several locations and important props for the production designer to deal with.

Each student is assigned a different design intensity level. The students then work through the steps of the tool kit with their design intensity level in mind. The exercises explore the use of design intensities as an aid in analyzing a narrative for animation, and in making design choices in the pre-production phase of animation. This step's objective is to put the information in step 2 into practice through a series of exercises, and to their measure if the students are able to support their design choices based upon their relationship to the narrative.

The objective of step 3, exercise A is to determine if the student can break a script down into its component parts, thereby focusing and organizing the design scope. In exercise A, the student deals with practical needs by charting out all of the items they absolutely need to perform the sample scene. Exercises B and C focus on practical research and mood research respectively. The objective of these two steps is to have the students learn about the research process and to make research decisions that support the narrative using design intensities as a guide. In Exercise B, the students select images based on the practical needs chart they created in Exercise A. They are looking for research that answers any questions they have about the items they need for the story. These may be questions about how an item functions, or how it looked in a particular period. In Exercise C the students look for images that inspire them as to the mood of each scene. In Exercise B and C the students should make decisions based on the design intensity level they are assigned at the beginning of step 3. Additionally, the research should always support the narrative.

After all of the information has been presented, the last set of questions is asked. This is step 4 (Post-Evaluation). The first objective of step 4 is to determine what the students know and think about the set design process after the presentation of the information. The answers are compared to those given in step 1. The second objective is to obtain the student's evaluation of
the tool kit and its contents. Some of the questions are repeated from step 1. The students will again give written responses. The complete test can be found in Appendix H.

3.4.6 Results of the Student Test

The test has two main goals. The first is to pilot test the prototype of an educational tool for animation production design students. The tool provides the students with a structure from which to develop their set design pipeline. The second goal is to determine if the incorporation of design intensities into the set design pipeline is beneficial to the students' understanding of the process, and their ability to problem solve resulting in better set design. The test focuses on phase 1 of the set design process flow chart (Figure 61). The tool was tested on three graduate students majoring in Design at the Ohio State University. Two of the students had never designed a set and one had some experience in grade school. The complete test results can be found in Appendix L.

Results of Step 1 (Pre-Evaluation): What do the students know about set design?

The objective of the first set of questions asked is to obtain information on the students' prior knowledge and opinions on set design. (The complete set of test questions is available in Appendix H.) All of the students started with a wrong understanding of what set design is. When asked to rank the importance of set design to an animation all three stated that it was very important. The ranking scale is as follows:

not important, _________________ moderately important, _________________ very important

The students also all described mood as an important function of set design. Their understanding of what the set design process is was less specific. Their comments were more generalized. However, student 2 did state that, "It is important to understand what message you want to portray through the story. Then take references [and] inspirational material which might be
similar." (Appendix L) Additionally, student 3 said that the first step would be to “assess the role of the set in the animation.” (Appendix L) Both of these comments suggest that there is an understanding of the importance of the relationship to the story.

Results of Step 2 (Knowledge Acquisition): Presenting the tool’s information

Step 2 has three related objectives. The first is to explain the set design pipeline to animation students to provide them with a foundational understanding of the process. The second is to present the concepts of design intensities as a framework for analyzing design decisions based on the specifics of the script. The final objective is to explain the function and use of the tool as a structure for beginning the set design process.

During step 2 the students were presented with the set design process flow chart and the concepts of design intensities. The students responded well to the information. They seemed interested in seeing how the concepts build on one another. They asked questions throughout the discussion of design intensities. This expanded the discussion and showed that they understood the concepts and sought further information. They also discussed the examples given and asked about appropriate levels for additional films and animations.

Results of Step 3 (Performing Principle Tasks): Completing the exercises

In step 3 the students were given a series of exercises to put the step 2 concepts into practice. The main objective of this step is to measure whether the students are able to support their design choices based upon their relationship to the narrative. In the first exercise the students broke the script down into its component parts as they related to set design. They charted the sets, set dressing and props needed for scene 3 of the test script on a practical needs chart. (The test script is available in Appendix J and the practice needs chart is available in Appendix K.) Each student was then assigned one of the design intensity levels to begin their research. The design intensity levels of denotative, punctuative, and embellishment were used on the three student participants.
Assigning each of the students a design intensity level to work within had one disadvantage of being slightly restrictive to the design process. However, the test was conducted with a small sample group of three students. This method was chosen to expose the students to as many design intensity levels as possible within the time span of the test. By assigning each student a level, they could observe the results obtained by their peers who were working at different design intensity levels. Their results could be compared and commented on during the discussion portion of the test.

Step 3, Exercise A-the Practical Needs Chart (This chart was previously called a Function chart. It was decided that this could be easily confused with the three functions of set design and was therefore changed to practical needs.)

This exercise had an additional objective to see if the students could break down a script into its component parts, thereby focusing and organizing the design scope. Each student was able to identify the three main locations of scene 3. They were less successful at identifying the main props and set dressing needed for the scene. All three students did not note two or more of the necessary prop and set dressing items. These responses are summarized in Table 4. Also of note is the fact that while missing some of the key props, all of the students included additional pieces of set dressing. This would suggest that they are more focused on atmosphere and mood than on the practical needs even though this step's purpose is to determine those key practical needs.

Step 3, Exercise B-Practical Research

During the practical research exercise, the students' goal is to find reference images for all of the items listed on their function chart. The students were given a standard set of images to begin their practical research. Each student received the same set of images. The images included a range of examples of most of the items found in the script. However, not all of the necessary items were included. The students were given access to the internet.
capability and told that they could search for any items that were missing or that weren't
represented as they imagined them. Two of the three students took advantage of the computer to
locate further research.
<table>
<thead>
<tr>
<th>sets &amp; locations</th>
<th>script</th>
<th>student 1</th>
<th>student 2</th>
<th>student 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>set dressing &amp; props</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cake-Red Cap</td>
<td>cake</td>
<td>cake</td>
<td>basket &amp; food</td>
<td></td>
</tr>
<tr>
<td>wine-Red Cap</td>
<td>wine</td>
<td>wine</td>
<td></td>
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<tr>
<td>latch</td>
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<tr>
<td>door</td>
<td>door</td>
<td>door</td>
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</tr>
<tr>
<td>bed-Grandma</td>
<td>bed</td>
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<td></td>
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</tr>
<tr>
<td>bed curtains-Grandma</td>
<td>curtains</td>
<td>curtains</td>
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</tr>
<tr>
<td>bed linens-Grandma</td>
<td>bedding</td>
<td>bed sheets</td>
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</tr>
<tr>
<td>flowers-Red Cap</td>
<td>flowers</td>
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</tr>
<tr>
<td>cap-Grandma</td>
<td>Grandma's clothes</td>
<td>Grandma's clothes</td>
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<tr>
<td>gun-huntsman</td>
<td>gun</td>
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<tr>
<td>scissors-huntsman</td>
<td>scissors</td>
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<td>stones-huntsman</td>
<td>rocks</td>
<td>stones</td>
<td>heavy stones</td>
<td></td>
</tr>
<tr>
<td>glass-Grandma</td>
<td>glass</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>fur pelt-huntsman</td>
<td>fur</td>
<td>wolf pelt</td>
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<tr>
<td>stools</td>
<td>red cap</td>
<td>pictures of Red Cap</td>
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<tr>
<td>stove</td>
<td>windows</td>
<td>tables</td>
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<td>table</td>
<td>lights</td>
<td>chairs</td>
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<tr>
<td>garden</td>
<td>wood stove</td>
<td>knitting projects</td>
<td></td>
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<td>pots</td>
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<td>embroidered pillows</td>
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<tr>
<td>cupboard</td>
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</tbody>
</table>

Table 4: Summary of the Practical Needs Charts completed by the students. Items in italics are notations beyond that required by the script.
None of the students completed this research fully. The quantity of research images chosen varied among the student participants. For example, student 1, who listed twelve of fourteen of the necessary props and dressing, only chose research for six. Since many of these items had research options available in the image pack and the internet was available for further research, it is not clear if the lack of research here was due to a misunderstanding of the denotative level or of the practical research step itself. The student did comment that the denotative level felt limiting. Both students 2 and 3 left out images for the bed curtains, Grandma's cap, and the wolf pet. These same two students noted the need for flowers but did not choose an image for these until the research-mood portion of the exercise. Student 3 did not note that wine and a wine glass were needed but did choose research images for them.

Step 3, Exercise C-Mood Research

The students had several images in common for their mood research. (See Appendix L) Many of their comments and choices showed that their emphasis here was on the mood of the lighting. Student 3 also emphasized the metaphorical meaning of the story. The chosen images showed a progression of mood through the forest and into Grandma's house. When asked how these images supported or contradicted the narrative, the student replied, "They confirm Little Red Cap's lesson of staying on the path and avoiding the forbidden forest. The images assume that the mother is right and the forest is dangerous." (Appendix L)

Results of Step 4 (Post-Evaluation): Did the students gain new knowledge?

Step 4 repeats some of the questions from step 1 for comparative purposes. It also includes several new questions to evaluate the students' responses to the new information. The objective is to determine what the students know and think about the set design process after the presentation of the new information in step 2 and the exercises in step 3. Additionally, the students' responses to the tool itself are evaluated.
The students still considered the setting to be 'very important'. Their comments on why this is so were consistent with their responses from step 1, but were more concise. At both the beginning and end of the test the students emphasized the importance of a set's ability to convey mood to the story. All of the students said that they found the information helpful to their process, and that they would refer back to the information within the tool.

The primary question for this step asks whether or not the students learned from the new information. Student 2 made very consistent choices while working at the punctuative level. They all convey a rustic, homespun feel. Student 3, who worked at the embellishment level, was heavily influenced by that level's strong influence on the localizing function. When asked how the design intensities influenced design choices the student commented, "I made sure all of the images supported the time period and mood because embellishment conveys time period and location." The same student also felt that the level called for a photorealistic portrayal and choice of research images. Additionally, the images chosen are very decorative, strongly contributing to this function of the set.

These results suggest that the levels do give the students a focus and starting point for their research. The students also came to this conclusion. One student responded, "I was able to focus on a level of intensity as a goal, and it helped unify the style of my choices." (Appendix L) However, the incompleteness of the practical needs charts and the practical research step suggests less of an understanding of those points in the process. It seems that the students would need more time to fully understand and explore all of the design intensity levels. This could include more classroom time discussing the levels as well as the set design process itself, and additional exercises that would further explore the students’ design choices.
CHAPTER 4

APPLYING THE PROCESS: DESIGNING WITH THE EDUCATIONAL TOOL

4.1 Set Design for Animation: Design of the Animated Short, Ice

An animated short titled Ice was created as part of this study. The short provided an additional opportunity to explore the set design process for animation. It also provides an additional test case for the set design tool kit, which has design intensities incorporated into the set design process. The goal is to provide a second opinion to be reviewed along side that of the students. The discussion is divided into the categories found in the final flow chart in Figure 59.

4.1.1 Practical Needs

The design for the short film is approached as it would be for a theatre design-through-the script. First the main locations are determined. They are as follows:

- a small Midwestern farm
  - exterior of the farm
  - interior of the kitchen
  - interior of the greenhouse
- the Ice fields
- the town of Burton
  - the main gate
  - the street leading to the feed store
  - interior of the feed store
  - the cemetery
- the edge of town
- the village
  - interior of a small house
  - exterior of the village
  - interior of the greenhouse

There are also specific props and pieces of set dressing needed. They include a bag of seeds given to Lily by her mother, and passports to move from town to town. Listing these locations and props provides a starting point for researching where these places might be and what the world might look like.

Figure 62: Two examples of research for the farm. Image sources Michigan Barn Preservation Network, 10 May 2005 <http://www.mibarn.net>, and Ron Saari Photography, 10 May 2005 <http://www.ronsaari.com/stockimages/barns/backBarnRoute7/BerksCountyPA.php>.

4.1.2 Research-practical

As a designer works on this preliminary research she should also think about who the people are that live in the world of the story. The set design can help establish a rich back-story for the characters. This can be created with set dressing, props and even color choice. For example, Lily's mother, Jo, should be recognized as more than a casual gardener. She is a research botanist and has been developing seeds for hydroponics gardening. The type of
equipment that surrounds her is important in describing who she is. Figure 63 shows some examples of hydroponics equipment.

![Two examples of hydroponics set-ups. Image sources Aquaponics.com, 12 June 2005](http://www.aquaponics.com/lillipHydroponics.htm) and [www.google.com](http://www.google.com).

Practical research is important to the localizing function of the set design. The research that is chosen leads directly to the design choices that will be made. Choosing references from the appropriate location is the key. The lay of the land as well as the type of architecture is crucial. There are differences between set design for theatre versus that for film and animation that should be considered during the research phase. In theatre, the detail of small props and set dressing can be more suggestive. However, in cinematic media, the ability to move the camera in to a close up shot creates the need for very detailed props and set dressing. Therefore, it is necessary to be very specific about research and design decisions related to these items.

### 4.1.3 Research-mood

At this point the designer also begins to consider the levels of design intensity. Prior to this study, the design intensities were unfamiliar, so this added a new element to the process. Upon evaluating the script for *Lot*, the fourth level—antifce—was initially considered. This level would give the world of the futuristic story a new, unknown quality. However, after working with this idea for a while the level seemed inappropriate. The story takes place in the near future. Part
of the premise is based on current research that suggests that global warming could have the
effect of causing an ice age and that this could occur within a ten year period. Therefore, it was
decided that the setting should feel close to present time, not futuristic. This way the emphasis
would be on the reactions of the characters, not on the futuristic equipment.

The punctuative level suggests a need for great detail in terms of time period, locale and
color. This level also has the additional benefit of demanding the use of the set in creating
strong compositions within the frame. This element of the level is a great benefit to the designer.
The use of the frame is much different in animation as compared to theatre. In theatre, one main
composition within the frame of, for example, the proscenium arch is created. Smaller
compositions can be created with scene changes. Sets can be moved in and out, or flown. Focus
can be redirected or tightened through lighting, but the overall frame and point of view of the
audience member does not change. In animation, or film, the point of view and focus of the
audience member can be shifted dramatically. Scenic elements can split a frame in half. The
camera can look down on the top of a character’s head from a bird’s eye point of view. This
cannot occur in theatre. Having this reminder from the punctuative level can be useful throughout
the set design process.

One of the pieces of mood research selected for Ice is from the graphic novel, Stray
Toasters. The style of the rendering within the novel varies throughout. Sometimes a character is
rendered in full color and appears very dimensional (Figure 64, left). At other moments the same
character is treated very graphically creating a more edgy “2D” image (Figure 64, right). The
rendering style creates a dark mood that is appropriate for some of the more desperate moments
within the narrative of Ice.
4.1.4 Blocking

Next, concept drawings and ground plans are developed. The process of designing the short provides many insights into the nature of the camera and concepts of blocking for animation. The ground plan of the farm has several points of influence. For example, during the prequel, Lily is looking out the kitchen door at her mother in the greenhouse. Snow begins to fall as she looks out. She turns her head to look at a calendar which shows the viewer that it is August. While Lily is looking at the calendar, it is important to see out a window across the kitchen so the falling snow can be seen simultaneously. So, from Lily’s one position, she must be able to see her mother in the greenhouse, the calendar, and snow falling through a window. With this initial plan, the organization of the farm after the snow was also considered. How would building positions influence the characters once they had to deal with all of the snow that would
fall? In this situation protecting the greenhouse would be crucial. Therefore, the barn, greenhouse and house were oriented in a way that would create a compound for Lily and her mother (Figure 65).

Figure 65: Rough ground plan for the farm after the snow falls.

The animatic also influences the development of the set designs. The initial ground plan was used to lay out a rough set for use in the animatic. Once the camera began to move through the greenhouse, it was determined that the plan needed to be adjusted slightly. The door to the greenhouse and the door to the kitchen were initially at a diagonal to each other. The greenhouse was shifted slightly to line up more directly with the house so that Jo and Lily could be seen at the
same time, as the camera moves through the greenhouse to the kitchen door. This allows for a cleaner camera move.

Blocking influenced design choices at the gate to Burton (scene 7). As Lily enters the town, the camera tracks up to reveal a wide shot of the sign to the town, as well as Lily passing through the gate. The sign was originally to be painted on solid metal. After looking at the shot in the animatic it was determined that it would be better if Lily could be seen throughout the entire shot through the sign. Therefore a new design was conceived for the sign.

4.1.5 Metaphor

Metaphor can be used within a set design. This category falls into the symbolic function presented by the Affrons. Metaphor supports the story by providing additional layers of information and meaning to the images. The hex sign on the barn at the farm is a symbolic element. Design of the hex sign began with research on traditional hex signs (Figure 66). The original intent was to use it as another localizing element. The hex sign is used quite often on barns in Pennsylvania and the Midwest. After researching the symbolism found in traditional hex signs, the decision was made to create a design that had significance for Lily and her family. The motif of flames occurred early in the design process. It was initially something Lily learned from the ice and snow. The concept of the flames symbolized the warmth of the family as well as the idea that something passionate and life giving could still exist within the icy environment. Therefore the flame motif should continue throughout the story. It also appears at the end when Lily walks out into the village for the first time. The village's greenhouse's cobbled together with bits and pieces of whatever the people could find. The pattern created on the front of the building repeats the shape of the flames. Here the motif suggests that fate has brought Lily to the village and that listening to her intuition, which told her to drop into the icy water, was the right choice. It was felt that the flames should appear at one more place within the story. The hex sign was the perfect place and it was then incorporated into the barn's design (Figure 67).
The color palette is a key consideration in any design process. The palette affects all three of the functions of a set design: it assists in the localizing function. For example, the color found in a sunset, or any natural light, can vary greatly across the country and world. This will also affect the appearance of the color of the snow. Color also suggests time of year, or season. When the story opens it is summer. The farm is lush and green. In the next scene the palette and season have changed drastically. The landscape is now covered in the pale blues, lavenders and whites of snow. The color palette adds to the decorative quality of the image by drawing the viewer’s focus and providing interesting images. Color is also symbolic: In loco, the color palette shifts throughout the course of the narrative. While on the farm the color remains more saturated and vibrant. Even the white of the snow has color within it. The landscape, though now potentially...
dangerous, also has the beauty found in a crisp, sunny winter day. Here the palette also includes the color within the shadows. As Lily heads out on her journey, the color begins to drain from the world until she reaches Burton. Here the palette is completely desaturated. The color of the shadows is muddy, consisting of dirty grays and washed out browns. The only color remaining is that of the feed store previously owned by her uncle. In designing the town of Burton, it was important to create a new reality for the characters. In the story, as supplies begin to fall short, new citizenship laws are enacted. Passports are required to move from town to town. So when Lily reaches Burton, it is important to see this shift to martial law. The town has a large fence encircling it with guards as well as signage showing the rules for entry. Once in the town we can see that many of the buildings have collapsed under the weight of the snow and most businesses have closed. Even the interior of the feed store, which was once owned by Lily’s uncle, is now fenced off to protect the meager supplies still available on the shelves. The shift in color palette adds to the desolate feeling present within the town.

Figure 86: The feed store in Burton. Saturated color remains only on the feed store once owned by Lily’s uncle.
The village is the final location for the short film. There needs to be a distinct difference between the village and the previous town of Burton. Lily wakes up confused and unsure of her safety, but needs to end up feeling secure. The room she wakes up in is warm and inviting. Though constructed of recycled and found pieces of lumber and metal the house is exactly this. There are rugs and quilts hanging on the walls to keep the wind out. The arrangement of the materials has a homemade feel. The color of the paint peeling off of the old planking is warm and textural. A fire is burning in an old metal drum and Lily’s remaining belongings are near. Once out in the village square the buildings all have a similar organic feeling. The ground plan for the village is circular and oriented around the greenhouse. Color has returned by light and shadow.

Figure 69: Rough ground plan and concept sketch for the houses within the village.
4.1.6 Aesthetics

The set itself can be designed and used to create interesting compositions within the frame. Elements can be used to create graphic interest as well as psychological meaning. For example, the interior of the feed store in Burton has many horizontal and vertical elements. These are created by the shelves, counter and fencing within the store. These set pieces are used to add to the composition of the frame.
4.1.7 Transitions

The transition itself or more precisely the type of transition is less of an influence on the animation set design than on the theatre set design. In theatre the transition occurs live in front of the audience and must occur by some mechanical means (if a change of location is occurring). In animation the transition can be edited in any way to create an instantaneous shift from one locale to another. So what is important here is the image that appears after the transition is complete. The transition from the prequel to scene 1 is an example. In this moment the story moves forward in time and a cross-dissolve is used to suggest this. In the prequel it appears to be a normal summer day until the snow begins to fall. Scene 1 occurs a couple of years later, after the ice age has begun. The landscape is frozen in snow. The trees have all been cut down for firewood. The horizontality of the landscape is emphasized. The difference between these two moments must be distinct.
4.1.8 Cost

Cost was less of a factor for this production, it was produced at the university facilities of the Advanced Computing Center for the Arts & Design. Cost here was defined in terms of student work hours rather than dollars. Without a labor budget, the production relied on student labor. This can be advantageous in that students are interested in experimenting and learning new techniques. Time spent on these experiments is not limited by cost, but by the number of hours the individual students have to offer.

4.2 Summary

Producing the short animated film provided several methods for further exploration of the animation set design process. First, it offered a direct comparison of experiences between set design for theatre and for animation. Second, the clarity of the breakdown of the process into steps (function, research-mood, etc.) was also tested. Finally, the incorporation of design intensities was explored directly through its application to the animation. These concepts have now been explored by two distinct types of users—students with no set design experience and a set designer with previous experience in the theatre.
CHAPTER 5

CONCLUSION

5.1 Summary

The animation industry invests large quantities of time and money in the production design of their films. Therefore it seems imperative that animation students with an interest in production design and art direction should have tools available to help in their understanding of this process. The goal of this study is to provide a discussion of the animation set design process, and the effect of set design on narrative development, and to present these concepts in a way that is easily understood and implemented by novice production designers through the use of a set design tool. The tool provides an explanation of the set design process. It also includes an introduction to and incorporation of design intensities into this process. The design intensities provide a framework for the students to begin their analysis of the script and their development of a cohesive set design.

From the testing that was completed it does appear that the tool and the use of design intensities aids students by helping them to focus on specific, appropriate design choices that relate to the script. Upon testing design intensities in the production of Ice, two conclusions were reached. The design intensities did help to focus the design in a direction that suited the story being told. However, in the case of an experienced set designer, for whom script analysis comes more naturally, trying to stay within a particular level of design intensity may be restricting. The experienced designer understands how to make consistent choices that relate to character and plot development without limiting design possibilities. The strong framework that is design
intensities strength for the beginning set designer may be its weakness for the experienced designer.

5.2 Next Steps

5.2.1 Improving the Educational Tool

The next step for the educational tool is the addition of an extensive image bank. A wide variety of research images is essential to the set design process. A designer should not be restricted by lack of access to research sources. The images would be used for the practical and mood research steps. These images would be categorized by the design intensity level that they represent. The students would need to be able to access other image sources as well, again so as not to be restrictive. During the test some of the students chose the same images for different design intensity levels. The number of repeating images would decrease as the size of the image bank increases. By starting with the categorized images the students are given guidance on how to begin their research. After working with the design intensities, they will have a stronger understanding of how to analyze the script and can move on to other image sources. Additionally, the “fill-in” charts and tables available in the tool need to be programmed as expandable charts. The user would be able to add columns and rows as needed for each task. This would enable students to work with the tool online.

5.2.2 Additional Testing of the Educational Tool

Future testing of the tool may benefit from some modifications to the testing process. First, the inclusion of a control group could prove useful. This group would perform the design tasks without any guidance or discussion of the pipeline or design intensities beforehand. The group that receives no new information would then be compared with the group that was taught about process and design intensities. Second, letting the students choose their preferred design intensity level, as one would do in a work scenario, may also be preferred. This would provide a more direct link with future set design scenarios. Including a larger group of students could also
be beneficial in this instance. In this way it would be more likely that someone in the group would choose each of the five design intensity levels. The students’ choices would be discussed in a group setting, thereby exposing the students to the full range. Third, the tool’s concepts could be put into practice on the production of a short animation created by students who have been exposed to these concepts. Finally, the tool could be presented to professional set designers for further evaluation. This group will have the benefit of professional experience to aid in their evaluation of the tool. The key question for the professional set designers is whether or not the design intensities are helpful to their process.

5.2.3 Incorporating Set Design and Art Direction Concepts into University Curricula

CG animation studios are investing large amounts of time and money into the production design of their animated films. Additionally, students are putting great time and effort into their own productions. If the goal is to tell compelling and entertaining stories, then students should have access to all aspects of the training needed to create these stories. Many schools do not provide production design courses in their curricula. This shortfall suggests the need for the incorporation of art direction and set design principles into university curricula. The following are suggested elements that could be developed into specific curricula:

- A strong base in design fundamentals. Most art and design departments already offer these courses. They are included here because design principles such as line, form, composition, and color apply to all design situations and are invaluable to the set design process. These fundamentals include
  - 2D design principles
  - 3D design principles
  - Color theory

- A strong base in traditional art and design skills including
  - Drawing and painting. Even if the set designer’s tool is the computer, it is important for her to be able to communicate ideas through drawings and
paintings. Ideas need to be generated quickly during production meetings. The designer needs an expedient way to get ideas out for others to react to. Working with rough sketches and refining them as a design develops is an integral step in the process.

- Model making—traditional and digital (3D computer generated)—Model building is also a valuable way to visualize a design for the director and producer. Some directors need this 3D form to understand a design completely.
- Drafting—traditional and/or digital (AutoCAD or Vectorworks)—After designs have been finalized, they need to be constructed either in a scene shop or in the computer. Drafted orthographic drawings are the means for creating scale drawings for others to build from.

The study of the principles of set design itself: This course could be arranged through the university’s theater department if a specialized art direction class is not affordable for the animation department. Model making and drafting may also be available within the theater department. Students will be exposed to the following principles:

- Staging or blocking—Actions must be planned to flow within the environment. The set design must be coordinated to support these actions. Additionally, the use of elements such as levels can further describe character relationships and situations.
- Composition—The composition of the stage or the frame can provide information that supports the story. For example, the relationship of one character to another can be described by their placement in the frame. Scenic elements can be used to further frame them, drawing focus where needed.
- Transitions—Whether on stage or within the frame, the transitions and the sets that appear before and after them are an important consideration.
- Scale: Scale can be manipulated to accentuate aspects of the story. Characters can be dwarfed or made to appear grand. Scale must be manipulated differently depending upon the size of the stage or the depth of the frame relative to the type of shot (close-up, wide, etc.) and focal length of the camera lens.

- The incorporation of design intensities: These concepts would be included in the set design coursework suggested above. Design intensities provide a framework for the student to begin the analysis of the script and the design of the set.

- A foundational course in script analysis: This could also be developed with the theatre department. Many theatre departments may already have such a class in place. Script analysis is the process of evaluating the script and its meaning. The script is broken down and analyzed in terms of character and plot. The student learns how to look at the story from an historical perspective as well as in its present day context. This process is important to the set designer's understanding of how the story should be designed.

- A series of courses in art, design and theatre history: Art history provides a background in artistic styles and movements as well as a deeper understanding of social history and the context under which art was produced. This knowledge can help the designer understand a script more thoroughly. It also provides a base of knowledge that enables the designer to add layers of meaning through imagery.

- A series of animation or film production courses: This would provide exposure to the use of the camera and how the set design looks via the camera lens. Working on student productions is also beneficial to the student. Putting theory into practice can be a leap. Providing a structure within which the student can explore the pipeline will aid them in their understanding of it. This will also immerse the students in the collaborative environment that is crucial to the process.
5.3 The Future of Animation Production Design

The timeline of theatre set design contains a wide range of styles including Realism, Minimalism, Expressionism and everywhere in-between. Currently the dominant style in CG animation is a stylized realism. Characters and environments often have a cartoony feel but are essentially naturalistic portrayals. Is there opportunity for a deeper exploration of the evocative set in CG animation? It is obvious from films such as *The Incredibles* and *Robots* that CG animation houses can produce lush and detailed environments. Is there room in mainstream feature animation for Minimalism and Expressionism? Is the increased popularity of non-photorealistic shaders a sign of a shift to more stylized productions? Perhaps looking to the great theatre Set Designers of the past will inspire future Production Designers of CG animation to explore a variety of design intensities and stylized approaches that may be more evocative of the story being told.
APPENDIX A

INTERVIEW QUESTIONS FOR PRODUCTION DESIGNERS/ART DIRECTORS

1. Please give a description of your job responsibilities and how they fit into the animation pipeline.

2. Who do you confer with before you begin your work?

3. What is your process after the initial consultations?

4. Where does your inspiration come from?

5. What is your relationship to the conceptual artist/illustrator? (Do you work collaboratively, begin before, or begin after his/her work?)

6. Who do you work with to coordinate the flow of the action with the design of environment?

7. How do you work to coordinate the design of the film among a large staff of people? (For example, in theatre there are construction drawings and paint renderings for each set piece and prop. Is there a similar process in animation?)

8. The following is a list of factors that may influence your design process. Please number them in their order of importance in your process, 1-5,

   ____________ composition
   ____________ character development
   ____________ production costs
   ____________ story/narrative development
   ____________ other

Please comment on your choices.

9. Does the technology you use in animation affect your design process? How?

10. Have you worked as a scenic designer/production designer in theatre, or feature film?
11. If yes, how does your process differ for animation set design?

12. If no, what is your background?

13. How do you feel the set design affects the average viewer's perception of the story?

14. (Optional) Please feel free to include a still from one of your designs with comments on some of the choices you made with regards to the scene and overall design.
APPENDIX B

INTERVIEWS QUESTIONS FOR ANIMATION SET DRESSERS

1. Please give a description of your job responsibilities and how they fit into the animation pipeline.

2. Who do you confer with before you begin your work?

3. What is your process after the initial consultations?

4. The following is a list of factors that may influence your design process. Please number them, 1-5, in their order of importance in your process.
   - composition
   - character development
   - production costs
   - story/narrative development
   - other

Please comment on your choices.

5. How many set dressers will there be on the average feature animation?

6. How does this number affect your decision making process?

7. What size portion of a film are you responsible for?

8. How do you work to coordinate the design of the film?

9. Does the technology you use affect your design process? How?

10. How do you feel the set dressing affects the average viewer’s perception of the story?
APPENDIX C

INTERVIEWS WITH PRODUCTION DESIGNERS/ART DIRECTORS

Interview with Steve Martino, Art Director, Blue Sky Studios, 7 December 2004

1. Please give a description of your job responsibilities and how they fit into the animation pipeline.

   As Director, responsible for supporting the director's artistic vision for the film through the design and supervision of characters, locations (sets), color script, materials, lighting, set dressing, effects and graphics. My role is to define and communicate the parameters that will serve to shape the "look" of the film through all aspects of production.

2. Who do you confer with before you begin your work?

   The Director and Production designer.

3. What is your process after the initial consultations?

   Establish the goals and objectives of the design assignment. Look to cast the appropriate artist for the particular task.

4. Where does your inspiration come from?

   Each project is different in terms of inspiration. On the film Robots that I currently working on, I have looked to junk yards, antique stores, construction sites, toys from my childhood and the mechanical world around me. Additionally, I have studied, in detail, the illustration work of William Joyce, our Production Designer. This covers the character and set design aspects of this project, but there are many other aspects of the design of the film, which include materials design, lighting design and effects design. Inspiration for materials design on this film has come from found objects and phoios. For lighting design I look to paintings, illustrations, photographs and films that capture the emotion and feeling that we are trying to achieve in the various story beats within our film.

5. What is your relationship to the conceptual artist/illustrator? (Do you work collaboratively, begin before, or begin after his/her work?)

   112
With the Production Designer I collaborate with him on the objectives of the particular assignment with an eye towards maintaining a cohesive styling to the overall film. On the set, prop and character design assignments I take my lead from his initial sketches or our verbal discussions about what we are trying to achieve. With the rest of the conceptual design team I work with them through brainstorming sessions, rough sketches and regular design rounds to help shape several options for the Director.

6. Who do you work with to coordinate the flow of the action with the design of environment?

I work with the Director in review of the script and storyboards for a particular sequence or setting. He sets the specific story objectives for all of the action and how the environment will be used to support them. I also work with the Head of Layout to understand how the staging of action within the environment will affect the final design or set dressing of the location.

7. How do you work to coordinate the design of the film among a large staff of people? (For example, in theatre there are conductor drawings and paint renderings for each set piece and prop. Is there a similar process in animation?)

(For purposes of this question I will stick to the design of an environment.)

We start with a conceptual phase in which we work within a small team to generate quick sketches to put on many ideas on the table as we can in a short amount of time. These sketches are discussed with the Director, Production Designer and myself to determine the best ideas to pursue further. We then generate tighter sketches to work out details and present the sketches to a Pre-Vis Artist (3D modeler). The design continues on with the conceptual artist generating detail drawings and reacting to the rough construction of the environment within the virtual 3D set. The final presentation of the concept involves sketches that provide an overview of the spaces (plan and elevation drawings) an illustration of location in the context of the film (characters, rough lighting ideas and a camera view in the film’s aspect ratio). There are also stills from the 3D pre-vis set with stand-in characters to verify that the scale of the space is appropriate and that the kind of camera placement that we think we will be needing is explored.

When the concept is approved then detailed drawings for modeling are generated and the pre-vis set is prepared as a template for the final modeling. Once complete, we hold two kick-off meetings, one for all department leads (modeling, rigging, layout, animation, set-dressing, materials, lighting and effects) and a more in-depth kick-off for the modeling and rigging team in which modeling jackets that include all of the drawing, 3D images and reference material is handed out.

From the 3D pre-vis set a foam core model is constructed by the modeling team. This scale model is used for discussions with the Layout, Animation, Effects and Lighting department during their kick-off meetings.

Once the form, shape and scale of the environment are complete we proceed with a similar phase of material and lighting design for the location. We paint over the pre-vis images of the set in Photoshop so that we are accurate in scale and perspective. We start with small rough paintings to find the right tone and then proceed to more detailed paintings with specific photo reference call-outs to each item within the set. Given the time constraints of the production, these final paintings are still lose and impressionistic.

At the end of this phase of the design we hold another kick-off with the materials team and lighting leads for the sequence. These meetings are always held in a color correct room.
Set Dressing begins once Layout is complete and the designer gets back into the process by opening up the Layout file in Maya or having a more experienced 3D artist grab frames from the shots to be drawn over. The best process on this film has been when the designer can actually open up the Maya file and add models to a shot to verify scale and placement and then provide a more detailed sketch (filling in all of the details) for the Set Dressing Artist. As you proceed on a film you develop a language for the styling of particular locations and as you move further into production there is less of a need to draw every detail and rather have a discussion about the objectives and leave it to the Set Dressing Artist to fill in the blanks.

Lighting design follows a similar development phase, which begins once the layout and final set dressing is complete.

8. The following is a list of factors that may influence your design process. Please number them in their order of importance in your process, 1-5. Please comment on your choices:

   1. Composition
   2. Character development
   3. Production costs
   4. Story/narrative development
   5. Other

   I will stick to set design for the purposes of my answers here.

   Story is number 1! Everything that we design in the film is in support of the story that we are trying to tell. In each shot there is something that is most important and the composition of the shot is designed to maximize the audience’s understanding of that moment. Sometimes this can be the set or the world that the character is in, but most often the setting is there to enhance and support the emotion and action of the character(s) in the shot. Composition affects both the practical aspect of readability of action (drawing the audience toward what you want them to focus on) and the less formal aspects of mood and tone. I put production costs at the bottom of the list, because I feel that you can achieve the more important aspects of story and composition in many ways. The challenge to the Designer is to be clever enough to succeed in those objectives within any budget constraints. This is not to say that you ignore budget constraints, but that you understand the parameters well enough to design successful story and composition solutions within them.

9. Does the technology you use in animation affect your design process? How?

   Yes, I don’t feel that we have achieved a successful design until we have realized it within the computer.

10. Have you worked as a scenic designer/production designer in theatre, or feature film?

   I have not worked in theatre or feature film as a scenic designer, but I have been involved with scenic and production design for live action commercials and production design for specific visual effects in film.
11. If yes, how does your process differ for animation set design?

12. If no, what is your background?

13. How do you feel the set design affects the average viewer's perception of the story?

Generally, I think that the set design sets a tone for the action that is taking place. That tone can be a support of the action or can sometimes play as a counterpoint to the emotion of the characters.

When done well the set serves to enhance the storytelling, just as well written dialogue, a good performance, great music, and well designed lighting enhance the overall experience of the audience.

14. (Optional) Please feel free to include a still from one of your designs with comments on some of the choices you made with regards to the scene and overall design.

Interview with Kathy Atteri, Production Designer, DreamWorks Animation SKG, 24 May 2005

1. Please give a description of your job responsibilities and how they fit into the animation pipeline.

The Production Designer is responsible for overseeing the look of the film and maintaining it throughout the whole process. This includes design, color styling, modeling, etc. Determining the look is a collaborative process. The difference between the Production Designer and the Art Director is that the PD has the final call on the global vision. The AD is responsible for the day to day running of the departments, working hand in hand with the PD to oversee the whole process. Additionally, the PD is more involved with the studio as a whole when it comes to casting decisions, software needs, and as the artistic representative for a body of artists. He also has (with the director and VFX Supervisor) the final call on every shot in the film.

2. Who do you confer with before you begin your work?

The Director and the Head of Story. Every decision supports the story. These meetings continue throughout the production.

3. What is your process after the initial consultations?

We do research and have a dialogue with the director and Jeffery (Katzenberg). The goal of the research is to get a feel for environments, characters, or story beats. We put it up on boards and look at it all together. This may go on for a year. It may start with vague sketches and becomes more specific until we’re deciding that the set has 10 trees and 7 rocks and the log goes here. This is a collaboration with the whole art department. The ‘we’ grows slowly over time.

4. Where does your inspiration come from?

It depends on the film (genre). I can be anything and everything. For example, for Spirit we looked at the National Parks to try and capture the grandeur of the American West. It's
matter of picking the artist who best addresses your needs. We chose N. C. Wyeth and Frederick Remington. For the Prince of Egypt, we looked at epic, David Lean, desert photography, Egypt and old world references.

5. What is your relationship to the conceptual artist/illustrator? (Do you work collaboratively begin before, or begin after his/her work?)

It is collaborative. They are my peers and we work side by side.

6. Who do you work with to coordinate the flow of the action with the design of environment?

I have little to do with this. The Layout Department works with the Director and the storyboards to develop this.

7. How do you work to coordinate the design of the film among a large staff of people? (For example, in theatre there are construction drawings and paint renderings for each set piece and prop. Is there a similar process in animation?)

The Art Director and I rely on our instincts to create a sense of continuity. There is also a tremendous amount of art generated. There are prop and model pages for everything. These include orthographics. Shrek needed a lot of orthographics. We work with the Set Dressers very closely, asking them to move an objective one way or another. We’re very specific for each shot. In lighting, we’re looking at shadows and reflected light. It’s a constant simplification and adjustment. All visual decisions should have the story in mind from staging to color.

8. The following is a list of factors that may influence your design process. Please number them in their order of importance in your process, 1-5. Please comment on your choices.

| 2 | composition |
| 1 | character development |
| 3 | production costs |
| 1 | story/narrative development |
| other |

Character development and story development are the same. These are always #1. As for production costs, you figure out how you can make it rich and lush for the $2 you have.

9. Does the technology you use in animation affect your design process? How?

It doesn’t affect the process but it may affect how we execute an idea. Technology can assist you or get in the way. If you can’t get an idea to work at first you find another route.

10. Have you worked as a scenic designer/production designer in theatre, or feature film?

No.

11. If yes, how does your process differ for animation set design?

12. If no, what is your background?

I worked as a freelance illustrator first, then as a background painter for television animation. I went to Disney as a Background Painter and then became a Supervisor. DreamWorks came next where I started as an Art Director. I became a Production Designer on Spinj
13. How do you feel the set design affects the average viewer's perception of the story?

Generally, they have no idea of it, but they are influenced by it as much as they are by the music. If there is a mistake in the set then the story will feel wrong. It affects them, but they are not aware of it.

14. (Optional) Please feel free to include a still from one of your designs with comments on some of the choices you made with regards to the scene and overall design.

Interview with Dan Cooper, Art Director, Walt Disney Feature Animation, 12 July 2005

1. Please give a description of your job responsibilities and how they fit into the animation pipeline.

(Creating) Reference for both look development and lighting/compositing departments. Also supervisor for both (artistically).

2. Who do you confer with before you begin your work?

The Director and Production Designer, mainly Digital Supervisor a bit as well.

3. What is your process after the initial consultations?

Color scripting and establishing shot/painted keys.

4. Where does your inspiration come from?

The Director, Production Designer, other vis dev artists, storyboards.

5. What is your relationship to the conceptual artist/illustrator? (Do you work collaboratively, begin before, or begin after his/her work?)

Yes, yes and yes. All in varying degrees. Sometimes we are the conceptual artist/illustrator.

On Chicken Little, we just worked at the same level. David Womersley (Production Designer) did 3D designs and we would flesh them out into renderings (painted). We would give input on his work (very minor) and he would sometimes have comments when we would show color. David worked the front end-initial designs and we would carry those through into production through Look and SPhN departments.

6. Who do you work with to coordinate the flow of the action with the design of environment?

Usually front and back end supervisors take care of this. (Steve Goldberg, Kyle Odermat, Kevin Geiger)

7. How do you work to coordinate the design of the film among a large staff of people? (For example, in theatre there are construction drawings and paint renderings for each set piece and props. Is there a similar process in animation?)

Production Design did our plan views, though that would normally fall into our work area. Individual props/renderings we did ourselves.
8. The following is a list of factors that may influence your design process. Please number them in their order of importance to your process, 1-5. Please comment on your choices.

   2. composition
   3. character development
   4. production costs
   5. story/narrative development
   Other

All to emotionally support the director’s vision...design is to make sure the image is both
attractive and reads quickly so that the viewer only sees what the director wants them to see
(as far as the narrative goes).

9. Does the technology you use in animation affect your design process? How?
   More possibilities

10. Have you worked as a scenic designer/production designer in theatre, or feature film?
   No

11. If yes, how does your process differ for animation set design?

12. If no, what is your background?
   Illustration/fine artist

13. How do you feel the set design affects the average viewer’s perception of the story?
   Greatly, though without their knowledge.

14. (Optional) Please feel free to include a still from one of your designs with comments on some of the choices you made with regards to the scene and overall design.

Interview with Keven Lock, Theatre Scenic Designer and Art Director, ABC’s Good Morning America, 12 May 2006

1. Please give a description of your job responsibilities and how they fit into the production pipeline.

   As a Scenic Designer, I am often the first designer engaged to work on a particular
   production and often, because of the types of productions that I am involved in and because
   I generally work with the same creative team, I become involved on the ground floor of
   conceptualizing how to approach a work. Beyond that, my role follows the traditional lines of
   working out the look, structure and style of a production in collaboration with the creative
   team, solving the intricacies of the practical details and communicating to and guiding the
   crafts people who will create the sets, then following through the rehearsals to opening.

2. Who do you confer with before you begin your work?

   The director certainly and the playwright, if available, but still deferring to the director’s vision.
All of the other creative team members if and when available and of course the other Designers

3. What is your process after the initial consultations?

First, I like to go through the script again so that I can consider and factor in any new information and review my notes from meetings. Then I like to have some ‘dream time’ just to ‘imagine’ before I move on to the concrete work of models, drawings and etc. If I’m in a resident situation, often I like to my ‘imagining’ in the theater where a work will be presented. After the initial consultations is also a good time for me to finish up on research or add any new information that was called for in the meetings. All during this time I am likely ‘doodling’ away, riffing on ideas, and ‘rippin, tearing, and collating’ research.

4. Where does your inspiration come from?

First and foremost from the script certainly, adding as soon as possible the director’s vision or the vision that the director and I have evolved together, not so much in terms of the visuals but just in terms of how to approach a particular work. Then, as I start to formulate a concrete visual approach to a work, I usually zero in one particular piece of research to serve a ‘metaphoric anchor’ for the design idea. This may be something that appears to be only tangentially related, an evocative piece of art or a photograph or some bit of pedestrian ephemera that just speaks to me in terms of the goal of the production. If I’ve chosen well, I find that I can turn to this ‘metaphoric anchor’ for support when ever I need it during the design process.

5. What is your relationship to the other designers? (Do you work collaboratively, begin before, or begin after his/her work?)

I find it best when we can all start together and can all work together rather than having to fill in and play catch-up however this doesn’t happen as often as I wish for.

6. Who do you work with to coordinate the flow of the action with the design of environment?

After formulating a clear concept this is the next essential task in the Director/Designer relationship. The formulation a ground plan begins the process of directing a show. The creation of obstacles on stage engenders action and the way characters will relate to one another. The shape of the ground plan shapes the style of movement on stage. For me it is essential that this part of the process involves the director and any one else involved in movement on stage to the greatest extent possible.

7. How do you work to coordinate the design of the production among a large staff of people? (For example, in theatre there are construction drawings and paint renderings for each set piece and prop. Is there a similar process in animation?)

For a large scale production, the Production Manager and the PSM if they exist on the Table of Organization. If shops are involved the Shop head and the heads of various departments

8. The following is a list of factors that may influence your design process. Please number them in your order of importance in your process, 1-5. Please comment on your choices.

   _4_ composition
   This brings to mind how does the Theater or other Presentation Space affect how a design is to be approached? HUGELY
9. Does the technology you use in animation affect your design process? How?

Technology...AAAYyyyyee.... Lighting technology mostly, the more access I have to intelligent lighting the better, and it will definitely affect how I approach a production. As for technology in the design process itself, I make extensive use of Photoshop for creating the renderings and elevations that I used to do with watercolor and pencils. I still do my drafting by hand though. And as for communication, email is lovely, but as with fax and Fed Ex, the speed of communication has changed the perception of how much time it takes to work out a problem or answer a question during the design process. Even though I can respond to you in thirty seconds, please remember: that I still need time to give the question the attention and exploration that it deserves.

10. Have you worked as a scenic designer/production designer in animation, or feature film?

Some, as PD on low budget idle work, videos or as Art Director on feature film. Extensive experience as a Designer for television; live, tape and virtual sets.

11. If yes, how does your process differ?

The process remains essentially the same, however when doing film or TV more work happens "on the fly and on your feet" because of the immediacy and flexibility of camera work. It's the product that differs. When designing for the theater I'm more concerned with overall composition. This is because I'm often creating a set that is a discrete object, which is to say that unlike in film or tape you see the shape and edge of everything, and because the composition of a theatrical set has to work harder to direct the attention of the viewer aided only by the lighting. In camera media our attention is directed for us. Camera media, of course, becomes more about detail, and generally is more subtle in terms of overall style than work for the theater.

12. How do you feel the set design affects the average viewer's perception of the story?

Depending on the production at hand, the flashy musical wants extravagant sets that are sheer entertainment simply by their presence, the dark psycho drama wants sustemial support of it's tense atmosphere, the period piece done "in style" wants to help transport the viewer to another time. The demands are different for every production. The important thing is to know HOW to affect a viewer in a desired way. When doing Children's Theater that deals with some cherished story, I have found that the more abstract and non illustrative
make the set, the more the viewers are able to fill in the details from their own memory and imagination and the more satisfying and "true" they report their experience to be.

13 Have you ever taught scenic design?

Yes, both as an individual mentor and as a guest artist on the college level and the high school level.

14. If yes, what aspects of set design do you think student designers have the most difficulty with?

In my experience students have the most challenge arriving at an appropriate design idea. Students with limited experience of the theater and its history often pursue outlandish, unprüfizable ideas that ignore the specific ideas and problems presented by a particular work, whereas students who come to the task equipped with a more practical knowledge of the theater often struggle with divorcing their imaginations from the chains of practicality to let themselves formulate something imbued with creative juice. I find that the other area students struggle with is developing the skill to efficiently and succinctly communicate their design idea. I’m talking renderings, models, elevations here. While some students come to the task equipped with the necessary presentation skills and some even a real talent for drawing or painting, other student designers, and not necessarily untalented ones, fall down hard here.

15. Please feel free to include a still from one of your designs with comments on some of the choices you made with regards to the scene and overall design.
APPENDIX D

INTERVIEWS WITH ANIMATION SET DRESSERS


1. Please give a description of your job responsibilities and how they fit into the animation pipeline.

I am a Layout Artist. We start with storyboards from the Story department and finish with actual shots in the computer. Those shots will have final cameras, rough character blocking, and fully dressed sets. From us, the shots are handed over to Character Animation, Lighting, and FX to do their respective jobs. We continue to shepherd the sequences as they travel through these other departments to ensure setup issues are covered and set continuity is maintained.

2. Who do you confer with before you begin your work?

For camera work and rough blocking, we confer with the Directors. For set dressing, we confer with the Production Designer.

3. What is your process after the initial consultations?

We go through an iterative process of extrapolating from the direction given to fill out the details of the sequence and refining that work based on later feedback from the Directors and Production Designer.

4. The following is a list of factors that may influence your design process. Please number them, 1-3, in their order of importance in your process:

_3_ composition
_2_ character development
_1_ production costs
_1_ story/narrative development
_other_

Please comment on your choices:

The story comes first... the point of the film is to tell a story. Meanwhile, in short features like these (we rarely get to go over 86 minutes), character development has to come thru the narrative. So ultimately, those two factors are too intertwined to really separate them.
For production cost vs composition... we'll always work the camera and set to allow for a good composition, but we might not get our first choice if that choice greatly increases the cost for other departments (FX most often, then Lighting).

5. How many set dressers will there be on the average feature animation?

I believe we currently plan for 2 set dressers per lighting team. A normal film will call for 5 lighting teams, so 10 set dressers. These 10 mix and match with different layout artists and lighting teams over the course of the show depending on skill sets and a need in everyone's life for some variety.

6. How does this number affect your decision making process?

The number of set dressers doesn't affect our actual set dressing decisions, only how the work is divided up. If the desired dressing is significantly more complex than normal, sometimes a 3rd layout artist will be added to the sequence.

7. What size portion of a film are you responsible for?

That's a difficult concept to gage. If you mean "as an individual artist vs the rest of the department" then about 1/6th for a set dresser (more like 1/8th for a camera operator). If you mean "as a department vs the rest of the studio"... yeef... wouldn't know how to answer that.

8. How do you work to coordinate the design of the film?

Much of that effort comes from the vision of the Production Designer. Beyond that preplanning, we'll make modifications in order to aid our desired compositions in an effort to better support the narrative. More simply put... we start with the Production Designer's ideas, and then move stuff so that it works with the film structure created by the rough blocking.

9. Does the technology you use affect your design process? How?

We've got some very powerful tools for dressing multiple copies of the same/similar objects or groups of those objects. As a result, we can add an amazing level of detail very quickly and with great control. This holds us more to chosen creative constraints rather than technologically dictated constraints.

10. How do you feel the set dressing affects the average viewer's perception of the story?

In most cases, the viewer will hopefully only notice the relationship between set dressing and narrative arc subconsciously. We don't want to distract from the story with the sets, we want to compliment and amplify it.
Interview with Tortil, Pixar Animation Studies (This interview was taken from the Pixar website on 21 April 2005, http://www.pixar.com/artistscorner/story.html)

What do set dressers do at Pixar?

Working with the production designer and director, we choose and place all the props—vegetation, furniture, etc.—in the 3-D movie sets. Everything you see in the foreground and background has been placed by a set dresser. Our goal is to best support the film's characters and their needs.

The art department makes “shader packets” that show what types of textures we have to work with. After we put all the props in place, we apply all the graphics, such as a scroll can label, and textures, such as a prop that has different types of wood to choose from. (Wood could have a walnut, ash or maple texture and either long or short grain variants.) We apply shader textures to architecture, foliage and props of all types.

You mentioned supporting the characters’ needs—how so?

As in, which props will best tell the story of a character or something about the character’s personality. Also, simply making sure animation has the props that the characters need to interact with.

Where do you get your props?

We get them from the modeling department—they live in a huge directory. There are many props to choose from, but we also need to build props individually. Sometimes we need to reuse items, shrink them down to a tenth of their size, and make them appear to be something else. It’s always exciting to solve how you’re going to make something look very different when you have a limited number of props to use for a particular scene. It keeps us on our toes. You have to know every prop in the catalog and be thinking of more creative ways to use props and textures.

Tell me about a time when you had to get creative with props.

The tree planter in the corner of the sushi restaurant in *Monsters, Inc.* is actually a Japanese tea set scaled eight times its original size. I needed a planter and didn’t have one, and the Asian motif on the cup worked great. So I scaled up the teacup, scaled down some rocks from the sushi pond, removed the leaves off a tree from the city street and—voila—I had created an ikebana-type arrangement.

What happens to a set after it’s dressed and approved?

The layout department comes in and does the camera work, or blocking. We work with layout to make sure the props are in the right places to work within the composition. They layout hands-off to animation and we follow the animation. It’s really cool because we get to work with all the different departments from beginning to end. When we make sure everything is locked down for lighting. (They don’t want props moving around because the shadows will change.)

What are you doing in the animation phase?
We're overseeing how the props are moved around and looking for continuity. For example, when a character picks up a glass and puts it down in a different place, we have to make sure that it's in the correct place from that shot forward for the entire sequence.

For continuity, we watch for how something sits after shot. We need to be really sensitive to all of these very simple things that are usually taken for granted. Ironically, many times you don't even clearly see the props after the scene is animated, due to depth of field, but the human eye can pick up the subtleties of things in the foreground and background. The presence of these shapes helps create a more believable world.

Are there any rules for decorating a character's room?

Working with the production designer, it's up to our discretion as to what best tells the personality of the character. The props—or information—you place on a set should say a lot about the character. For example, a neat and tidy character may have nothing on his shelves.

Sounds like you must do a lot of people watching.

Yeah, I notice people's offices around here. I watch children, noting how they throw their stuff around the room. I'm constantly noticing people's living spaces.

Did you always know you wanted to be a set dresser?

Actually, I've been interested in set dressing since I was a very little kid. I was constantly moving furniture around in my Barbie™ townhouse, but I never played with the dolls. I would create different scenarios within the environments and would photograph the different ways I dressed the rooms. I'd also take photos of things in disarray around my house (like a messy room). I was studying the way people interact with their environments without even knowing it.

Another thing I did as a kid was make drawings of the sets for movies and TV shows I liked. I redid the sets on Diff'rent Strokes and The Brady Bunch a few times. You know how it was never really clear where the father's office was in The Brady Bunch? I'd always figure out which the sets weren't set up right because I figured out which door was not matching up. Same thing with Bewitched and I Dream of Jeannie. I was looking for continuity even then.

Did you explore that interest in a formal education?

I studied industrial design at the Rhode Island School of Design. I worked in the metal, wood and plastic shop, where I learned how things are constructed, and how shapes should work together. My knowledge of how shapes interact and my extreme attention to detail translates well in the work I do at Pixar.

So you graduated from college and went straight to Pixar?

Yes, I did. And it's perfect—I always wanted to live and work in a beautiful environment.

Is a design background necessary to become a set dresser?

Not necessarily. Our department has architects, designers and CG modelers and lighters with strong technical backgrounds. It's important to have a good balance, because we have different strengths, and together we can solve both creative and technical problems.
What’s the most challenging aspect of your job?

Keeping on top of all the props throughout the entire movie, I’m constantly making sure props have correct placement, colors and textures, and looking out for composition changes in shots due to prop or camera moves. It’s also a challenge to figure out when moving or removed props break shots.

Things can happen on a production when you have two hundred people working around the same sequence day after day. Things are constantly changing. Keeping an eye on all of that is very difficult.

So what’s an example of a broken shot?

Sometimes you’ll have a floating prop that you can’t identify right away. Or a character will be naked or have no eyes—that’s something you don’t get in 2D animation!

There was a shot in the sushi restaurant in Monsters, Inc. that took us a while to figure out. It was the scene where a monster picks up a table and throws it over to get out of the restaurant quickly. Well, whenever the monster did that action, the entire restaurant was flipping over and backward! Somebody had attached the whole set to the hand instead of just the table.

What are your favorite set props?

There were some pipes we used a lot in Monsters, Inc. They could be shrunk down and created with different fittings. You can make anything out of them. I made a standing theater light using all those components together. That was really cool. We make due with what we have—it’s always a challenge, always a lot of fun.
Appendix E

A Flow Chart for the Theatre Set Design Process

Figure 72: A flow chart for the theatre set design process.
APPENDIX F

THE SCRIPT FOR THE ANIMATED SHORT, ICE

The story takes place in the near future. An ice age has enveloped the earth. The glaciers of North America have expanded once again into the central United States. Global food supplies have failed due to shortened growing seasons. The result has been famine, and civil strife. Communities are isolating themselves more and more. New residents are rarely accepted into communities because no one wants another mouth to feed. Much of the population has become nomadic.

Large coastal cities have fared better than the more rural areas of the central United States. Smaller cities and towns have been left without any regular delivery of supplies. This has changed the economy to a barter system. Money is of little value in these areas. Food and alternative sources of fuel have the highest value.

Characters

Lily, 20-Lily has been living on a small isolated farm with her mother, Jo.
Jo (mother), 45-Jo’s mother and a research botanist.
Sheriff, 51-the town of Burton.
Hal, 62-Owner of the feed store in Burton.
Maur, 42-an old acquaintance of Lily’s uncle.
Sean, 48-Mayor of the village.
extras-people in line, town crowd, villagers

Premise-Wide shot of a Midwestern farm. The camera moves across the landscape towards a greenhouse. We track through the greenhouse passing a woman, Jo, 45. We continue to track out the greenhouse door towards the farmhouse. As the camera reaches the door a young woman, LILY, 20, steps into the doorway. She is looking out at the farm. It is a beautiful day though a few clouds are starting to fill the sky. As Lily is looking out the door the sky clouds up further and snow flakes begin to drift down. The snow becomes heavier. Lily looks over at the calendar hanging on the refrigerator. It is August. The frame dissolves to white. During the dissolve, the radio on top of the fridge, is playing a series of news broadcasts. They overlap and fade out.

RADIO V.O.
The freak summer snowstorm is not expected to last, with little to no accumulation anticipated.

The government announced today that aid will be available to the farmers who have lost crops in the
recent crop snap.

Tech stocks fell again today as grain prices reached an all new high.

A new plan for food rationing will be announced in the coming days. Citizens are asked to be patient as the plan is implemented.

Scientists are reporting that we should look forward to an early spring.

Opening—Lily has been living on a small, isolated farm with her mother, Jo. They have been surviving on food grown in a small hydroponics greenhouse. Lily has been living a very quiet life—a good life, though sheltered one. Even since the snow came, life on the farm has been stable, and reasonably carefree. This all changes as the story begins. The story opens just after the death of Lily’s mother, Jo. Jo died when the greenhouse collapsed in a storm. With her mother gone, and the food supply destroyed, Lily is forced to leave the farm to find a new way of life. She is determined to survive on her own.

EXT. A Glacier in the Midwest-SUNRISE

Extreme Wide shot—It is a beautiful view of the sunrise reflecting on the snow. It is quiet. Slow Push-in—A figure comes into view. She is kneeling in the snow. LILY sits at her mother’s grave. She gets up and walks back to the farm.

INT. Farmhouse-DAY

Lily is in the kitchen. There is little furniture left because it has been burned for heat. There are a few sculptors’ tools and supplies scattered about the room. Lily packs a bag with a few essentials—a small package of food, a bag of seeds, a few photos, and a needle and thread.

EXT. The Farm-DAY

Lily exits the house and walks towards the greenhouse. One side of the building is collapsed.

I/E Greenhouse-DAY

Flashback—it is storming outside. Jo and Lily are trying to clear snow from the greenhouse roof. The roof collapses, mortally injuring Jo. Before her death, Jo gives Lily a bag of seeds from the greenhouse, telling her, “Take the seeds and my notebook and find your Uncle Ed. He’ll be able to help you. Keep the seeds close.”

EXT. The Farm-DAY

Lily leaves the farm. As she goes, she passes an ice sculpture she has created. It is in the shape of icy flames.

EXT. The Ice field

Lily heads out into the frozen environment on foot, passing deserted homes that have collapsed from the weight of the snow. She digs a cave in a snow bank to sleep for the night.
On one clear evening, she sees a group of people in the distance. They are heading in the
direction she has already come. Though she is running low on food, she knows the direction she
is headed is the right one. She huddles next to a partially buried billboard to protect herself from
the wind.

EXT. Town of Burton-DAY

Lily approaches a small town, hoping to find her uncle there. The town is surrounded by an
imposing fence. There is a long line of people trying to get into the town as local passports are
now required to be admitted anywhere. There are signs posted listing the rules for admittance
and the type of ID required. Loud speakers are broadcasting the same message. Lily joins the
line. The family ahead of her has two small children. The family approaches the SHERIFF at the
gate. They don’t have the proof of residency they need to get in. The sheriff turns them away. The
parents beg the officer to at least let their children in. They are pushed away.

Lily moves up to the sheriff. She holds up her ID for inspection. It is clearly not the right type. He
gives her a dirty look and tells her to shove off. She holds her ground and tells him to look at it
again. The sheriff looks at Lily’s hand more closely. The ID is lying in her palm along with three
small, and valuable, seeds. The sheriff pauses, and then looks her in the eyes. He gestures for her
to pass through the gate. Lily heads for her uncle’s feed store.

INT. Feed store

LILY
Is my uncle here?

HAL
Not here. The place is mine now.
LILY
So where is he?

HAL (walking away)
You remember Maur? Go ask him.

Lily exits the store.

EXT. Feed store

A small, unfriendly crowd has formed outside and is blocking Lily’s path. She tries to get past but
is jostled against the building. The sheriff walks past, ignoring the situation. Lily’s backpack and
supplies are taken from her. She manages to get free while the crowd is searching her bags. She
heads for the edge of town.

EXT. Cemetery

Lily starts to cross through the cemetery. She tips over a gravestone sticking out of the snow.
She turns to look at the stone. It has her uncle’s name on it. Looking back at the town she sees
that one of the men, MAUR, is following her. There is a smooth expanse of snow at the edge of
the cemetery. Lily heads out onto it.

EXT. Crevasse field-DAY
Lily steps out onto the pristine surface of the smooth snow. She reaches the middle of the clearing before the ice below her feet begins to crack. The crack widens and the thin sheet of ice covering the hidden crevasse shatters. Lily clings to the slippery edge. Below her, a frigid river is flowing under the ice. The water is a deep iridescent blue. She looks around her. To the right she can see the crowd form the town following her trail. The town fence, which crosses over the ice field, is blocking her escape to the left. The sky above is filling with storm clouds. The only way over the fence is under the ice. Lily chooses the water below, and drops in. The water pulls her under the ice.

INT. Shack-DAY

Lily wakes near a fire, in a small shack of a house. She finds the quilted vest she had been wearing and heads outside.

EXT. Village-DAY

She is in a small village. As she walks through the village, she sees people working together to improve the make shift buildings. She follows a group heading into a glass building at the center of the village. We can see that the hodgepodge of glass that has been scavenged to build the structure has created the shape of flames on the front of the building. The form echoes that which Lily had created out of ice.

INT. Greenhouse-DAY

Lily walks in on a town meeting. The group greets her warmly and she is invited to join them. She soon realizes the building is a greenhouse, but the village is missing plans to put inside. The group is discussing ways to find a supply of seeds. Lily, interrupting the meeting, walks to the front and removes her vest. She takes a knife from one of the villagers and slices the vest open. Out spills the seeds she had sewn inside.
APPENDIX G

LIST OF REVIEWED FILMS AND ANIMATIONS

List of reviewed films. The films were selected based on the top 50 highest grossing films according to [www.movieweb.com](http://www.movieweb.com), as of May 20, 2004. If an animated feature fell into this category it was not included here, but was included in the feature length animation category. The key to intensity levels is as follows: D=deontic, P=prudential, E=em-bellishment, A=artifice, N=narrative.

<table>
<thead>
<tr>
<th>Title</th>
<th>Intensity Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanic</td>
<td>N</td>
</tr>
<tr>
<td>Star Wars: Episode IV - A New Hope</td>
<td>A</td>
</tr>
<tr>
<td>E.T. the Extra-Terrestrial</td>
<td>P</td>
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<tr>
<td>Star Wars: Episode I - The Phantom Menace</td>
<td>A</td>
</tr>
<tr>
<td>Spider-Man</td>
<td>P</td>
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<tr>
<td>The Lord of the Rings: The Return of the King</td>
<td>N</td>
</tr>
<tr>
<td>The Passion of the Christ</td>
<td>E</td>
</tr>
<tr>
<td>Jurassic Park</td>
<td>P</td>
</tr>
<tr>
<td>The Lord of the Rings: The Two Towers</td>
<td>N</td>
</tr>
<tr>
<td>Forrest Gump</td>
<td>P</td>
</tr>
<tr>
<td>Harry Potter and the Sorcerer's Stone</td>
<td>A</td>
</tr>
<tr>
<td>The Lord of the Rings: Fellowship of the Ring</td>
<td>N</td>
</tr>
<tr>
<td>Star Wars: Episode II - Attack of the Clones</td>
<td>A</td>
</tr>
<tr>
<td>Movie</td>
<td>Rating</td>
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<tr>
<td>----------------------------------------------</td>
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<tr>
<td>Star Wars: Episode VI - Return of the Jedi</td>
<td>A</td>
</tr>
<tr>
<td>Independence Day</td>
<td>P</td>
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<tr>
<td>Pirates of the Caribbean: The Curse of the Black Pearl</td>
<td>E</td>
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<tr>
<td>The Sixth Sense</td>
<td>P</td>
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<tr>
<td>Star Wars: Episode V - The Empire Strikes Back</td>
<td>A</td>
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<tr>
<td>Home Alone</td>
<td>D</td>
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<tr>
<td>The Matrix Reloaded</td>
<td>A</td>
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<tr>
<td>Harry Potter and the Chamber of Secrets</td>
<td>A</td>
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<tr>
<td>Dr. Seuss' How the Grinch Stole Christmas</td>
<td>A</td>
</tr>
<tr>
<td>Jaws</td>
<td>P</td>
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<tr>
<td>Batman</td>
<td>A</td>
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<tr>
<td>Men in Black</td>
<td>A</td>
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<tr>
<td>Raiders of the Lost Ark</td>
<td>E</td>
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<tr>
<td>Twister</td>
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<tr>
<td>My Big Fat Greek Wedding</td>
<td>P</td>
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<tr>
<td>Ghostbusters</td>
<td>P</td>
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<tr>
<td>Beverly Hills Cop</td>
<td>P</td>
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<tr>
<td>Cast Away</td>
<td>P</td>
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<td>The Lost World: Jurassic Park</td>
<td>P</td>
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<td>Signs</td>
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<td>Mrs Doubtfire</td>
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<td>Ghost</td>
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<tr>
<td>Saving Private Ryan</td>
<td>E</td>
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<tr>
<td>Mission: Impossible 2</td>
<td>P</td>
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<tr>
<td>X2: X-Men United</td>
<td>A</td>
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<tr>
<td>Austin Powers in Goldmember</td>
<td>E</td>
</tr>
<tr>
<td>Back to the Future</td>
<td>E</td>
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</table>
Austin Powers: The Spy Who Shagged Me  E
Terminator 2: Judgment Day  P
Armageddon  D
The Mummy Returns  E
Gone with the Wind  E
Pearl Harbor  E
Indiana Jones & the Last Crusade  E
Men in Black II  A
Gladiator  E
Dances with Wolves  E

List of Reviewed Feature Length Animated Films: The films listed here are 3-D computer generated animations.

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<td>Shrek</td>
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<td>E</td>
</tr>
<tr>
<td>Toy Story</td>
<td>P</td>
</tr>
<tr>
<td>Toy Story 2</td>
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<tr>
<td>Dinosaur</td>
<td>D</td>
</tr>
<tr>
<td>Monsters, Inc.</td>
<td>A</td>
</tr>
<tr>
<td>Ice Age</td>
<td>E</td>
</tr>
<tr>
<td>Finding Nemo</td>
<td>D</td>
</tr>
<tr>
<td>Antz</td>
<td>N</td>
</tr>
<tr>
<td>A Bug's Life</td>
<td>P</td>
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<tr>
<td>Robots</td>
<td>A</td>
</tr>
</tbody>
</table>
List of Reviewed Animated Short Films - The films listed here are 3-D computer generated animations.

<table>
<thead>
<tr>
<th>Title</th>
<th>Intensity Level</th>
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</thead>
<tbody>
<tr>
<td>Burt</td>
<td>D</td>
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<tr>
<td>Soldier Man</td>
<td>P</td>
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<tr>
<td>Pingwin</td>
<td>P</td>
</tr>
<tr>
<td>My Backyard</td>
<td>P</td>
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<tr>
<td>Sam</td>
<td>A</td>
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<tr>
<td>El Arquero</td>
<td>A</td>
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<tr>
<td>Sunny Side of the Street</td>
<td>D</td>
</tr>
<tr>
<td>Baby Changing Station</td>
<td>D</td>
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<tr>
<td>Plumber</td>
<td>P</td>
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<tr>
<td>Shining Lore</td>
<td>A</td>
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<tr>
<td>Ti Toc</td>
<td>D</td>
</tr>
<tr>
<td>Cane Toad</td>
<td>D</td>
</tr>
<tr>
<td>Traffik</td>
<td>D</td>
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<tr>
<td>Warcraft 3-Paix of Chaos</td>
<td>A</td>
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<tr>
<td>Ritterschlag</td>
<td>A</td>
</tr>
<tr>
<td>This Wonderful Life</td>
<td>D</td>
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<tr>
<td>Dia de los Muertos</td>
<td>P</td>
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<tr>
<td>Gravities</td>
<td>A</td>
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<tr>
<td>Title</td>
<td>Grade</td>
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<td>------------------------------</td>
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</tr>
<tr>
<td>Aunt Luisa</td>
<td>P</td>
</tr>
<tr>
<td>Akryls</td>
<td>A</td>
</tr>
<tr>
<td>Puppet Show</td>
<td>D</td>
</tr>
<tr>
<td>Eldolons of Edna</td>
<td>D</td>
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<tr>
<td>Gone with the Wind in Sixty Seconds</td>
<td>P</td>
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<tr>
<td>Henry's Garden</td>
<td>N</td>
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<tr>
<td>Un Amour Mobile</td>
<td>N</td>
</tr>
<tr>
<td>Au Petit Mort</td>
<td>D</td>
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<tr>
<td>Mekarate</td>
<td>P</td>
</tr>
<tr>
<td>Ode to Summer</td>
<td>E</td>
</tr>
<tr>
<td>Little Red Plane</td>
<td>P</td>
</tr>
</tbody>
</table>
APPENDIX H

STUDENT TEST FOR THE EFFECTIVENESS OF THE TOOL KIT

The study will be conducted with three (3) students.

Goal #1-To pilot test a proposed method of teaching the pre-production phase of set design to animation students through the use of a tool kit that provides the students with a structure from which to develop their set design pipeline.

Goal #2- To determine if the incorporation of design intensives into the set design pipeline is beneficial to the students' understanding of the process, and their ability to problem-solve resulting in better set design.

Step 1- Ask general questions about each student's pre-existing knowledge of set design.

Step 1 Objective-To establish a baseline of information on what the students know and think about the set design process for animation. This information will be compared with the student's responses at the end of the study.

The following questions will be asked before any other information is presented. The students will be asked to give written responses.

1. How do you define set design?
2. Have you ever designed a set for animation, film or theater?
3. How important do you think the set design for an animation is?
   not important | | | | | | very important
   moderately important

4. Why? Please comment on your answer to question #3.
5. What is the most important factor to consider when designing a setting?

6. What steps would you take when beginning a set design for an animation?

Step 2-Present in detail the information found in the tool kit. (The tool kit is located at http://aacad.osu.edu/~sburns/research.html)

Step 2 Objective-To explain the set design pipeline to animation students to provide them with a foundational understanding of the process.

To present the concepts of design intensities as a framework for analyzing design decisions based on the specifics of the script.

To explain the function and use of the tool as a structure for beginning the set design process.

This information will be put into practice with the exercises presented in step 3.

a. Discuss design intensities and provide sample images from animation, film and theatre. (see online examples)

The denotative set provides information about the time period and location of a scene, but in a generic, almost stereotypical way. Only the most basic information is provided.

The sets may appear to be interchangeable.

The punctuative set also provides time and place, but in a much more specific way. More details about class and ethnicity are revealed, as well as details about the characters. The set will also contribute more to the overall composition of the frame.

The set as embellishment is often inspired by art historical references. They are often period pieces. Since the story is set within a specific time period, the set becomes more necessary to describe the narrative of the film. These sets can be very decorative and often of an epic scale. References to a specific time period aid in defining the character and his world.

Grouped into two subcategories, the set as artifice includes the movie musical where a set’s sole purpose may be the big musical number. The second category within artifice includes science fiction and fantasy. These sets create worlds that are unfamiliar and clearly fictitious, though often highly naturalistic.

The fifth level, set as narrative, may include aspects of the first four. Its main qualification is that it is a unit set. The set describes the characters and their daily life in great detail.

The environment is what forms them.

b. Discuss the function and purpose of the tool. (see online flow chart)

The tool breaks the pre-production process into steps. We will be covering function, practical research and mood research.

Function refers to one of the very first steps in the design process-determining what the story needs in order to be told. These are very basic functional needs.

Practical research is any research you do regarding practical issues. It also includes historical research on what an object looked like in a particular time period.
Research for mood is any type of research you find that provides inspiration. It can be anything that evokes the mood and tone of the story. It may include, but is not limited to, painting, sculpture, photographs, film or animations.

Step 3: Read and discuss a short scene for a proposed animation. Assign a different design intensity level to each student. Have each student work through the steps of the tool kit with their design intensity level in mind. The exercises will explore the use of design intensities as an aid in analyzing a narrative for animation, and in making design choices in the pre-production phase of the animation. Compare and discuss the results with the students.

Step 3 Objective: To put the information in step 2 into practice through a series of exercises. To then measure if the students are able to support their design choices based upon their relationship to the narrative.

Exercise A Function: List the items you absolutely need to perform this scene. (The examples found in the online tool kit will be shown here. Use the blank function chart for this step.)

Exercise Objective: To determine if the students can break a script down into its component parts, thereby focusing and organizing the design scope.

Exercise B Research-practical- Select images that describe the practical needs of the script.

Exercise Objective: To have the students learn about the research process and to make research decisions that support the narrative using design intensities as a guide.

Q: What are some topics you might research to support the needs you identified in exercise A?

Exercise C Research-mood- Select images that help to describe the mood and emotional quality of the scene.

Exercise Objective: To have the students learn about the research process and to make research decisions that support the narrative using design intensities as a guide.

Q: What are some topics you might research to help you depict the mood for each scene?

Additional Questions:
Q: How do the design intensity level support or contradict your choices?
Q: How do these images support or contradict the narrative?
Q: How do you think the design intensity levels influenced your choices?
Q: What are the differences in the choices made for each design intensity level?
Q: What design intensity level do you feel best supports the narrative of the test script?
Notes will be taken on the discussion that takes place within step 3.

Step 4: The following questions will be asked after all of the information has been presented.

Step 4 Objective: To determine what the students know and think about the set design process after the presentation of the information. The answers will be compared to those given in step 1. Also, to obtain the student’s evaluation of the tool kit and its contents. The students will be asked to give written responses.

1. How important do you think the set design for an animation is?
   not important ______ | ______ | ______ | ______ | very important
   moderately important

2. Why? Please comment on your answer to question #1.

3. What is the most important factor to consider when designing a setting?

4. What techniques would you put into practice on your next animation project? What would your process be?

5. Did the information that was presented help in your understanding of the set design process?

6. Would you refer back to this information?

7. Did the information provide any insight into methods of analyzing a narrative?

8. Why is this analysis important?

9. Did the use of design intensities help you in your decision making process?

10. Is there information missing that you would find helpful?

Additional Questions to Consider when Analyzing the Results

1. Did the student have a process to use for making their decisions?

2. Did the student identify the sets and props that are essential to perform the story?

3. Was the student able to connect the images chosen to the narrative?
   (Was there an evaluation beyond “I like this picture”?)

4. Was the student able to connect the concepts presented within the design intensities with their method of analyzing the script? (Did design intensities help or hinder the student?)

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APPENDIX J

SCRIPT FOR THE STUDENT TEST-LITTLE RED RIDING HOOD

The story is by Jakob and Wilhelm Grimm and was taken from http://mls.usm.edu/Meerchen/grimmred.html.

Scene 1

Once upon a time there was a sweet little maiden. Whoever laid eyes upon her could not help but love her. But it was her grandmother who loved her most. She could never give the child enough. One time she made her a present, a small, red velvet cap, and since it was so becoming and the maiden insisted on always wearing it, she was called Little Red Cap.

One day her mother said to her, "Come, Little Red Cap, take this piece of cake and bottle of wine and bring them to your grandmother. She's sick and weak, and this will strengthen her. Get an early start, before it becomes hot, and when you're out in the woods, be nice and good and don't stray from the path, otherwise you'll fall and break the glass, and your grandmother will get nothing. And when you enter her room, don't forget to say good morning, and don't go peeping in all the corners."

"I'll do just as you say," Little Red Cap promised her mother.

Scene 2

Well, the grandmother lived out in the forest, half an hour from the village, and as soon as Little Red Cap entered the forest, she encountered the wolf. However, Little Red Cap did not know what a wicked sort of an animal he was and was not afraid of him.

"Good day, Little Red Cap," he said.

"Thank you kindly, wolf."

"Where are you going so early, Little Red Cap?"

"To Grandmother's."

"What are you carrying under your apron?"

"Cake and wine. My grandmother's sick and weak, and yesterday we baked this so it will help her get well."
"Where does your grandmother live, Little Red Cap?"

"Another quarter of an hour from here in the forest. Her house is under the three big oak trees. You can tell it by the hazel bushes," said Little Red Cap.

The wolf thought to himself, This tender young thing is a juicy morsel. She'll taste even better than the old woman. You've got to be real crafty if you want to catch them both. Then he walked next to Little Red Cap, and after a while he said, "Little Red Cap, just look at the beautiful flowers that are growing all around you! Why don't you look around? I believe you haven't even noticed how lovely the birds are singing. You march along as if you were going straight to school, and yet it's so delightful out here in the woods!"

Little Red Cap looked around and saw how the rays of the sun were dancing through the trees back and forth and how the woods were full of beautiful flowers. So she thought to herself, if I bring Grandmother a bunch of fresh flowers, she'd certainly like that. It's still early, and I'll arrive on time. So she ran off the path and plunged into the woods to look for flowers. And each time she plucked one, she thought she saw another even prettier flower and ran after it, going deeper and deeper into the forest. But the wolf went straight to the grandmother's house and knocked at the door.

**Scene 3**

"Who's out there?"

"Little Red Cap. I've brought you some cake and wine. Open up."

"Just lift the latch," the grandmother called. "I'm too weak and can't get up."

The wolf lifted the latch, and the door sprang open. Then he went straight to the grandmother's bed without saying a word and gobbled her up. Next he out on her clothes and her nightcap, lay down in her bed, and drew the curtains.

Meanwhile, Little Red Cap had been running around and looking for flowers, and only when she had as many as she could carry did she remember her grandmother and continue on her way to her house again. She was puzzled when she found the door open, and as she entered the room, it seemed so strange inside that she thought, Oh, my God, how lightened I feel today, and usually I like to be at Grandmother's. She called out, "Good morning!"

But she received no answer. Next she went to the bed and drew back the curtains.

There lay her grandmother with her cap pulled down over her face giving her a strange appearance. "Oh, Grandmother, what big ears you have!"

"The better to hear you with."

"Oh, Grandmother, what big hands you have!"

"The better to grab you with."

Grandmother, what a terribly big mouth you have!"
"The better to eat you with!"

No sooner did the wolf say than he jumped out of bed and gobbled up poor Little Red Cap. After the wolf had satisfied his desires, he lay down in bed again, fell asleep, and began to snore very loudly.

The huntsman happened to be passing by the house and thought to himself: "The way the old woman's snoring, you'd better see if anything's wrong." He went into the room, and when he came to the bed, he saw the wolf lying in it.

"So I've found you at last, you old sinner," said the huntsman. "I've been looking for you for a long time."

He took aim with his gun, and then it occurred to him that the wolf could have eaten the grandmother and that she could still be saved. So he did not shoot but took some scissors and started cutting open the sleeping wolf's belly. After he made a couple of cuts, he saw the little red cap shining forth, and after he made a few more cuts, the girl jumped out and exclaimed, "Oh, how frightened I was! It was so dark in the wolf's body."

Soon the grandmother came out. She was alive but could hardly breathe. Little Red Cap quickly fetched some large stones, and they filled the wolf's body with them. When he awoke and tried to run away, the stones were too heavy so he fell down at once and died. All three were quite delighted. The huntsman skinned the fur from the wolf and went home with it. The grandmother ate the cake and drank the wine that Little Red Cap had brought, and soon she regained her health. Meanwhile, Little Red Cap thought to herself, Never again will you stray from the path by yourself and go into the forest when your mother has forbidden it.
APPENDIX K

PRACTICAL NEEDS CHART

Practical Needs

Use the chart to describe all of the sets, props and set dressing you need for the scene. When listing sets, indicate if a set is an interior (int) or exterior (ext). When listing props, indicate what character the prop belongs to.

<table>
<thead>
<tr>
<th></th>
<th>scene 1</th>
<th>scene 2</th>
<th>scene 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>sets &amp; locations</td>
<td></td>
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<tr>
<td>set dressing &amp; props</td>
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APPENDIX I
RESULTS OF THE STUDENT TEST

Question-Step 1

1. How do you define set design?
   I define it as lighting backdrops, props, basically the environment around the characters or what the characters will interact with.

2. Have you ever designed a set for animation, film or theater?
   Yes, when I was in the 5th grade, I created pointy backdrops for scenes in a small play.

3. How important do you think the set design for an animation is?
   Very important

4. Why? Please comment on your answer to question 3.
   Set design can often set the mood of a scene. It provides critical information about where a character is and possibly what they interact with. It can lead a lot without characters exploring their environment, plus it can heighten the message the story is trying to convey.

5. What is the most important factor to consider when designing a set?
   I would have to say lighting. Without lighting, a backdrop is just a backdrop. It can also affect character emotions. I would say the most important factor is setting emotion, or what setting would best convey the message you’re trying to say.

6. What steps would you take when beginning a set design for an animation?
   I would start with backdrops, what is the character, establishing that basically. I would also consider lighting for the scene and ambient sounds.

Figure 73: Results for step 1 from student 1 (student code RED-denotative) in the test.
Function

The chart below is used to describe the actions, props, and set dressing you need for the scene. Use it to determine: (1) the characters involved, (2) the location, (3) the props, and (4) the set dressing for each scene.

<table>
<thead>
<tr>
<th>Scene 1</th>
<th>Scene 2</th>
<th>Scene 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets &amp; Locations</td>
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<tr>
<td>Props &amp; Props</td>
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</tr>
<tr>
<td>Function (props)</td>
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</tbody>
</table>

Figure 74: Response for step 3a from student 1 in the test.
1. How does the design intensity level support or contradict your choices?
   I tried to keep my choices as simple, basic, and bland as possible. That way, they can easily be interchanged for other shots.

2. How do these images support or contradict the narrative?
   All the images support the narrative in a very generic way. Some info about time period is portrayed but not much.

3. How do you think the design intensity level influenced your choices?
   They really forced me to simplify my ideas. I didn't want to get too caught up in the details. I tried to keep it as plain, yet informative as possible.

4. What are the differences in the choices made for each design intensity level?
   They are very drastic with the embellishment and the narrative in particular. Both provided much more detail for the story.

5. What design intensity level do you feel best supports the narrative of the test script?
   I think any level above mine would be better. Embellishment might be too much but decorative is definitely not enough. The story is too plain, and simple with level 1. Narrative would probably be best.

Figure 75: Response for step 3c from student 1 in the test.
1. How important do you think the set design for an animation is?

very important
moderately important

2. Why? Please comment on your answer to question 1:

It sets the mood, tone, and context for the whole story.

3. What is the most important factor to consider when designing a setting?

I would have to say mood is one of the most important factors. This can also help convey the overall message from the story.

4. What techniques would you put into practice on your next animation project? What would your process be?

I would definitely concentrate a lot on mood in the story. I think I would try to establish that first from the script and go from there.

5. Did the information that was presented help in your understanding of the set design process?

Yes, it definitely made me carefully consider alternate methods of set design and research.

6. Would you refer back to this information?

Yes, I would.

Figure 76: Response for step 4a from student 1 in the test.
7. Did the information provide any insight into methods of analyzing a narrative?

   Yes, I think it helped me consider other possible approaches, from a basic approach like deduction to an elaborate approach like embellishment.

8. Why is the analysis important?

   It allows us to determine a suitable research method for the story. Sometimes, a more basic approach may be the best fit.

9. Did the use of design thinking help you in your decision making process?

   Yes, or in this case, it forced me to restrict my choices for the story.

10. Is there any information missing that you would find helpful?

    Not that I can think of.

Figure 77: Response for step 4b from student 1 in the test.
1. How do you define set design?

Set design is the composition of a set or location where the animation/story is taking place. It includes decisions about arrangements of elements and lighting etc.

2. Have you ever designed a set for animation, film or theatre?

No.

3. How important do you think the set design for an animation is?

Very important

4. Why? Please comment on your answer to question #3.

The set design is very important in terms of mood of the story. It can be used to direct viewers' attention to certain aspects of the story as well as complement the story metaphorically.

5. What is the most important factor to consider when designing a setting?

How does it complement or comment on the story. Is there an element the viewer is meant to feel about the story.

6. What steps would you take when beginning a set design for an animation?

The story is important to understand what message do you want to portray through the story. Then take references/ Inspirational material which might be similar. Sketch a few different combinations of colors, different arrangements to see what's more effective. Test it on viewers to see what they feel about it.

Figure 80: Response for step 1 from student 2 (student code GREEN-punctuative) in the test.
<table>
<thead>
<tr>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the chart to describe all of the sets, props and set dressing you need for the scene. When listing sets, indicate if a set is an interior (int) or exterior (ext). When listing props, indicate what character the prop belongs to.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>scene 1</th>
<th>scene 2</th>
<th>scene 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>sets &amp; locations</td>
<td></td>
<td>bedroom (int)</td>
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<td></td>
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<td>breakfast (ext)</td>
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<tr>
<td>set dressing &amp; props</td>
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<td>curtain (int)</td>
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<td>gun, scissors (human)</td>
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<td></td>
<td></td>
<td>red cap (little boy)</td>
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<tr>
<td></td>
<td></td>
<td>stone</td>
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<tr>
<td></td>
<td></td>
<td>fork (int)</td>
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<tr>
<td></td>
<td></td>
<td>cake, wine glass (lady)</td>
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<td></td>
<td></td>
<td>latch</td>
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<tr>
<td></td>
<td></td>
<td>windows (house)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lights (house)</td>
</tr>
</tbody>
</table>

Figure 81: Response for step 3a from student 2 in the test.
1. How does the design intensity level support or contradict your choices?
   
   It dictates certain colors. For ex: blue and lemon creates a mysterious environment.

2. How do these images support or contradict the narrative?
   
   They provide a direction for designing. The forest and the portrait suggest lighting for the inside of the house.

3. How do you think the design intensity levels influenced your choices?
   
   The process was based on elimination. I looked at the images and evaluate whether they give a feel at a certain mood or time of the day etc.

4. What are the differences in the choices made for each design intensity level?
   
   I was leaning more towards the mood and color/feel of the setting. Front images were very decorative. It gave a feeling of the setting of a period piece, more than a fairy tale. Matt's was very general and almost abstract.

5. What design intensity level do you feel best supports the narrative of the test script?
   
   It can be a combination of picturesque & artistic since there are imaginary elements in it.

Figure 82: Response for step 3c from student 2 in the test.
1. How important do you think the set design for an animation is?
- not important
- moderately important
- very important

2. Why? Please comment on your answer to question #1.
   It supports the narrative. Sometimes it can be more important than the narrative itself. It dictates the viewer's attention and mindset, consciously or subconsciously.

3. What is the most important factor to consider when designing a setting?
   Mood of the story is very important, what message needs to be conveyed.

4. What techniques would you put into practice on your next animation project? What would your process be?
   Understand and identify the mood/message of the story.
   Gather research/references for inspiration.
   Model the setting.
   Try it out on a test story to see what feels right and if it

5. Did the information that was presented help in your understanding of the set design process?
   Absolutely. The classification was interesting.

6. Would you refer back to this information?
   Yes. The image bank would be nice.

Figure 83: Response for step 4a from student 2 in the test.
7. Did the information provide any insight into methods of analyzing a narrative?
   Yes, it focuses the process of research. It can be restricting at times.

8. Why is this analysis important?
   Because the setting can affect the story in a positive or negative way. Every decision needs to be deliberate. The analysis tells you what effect it might have on the viewer.

9. Did the use of design intensities help you in your decision making process?
   Yes, same as above.

10. Is there information missing that you would find helpful?
    May be, on the website, you could have a link to the color theory or something about how certain elements affect human perception.

Figure 84: Response for step 4b from student 2 in the text.
Figure 85: Practical needs collage from student 2 in the test.
1. How do you define set design?

   The design of the scene where action takes place, including structural design, props, and environment.

2. Have you ever designed a set for animation, film, or theatre?

   No.

3. How important do you think the set design for an animation is?

   very important

4. Why? Please comment on your answer to question #3.

   The set helps create the mood, and sometimes is crucial to the story itself. The set also
   interacts as a character and the animation would suffer without it.

5. What is the most important factor to consider when designing a setting?

   In the piece. Including:
   Is it a character?
   Can it be experimentally? (Color, music, etc.)
   Does the character interact with it, and why?

6. What steps would you take when beginning a set design for an animation?

   Assess the role of the set in the animation
   Create a color palette appropriate to its role
   Begin structural drafts, model the structure, draft props, and install props.

Figure 87: Response for step 1 from student 3 (student code BLUE-embirdishment) in the test.
**Function**

Use the chart to describe all of the sets, props and set dressing you need for the scene. When listing sets, indicate if a set is an interior (int) or exterior (ext). When listing props, indicate what character the prop belongs to.

<table>
<thead>
<tr>
<th>Set &amp; Locations</th>
<th>Scene 1</th>
<th>Scene 2</th>
<th>Scene 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Set dressing &amp; props</th>
<th>Scene 1</th>
<th>Scene 2</th>
<th>Scene 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>bed</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hat</td>
<td>ext</td>
<td></td>
<td></td>
</tr>
<tr>
<td>table &amp; chairs</td>
<td>ext</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bedroom set</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bed sheets</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>blanket</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bed</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bedside table</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bed</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>basket (ARC)</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sofa</td>
<td>int</td>
<td></td>
<td></td>
</tr>
<tr>
<td>table</td>
<td>ext</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chair</td>
<td>ext</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

set = ext

**Function (cont’d)**

<table>
<thead>
<tr>
<th></th>
<th>Scene 1</th>
<th>Scene 2</th>
<th>Scene 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 88: Response for step 3a from student 3 in the test.
1. How does the design intensity level support or contradict your choices?

The set design, costumes, and props all contribute to a time period and location. Scenes in the early 1900s.

Everything is elegant in the season, rain. However, the forest is reductive and brutal, but frightening.

2. How do these images support or contradict the narrative?

They confirm Lee's decision of staying on the path and avoiding the Forbidden Forest. The images argue that the mother is right, and the forest is dangerous.

3. How do you think the design intensity levels influenced your choices?

I made sure all the images supported the time period and location. Because Embellishment comes across.

4. What are the differences in the choices made for each design intensity level?

The decision was basic props.

The promotional material class.

The embellishment gave a time period.

5. What design intensity level do you feel best supports the narrative of the text script?

Embellishment because it allows the story's world to stay on the path.

Figure 89: Response for step 3c from student 3 in the text.
1. How important do you think the set design for an animation is?

very important

moderately important

not important

2. Why? Please comment on your answer to question #1.

It helps tell the story, communicates mood, and can convey time and location.

3. What is the most important factor to consider when designing a setting?

What level of intimacy is best?

4. What techniques would you put into practice on your next animation project? What would your process be?

Trying out different ideas and levels of intimacy to see which is best, then continuing in that direction.

5. Did the information that was presented help in your understanding of the set design process?

Certainly! I can use it in my own projects and understand the versatility of the set much better now.

6. Would you refer back to this information?

Yes, both the webpage and the exercise.

Figure 90: Response for step 4a from student 3 in the test.
7. Did the information provide any insight into methods of analyzing a narrative?

Yes, it explicitly informed me on how to use the analysis of the narrative to choose the level of embellishment.

8. Why is this analysis important?

To help communicate the narrative most clearly. If you don't understand a script, your audience won't either.

9. Did the use of design intensities help you in your decision making process?

Yes, I was able to focus on a level as a goal, and it helped unify the style of my choice.

10. Is there information missing that you would find helpful?

More examples from stage plays. While the focus is on animation and film is more closely related, when I was listening to the explanation I wanted stage play examples for each level too.

Figure 91: Response for step 4b from student 3 in the test.

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Figure 93: Mood collage from student 3 in the test.
BIBLIOGRAPHY


ENDNOTES


2 The following college curriculums were surveyed via the internet: Sheridan College, Ringling School of Art & Design, Columbus College of Art & Design, RIT, CalArts, UCI, A. Savannah College of Art & Design, Pratt Institute, School of Visual Arts, Texas A & M.

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