OUTTA THIS WORLD: MERGING CLASSIC ANIMATION STYLES WITH MODERN TECHNOLOGIES AND DESIGNS

A Professional Project

Presented to

The Honors Tutorial College

Ohio University

In Partial Fulfillment

of the Requirements for Graduation

from the Honors Tutorial College

with the degree of

Bachelor of Science in Communication

by

Nicholas C. Corrigan

August 2017
# Table of Contents

**Section I: Introduction** .................................................................1

**Section II: Production Methods: Traditional 2D Animated Cartoons** ..............4
- The Animation Process .....................................................................4
- Traditional Production Pipeline ..................................................7
- The Effects of Outsourcing Animation .........................................10
- The Integration of Digital Software .............................................12

**Section III: Production Methods: Modern 2D Animated Cartoons** ............16
- The Rigging and Animation Process ............................................16
- Modern Production Pipeline .......................................................19
- Synthesis & Conclusion of Traditional vs. Modern .........................23

**Section IV: Personal Methodology: Producing *Outta This World*** ............26
- Script Writing & Abstract of Story .............................................26
- Voice Acting & Recording ..........................................................27
- Character & Background Design, Storyboard & Animatic ..................27
- Animation, Music, & Sound Effects ..........................................30

**Section V: Personal Analysis: Success/Failure of *Outta This World*** ........34
- Successes/Failures of Production Pipeline & Troubles Encountered .......34
- Successes/Failures of Animation & Blending of Styles ....................36
- Conclusion ..................................................................................38

**Works Cited** ..............................................................................39
Section I: Introduction

Animation is a widely used medium for storytelling, both fictional and non-fictional works. It opens up a world of limitless possibilities for captivating plot lines, characters, and artwork. Animation also enables filmmakers to visually communicate emotions and themes on a higher level than other means of storytelling, through the use of exaggeration and creative design. As the evolution of animation progressed into modern times, the means of production have changed to become more reliant on technology and digital software, especially for 3D animation.

Different animation software allows for other means of creating animations besides hand-drawing, stop motion, or rotoscoping. While digital software creates crisp, clean visuals, cuts down production time, and opens up an infinite amount of animation styles to surface, it often removes certain qualities only traditional frame-by-frame animations can possess. As technology advances and means of production change, one factor that remains constant when relying on computers and technology is that the animators and all members of production teams are limited by what the computer allows them to do, rather than what they can visualize and put on paper with their own hands.

In the scope of 2D animation, modern animation software often relies on importing assets and animating rigged characters, usually through “puppet-style” manipulation, i.e. clicking and dragging to change the position of whatever is being animated. The program then automatically creates in-between frames to move the asset from Point A to Point B. The animator must then manipulate the in-between frames until satisfied with the motion, while also manipulating the shape of the assets by using transformation tools provided by the software.
This method is efficient and still has the potential to create visually stunning animations, but the overall “quality of life” can be diminished depending on how much of the final product relied on the software’s automatic tweening. Professional animators know how to avoid this, but modern animated 2D television shows often work on tight schedules with limited budgets. The time frames and monetary compensation often result in somewhat minimalist animation, with quick and snappy movements, limited angles of viewing, and/or simplistic asset design.

Examples of this can be seen in shows such as *Family Guy, Archer, South Park,* and *The Simpsons,* at least recently since production methods have changed to rely completely on digital software. This by no means implies that these shows have bad animation, but the style of motion is vastly different when compared to traditionally animated 2D cartoons, such as any early Disney animation, *Merrie Melodies,* and classic *Looney Toons.*

However, these traditionally animated 2D cartoons have lower overall aesthetic quality, due mainly to the lack of high-definition capabilities at the time they were created. In recent years, reboots of classic cartoons, such as *Looney Toons, Mickey Mouse* and *Scooby Doo* have surfaced, with re-imagined versions of the characters to fit modern aesthetic styles. These reboots changed the style of animation as well – the styles of motion at times try to emulate those of the classic cartoons (such as Tasmanian Devil’s tornado cloud and Scooby Doo running in place before taking off), but nowhere near the degree of detail compared to the traditionally produced versions. The resulting styles of motion seem to be products of the digital software these shows use to create the animations.
This raises several questions: why does quality of motion seem to be sacrificed for the sake of high-definition artwork? Is it because of modern technology itself, or the schedules and monetary compensation of the production teams? And, most importantly in the scope of this professional project – is it possible to create a television-style animation using digital software with the same quality of motion as traditional 2D animated cartoons while maintaining a modern aesthetic design?

In this paper, I will go into detail about the production methods of traditionally animated 2D cartoons and the integration of digital software, followed by the production methods of modern television shows and highlighting how methods have changed. I will then discuss the methods used to singlehandedly create my original animation (whereas all animated shows, traditional and modern, have teams of many people), Outta This World, while noting any drastic differences from mainstream production methods, and finally I will analyze the success/failure of my production methods and end result.
Section II: Production Methods: Traditional 2D Animated Cartoons

The Animation Process

Before discussing the production pipeline for 2D animated shows, it is important to know the actual process of traditional, hand-drawn 2D animation and the detail that goes into each frame. Richard Williams discusses these methods in his instructional book, *The Animator’s Survival Kit*, where he outlines the advantages and disadvantages of each method. Williams explains that traditional 2D animation typically follows one or a mixture of the following two methods: straight-ahead animation and pose-to-pose animation. Straight ahead animation is the process of starting a drawing at the very beginning and drawing each following frame sequentially. Pose-to-pose animation involves drawing main “key frames” first, or a main pose in an action sequence, then filling in the frames between (the “tween” frames) based on the main poses. Both methods can produce similar results, and animators tend to combine both methods for the most efficient results while maintaining the ability to be creative and spontaneous (Williams 61-3).

Examples of these methods along with the meticulous detail that goes into traditional 2D animation can be seen in most shows with ample budgets anywhere in the mid-to-late 1900s, such as *The Simpsons* and *Merrie Melodies* (specifically *The Dover Boys*). This first example comes from the very first episode of *The Simpsons*, which aired on December 17, 1989. The example is taken from an instance of the title sequence of the show, and is compared to the same sequence that was digitized with modern software from an episode in 2013:
Here Marge is shown performing a simple head turn. The first example uses modern digital software, the second uses traditional hand-drawn animation. Note that the first example only lasts for five frames at a rate of 24 frames per second. The second example lasts for 24 frames, or a full second. The first example shows the loss in motion quality, due to either the integration of digital software or a lazy animator, as only her head rotates with no change in her body or hair shape. The second example shows distinct fluid motion, with astute follow-through and exaggeration of movement; her hair
changes shape, she looks at different angles, she changes facial expression, and her entire body moves.

Another example can be seen in *The Dover Boys*, a *Merrie Melodies* cartoon produced by Chuck Jones in 1942. This cartoon was one of the first to integrate “smear frames,” an animation technique that produces quick and snappy movement over a wide range within a small amount of frames. The technique was developed to cut back on production time while still producing fluid and high-quality animation:

This example is from a scene where the three Dover Boys are quickly tip-toeing from one side of the frame to another. This method tricks the eye into believing the characters quickly moved across the screen within two to three frames, rather than animating an entire sequence of the characters tip-toeing across the entire frame. Hand-drawn 2D animation easily allows animators to create these frames, as they are typically made during pose-to-pose animation; two key frames are made on either side of the frame, then
filled in by visualizing the motion from one key frame to the other. Bear in mind these examples during the following discussion of the traditional pipeline of 2D animated shows that will lead to the emergence of mainstream integration of digital software.

**Traditional Production Pipeline**

Traditionally animated 2D cartoons, especially ones produced back in the late 1900s, such as *Looney Toons*, *Merrie Melodies*, and *The Simpsons* followed systems of production pipelines that slightly varied from show to show, but followed the same parameters. Tony Tarantini goes into detail of the production pipeline based on his own experience in the industry and interviews with professionals in his article “Pictures That Do Not Really Exist: Mitigating the Digital Crisis in Traditional Animation Production,” explaining how production teams were assembled based on artists’ particular skillsets, ranging from main/secondary character design to background design, key frame animation and tween animation, sound design, directing, editing, and final compositing (252).

Seniority played a big role in how the work was distributed amongst the team; “senior” artists, who had much more experience in the field and working within the pipeline as a whole, typically had more responsibility and produced the most significant work, such as the main animation of characters and complex movements. “Junior” artists, or newcomers, were typically under the authority of seniors, and would complete smaller tasks, such as the cleanup of frames that were already animated or designing smaller assets within the production, like secondary characters in the background or objects that moved (Tarantini 254). This hierarchy at the time was not questioned by either end of
artists, as the seniors would train the juniors upon entry to prepare them for the same role in the future, as there was no other realistic way the juniors could learn the roles of seniors on their own or without being directly involved in an industry team.

Elaborating further, every role that exists within the production pipeline (this still applies today) is quite labor-intensive and requires many hours to complete what seems like a small task on tight deadlines. Tarantini explains that a single animator in the traditional pipeline “was expected to produce anywhere from five to ten seconds a week of well-executed rough character animation,” while other artists would simultaneously clean up and refine what was produced along with other aspects of the production, such as coloring and background design (260). The following web provided by Tarantini lays out the different areas of production to help visualize the different responsibilities and general “disarray” of the entire process:

![Image: A visual of the controlled chaos of production pipelines (Tarantini 257).]
Each bubble has distinct teams of people that work within that department to advance the production. Some members of the team would assume multiple roles, especially seniors, as production progressed. For example, some senior artists would assist with storyboards and some gags included in the script during the First Phase, and would then assume roles in the Second Phase such as animation, layout, or background design. The longer an artist was on the team, the more “jurisdiction” and influence he/she would have in each step in the process. Since some steps cannot begin without the completion of another step, if the artist did not take on more roles, they would otherwise no longer be involved until the next project (Tarantini 257).

Often times many people involved in these productions were not completely interested in how the world saw their work or audience reception. Many artists on teams liked to be involved simply out of passion and to create funny pieces of which they were proud. Chuck Jones describes his view on this in an interview with Steve Bailey from 1988:

> We didn’t know what the audience wanted. And it probably still doesn’t know what it wants — this business of testing and marketing is pretty silly. We made the pictures for theaters, and for ourselves. (qtd. in Bailey)

This outlook, typically held by senior artists, became less common as time progressed and producers became more concerned with their cartoons’ audience reception (Tarantini 260).

Sound design and voice recording typically comes first before the main animation. Voice acting is directed based on the storyboards for the episode to dictate the type of inflection and emotion conveyed in each line of dialogue. After voice recording is complete, lip-syncing and most animation is made based on the audio. It is much simpler
to animate based off of already-existing audio than it is to animate a “guesstimated” sequence then record voice based on that sequence. Animating along with the voice recordings also enables animators to produce more accurate visual representations of emotion and infliction.

The Effects of Outsourcing Animation

Some shows and productions would also outsource the labor of animation to other countries, which became more of a common practice as time progressed. As animated productions became longer and more detailed, the cost of production would increase as well. Companies and studios resorted to outsourcing the bulk of the work (usually animation wise) to countries such as India or Japan. Deputy managing editor of Rediff, George Iype, in his online article “If It’s Animation, It Must Be India!” discusses the growing popularity of animation outsourcing, saying “cities in India like Mumbai, Chennai, Bangalore, Hyderabad and Trivandrum have emerged as the country’s major animation hubs.”

The following quote explains American and Canadian studios’ reasoning behind outsourcing, which is mainly due to low cost:

The main reason why foreign entertainment firms are flocking to India is the cost advantage the country offers. For instance, in the US, animators can cost about $125 an hour; in India, they cost $25 an hour. Toonz Animation offers animation at 25 per cent to 40 per cent lower rates than other Asian studios and much lower than those of American studios. (Iype)

Iype elaborates further, explaining how studios in India have plentiful English-speaking artists and animators, along with high-quality production studios with up-to-date
practices specifically designed for insourcing projects from countries like the United States and Canada.

Robin Wilding of Animation Career Review interviews professionals in the animation industry to explain animation outsourcing in his article “Animation Outsourcing: The Bottom Line According to the Pros,” as well as their methods to compete with outsourcing. He highlights both the good and bad effects outsourcing has had on these professionals from various studios and companies in the United States and Canada. One interviewee, Trevor Davies, owner of CORE Animated Effects, describes the impact he has experienced:

> Outsourcing has changed the market. Currently, local work tends to be more in the design end and development. To that end we are focused more on creating original content than we did in the past, when we were more focused on service work. (qtd. in Wilding)

Wilding then shares Mark Cappello of Invisible Entertainment’s experience with outsourcing and how it has affected his career in Canada, “I’ve been unlucky enough to see a great work migration in the late ‘90s as even design and layout and posing were sent overseas creating a massive drought on the Canadian animation landscape,” (qtd. in Wilding).

Outsourcing created an international competition of animation, where independent American and Canadian studios had difficulty finding and producing work due to the much lower prices of foreign competitors. This created a need for the studios to find new ways to cut down on production costs while maintaining high-quality animation. After methods like smear frames and double frames (drawing multiple instances of movement within one frame) were not enough to beat out the competition,
the development and integration of digital software became increasingly popular and mainstream within production pipelines (Tarantini 261).

**The Integration of Digital Software**

The aforementioned obstacles and competition for producing animated shows created a need for studios to find new, more efficient methods for their production pipelines. In the late 1990s, studios began to integrate digital software for the use of animation, mainly Macromedia Flash. Flash served as the first main digital tool used for 2D animation to speed up the entire production pipeline. Tarantini discusses the integration, stating that artists and animators at the time were skeptical of its integration—“[artists] noted some benefits but the general consensus was that it could never capture the performance that a traditional animator is capable of generating on paper,” (259).

Tarantini continues to explain the growing integration of Flash and how animators at the time reluctantly acknowledged its legitimacy after several shows used it successfully in their production pipelines and their products were well-received by audiences (259). When other television producers witnessed how the loss of full animation quality and embracing limited animation did not have a negative effect on audiences, Flash “became very attractive to animation producers who were trying to find inexpensive processes to accommodate shrinking income opportunities,” (Tarantini 259). This led to more and more limited animation productions and the further development of digital animation software, which in turn led to the decline of full, fluid 2D animation. *The Simpsons* example from earlier in this paper demonstrates this “trend” best.
This change in the production pipeline was not well-received by the incumbent animators and artists at the time. Junior artists embraced the change as learning the software allowed them to be near or on the same level as senior artists upon entry, as the software in some senses combined what were originally separate roles. Senior artists were not as receptive, as Tarantini explains that “it created a sense of uncertainty among senior 2D artists that felt restricted by its limitations,” (260). The software was unprecedented and it uprooted the process that senior animators and artists knew and loved. The new production pipeline integrated “primitive” versions of what is considered today to be “puppet animation,” which will be further discussed later in this paper.

The following web diagram, excerpted from Tarantini’s article, helps visualize the changes from the traditional 2D production pipeline. Note how many of the steps are combined:

Fig. 2.4 – Visual of the shift from traditional to digital pipelines (Tarantini 261).
This process also enabled a single animator to produce far more animation within a given time frame than the traditional process. Producers from the traditional process expected a single animator to produce three to five seconds of rough character animation per week, and Flash allowed producers of the new process to expect roughly 30 to 60 seconds of completed animation per week.

Other than speeding up the actual animation process, the integration of Flash and digital software also made it far easier for all artists and animators to produce work with consistent styles during an entire production. Tarantini explains this shift, stating how “puppet animation” changed the focus from detailed animating to rigorous asset creation, where a single character would be broken down into different parts that could all move, such as a head, upper arm, lower arm, hand, torso, upper leg, etc. The development of these art assets ensured that the style of each character could not significantly change during the animation process, which also leveled the playing field between junior and senior artists/animators on every production team (262-5).

This shift changed the criteria of junior artists’ skillset and knowledge base upon entry of the industry forever. Before the integration of digital software, most artists focused on their drawing capabilities and their abilities to visualize a complete motion on their own and put it on paper, using techniques discussed in the beginning of this section, such as smear frames, double frames, straight ahead animation, and pose-to-pose animation. Flash and digital software instead demanded rigorous design of assets and the ability to manipulate what the software produced on-screen. Animators learned instead how to change an asset’s motion track or how to effectively scale/resize objects. Drawing
 tween frames was still possible, but it would typically only change whatever asset was moving rather than an entire drawing.

Combined with audiences’ acceptance of limited animation and the desire of producers to be more efficient and cost-effective, the integration of digital software resulted in the loss of fluid, detailed, full 2D animation. Senior artists at the time and independent animation teams would still produce animation of traditional quality for passion projects or short films, but Flash and digital software quickly became mainstream. Any upcoming animator hoping to work in the industry after this time would instead need to focus on learning how to use this software.
Section III: Production Methods: Modern 2D Animated Cartoons

The Rigging and Animation Process

Modern animated 2D cartoons follow parameters vastly different than those of traditionally animated 2D cartoons. Rather than drawing each frame and redrawing characters on every tween frame, characters, backgrounds, and all other assets are digitally designed and set up to be easily compatible with the software’s rigging and animation capabilities. The most popular programs used today, for both 2D and 3D animation, are Toon Boom Animate Pro/Harmony, Autodesk Maya (3D software that can be repurposed for 2D productions), and Adobe products such as Photoshop, Illustrator, After Effects, and Animate (formerly Flash). Each program has its own unique methods and terminology for animating and designing, and many are designed to be seamlessly integrated between one another. The following explanation of rigging comes from my own experience with designing, rigging, and animating characters using 2D and 3D software.

“Rigging” is an important process in both modern 2D and 3D animation, especially in regards to puppet-style animation. Rigging is the process of building a character to be efficiently prepared for animation. In regards to 2D, this requires the design of a character to be broken down into individual parts and files that will be combined and connected within an animation program, usually with parameters and restrictions to allow realistic movement without the risk of the rig breaking or expanding to unrealistic positions.

A basic human character rig is composed of the following parts: the head, neck, torso, base, upper arm, lower arm, hand, upper leg, lower leg, foot. Rigs often get far
more complex, such as adding facial parts that are set up to move on their own such as eyebrows, hair, mouth, and each individual finger on a hand. 2D software such as After Effects integrates a process called “time-remapping,” which allows different drawings of hands, mouths, and angles that the entire character is viewed to be seamlessly integrated into a single rig that can switch back and forth between each different drawing.

After all parts of a character are imported into the animation program and stacked in their appropriate positions based on layering, the parts are connected with what most programs refer to as a “skeleton tool,” which places joints on each object that serve as reference points for the program to manipulate each object’s motion path. The skeleton essentially seals all of the assets together to create a puppet, hence “puppet-style animation.” The program then uses forward kinematics and inverse kinematics to manipulate the puppet. To elaborate, a character rigged puppet-style with inverse kinematics allows the animator to click and drag a hand, and the other parts of the arm will follow the hand appropriately. Forward kinematics functions similarly; rather than clicking and dragging the hand, if an animator were to rotate an upper arm, the lower arm and hand would follow accordingly.

Once the rig is set up, animation can begin. The animating occurs by changing the position of whatever is moving over the course of some frames, defined by placing key frames, then manipulating each object’s motion path that the computer generates on each in-between frame. Each object can also be scaled and skewed using different transformation tools provided by the program. This is vastly different than traditional 2D methods, where the animator completely dictated the position and scaling of a drawing using their own knowledge of how an object should move, their drawing ability, and the
physics of the movement. Puppet-style animation limits the animator to work off of what the computer can generate, rather than what their imagination and ability to draw can generate.

An example of a puppet rig is provided by Neil Holman and Chad Hurd, producer and art director (respectively) of the 2D animated series Archer through an interview with Dan Sarto of Animation World Network titled “The Minimalist Animation of ‘Archer’”:

Note the visualization on the left-most picture of how each body part is separated and connected. Each pink dot represents the position of an anchor point or skeleton joint for the rig if each component were stacked correctly instead of separate. The other drawings of Sterling Archer’s head represent how complex a facial rig can get; note the separate eyelid and eyebrow shapes, along with the different mouth shapes and separation of hair parts to allow independent animating of each asset. The upper-right image shows examples of how the rig can be manipulated to produce different action poses. Drawings
of the same character from different angles are not shown, but are typically included within a rig as well.

Bryan Fordney, animation director of *Archer,* discusses the animation process in a separate interview titled “Animating Archer” with James Gartler and Dan Sarto of Animation World Network: “we use Adobe After Effects for the character acting, which is almost more similar to 3D animation than it is to traditional animation. . . that allows us to work very quickly,” (qtd. in Gartler). Animating puppet-style is more efficient, but excludes certain nuances traditional 2D animation can produce. In regards to *Archer,* the art style is intended to be more realistic than classic cartoons, so less inclusion of qualities like exaggeration, squash and stretch, and anticipation does not necessarily hinder the final look of the animation.

**Modern Production Pipeline**

Modern 2D animated television shows follow a similar production pipeline to traditional 2D animation, in regards to certain duties, but the workflow is vastly different along with what each person on the production team does. Modern shows have different methods from studio to studio, which are heavily dependent on the software they use for each step of the process. Modern artists and animators focus mainly on asset design and digital animation, rather than re-drawing everything on cells like traditional artists.

Several shows, like *Archer,* combine the use of 3D and 2D software. Neil Holman explains the process in his interview with Dan Sarto, detailing how he and others will research environments for their backgrounds to be built in 3D software for 2D repurposing. He continues on, saying:
Once we take a picture inside that 3D model, our background painters work over that picture, that render. . . with our storyboard artists, we take those camera angles, plot those inside this 3D environment and kick out still images. Our background painters take those 3D-rendered images and then paint over them, working in all sorts of textures and details. (qtd. in Sarto)

Holman and Herd provide an example of this explanation, showing the transfer of the process from storyboard to 3D render to final 2D background:

![Storyboard and 3D model with background painting](image)

Fig. 3.2 – Beginning to end process of *Archer* background design (Gartler, 2014).

Compared to 2D traditional methods, the process for creating the background is arguably more in-depth. Older shows and animated productions also used the process of painting over cells and refining, but were often based on a static picture or a background the artist imagined rather than a modeled 3D environment. The modern technique allows for high-definition rendering and incredibly detailed artwork due to the imagery the 3D software originally produced. This highlights the focus workers in the industry have on learning digital software, rather than focusing only on artistic ability to produce an image.
Besides learning how to use the software, workers in the industry will often learn how to manipulate the functionality of the software as well. Every asset that a show possesses can be re-used and recycled for different purposes, and often times the staff will re-evaluate the assets on hand at the end of a season in preparation for the next one. Holman explains this process, “we do a postmortem looking at our character rigs. Sometimes the After Effects guys have specific requests due to technology. . .or they’ve written some code to make the animation easier,” (qtd. in Sarto). Coding plays a large role in allowing artists and animators to more easily animate scenes. After Effects, Autodesk Maya, and several other programs allow users to essentially re-design the interface and inner-workings of the program to better suit their style of approach and be more efficient.

Another big step in the production pipeline process is troubleshooting issues with the software. Dan Harmon and Justin Roiland, creators of Rick and Morty, discuss their show’s methods in an interview with James Gartler of Animation World Network titled “Rick and Morty Returns for Season 2.” Rick and Morty regularly tries to push the envelope in terms of visual and story complexity. Roiland describes the process of animating scenes with split realities from season two, episode one, “A Rickle in Time,” where up to 64 compositions with differing animation and dialogue are all on screen at once, and the problems it caused due to the software’s limitations:

There are shots in that episode where there were so many elements going on that they could no longer even manipulate it anymore. The final changes had to be animated on top of an output. They basically had to output it and then rotoscope over the top of it in order to get the final fixes in. It was insane. The system just couldn’t handle it. (qtd. in Gartler)
Each composition in the frame has the same amount of detail in regards to character design and background design. The following image is a still from the episode where reality splits into four parts. Note the level of detail in the background and the differing actions of the characters in each reality:

Fig. 3.3 – Rick attempts to calm down his grandkids after reality divides (*Rick and Morty*, 2015).

Nearly the same level of detail in each reality is kept as they split more and more, with each new reality differing in some way. The next image displays a moment reality is split into 64 parts:
The limitations of the program and computer processing power created many issues for the production team, as Roiland explains how they had to repeatedly re-do certain shots until the program sufficiently responded; “...to a much greater degree we popped the hood open. . . and this was after Wes had already boarded it with his team. . . they had to go in and re-board a bunch of stuff,” (Gartler). Issues like this highlight the differences between traditional and modern production pipelines. Modern pipelines need to work around the limitations of software, while traditional pipelines need to work towards making what they can put on paper and cells limitless in regards to their own imaginations (Tarantini 255).

**Synthesis & Conclusion of Traditional vs. Modern**

The preceding explanations of traditional production pipelines and modern production pipelines highlight the changes the industry as a whole goes through as technology progresses. Traditional methods relied mainly on artistic ability and
experience working within a team to clean up individual drawings, with most focus being placed on the actual animating to produce fluid motions and high-quality movement styles. Modern methods rely mainly on asset design and knowledge of software to utilize the most efficient tactics to output the final animation as quickly as possible. The efforts of cleaning up and refining drawings on cells shifted to coding and manipulating software to become more efficient and producing crisp, clean, high-definition artwork.

The focus of traditional methods created animations with many angles and constant movement, as well as the inclusion of “cartoony” qualities such as squash and stretch, exaggeration, and anticipation. These qualities somewhat disappeared as productions integrated software with rigs of static character designs with limited movement and angles of view. Season four, episode fourteen titled “PTV” from *Family Guy* perfectly encapsulates this in a scene that includes Wile E. Coyote from *Looney Toons*.

![Fig. 3.5 – Wile E. Coyote barters with Peter Griffin (*Family Guy*, 2005).](image)

Wile E. is drawn in a way that matches the aesthetic style of *Family Guy*, but his motions in the scene are limited and quick, rather than full and fluid like in original *Looney Toons*
episodes. Arguably, if he moved the same way as his classic self, it would not necessarily fit in with the style. However, if traditional methods were integrated, he could move in the same way as his classic self with his redesign.

A different example that accomplishes this comes from *Gravity Falls* in its title sequence. The design of the characters fits modern styles of design while also incorporating traditional movement styles. However, the full episodes do not possess the same quality of animation and levels of detail as the title sequence. The following are stills from the title sequence that demonstrates classic movement style:

![Fig. 3.6 – Dipper discovers a skeleton in a secret cave (*Gravity Falls*, 2012).](image)

The actual sequence has far more in-between frames, but these stills demonstrate classic qualities well. Note the different angles of view, the squash and stretch, and the dynamic expression changes and poses of the character, Dipper. This blending of modern aesthetic design and traditional movement style is what I set out to accomplish in my short animation, *Outta This World.*
Section IV: Personal Methodology: Producing Outta This World

Script Writing & Abstract of Story

In order to produce an animation with modern aesthetic design and traditional animation movement styles, I first wrote a script that was originally eighteen pages long that included characters of all kinds, including people, a bee, a horse, other random objects, and an alien. I intended to include both visual gags and verbal jokes, along with elements of breaking the fourth wall and random objects coming to life. Dialogue wise, I gave each character a different personality with inflections and lines that sounded like natural speech, by including some stuttering and some pauses between lines. The following is the abstract of my story’s plot:

Two friends, Carl and Myles, encounter an alien named Neila with a mysterious “head-arm” that randomly crash-lands on Earth. The seemingly-friendly alien asks Carl and Myles to show him around Earth while he gathers himself to return to his own planet. Carl and Myles show him around their town while questioning the purpose of Neila’s head-arm, taking him to their favorite restaurant, a pool, and an arcade. At the arcade, an excited high-five with Neila’s head-arm transforms him into an all-mighty being with the intention to wipe out Earth’s population and take it over for his own alien race. Carl and Myles must act quickly to restore Neila to his original form and save the world.

I made several changes to the original script during other parts of production which were mainly cutting scenes and re-writing some lines of dialogue. The original script would have most likely made an episode lasting eight minutes, which I had to condense in order to give myself enough time to animate the entire story. I intended for
the edited story to last five minutes, but condensed it further to around three minutes due to problems and roadblocks while animating.

**Voice Acting & Recording**

After the original script was complete, my next step was voice recording. Michael France, an Ohio University Honors Tutorial College music production student, helped me with recording by providing microphones and mixing the sound files in Audacity. He, Cory Abdella, Yonry Zhu, and myself voice acted for all characters in my story. We recorded before I produced any storyboards or animatics so I could more accurately produce storyboards based on the inflection of each line of dialogue.

We had three separate sessions of recording. The last two were essentially re-dos to explore different personalities for some characters as well as following the dialogue changes I made to the script after the first session based on feedback from my professional project adviser, Tyler Ayres, an animation professor at Ohio University. Michael France sequenced each recorded line of dialogue into one audio file so I could easily import and edit spacing for my storyboard, animatic, and animation.

**Character & Background Design, Storyboard & Animatic**

After the first complete session of voice recording and receiving the sequenced file, I began storyboarding in Toon Boom Harmony using a Wacom drawing tablet. Toon Boom allows the user to draw and color within the program and uses vector graphics to output high-definition artwork upon exporting and rendering. The two main characters, Carl and Myles, are my own original characters that I have used in various
media over the past few years. The alien, Neila, and other secondary characters I designed on the fly while I made my storyboard and animatic. I made the storyboard drawings rough and black and white, with the intention of cleaning up and coloring after the actual animation was complete. As I progressed through my storyboard, I meticulously synchronized poses and facial expression along with the voice recordings. This resulted in creating key frames that I could later implement upon actual animation, so the storyboard essentially transformed into an animatic as I progressed.

For background design, I made rough drawings on a separate layer within Toon Boom during the animatic. Once the animatic was complete, I imported the background drawings into Adobe Illustrator to clean up and improve their overall aesthetic and colored them in Adobe Photoshop. I changed methods quickly, realizing that I could refine and clean up the backgrounds within Toon Boom itself to the same degree, and skip the process of transferring the file from Illustrator to Photoshop and just color them in Toon Boom as well.

Since I wrote the entire script and made all of my own drawings, it was not necessary for me to make storyboards in the traditional sense because I already had an understanding of what I wanted to produce; I was my own director. The following are some examples of my storyboard and animatic:
In total, these images account for less than one-fifth of the images I made throughout the entire animatic. During this process, I was able to see my characters come to life and make necessary changes to further develop their personality. This led to changing dialogue and rewriting certain scenes for the sake of quicker plot progression and an overall better story. After these changes were made, Michael France helped me re-record the voices in our second and third voice acting sessions.

**Animation, Music, & Sound Effects**

Upon completion of the animatic, the actual animation and filling in in-between frames began. I set up my animatic to be ready for animation immediately, mainly by filling in frames between the main poses I set up. I originally intended for my short to run at 24 frames per second, but quickly changed to twelve frames per second to encapsulate an old-school look and cut back on production time. While animating, I referenced Richard William’s book *The Animator’s Survival Kit*, John Halas’ and Harold Whitaker’s guide *Timing for Animation*, and Tom Bancroft’s book *Character Mentor* to help visualize and execute certain frames for drawings I had trouble creating. All three had
guides, tips, and tricks for creating good, fluid animation and designing characters from all angles, as well as mouth shapes for believable lip-syncing.

I mainly utilized pose-to-pose animation during the entire process, which Toon Boom easily allows with “onion skinning,” a feature that shows faint outlines of frames before and after the current frame for reference. Toon Boom allows audio to be directly imported to the program, so for certain noises or for audio that had changed after I made the animatic, I was able to import the new files and arrange them accordingly. While animating, especially for lip-syncing, each frame was aligned with a soundwave from the audio file that made it easy to line up the mouth shapes. I originally intended to do lip-syncing in After Effects using pre-made mouths, but during the process I discovered it was far easier to draw the mouths within Toon Boom. I was able to copy and paste certain mouth shapes to re-use for each character, but most of the detail I put into the animation came from dynamic mouth shapes to perfectly match and enhance every word each character spoke.

In regards to coloring, I originally intended to complete all animation before coloring, but I quickly discovered this was a very inefficient method. Instead, I colored each frame as I animated and cleaned up the key frames from my animatic. This allowed me to manipulate objects that already had color to save me the extra work of coloring an entire character every frame, rather than just parts that were re-drawn each frame. I colored the backgrounds each time I progressed to a new shot.

After completing a scene, I rendered out image sequences of each frame to be imported to After Effects, where I added sound effects and music. All sound effects and music I found came from royalty-free websites that allowed free use of their database of
Outta This World

sounds. Upon completion of another scene, I would render out the next image sequence and add it to the already-existing After Effects file. After Effects also allowed me to render out and export final movie files for test viewings.

The following images are still from my animation after cleaning up drawings and coloring for the sake of comparing progress to the drawings from my storyboard and animatic. Each still included is taken from a main key frame pose:
Section V: Personal Analysis: Success/Failure of *Outta This World*

**Successes/Failures of Production Pipeline & Troubles Encountered**

Retrospectively, the methods I used to produce *Outta This World* had both good and bad qualities. In regards to my production pipeline, I successfully implemented both traditional and modern techniques. Using pose-to-pose animation and drawing frame-by-frame helped create an old-school look and movement style of my characters. My knowledge of digital software (Toon Boom and After Effects) allowed me to manipulate each program to produce a traditional style while maintaining high definition and modern aesthetics. Cutting certain scenes and animating at twelve frames per second helped me cut down drastically on total production time. Unfortunately, at the time of writing this paper, I was unable to complete the entire animation as I had originally hoped. At this moment, I have roughly two and a half minutes of completed animation, and I intend to reach the three minute goal shortly after completing this paper.

However, some decisions I made for producing the entire animation were not as efficient as they could have been, especially since I produced every segment of the pipeline singlehandedly (excluding the help from Michael France with voice recording). I was admittedly over-confident that I could handle each step on my own without realizing how daunting so much work would be, along with underestimating how much time each step would take. Compared to studios and production teams that have multiple people assigned to each step in the process, I should have had more foresight from the beginning to make a smaller project for myself. The original script was eighteen pages, which is far too long of a story to singlehandedly produce in the time frame provided. Writing a
shorter story from the beginning would have made the entire process easier and more efficient for me to approach.

Cutting scenes and re-recording dialogue with re-written lines significantly hindered my overall progress. These changes required me to make more changes to work I already produced, such as the animatic and several key frame poses. The re-recorded audio files also caused me some trouble working in Toon Boom, as Toon Boom is in no way a program for audio editing. With each new line recorded, I had to separately import each file and manually place them at the exact positions of relevant animatic frames, which cluttered my interface and hindered my digital hygiene. I also had to delete and edit some parts from the original sequenced audio file, which eventually stopped working completely. After a certain point, if I tried to edit the file or reposition a part of the audio, the sequenced file would fall apart and the pieces I tried to edit would disappear or “transform” into a different section of the audio for unknown reasons. This significantly increased the amount of time taken to properly position and edit my animation.

Beyond these problems, I wonder how differently the process would have gone if I had used straight-ahead animation rather than making an animatic with key frames then using pose-to-pose animation. It took a significant amount of time to make the animatic itself, and in hindsight it may have been an unnecessary step in regards to making an animation quickly. However, I am glad I made the animatic and used pose-to-pose animation, because they forced me to tackle every step in both traditional and modern production pipelines and provided useful experience.
Successes/Failures of Animation & Blending of Styles

In regards to the animation itself, I successfully implemented both traditional and modern styles of motion and aesthetics. Pose-to-pose animation at twelve frames per second allowed me to add fluid detail while minimizing the amount of time necessary to animate a single motion. I put most of my attention into lip-syncing and expressions to sell the inflections and personality of each character, while enhancing their visual delivery. I successfully utilized traditional methods such as smear frames and double frames, along with exaggeration, squash and stretch, and anticipation. I attempted to include a wide variety of angles for my characters, but re-drawing heads at slightly different angles every frame was unrealistic for the scope of this project.

The following stills show examples of the techniques I used for smear and double frames, as well as the detail I put into facial expressions and mouth shapes. Keep in mind that every single frame of animation I produced had some degree of hand-drawn changes, that often times took multiple tries before I was satisfied with the overall results. Certain sequences of motion that were particularly difficult to time and space required me to delete and re-draw entire sequences at varying points of the process.
Bear in mind that every instance in this image cluster has a handful of frames preceding/following them with smears of lesser detail to sell the overall motion quality. Every frame also has a varying degree of scaling, in regards to moving body parts or accentuating body language and fluid motion while a character speaks. Many more smear frames and double frames exist in my animation, which were somewhat difficult to visualize and execute during the process.
Conclusion

Overall, the answer to my main question of whether or not it is possible to create a television-style animation using digital software with the same quality of motion as traditional 2D animated cartoons while maintaining a modern aesthetic design is yes, but it is impractical, especially single-handedly. The previous discussion of traditional and modern production pipelines proves that the evolution of the industry’s methods as a whole makes complete sense. If time and deadlines were not a factor, then every show could possess the level of detail in motion as seen in traditional cartoons. The implementation of digital software allows shows to reach new heights of plot complexity and depths of character that otherwise would not be possible using traditional methods. However, certain software does allow for the level of detail in motion of traditional cartoons to be attained, so long as there is enough time provided. It is possible, yet inefficient.

*Outta This World* was a challenging endeavor to produce, but the animation I created proves it is possible to blend traditional and modern qualities to an extent. Had I worked with a team of people or written a shorter story, I most likely could have completed the entire animation with time to spare. I intend to complete the rest of my animation as quickly as possible for my own sake and for the sake of the animation as a whole. Perhaps in the future, software may be further developed to allow easier implementation of traditional animation methods with crisp, clean modern aesthetics. For now, *Outta This World* can serve as an example of the synchronization of possibilities and limitations within animation.
Works Cited


