

*UN-PORTALABLE!* AN ANIMATED EXPLORATION IN BOUNDARIES AND RELATIONAL  
DESIGN

by

IRA KLAGES  
B.S. University of North Florida, 2014

A thesis submitted in partial fulfillment of the requirements  
for the degree of Master of Fine Arts  
in the School of Visual Arts and Design  
in the College of Arts and Humanities  
at the University of Central Florida  
Orlando, Florida

Spring Term  
2022

Major Professor: Darlene Hadrika/Michael Cabrera

## ABSTRACT

*Un-Portable!* is an animated multimedia short film about two friends who become fused together after using a faulty teleporter. They attempt to conceal their deformity while simultaneously navigating a social situation with one of their friends. The main focus in the film is the concept that boundaries tend to become clearer as they begin to break. This conceptual focus merges into the visual theory of the film in which highly expressive character design and hybrid media utilization are driven by relational and narrative design choices. This film serves as a condensed pilot and proof of concept for a larger prospective serialized work. The construction of the physical aspects of *Un-Portable!* allow for flexibility in camera angles that benefits not only production of the film itself, but also future projects within the potential series.

## ACKNOWLEDGMENT

I'd like to acknowledge Darlene Hadrika, Jo Anne Adams, and Michael Cabrera for their support during my time in this program and for serving as my thesis committee. I'd also like to thank James Wirth, Katherine Hooper, and Dennis Ahearn for their support during my undergraduate experience, without which I would not have accomplished what I have up to this point.

## TABLE OF CONTENTS

|                                   |    |
|-----------------------------------|----|
| LIST OF FIGURES                   | v  |
| INTRODUCTION                      | 1  |
| Overview                          | 1  |
| THEMES                            | 3  |
| Boundaries                        | 3  |
| Defining Boundaries               | 3  |
| Boundaries in <i>Un-Portable!</i> | 4  |
| Design concepts                   | 6  |
| Collage                           | 7  |
| Relational Design                 | 9  |
| FILM OVERVIEW                     | 13 |
| Plot                              | 13 |
| Intent                            | 14 |
| Stylistic Preference              | 15 |
| Professional Development          | 17 |
| Characters                        | 18 |
| Setting                           | 21 |
| METHODS                           | 26 |
| Pre-production                    | 26 |
| Production                        | 28 |
| Post-Production                   | 45 |
| Compositing                       | 46 |
| Sound Engineering                 | 47 |
| CONCLUSION                        | 50 |
| REFERENCES                        | 51 |

## LIST OF FIGURES

|  |    |
|--|----|
| Figure 1: Visual representation of the medium shell system. ....   | 7  |
| Figure 2: The personality/color spectrum. ....   | 11 |
| Figure 3: The mood/motion spectrum.....  | 12 |
| Figure 4: The characters of Un-Portalable! from left to right: Jonesy, Enya, Polly, three Café employees, seven café patrons. ....   | 18 |
| Figure 5: Comparison of the café portal (left) and Enya’s portal (right) in Un-Portalable!. ....   | 22 |
| Figure 6: The set used for Enya’s apartment in Un-Portalable!.....   | 23 |
| Figure 7: The set used for the Café in Un-Portalable!. ....  | 23 |
| Figure 8: 3D CGI shopping parade located outside of the Café in Un-Portalable!.....  | 24 |
| Figure 9: The graduate workspace featured at the end of Un-Portalable!. ....   | 25 |
| Figure 10: One of the cardboard set prototypes for the café set used in Un-Portalable!. ....   | 27 |
| Figure 11: Outside corner of the apartment set featuring modular walls being held in place by base-grooves, beams, pegs and guiding beams. ....  | 30 |
| Figure 12: Jacket fabric attached to lampshade without clothespins. ....   | 31 |
| Figure 13: Wooden scaffolding with attached lights set up for apartment set. ....  | 33 |
| Figure 14: Compilation of different passes taken for one of the apartment shots. Listed from left to right, top to bottom: neutral lighting pass, stand-in pass, window lighting pass, floor lamp lighting pass..... | 34 |
| Figure 15: Frame from the paper drawings segment. ....   | 37 |
| Figure 16: Frame from the bead stop motion segment. ....   | 38 |
| Figure 17: Frame from the polymer clay stop motion segment. ....   | 39 |
| Figure 18: Frame from the body photography segment. ....   | 40 |
| Figure 19: Frame from the Lego segment.....  | 42 |
| Figure 20: The first and second shots in the explosion sequence. ....  | 44 |

## INTRODUCTION

### Overview

The film *Un-Portable!* is primarily driven by the conceptual theme of boundaries, specifically the idea that boundaries tend to become clearer as they begin to break. The concept of boundaries is also persistently intertwined with the design theory of the film. The appearance of characters and settings are all determined relationally, as in how they compare to each other, instead of symbolically, as in what they might directly represent.

The types of boundaries explored in the film range from physical to non-physical. Boundaries that are more clearly physical, like those between an object and the space around it, are portrayed primarily through differences in artistic medium. Boundaries that are less physical, like emotional boundaries, are portrayed primarily through stylistic variations within mediums. The concept of boundaries is innately comparative because it is essential to have two separate entities or concepts for a comparison to be made. The motif of boundaries and their breakage is visually reinforced via collage and relational design. For the purpose of this paper, the term “relational design” is used to describe design choices that are motivated by the relationships between on-screen entities. These conceptual frameworks are apt for the film because they also rely on comparison between entities.

Collage, in *Un-Portable!* is apparent through extensive usage of mixed media and contrasting visual elements implemented throughout the entire film. The most salient instances of relational design in *Un-Portable!* include character color, setting colors, and character animation style. The appearance of

these attributes fluctuates depending on the story, personality, and moods of the characters. For instance, the three main characters have dominant colors that are based in hues of blue. The extent to which their main colors deviate from blue correlates with how their personalities deviate from what might be considered more socially normal behavior. Likewise, the animation of the characters fluctuates between proportional, angular movements and considerably more abstract, rubber-hose-type movements.

The film is a proof of concept for a potential series. The story depicts a condensed version of the type of humor, visual style and characterization that would be the driving force in the show. The film tests of practicality in the method of its creation, which involved the fabrication of modular sets that could be easily dismantled and reconstructed for flexibility of shooting.

## THEMES

### Boundaries

#### Defining Boundaries

Boundaries signify a difference or a change between distinct objects, concepts, or states. They work as definitions that assist in the quantification and categorization of various aspects of human existence and experience. Boundaries affect what people can do, for example: how local laws may vary across different counties. Boundaries also have an impact on how we process our environment. For instance, participants have been found to judge equal distances differently depending on the boundaries that contextualize those distances. For instance, if the distance spans across a national border, participants will often miscalculate that distance (Burris and Branscombe 310).

How individuals define various boundaries in their life, may be an extension of their cognitive representation of various concepts. To define a boundary, one needs to define the concepts that are being bound. To define what something is, is also to define what it is not. A boundary, however, may not be a solid binary concept. Boundaries, like most aspects of life, are often flexible and nebulous. For example, the term "symbolic boundaries" may represent the conceptual distinctions within ideas like race or gender (Lamont and Molnár 168). The definition of these boundaries may be more dependent on the personal experiences or current state of mind of the individual involved. The majority of boundaries are probably, in fact, fluid since life rarely produces absolutes. Boundaries often carry with them many variables that impact how they are defined. The way boundaries were integrated into the visuals of *Un-Portable!* was impacted by the fluidity of and interactions within our understanding of boundaries.

## Boundaries in *Un-Portable!*

The various boundaries depicted in *Un-Portable!* span differing degrees of physicality and presentation. The most physical boundary explored is that related to distance, which is expressed by differentiation in medium. Less physical boundaries, like personality and emotion are expressed through variations in color, movement, and artistic style. The film also contains repeated narrative references to boundaries, especially how they are most apparent once they begin to break.

The different mediums that portray distance-related boundaries follow a relatively consistent structure throughout the film. The structure persists throughout the story until it is disrupted as part of the narrative. The structure involves layers, or shells, that emanate outwards from the characters like an onion. The mediums of each shell are as follows: 2D animation, hand-built miniatures, 3D computer-generated imagery, and scenic photography. The shells do not represent exact distances, instead they are meant to emulate a visual analogy of how one might cognitively construct the boundaries of elements visible in their environment. The environment is broken down into sections based on their constituent parts, and where they are relative to the characters perceiving them.

The characters are vehicles for portraying less physical and more conceptual, dynamic boundaries. The boundaries between extreme emotional display and calmness are conveyed through a spectrum of character movement styles. Additionally, the main characters have full color schemes, while the background characters have only one solid color to accompany their linework. The differences in amount of color between the main and background characters helps cement the background characters as aspects of the setting instead of the main focal points of the story. The inhuman skin colors of the characters are also meant to emphasize the boundary between the film world and the real world.

The characters act out the breakage of many boundaries in the film. One instance of this occurs at the beginning of the film when Jonesy surprises Enya in his home. In the first shot of the film, Jonesy startles Enya while he is in the bathroom. The bathroom was chosen for the opening shot because of its intimate association with privacy. Jonesy strongly establishes the dynamic of their friendship for the audience by his carefree, but well-intentioned, destruction of a very widely understood boundary. Jonesy's drastic lack of understanding personal boundaries is further illustrated later in the apartment when the state of the front door is visible in the background. It is implied that Jonesy has broken the front door off its hinges to enter Enya's apartment; this exemplifies the breaking of both personal and physical boundaries. Jonesy's persistent infringement on Enya's boundaries peaks when the portal malfunction, caused by Jonesy's shoddy repair, results in Jonesy and Enya's body being physically fused together.

Instances related to boundaries and their breakage continue with moments such as Enya and Jonesy wearing Polly's coat, Enya accidentally smashing into other unsuspecting cafe patrons, and Jonesy trying to claw his way out of the coat. In each incident, the recognition of the broken boundary typically causes a degree of discomfort among one or more of the involved parties. The discomfort that the characters experience comes not only from the breaking of the boundary, but also the sudden recognition of the boundary. For instance, Enya and Jonesy may have not previously been consciously aware of the pre-existing boundary between their two bodies. Their separateness was considered a given because it had never been tested in any way. Once the boundary between their physical bodies is broken, they have no choice but to become aware of that boundary and how it impacts them.

As the film's reality begins to buckle, more boundaries become increasingly obvious through their breakage. Enya and Jonesy's defusing sequence exhibits the most intense display of boundary interplay via the chaotic melding of different animation mediums. Bringing together the mediums in the

same composition breaks the boundaries of how one might define a visually cohesive scene. The audience is presented with a visual juxtaposition of contrasting states, the attributes of which can now be more easily observed and compared.

In the same sequence, in addition to the multimedia boundaries being broken, the set is shown being blown apart. The physical walls of the environment get knocked down, thus revealing the workspace in which the film was being created. The walls of the set breaking produces an explicit narrative explanation for the visuals of the film. Until that moment, the audience might easily assume that the visuals in the film are merely aesthetic choices. However, revealing the workspace provides the audience with evidence and acknowledgement that the film is and always was intended to be a creation outside of reality. The goal of *Un-Portable!*, unlike some other films, is not to immerse the viewer so entirely that they forget they are watching a film. The purpose of *Un-Portable!* is to, instead, emphasize that it is a creation. The collapse of the set walls serves a final, distinct reminder to the audience of the boundary between reality and fiction. The breaking of this boundary, like many of the others, clarifies its own existence.

## Design concepts

The visual design of *Un-Portable!* is tightly laced with the narrative and themes of the film. There are two main concepts that informed the choices made about the overall look of the film: collage and relational design. Focusing on flexibility and diversity in both artistic medium and animation style, the collage-like appearance of the film is meant to emphasize the existence of portals in the film's universe. A loose relational design model informs artistic decision making. Relational design is very complementary to the boundary motif present in *Un-Portable!* compared to more traditional symbolic design. The term "symbolic design", for the purpose of this paper, is used to refer to design that is

motivated by the use of symbolism. Through a relational design model, focus is directed at how a design of an entity compares to the designs of those around it. The designs can also dynamically change as relationships and states change throughout the film.

## Collage

Consistent integration of different mediums on screen creates the collage-like appearance of the film. There are a few gradations in the structure of some shots, however, most of the film follows a particular structure in regard to the portrayal of multimedia. The structure involves an onion-like arrangement of layered shells, where each shell represents a different medium (fig1).



*Figure 1: Visual representation of the medium shell system.*

The first, innermost component of the structure, the characters, are portrayed via 2D hand drawn animation. The first shell, containing the characters, is their immediate surroundings which is represented by the hand-built miniature sets. This shell includes three different sets that are shown separately

throughout the course of the film: Enya's apartment, the cafe, and the inside of Polly's jacket. The next shell is the city in which the story takes place, this is represented by a 3D CGI model of surrounding buildings, streets, street furniture, and flora. These small sets were modeled by colleague Damian Thorn-Hauswirth to appear noticeably CGI and only appear through the windows and doors from inside the set. The outermost shell that appears in *Un-Portable!* is the sky, which are real photographs of the sky taken during production. The shell system helps maintain visual order in the film, while still promoting a somewhat chaotic and patchwork appearance. This patchwork appearance also serves as an environmental hint to how the existence of portals has affected the look of the in-film world. The implication is that the existence of portals allows the easy exchange of diverse materials across space and time; thus, the mixing of places, times, and realities causes matter in this world to take on irregular and inconsistent forms.

The concept of diverse and inconsistent appearances in matter informs design decisions made regarding the animation in the film. A variety of techniques contributes to the character animation to suit the mood and needs of each shot. Most of the animation is constructed from a standard pose-to-pose technique. In pose-to-pose animation major key poses are established and timed out, then motion in between key poses is detailed in the same manner. Focusing on a pose-to-pose structure allows the easy planning of dynamic and fast paced motion. However, in addition to pose-to-pose technique, animation in *Un-Portable!* also at times exhibits straight-ahead technique. Because of its spontaneous nature, the inclusion of straight-ahead animation allows for the inclusion of motion that was less predictable and refined. The straight-ahead animation is featured most frequently in the more experimental shots, especially with the stop motion assets.

To further push the diversity in appearance, model sheets for characters were given a large range of flexibility. Turn arounds were created for characters to establish a baseline sense of sizing, proportions,

and artistic style. However, the boundaries of character bodies and expressions were repeatedly pushed. The shapes and sizing of character body parts were frequently manipulated to prioritize the emotion of the scene. The flexibility needed for the character animation was the main reason why a hand-drawn approach was utilized over creating a rigged or puppet character. The diversity and flexibility in both animation style and medium regularly worked in tandem to enhance the visual collage aesthetic apparent throughout *Un-Portable!*.

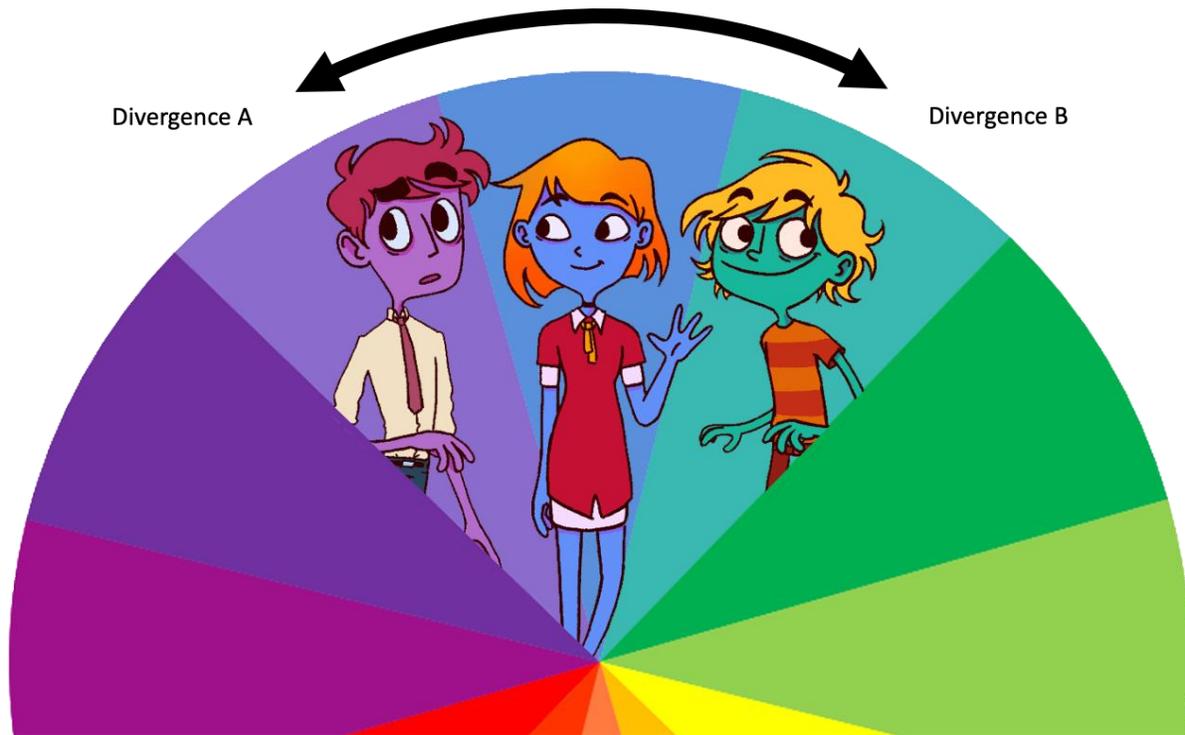
## Relational Design

Design choices in *Un-Portable!* are largely determined by a given entity's comparative relationship with other associated entities. Relational design is different from, more traditionally used, symbolic design in that it creates a dynamic and interactive relationship between an entity and its visual representation. A symbolic design choice typically has a static relationship with the entity to which it is applied. For example, a story might contain an item that has been symbolically colored black because of the color's association with death. Understanding this symbolism would require the viewer to be at least somewhat aware of a culture that acknowledges that representation. The concept becomes far less meaningful when viewed in the context of a culture that might associate a different color with death or associate the color black with something else. The relational design model in *Un-Portable!* primarily uses the relationship between on screen entities to inform design. The information needed for interpretation of the designs is largely provided within the work itself, so a cultural or regional lens is not immediately necessary to fully grasp the intent of the work. A relational model can also easily be constructed to respond to potential changes in the relationships with which it interacts. In a film like *Un-Portable!*, the relationships between various characters and settings can produce considerably diverse visual outcomes; thus, a relational design approach complements the aforementioned collage look of the

film. Additionally, because relational design and the concept of boundaries are both innately comparative, a relational design approach is more thematically appropriate than a symbolism-based approach.

In *Un-Portable!* design choices are typically determined by ascertaining where the relevant entities lay on a particular spectrum. The most salient examples of this are how the character personality spectrum interacts with color, and how the character mood spectrum interacts with motion.

In regard to color and personality, the base colors of the three main characters are all hues of blue: Polly is blue, Enya is purple, and Jonesy is Green. Blue is the baseline color for these characters because, regardless of how their hues were adjusted, they appear distinctly as unreal humans. However, the variations in their hues are determined by how their personalities compare to one another; this is quantified by where their personalities lay on a spectrum. This particular spectrum loosely compares the neurotypicality of different characters' personalities. In this case, Polly is the most neurotypical of the three; Polly reacts rationally to situations and generally does not demonstrate any extremes in her personality. Polly falls somewhere close to the center of this personality spectrum; the color associated with the middle is blue, which was thus assigned as her dominant color. Enya and Jonesy both have fairly neurodivergent personalities, however their personalities diverge from typicality in entirely different ways. Enya's personality is more dominated by obsessive tendencies and pessimism, while Jonesy's personality is dominated by blithe tendencies and optimism. So, on the personality spectrum, they are placed on opposite ends on either side of Polly (fig 2).



*Figure 2: The personality/color spectrum.*

Enya is assigned purple because it marks a deviation away from blue, towards red; Jonesy is assigned the color green because his personality deviates in the opposite direction, in this case towards yellow.

The personality/color spectrum is applied by comparing personalities across all three characters. However, the mood/motion spectrum is applied to each character individually. Whereas personality remains relatively consistent for a person, mood fluctuates more readily; therefore, the character colors remain fairly consistent while their motion styles alternate much more frequently throughout the film. The mood spectrum measures the extremeness of emotion; one end of the spectrum is low emotion, akin to calmness, and the opposite end is high emotion, akin to emotions such as intense anger, sadness or joy. Low emotionality is depicted by character motion that is more angular and proportional, while high emotionality is depicted by wilder, rubber-hose-like motion (fig 3).

Character Motion/Personality Spectrum

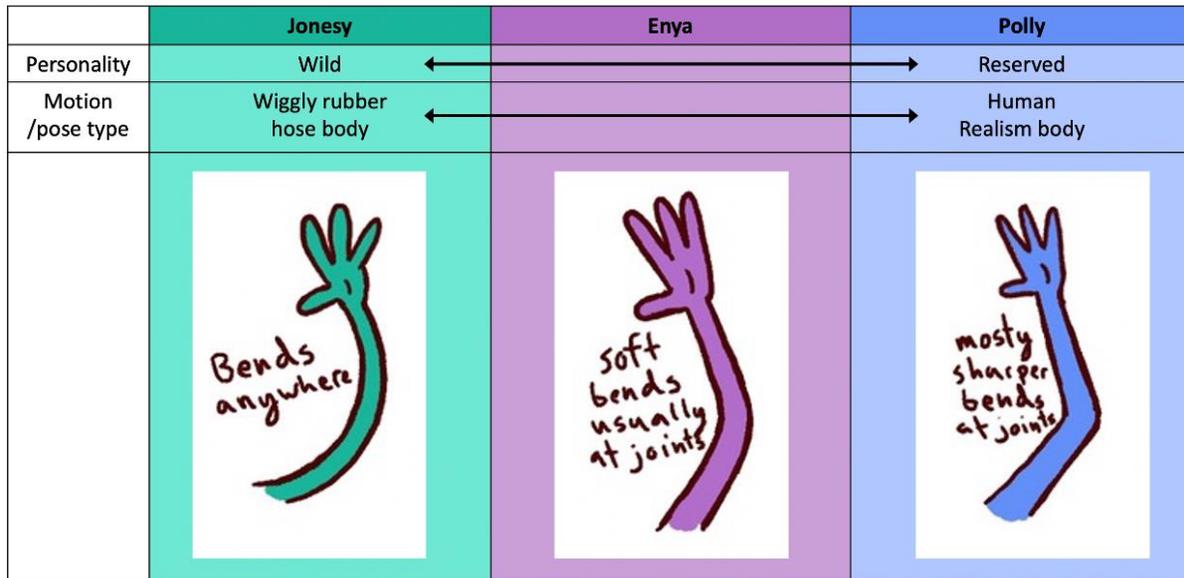


Figure 3: The mood/motion spectrum.

While the moods of characters do change regularly, each character has a different overall temperament that establishes a baseline location on the spectrum. Polly has the lowest emotionality, Jonesy has the highest, and Enya is somewhere in between. The characters will typically default to these locations on the spectrum between fluctuations.

## FILM OVERVIEW

### Plot

The film *Un-Portable!* starts off with one of the main characters, Enya, turning on the lights and entering his bathroom. The audience views Enya from his mirror's perspective as he combs his hair. As Enya is preparing himself, the second main character, Jonesy, sneaks into the bathroom with him and surprises him. As Enya recovers from the mild arrhythmia brought about by Jonesy's unexpected appearance, Jonesy informs him that his formerly broken, home teleportation device is now functional. Jonesy does not mention to Enya that he has performed these repairs himself. Despite this, Jonesy excitedly insists on trying the portal out under the assumption that it is fully operational. Enya, however, has his doubts. Enya voices his concern about the possible complications a portal mishap could have with his plans to meet up with his friend Polly later. Jonesy dismisses these concerns as unlikely and, through his usual casual confidence, coaxes Enya into the Portal with him.

The next time Enya and Jonesy appear, they groggily emerge from a cloud of smoke forming from the portal in the café where Enya has planned to meet with Polly. Enya and Jonesy are now fused together because of Jonesy's amateur portal repairs. Enya's panic is exacerbated when he notices that Polly has arrived early to their rendezvous and is currently waiting for him only a few steps away. Jonesy attempts to calm Enya down. He hastily prompts Enya to disguise their affliction by covering their fused body with a large coat hanging on a nearby rack. After concealing their bodies, Enya makes his way towards Polly with forced nonchalance. Polly and Enya attempt to engage in small talk while Enya tries his best to keep an increasingly agitated Jonesy hidden within the coat. In desperation, Jonesy grabs at Enya, disrupting his composure. Enya takes a moment to enter the coat himself and has an irritated word

with Jonesy about the disruptions. Polly quietly observes with increasing concern while Enya and Jonesy yell at each other inside the coat. When Enya finally emerges from the coat, Polly confronts him about his bizarre behavior.

As she is speaking, the feeble forces holding together Jonesy and Enya's forms begin to collapse. Various dimensions and phases of reality shift in and out as their bodies desperately contort their way to re-stabilization. The distortions become increasingly wild and violent and begin to rattle the walls of the café. The disaster culminates into one final explosion that breaks down the background, revealing the studio space in which the film *Un-Portable!* has been created.

Enya stands, stunned, naked and alone, in the rubble of the explosion as the dust clears around him. Jonesy soon pops up out of a nearby pile also naked. Jonesy approaches Enya pleased with the fact that their bodies are no longer fused together. With a big grin, Jonesy puts an arm around Enya, looks at their bodies and then out at the rubble, and remarks on how everything appears to be back to normal.

## Intent

This short film is intended as a proof concept for a serialized animated show. In the show, the audience follows the characters as they navigated various business ventures and catastrophes in different worlds and realities via teleportation technology. The character personalities and narrative implementation of mixed media drives the theory of show. The story chosen for this film samples the kinds of visual development, pacing, and comedy that would be typical of an episode. However, to maintain feasibility regarding deadlines, cost, and manpower, the story is a truncated version of what might be seen in a full-length episode. The film also reflects the creator's personal style preferences, as

well as the areas of animation they were most interested in developing professionally at the time of the film's creation.

### Stylistic Preference

The visual development of *Un-Portable!* not only revolves around emphasizing narrative and conceptual themes in the story, but it also works as a functional summary of the stylistic preferences of the creator. The aspects of the creator's stylistic preferences that are most prominently featured in *Un-Portable!* are: narrative multimedia, highly emotive/expressive character design/posing, and highly saturated color palettes. These three stylistic preferences also recur in much of the creator's personal work due to their relationship with eliciting viewer empathy.

Multimedia in the film *Un-Portable!* is purposefully integrated into the story. The film's multimedia mise-en-scène is intended to immerse viewers in the production of the film rather than immersing them in the story alone. There is a potential connection between a viewer's engagement with art and their ability to empathize with it. It is possible that experiencing evidence of the creative process in a piece allows a viewer to analyze and engage with it more critically (Brinck). Based on that assumption, one can further assume that the extent to which one can see the creative process, like apparent sketch marks, fingerprints, and markups, may have an impact on the extent to which a viewer is likely to empathize with the work. Increased evidence of creative process may correlate with a more empathic experience. Allowing the viewer to peek into the production process of a film through the film itself creates an implicitly more intimate connection than realism alone. Revealing the creator's fingerprints helps force viewers to acknowledge the human element behind the film's creation; it simultaneously entertains and educates. This is one of the reasons why hand-built sets were specifically chosen to represent the background as opposed to photographs of pre-existing locations. Building sets, especially

miniatures which will be viewed up close, provides ample opportunity to show evidence of the artistic process within the work. Wood, cloth, paper, and paint can all be easily manipulated to show the wear of how they were shaped and modified. The sets in *Un-Portable!* are filled with subtle brush strokes, cut marks, and fingerprints which all help communicate to the audience the history of their creation. The use of multimedia in *Un-Portable!* exceeds mere aesthetics, it is meant to be a conversation with the audience about the art in the film, how it is made, its connection to the story, and how the viewer reacts to that process.

Like the multimedia aspects of the film, the character design in *Un-Portable!* also feeds off the concept of audience empathy. The character design in the film emphasizes flexibility in showing a wide range of emotion. The heads of the characters are disproportionately bigger than their bodies, and the faces, eyes in particular, are also inhumanly large. The emphasis on these areas mirrors the areas of human bodies that viewers tend to focus on (Iskra et al 8-9) as well as the areas of the human body that likely give viewers the most information about emotion (M. W. Schurgin et al). The thin almost tube-like structure of the characters' bodies is small and simplified enough to not distract from the face. In fact, because the simplified body designs allow for the intuitive formation of distinct shapes, angles and curves, the body is often used to accent and draw more attention to the character's face through layout composition and shape language.

The color palettes in *Un-Portable!* are also influenced by the concept of viewer empathy, however the relationship is slightly different from the ones mentioned previously. Whereas multimedia use and character design elicit viewer empathy, the color choices, in a way, repress empathy. For instance, reds and yellows are explicitly avoided when choosing colors for main character skin tones because they tend to be some of the more dominant colors in natural human skin tones. The characters are

meant to resemble humans but to appear distinctly alien from them. Reds and yellows are instead used to guide the colors of the background sets which helps amplify the feeling of artificiality in each shot. The unnatural colors provide a subtle reminder that this film is not meant to be a depiction of reality. Drawing attention to the unreality of the film helps bring focus back to the main sources of empathy mentioned earlier, stylism and craftsmanship.

### Professional Development

*Un-Portable!* was created during a shift in the creator's professional focus. A migration was being made from technology-focused professions to ones centered around storytelling and artistic development. The film was created not only as a vehicle of artistic statement, but also a demonstration and documentation of current skill level in various areas of personal interest regarding animation production. The creation of *Un-Portable!* centered around two main areas of interest: storyboarding and production design.

Storyboarding and animatic development was an instrumental part of developing the film. The first full script was written in thumbnail storyboard form, where the boards mainly centered around emotional pacing and transitions. From there additional aspects were continually added in the subsequent drafts to further accent the main emotional timeline. Because much of the emotional communication in *Un-Portable!* is integrated with the timing of dialogue and motion, the storyboards were predominantly edited in animatic format. The animatic boards typically contained multiple layers so that motion of characters and props across backgrounds could easily be finessed. Editing boards temporally provides the information needed to fine tune timing while maintaining overall cohesion.

*Un-Portable!* also provided multiple opportunities in which to demonstrate various elements of production design. Special attention was paid to crafting, characters, environments, and visual styles that all complemented each other's narrative. Because one of the film's driving forces is character emotion, the design process started with the characters. Characters were initially created to visually portray their respective personalities. The visual portrayal of settings and story were then built around what the characters looked like. Repeated revisions were then made to all visual aspects to further cement their visual cohesion.

## Characters

The characters featured in *Un-Portable!* include Enya, Jonesy, Polly, and a handful of café patrons and staff (fig 4).



Figure 4: The characters of *Un-Portable!* from left to right: Jonesy, Enya, Polly, three Café employees, seven café patrons.

The three main characters are college students who are nearing graduation. This season of life reflects the flexibility of the demographics and life paths that it can represent. For the city in which the film takes place, the college is a central fixture. The designs of the patrons and staff reflect this as well. College also represents a tumultuous turning point in many individuals' lives. The perceived finality of the choices made during a person's college career can feel intimidating. The gravity that one might feel when

determining the potential path for the rest of their life served for an apt backdrop that complements the anxiety in film.

Enya's anxiety stems mainly from his uncertainty. He recognizes the chaos and transience of the world around him and attempts to account for and control it. Jonesy in many ways is a foil to Enya; Jonesy recognizes that same chaos but embraces and sometimes even seeks to cause it. Conversely, Polly, while exhibiting her own quirks, represents a more stable baseline personality.

The interpersonal character dynamics reflect the stylistic layering of artistic mediums mentioned previously. The primary way this is implemented is via a recursive "double act" dynamic. The double act has roots in the British Music Hall tradition (Roberts 1), and usually features two individuals who play off each other, one of which usually assumes the role of the "straight man". The characters in the double act often act as a foil to one another, emphasizing certain traits of the other by displaying the opposite. The double act routine is a prominent comedy structure throughout the show *Blackadder*, especially the fourth series *Blackadder Goes Forth*. The double act routines in *Blackadder* typically play off varying character inequalities regarding attributes like intelligence, wealth, and affability. This is most often acted out among the three main characters, but is also common among the supporting characters as well. The following dialogue is taken from the episode *Major Star*, in which Captain Darling is helping General Melchett prepare for his date with Georgina.

MELCHETT. God, it's a spankingly beautiful world and tonight's my night. I know what I'll say to her. 'Darling...'

DARLING. Yes sir?

MELCHETT. What?

DARLING. Um, I don't know sir.

MELCHETT. Well don't butt in! 'I want to make you happy, darling'.

DARLING. Well, that's very kind of you sir.

MELCHETT. Will you kindly stop interrupting? If you don't listen, how can you tell me what you think? 'I want to make you happy, darling. I want to build a nest for your ten tiny toes. I want to cover every inch of your gorgeous body in pepper and sneeze all over you.'

DARLING. Really sir! I must protest!

MELCHETT. What is the matter with you, Darling?

DARLING. Well, it's all so sudden. I mean the nest bit's fine, but the pepper business is definitely out!

MELCHETT. How dare you tell me how I may or may not treat my beloved Georgina!

DARLING. Georgina?

MELCHETT. Yes, I'm working on what to say to her this evening!

DARLING. Oh yes! Of course. Thank God.

MELCHETT. Alright?

DARLING. Yes, I'm listening, sir.

MELCHETT. Honestly Darling, you really are the most graceless, dim-witted bumpkin I ever met.

DARLING. I don't think you should say that to her.

This scene exemplifies the play off of two inequalities between the characters. Melchett plays straight man to Darling's conversational obliviousness, and Darling plays the straight man to Melchett's eccentric romantic proclivities.

*Un-Portable!* continues this humor structure by layering the double act routine among all characters in the film. The first layer is Enya as the straight man to Jonesy. Jonesy's behavior and presentation is more whimsical, a quality which is highlighted by Enya's more pragmatic way of navigating situations. The next layer groups Jonesy and Enya's interactions together, which is counteracted by the even more emotionally pragmatic Polly acting in the straight man role. Then finally Jonesy, Enya, and Polly's interactions are counteracted by the completely unremarkable patrons in the café around them, who act as the final outermost straight man layer.

## Setting

In *Un-Portable!*, it is assumed that portals are so commonplace to the point where they are marketed as consumer goods. Portal technology, in the film's universe, exists in a competitive market; much like phones in the real world, individuals can buy high-end, brand name portals like the one featured in the Café. They can also buy budget models or kits which are considerably less expensive, but also tend to be clunkier and less user friendly, like the one featured in Enya's apartment (fig 5).



*Figure 5: Comparison of the café portal (left) and Enya's portal (right) in Un-Portable!.*

Enya's apartment features a budget portal that came built into his apartment. Enya's portal features multiple separate components with exposed wires and electrical elements. Additionally, the portal exhibits significant wear and design elements reminiscent of pre-smartphone era transitional technology like antennae, old fuse bulbs, and a paper local directory as well as a personal note of commonly used coordinates. This appearance is considerably different from the sleek, minimalist design of the portal in the café. Portraying Enya's portal as founded in comparatively outdated technology helps establish the perception of Enya as a low-income college student. Enya's apartment was purposefully made to look small and relatively mismatched with humble, hand-me-down looking items to help visually balance the fact that he can afford to live alone (fig 6).



Figure 6: The set used for Enya's apartment in *Un-Portable!*.

The mismatched items also include small artifacts connected to his friendship with Jonesy since he would most likely be Enya's most frequent visitor.

The theme of mismatched items continues into the design of café as well (fig 7).



Figure 7: The set used for the Café in *Un-Portable!*.

The café is run and staffed by several local college students and the items chosen for this setting reflects their diversity and resourcefulness. This along with the contiguous color scheme of both sets also helps subtly imply the café's relatively proximal location to Enya's apartment. Enya's apartment is actually within walking distance of the café, which partly accounts for Enya's hesitance to use the portal at the beginning of the film. The Café in *Un-Portable!* is situated on a colorful shopping parade which can be seen outside the café window behind Enya (fig 8).



*Figure 8: 3D CGI shopping parade located outside of the Café in Un-Portable!.*

The parade is loosely based off one on Park Street in the Five Points neighborhood of Jacksonville, Florida. Five Points' proximity to college campuses and residential areas makes it an ideal point of inspiration for the film. Jacksonville also is home to a diverse range of architecture and influences that complement the chaotic collectiveness of the film's visual elements.

At the end of *Un-Portable!*, the sets used to make the film's backgrounds fall apart. This reveals the "real world" in which the film had been created. This ending sequence takes place in the creator's graduate workspace (fig 9).



*Figure 9: The graduate workspace featured at the end of Un-Portable!.*

The workspace is decorated with mementos from various projects and occurrences from the three years the creator spent in the graduate program. These clusters of background objects in the workspace carries the visual theme of chaotic mismatching through to the film's portrayal of reality.

## METHODS

The production pipeline for *Un-Portable!* had to be specially tailored to address several different unique challenges. The pre-production stage involved an intensely conversational interaction between storyboarding and set design. This was necessary to develop an effective plan in which the built assets were both functionally reusable and could also be completed within the established deadline. Creating assets during the production stage involved several iterations of prototypes to test out fabrication methods. Cardboard stand-ins were made during construction to help maintain the cartoon proportions of the sets. The same stand-ins were used again while photographing the backgrounds to help simulate character layout, and to provide a guide for size consistency during animation. Rough animation also had to contain enough detail to inform creation of multimedia effects so that there was enough flexibility to adapt to different means of experimentation. Because of the large amount of multimedia animation, post-production compositing was often integrated with the production stage. For shots that had a heavy amount of experimental aspects, compositing was often done directly alongside the creation of the assets. The improvisational nature of many of the experimental processes required a considerably flexible pipeline. This way, unexpected outcomes could be easily worked into shots, and the building of subsequent assets could easily respond to those already created.

### Pre-production

To most efficiently create the sets needed for *Un-Portable!*, it was necessary to know what areas of each room were visible in each shot. Likewise, to create effective and accurate storyboards, it was necessary to understand the layout and limitations of each room. This meant that both the sets and storyboards had to be planned at the same time. The story and pacing would be established via the

storyboard, then the angles in the boards would be tested out by building a quick to-scale cardboard prototype (fig 10).



*Figure 10: One of the cardboard set prototypes for the café set used in Un-Portable!.*

Testing involved attempting to replicate the shots in the storyboards through photography of the prototype; the set could then be expanded or truncated to match the needs of the boards. The testing process would also reveal shots that would be too cumbersome in regard to building assets or maneuvering the camera; these shots could then be reboarded to create a more accommodating sequence.

Storyboards were, for the most part, edited directly in animatic form. Working in animatic format allowed for the easiest development and refinement of the story's pacing, color palette changes, comedic timing, and acting. The animatic was first aligned with placeholder audio which included a dialogue track read by the creator, and temporary music to mark the mood and beats of each scene. The placeholder audio was created entirely by the film's creator and provided enough information to approximate the film's layout and editing beats during development until the final audio was ready to be implemented. Final recordings by voice actors and original music were eventually created for the film, after which the bulk of the production stage began.

## Production

Once the general layout measurements and all camera angles in the film were established, construction of the final set began. Cardboard stand-ins of Jonesy and Enya were created for comparison during the construction of sets and props. The stand-ins were on-model, to scale cut-outs of the characters so that the shapes and measurements of props and set features, like doorways, windows, and stairs, would complement the proportions of the characters. The characters in *Un-Portable!* were not designed with realistic human body proportions; therefore integrating them with backgrounds that were based on realistic human body proportions was not stylistically ideal. For example, because of the narrow, lankiness of the characters, a standard apartment door would look far too wide when they stand next to it. The cardboard stand-ins allowed for informed sizing estimations to keep the backgrounds looking consistent both throughout the set and against the characters.

Because *Un-Portable!* was created as a proof of concept, the assets for the film were created with this intent as well. Sets were built modularly to accommodate future projects and additional camera

angles if needed. The two main sets, the apartment and the café, were built out of wood; the thickness of the walls was 1/8 inches and that of the bases was 1/4 inches to help ensure stability. Thicker walls would have provided more stability but were sacrificed to stay within the materials budget. After the base was cut into shape, a 1/8 inch thick groove was cut into the base where the walls were to be placed. A 1/4 inch tall beam was then placed on the top of the base around the sides of all the grooves. These beams served two main purposes: They decreased wall wobbling by effectively deepening the groove; they also served as set decoration because they were painted as baseboards for the interior. A second wall stabilization method was implemented involving small guiding boards placed on the outside corners of the set accompanied by a set of adhered pegs. The guiding boards ensured that the walls sat in the correct area of the groove relative to the other walls. The pegs were put in place so that rubber bands could be wrapped around them thus applying pressure on the corners which eliminates corner gaps and serves as a method for all walls to support each other. The guiding board and pegs system was used instead of an external buttress system to reduce the footprint of the set and keep it within the limitations of the available work spaces (fig 11).



*Figure 11: Outside corner of the apartment set featuring modular walls being held in place by base-grooves, beams, pegs and guiding beams.*

The one background that was not created from wood was the interior of the coat that Enya wears in the Café. This background was used in the scene where Enya pulls his head inside the coat to berate Jonesy for his disruptive actions. This set consisted of sewn fabric adhered to a lampshade. First a thin cotton base was cut into a 3.5 foot x 2 foot rectangle. Cotton bedding was then pinned in place with pink elastane fabric to the base to mimic the voluminous appearance of a quilted jacket. All three layers were

then sewn together via parallel straight stitching lines 3 inches apart. The stitching lines were also in place to mimic the puffy segments of a quilted jacket.

After the fabric had been sewn together, it was attached to a recycled lampshade that would hold the material in the correct shape to replicate the jacket's inside. The fabric was wrapped around the inside of the shade and held in place with clothes pins (fig 12).

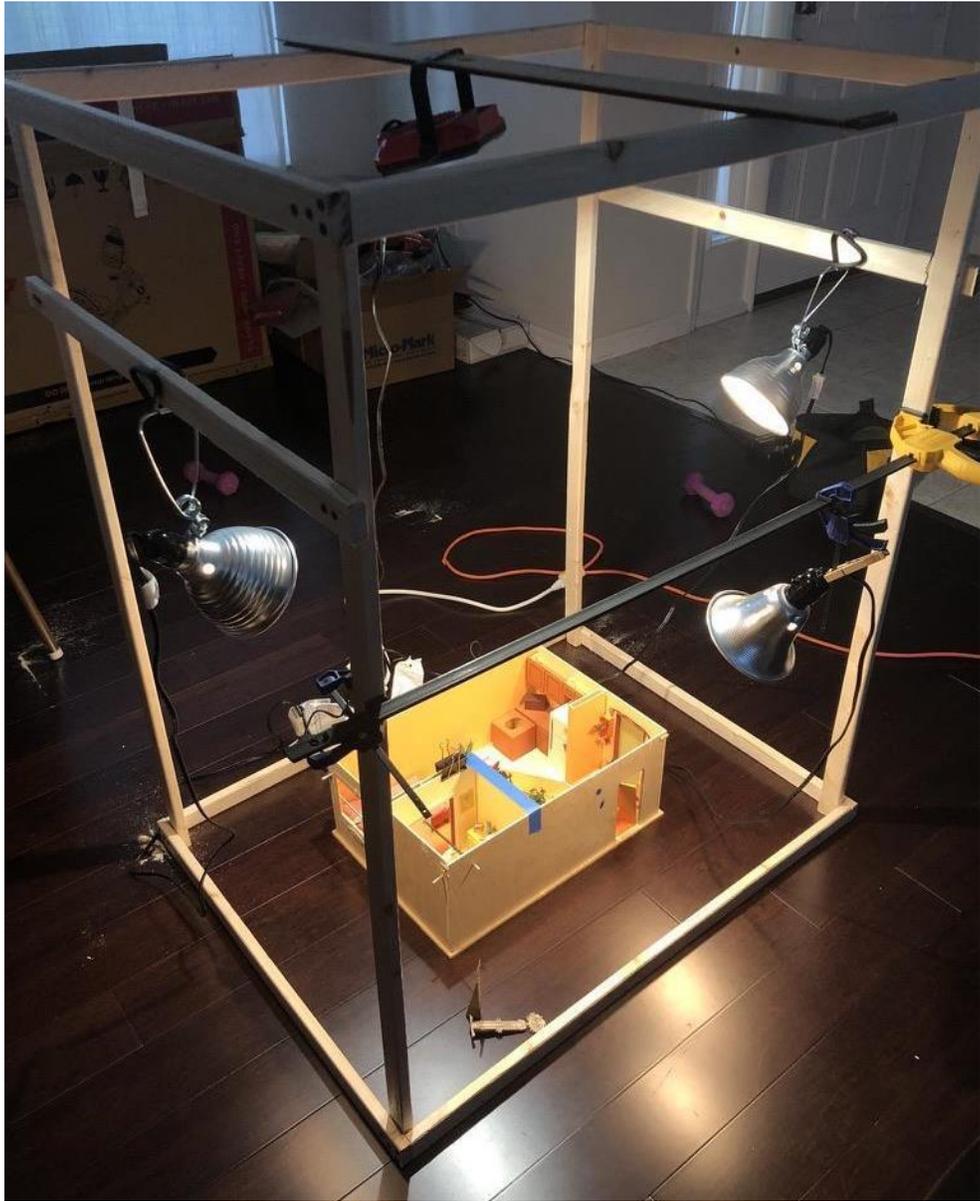


*Figure 12: Jacket fabric attached to lampshade without clothespins.*

This attachment needed to be temporary so that the material could be reused for other angles and foreground assets. The material was bunched together at the spider of the shade so that it would be hidden behind the characters' heads when they were drawn in. Because of the ambiguous landscape of the

background, and the fact that characters would not be required to navigate the space in any complicated way, the stand-ins were not required for the construction of this set.

Once the sets were complete, a list of necessary camera angles was derived from the master shot list. Based on this list, similar angles were scheduled together for convenience of shooting. Shots in the apartment site had several different photographic passes that were taken due to there being several different lighting sources in the set. A wooden 39 x 29 x 48 inch scaffolding was built to enclose the set to which lights could be attached, this allowed easier control over maneuvering lighting sources (fig 13).



*Figure 13: Wooden scaffolding with attached lights set up for apartment set.*

The lighting sources that needed to be controlled were the bathroom light, the bedside lamp, the floor lamp, and the window. For each relevant light in a shot, a photograph of the light source alone needed to be taken in addition to the neutral lighting. For example, a shot that included a view of both the window and the bedside lamp would need three lighting passes: one photograph of the set with only the window

light, one with only the bedside lamp, and finally one with the default overhead lighting needed for basic illumination of the set. These photos all had to be taken at the exact same angle with the exact same scene arrangement so they could be overlaid successfully later during post production.

In addition to the lighting passes, there was also a stand-in pass taken for every shot that contained a character. The same character stand-ins from construction were used again to help simulate character layout, and to provide a guide for size consistency during animation (fig 14).



*Figure 14: Compilation of different passes taken for one of the apartment shots. Listed from left to right, top to bottom: neutral lighting pass, stand-in pass, window lighting pass, floor lamp lighting pass.*

When a scene called for dynamic character movement, such as a character moving from the background closer to the foreground, sometimes several photographs would be taken of the stand-in at different locations to help further specify changes in size.

In between photographing the backgrounds, rough animation was started on shots for which background photography had already been completed. Rough animation was executed using the animation software Toon Boom Harmony. The neutral lighting pass, the stand-in pass, and the audio for the shot were imported into the Harmony scene to inform the layout, acting, and movement of the character animation. Shots with the same background were often done in the same file to maintain consistency in how characters looked across similar scenes. 2D rough animation was also done to guide execution of much of the stop motion and other experimental animation assets.

The rough animation stage was completed first, for as many shots as possible; this accommodated the identification of potential issues with overall flow, layout, and continuity and minimized revisions needed in the following stages. Conscientious and consistent project management like this was essential for the execution of *Un-Portable!*, particularly because a large portion of the film was experimental. Many techniques used in the film had not been previously attempted by the creator and hence carried with them many unknowns in their feasibility. Thus, during production, time spent on different tasks was meticulously recorded and categorized so that average time per frame could be determined for each task. The average times were then used to predict how much time was needed for remaining tasks. This enabled a continual adjustment of workflow and scheduling to fit the needs of the project. The schedule for shot production was arranged with several different built-in contingency plans for completion. Shots were prioritized largely based on their narrative importance; this way, if needed, uncompleted shots could be omitted at the end and have minimal impact on the viewer's experience of the story. The production of multimedia assets was prioritized based on the potential difficulty of execution.

Set times were established for testing different experimental mediums; this helped determine if the look of the medium was right for the film, and it also helped determine a rough estimate of the effort and time needed to integrate it into production. The stop motion and experimental mediums were largely delayed until the majority of 2D cleanup was completed. This schedule was in place because the experimental media could be replaced with a 2D substitution if it was needed. Creation of stop motion and experimental assets required a considerably longer amount of setup time compared to 2D animation assets. The 2D workflow and expectations were considerably more concrete than much of the uncharted territory being explored for the experimental effects.

The experimental portions of the film were mostly done using the stop motion software Dragonframe. The multimedia segments discussed in this section are listed in the order they appear in the film: paper drawings, bead stop motion, polymer clay stop motion, thread stop motion, body photography stop motion, puppets, wet paper, Lego/found objects, historical animation references, and the set explosion segment.

For the paper drawings segment, the rough animation frames for the shot were printed out on college-ruled, loose leaf paper. The printouts were then hand colored in with crayon in a loose scribble pattern that varied noticeably for each frame. To add to the chaotic feel of the paper, the printouts were then ripped by hand so that borders of the paper would appear to expand and contract with the animation. The camera was set up in a downshooter position and pointed at a glass panel with a bluescreen surface underneath the glass. The glass panel allowed the easy movement of items without disturbing or destroying the bluescreen. The transparency of the glass also enabled movement of the entire arrangement at once if needed. Dragonframe was used to overlay the animation with the input from the camera so that

the images on the paper could be aligned correctly with the rough animation in the scene. Each drawing in the segment was photographed and then the bluescreen matted out in Toon Boom Harmony (fig 15).



*Figure 15: Frame from the paper drawings segment.*

In the same shot the bead stop motion effect appeared. The color of the beads was limited, so beads were grouped into large color clusters that represented different aspects of the animated characters. Yellow represented Jonesy's skin, blue represented Enya's skin, red represented their coat, and cyan represented their shoes. These frames were photographed in a manner similar to that in the paper drawing effect. The colors were then edited digitally to match the actual colors of the characters. Each frame in this segment was also photographed and then matted in Toon Boom Harmony (fig 16).



*Figure 16: Frame from the bead stop motion segment.*

The following shot featured the polymer clay stop motion effect. Instead of creating a standard character rig, the clay was sculpted directly onto the surface of the glass panel. The resulting effect resembled a relief sculpture protruding towards the camera from the glass panel, as opposed to a free-standing clay figure. This was again done by matching up the camera input with the rough animation frames using Dragonframe. Because colored polymer clay easily smudges together when sculpting, white clay was used, and color was added digitally via an animated overlay later after matting. This kept the color of the character legible and easier to control while still retaining the impression and texture of the polymer clay (fig 17).



*Figure 17: Frame from the polymer clay stop motion segment.*

Shortly after the CGI effect, the thread stop motion effect appeared. The thread effect was animated in a similar fashion to the bead effect. Large color groups of thread were photographed, via downshooter camera using Dragonframe, responding to the movement of the rough animation. The thread was then recolored digitally to correspond with the colors of the characters. However, because the shape of the thread was considerably less solid in appearance than most of the neighboring animation effects, loose animated shapes were made to overlay the effect and tie it in with the rest of the surrounding visuals. Light linework for character faces and edges of the character bodies was also overlaid to encourage a loose point of focus of visual continuity.

The stop motion techniques in the previously mentioned effects were again utilized for the body photography effect. Dragonframe was used to align the 2D rough animation frames with photography of

the creator's arm. Photographs of the arm were then matted and colored digitally to match the skin color of the character Enya. Additionally, a pulsating vein was hand-animated on the arm in the Jonesy's skin color for a dramatic and visceral representation of the characters' fused state (fig 18).



*Figure 18: Frame from the body photography segment.*

The following shot featured footage of the main characters as puppets. The puppets were created by covering carved styrofoam cores with a layer of shaped, open-cell upholstery foam. The foam then had fabric and accessories glued and sewn to it to represent various body features. The arms of the puppets were made from long sewn tubes of fabric that were fitted around thin strips of foam. The arms were attached to the edges of the arm hole on the bottom of each puppet head. The bodies of the puppets were essentially sleeves made to look like the clothing of the characters. Jonesy's body sleeve was a normal shirt sleeve that was simply painted with stripes. Enya's body consisted of the front and collar of an old button up shirt; the back and sleeves were cut off the shirt and this area was then sewn closed. A small

cuff made of Enya's skin fabric and some elastic strips was also made to wear on the wrist under the body sleeve so that the skin color of the operator would be concealed. Operating the mouths and heads of both the puppets occupied both hands; so, to accommodate movement of the arms during filming, the puppets were suspended in the air by several pieces of string and kinked wire attached to a long bar. Hanging the puppet arms from the bar allowed them to move in response to the flailing head and bodies, thus only requiring one operator. The puppets were filmed on an iPhone X in front of a green screen which was later matted out.

The puppet effect quickly transitioned into the wet paper effect. This effect involved soaking clumps of colored tissue paper and squishing the clumps around on the glass surface. The original tissue paper used was red and yellow to ensure easy matting from the bluescreen. Like several of the previous effects, the tissue paper was also recolored digitally to correspond with the colors of the characters. This effect was also shot via downshooter camera and overlays using Dragonframe. Similar practices were utilized in production of the Lego and found objects effects. A Lego face was built with three separated moving areas: the head, the eyes, and the hair. Because of the difficulty of generating squash and stretch effects in close up images of Lego, secondary action on the eyes and hair was emphasized to keep the motion feeling bouncy and cartoony. Behind the Lego, pieces of string were manipulated to move in a helix pattern (fig 19).



Figure 19: Frame from the Lego segment.

The shot following the Lego effect contained two references to animation history. Jonesy and Enya at first morphed into a figure that was visually similar to the protagonist of Emile Cohl's *Fantasmagorie*. The character animation appeared as white outlines over a grainy darkened background that encompasses the figure; this visual emulated the negative film upon which *Fantasmagorie* was shot. Reference to *Fantasmagorie* was chosen specifically because it was one of the earliest, well-known, instances of hand-drawn animation; *Fantasmagorie* also had a strong theme of transmogrification which was particularly relevant in the defusing sequence. After the Emile Cohl effect, Jonesy and Enya fragmented into small pieces and then reassembled into a looping animation that was executed via a digital phenakistoscope. The phenakistoscope was chosen because of its historical significance as a pre-film, moving image device. The end of the shot featured the phenakistoscope crumpling up into a ball and emitting a fluctuation of light that segued to the explosion segment.

The set explosion segment was the most complex segment in the film, largely due to the substantial amount of assets involved. The segment consisted of two shots and involved roughly 31 stop motion elements. This number did not include the stray aesthetic assets like the sand or button effects that were created via the downshooter camera.

The first of the two shots in the segment was a wide shot of the set exterior. The entire set was shown as well as the workspace in which it was located. This shot depicted the pre-explosion action during which material was sucked in towards the set, then the beginning of the explosion action during which material was expelled out the top of the set. Depiction of the explosion in this shot involved stop motion animation of the exterior of the set. The walls and base of the set were too large and heavy to be easily maneuvered by the available rigs. Instead, a to-scale miniature of the set was built. The four walls and base of the miniature set all fit together and came apart in the same manner as its larger counterpart. Wooden handles for the rigs were glued on to the sides of the model's components that were pointed away from the camera. Rig arms were used to position the miniature set components in the air while photographing it in front of a blue screen. The footage of the miniature set was then keyed and superimposed over a photograph of the workspace from the same angle. Photographs were taken of both the miniature and full-size set at the same angles; the photographs of the full-size innards were then superimposed onto the footage of the miniature set. This allowed the set to look complete, but not require the construction of additional, intricate assets like the staircase and furniture.

The second shot in the explosion segment was a close up shot of the top of the set as material from the inside, including Jonesy and Enya, were thrown up into the air (fig 20).



*Figure 20: The first and second shots in the explosion sequence.*

For this shot, the walls of the full-size set were used instead of the miniature. The full size walls were chosen primarily because only the tops of the walls are shown in the shot, and therefore the walls did not have to be lifted from the work surface while shooting. Instead, clamps and various blocks of wood were used to hold the walls in position while shooting. Additionally, the full-size walls were chosen due to the shot being a close up shot; differences in details and scale of texture would be more noticeable if the miniature was filmed in a close up shot. The items that come out of the set were also the original full size items. The stop motion animation for each item was shot separately in front of a bluescreen using rig arms and Dragonframe. Components were placed in the scene immediately after shooting so that the next item being photographed could visually respond to the updated layout of the composition. Four stop motion paper balls were also animated flying in and out of the set to help solidify the overall movement of the explosion. Additional experimental artifacts were filmed with the downshooter camera over a bluescreen to add in as needed. These artifacts included three button trails, in which buttons and small objects were animated traveling in arcs with each frame displaying a new button of increasing and then decreasing size. There were also three sand bursts, in which a small pile of sand was shot increasing in size and then dispersing radially.

With all the segments mentioned, additional visual artifacts were added to the peripherals of the main action. The artifacts generally consisted of smaller, abstract items including materials made from the variety of displayed animation techniques in the film. These include things like buttons, shells, beads, sand, paper, string, and simple 2D and 3D shapes and lines. These were largely done via straight ahead animation to help add to the chaos of each shot. In each shot, much of the experimental assets were tied together with 2D animation. The 2D frames were also spliced into the shots at sporadic intervals and on different layers which created a choppy and turbulent impression. 2D animation was used to create artificial smears and blend transitions between the assets shown on screen. The intense mixture of animation mediums, styles, and effects were implemented with the primary intent of enhancing the visual chaos of sequence.

## Post-Production

The post-production stage roughly encompassed two types of tasks: Compositing and sound engineering. Compositing included assembling all the production assets into their respective shots while fine-tuning elements like color, layout, and timing to further aid the overall appearance and flow of each shot. Sound engineering in this stage included composing background music, producing foley, and correcting abnormalities in the dialogue recordings. Some of these tasks were spread out over both the production and post-production stage; this mostly occurred in shots that contained particularly intricate compositions, or narratively relevant sound design. However, the bulk of compositing and sound engineering was completed after the bulk of the production stage was completed.

## Compositing

Every shot in *Un-Portable!* required some degree of compositing. During production a rough draft composite, usually created using Toon Boom Harmony, was assembled for the purpose of guiding layout and animation. This rough draft was typically rendered in low resolution and contained only backgrounds, interactive props, and character animation. These rough compositions were later used in post-production as guides for the final composition. For most of the shots, the final compositing process usually started with background color correction. Each of the four sets had one reference photograph to which the contrast and brightness of the other background photograph was matched using Photoshop. The adjusted background photos, along with any other assets like separate props or animation, were then brought into Nuke for compositing. The basic framework for the node structure used in most of the shots was based around a framework designed by colleague Damian Thorn-Hauswirth. This framework provided further control of aspects in the shot like, color grading, blur, lighting, and scenery integration for window views.

Nuke was also used for the fine tuning of multimedia integration. In each shot, photography and 2D animation had to be married intuitively. Additionally multimedia prop interaction and background elements were included to further immerse the viewer in the film. Multimedia integration mainly took place through three different methods. The first method involved generating assets separately, typically in front of a green screen, and then matting those images into the shot. This was commonly used for stop motion and experimental assets that would appear primarily in the foreground of the shot and/or had particularly complex motion to animate, for example: Enya's comb in the opening shot and the flying furniture in the explosion shot. The second method involved generating assets that were composited onto a green screen that was built into the set itself. This was used for items on the set that had flat surfaces that displayed some sort of motion, for example: the digital clock and television in Enya's apartment, and

the portal doorways. The final method involved animating assets in the background photography itself. This method was reserved for very simple prop movements where a character would either not directly touch the prop, or the contact with the prop could be easily obscured, for example: the shot which contained a coat rack falling over after a jacket was removed from it, small chair and table movement during dialogue, and close-ups of the set wall movements. This method was chosen, when practical, because it retained many visual elements like shadows and reflections. Capturing these elements as part of the background photography reduced the amount of adjustments needed in compositing to integrate assets seamlessly.

## Sound Engineering

The sound in *Un-Portable!* was intended to augment the visuals of the film. Because of this, much of the sound was finalized after the visuals. Post-Production sound engineering consisted of three main tasks: composing music, adding sound effects, and cleaning dialogue tracks.

Initially, temporary music was used during the early stages of production and planning to highlight emotion and pace changes in the story. Music was also used to mark location changes, so three different songs were chosen for the three locations in the film. The temporary song used for the first location, Enya's apartment, was Duke Ellington's "The Dicky Glide"; the temporary song used for the second location, the Cafe, was "Label Maker" by Redshirt Theory. The final temporary song, "skate" by Popcorn10, was used for the workspace shown at the end of the film and the credit sequence. These songs were all replaced by music composed and recorded by the creator of the film using Garageband and Logic Pro.

The music and sound effects were designed to complement comprehensibility of the preexisting dialogue tracks. The interplay between dialogue and character acting was crucial to successful delivery of comedic moments in *Un-Portable!*. To ensure its clarity, the dialogue track was checked for inconsistencies that might be confusing or distracting to the audience. All dialogue tracks were first set to a baseline volume to check for variances in consistency and quality of recording. The equalizer in Logic Pro was then used to eliminate any detectable plosives, handling noises, or background interference. Once the dialogue track had been cleaned of imperfections, volume and effects were manipulated to respond to the relevant environmental information conveyed in the film. For example, one of the sequences featured Jonesy and Enya arguing inside Polly's coat. This sequence contained shots of this interaction from the inside of the coat as well as shots from the outside. For shots inside the coat, the dialogue track was played at a volume that was slightly louder than the default volume, which implied that the viewer was near the characters. However, for shots outside of the coat, volume was lowered and muffled to help imply that there was a barrier and increased distance between the audience and the characters. After the dialogue track was adjusted, several reviews of the film with all the adjusted audio tracks were conducted to check for coherence and legibility and intelligibility.

The final audio featured a collection of contrasting sounds and instruments to further complement themes of boundaries and collage. The music was written to muddle genres and sound effects were often generated by disparate sources. Instead of using a sound effect library, effects were personally generated and recorded to further retain the unique ambiance of the film. Foley was created for all diegetic sound including impact sounds, like objects falling or colliding, and ambient noise, like cafe chatter and television noise. Additional artificial sounds were also used at times especially during scenes when the portal was featured. Oscillating low frequencies, buzzing, and high pitched ringing sounds were

associated with the portal to imply electronic malfunction, and to give the scenes a mildly apprehensive accent.

## CONCLUSION

The film *Un-Portable!* follows Jonesy and Enya as they navigate a world filled with fragile boundaries that are defined through their breakage. The boundaries explored in the film are diverse in their conceptual physicality as well as how they are represented visually. Visual representations of boundaries include extensive use of collage, with a particular focus on mixed media. Relational design also dominates the visual direction of the film, placing emphasis on how the entities in compositions compare to one another rather than what an entity or design might symbolize. The use of collage and relational design are inherently comparative approaches in that they depend on the relationships between the entities they contain. This makes them apt approaches for the exploration of boundaries which is also inherently comparative.

In addition to exploring boundaries, the film serves as a proof of concept for the writing, art style, and production methods involved. The sets and props in *Un-Portable!* are modular; thus, assets can be easily integrated into future projects to expand the film's universe and provide more opportunities for rich, narrative, multimedia integration.

The uniqueness of *Un-Portable!* muddles the boundaries between experimental and traditional design and storytelling in animation. Closer observation of the way in which boundaries impact how individuals process and navigate the world may lead to a richer understanding of those complexities. This is particularly relevant for storytellers and designers, in that deep understanding is a critical element in effective communication.

## REFERENCES

- Baken, Jon. *skate*. Bandcamp. <https://popcorn10.bandcamp.com/track/skate>
- Burris, Christopher T. & Branscombe, Nyla R. *Distorted distance estimation induced by a self relevant national boundary*, 2005. *Journal of Experimental Social Psychology*. 41. (305-312)  
<https://doi.org/10.1016/j.jesp.2004.06.012>
- Brinck, I. *Empathy, engagement, entrainment: the interaction dynamics of aesthetic experience*. *Cogn Process*, 2018. 19, 201–213. <https://doi.org/10.1007/s10339-017-0805-x>
- Ellington, Duke. "The Dicty Glide." Jubilee Stomp. BMG. 1992. CD
- Fantasmagorie*. Directed by Émile Cohl, 1908.
- Iskra, Andrej & Gabrijelčič, Helena. *Eye-tracking analysis of face observing and face recognition*. *Journal of Graphic Engineering and Design*, 201 2. 7. 5-11. 10.24867/JGED-2016-1-005.  
[https://www.researchgate.net/publication/321232370\\_Eye-tracking\\_analysis\\_of\\_face\\_observing\\_and\\_face\\_recognition](https://www.researchgate.net/publication/321232370_Eye-tracking_analysis_of_face_observing_and_face_recognition)
- Jones, Aaron. *Label Maker*. Bandcamp. <https://redshirttheory.bandcamp.com/track/label-maker>
- Lamont, Michele and Virag Molnar. *The Study of Boundaries in the Social Sciences*. *Annual Review of Sociology*, 2002. 28:167-95
- "Major Star." *Blackadder*, created by Richard Curtis and Rowan Atkinson, season 4, episode 3, BBC, 1989.
- M. W. Schurgin, J. Nelson, S. Iida, H. Ohira, J. Y. Chiao, S. L. Franconeri. *Eye movements during emotion recognition in faces*. *Journal of Vision*, 2014;14(13):14. doi:  
<https://doi.org/10.1167/14.13.14>
- Roberts, Andrew. *The Double Act: A History Of British Comedy Duo*. Stroud, Gloucestershire, The History Press, 2018.