Connections Between Voice and Design in Puppetry: A Case-Study

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CONNECTIONS BETWEEN VOICE AND DESIGN IN PUPPETRY: A CASE STUDY

by

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B.S. Indiana University of Pennsylvania, 2000

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

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ABSTRACT

Puppets have been entertaining, educating, and mesmerizing American audiences since the birth of our nation. Both in live theatrical events and TV/film, audiences have watched puppeteers bring their puppet characters to life with clever voice quality choices, unique characterizations, and vivid visual designs.

This thesis is a case study that first borrows insight from cartoon character designers, animators, and voiceover actors to provide considerations for voice quality choices, characterizations, and design elements when creating a new puppet character. It then investigates the connections that exist between those three elements once a puppet is fully realized. In order to identify these connections, a test was developed in which participants were asked to use a set of blank puppet heads/bodies and a variety of facial features to each build a unique character and then provide their puppets with a unique character voice. The data collected from the test was then deconstructed and analyzed by comparing each included design element to specific Estill Voice Training™ vocal attributes identified within each individual puppet character’s voice to find where connections occurred.

The goal of this thesis is to provide a systematic method for creating vibrant and rich original puppet characters.
ACKNOWLEDGMENTS

First I would like to thank my Thesis Chair, Dr. Steven R. Chicurel. I will always cherish his guidance and patience throughout this process. Along with Dr. Steve, I would like to thank the two other members of my committee, Tara Snyder and Vandy Wood. Their insight and contribution has highly impacted the contents of this paper.

I also need to thank Pasha Romanowski for his mentorship as a puppet builder. He has imparted a plethora of knowledge to me over the last few years. This paper would not exist without his willingness to share his knowledge of the craft.
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CHAPTER 1: INTRODUCTION

Finding the Question

The art of puppetry has always intrigued me. I remember as a young child watching Jim Henson’s *Sesame Street* and *The Muppet Show* on television on a daily basis. I remember it being magical, and now, as an adult, I continue to be fascinated with the special magic that is created when a puppet comes to life.

One can easily step back, remove oneself from a live puppet performance and story, and see that any particular puppet may have been built from random craft supplies, that the movement of the mouth may not be matching exactly what the puppet handler is saying, or that there is a string or hand rod poking out of the puppet’s wrist. Still, when a skilled puppeteer begins his work of bringing this inanimate little craft creature to life, all of those technical thoughts disappear from my mind, and what emerges for me is an intense interest in the life of this deep, rich, three-dimensional character I see before me. When I am transported from reality to fantasy, magic occurs. Great puppetry has a way of achieving this like nothing else.

My fascination with and interest in puppetry sparked the topic of this thesis project. I knew that if I were going to spend several months working intensely on a graduate thesis, I would need to select a topic about which I am passionate.

Once I decided that puppetry would be the central topic, I knew that I would need to focus the research by asking a very specific question to lead the project. Although I had a multitude of questions in regards to how the magic of puppetry occurs, the biggest question I wished to investigate concerned puppet voices. What inspires the voices puppeteers give to their puppets? My initial thought was that individual design elements might be sparking a particular
vocal choice or vocal quality, but I was not sure if that was indeed the case. With these thoughts and ideas in mind, my thesis questions emerged. What is it about the individual design elements of a hand puppet that informs a puppeteer to create organically the voice that he or she produces? Do common threads exist subconsciously between design elements and voice?

**Statement of Purpose**

Information concerning the connection between design elements and vocal choices in puppets is scarce. Much of the information identifies the variety of voices that can be created, but does not connect those options to puppet design. Published material that directly links these elements in puppetry does not exist.

Although I did not find copious amounts of information on the connections of voice and design in puppetry, I was able to locate quite a bit of material concerning the connection of design elements and vocal choices in cartoon animation. Throughout this paper, I will borrow many of the concepts cartoon character designers and voiceover actors use when they create cartoon characters. I will then apply those concepts to puppetry.

After listening to several online interviews and speaking with several professional puppeteers, I realize that most of them do not mention having a system or methodology for creating puppet voices, but rather state that the voices simply emerge organically after spending a few minutes looking at the puppet.

I asked three professional puppeteers the same questions: “When you meet a puppet for the first time and are asked to bring it to life, what is your process for giving it a voice? What goes through your head as that process is happening?” I received an interesting variety of answers.
Professional puppeteer Peter Linz, best known for his role as Walter in the new *Muppets™* movies, stated the following:

In answering an interviewer's question, how do you come up with all those voices, Frank Oz famously replied, "I don't do voices. I do characters." I love that line. Whatever vocal quality you give to any puppet should ideally be suggested by who that character is - what drives them. That being said, when I first see a new puppet, I imagine what kind of voice would come out of its face. The character's eyes say a lot - whether their [sic] wide-eyed or narrow slits. The shape of the mouth can also suggest an affectation. Ultimately however, the voice reflects what kind of character they are. I knew Theo from *Between the Lions* would have a large, gruff theatrical voice. Gruff, because at heart, he is a lion! But he's also a storyteller and a lover of books, so his voice needed to be flexible and especially expressive.

Sometimes a character is presented to you one way, but through the development process the vocal quality evolves into something completely different. Walter from 2011's *The Muppets*, was originally supposed to sound like the actor Michael Cera. After a couple of table-reads, Muppet performer Bill Barretta suggested that I use my own voice for Walter, who is supposed to basically be a young, every–man. It was challenging because I'm used to hiding behind character voices. It was a little unnerving and took some getting used to having my natural speaking voice come out of a puppet's face! Ultimately, everyone liked this new voice better than the old and we stuck with it (Linz).

Mike Peterson, best known for being a puppeteer on Jim Henson's *Fraggle Rock™*, stated:

For me, it all starts with the puppet’s look. My favorite way of “seeing” a puppet for the first time is to hold it up in a mirror, so I’m seeing it from a bit of a distance. I believe this to be fairly close to the audience’s point of view – that little bit of distance. After that, the voice is almost instantly suggested: gruff for a character that appears to be gruff, softer for a character that seems to be thoughtful, squeaky for those who are obviously meant to be cute. These choices might seem kind of obvious or “on the nose,” but for me it really is that simple. I want my characters to sound the way they look (Peterson).

The third puppeteer I asked was Jamie Donmoyer, who is best known for her work on the children’s television show, *Beyond the Lions™*. She is also an active teaching artist in Orlando, FL. She espouses the following:

When I first meet a puppet, I have to find the character. I look at the shape of the face, and try to get my face in a similar position (protruding lip, tongue sticking out, puffy
cheeks, etc.). Figuring out the gender comes next, and the age of the character, in order to determine the high or low pitch of the voice. Then I find out a simple character backstory (scripted or applied to when the character will be used). I begin to think of people (or animals if applicable) who I have encountered in the world. I think about the rhythms and tempos of their voices, any accent that would fit, and play around with it until I get to a comfortable placement that I can recall easily. From there, it's refining and adding quirks (Donmoyer).

As you can see, all of the puppeteers have unique processes when giving a puppet a voice. Donmoyer’s response provided enough evidence for me that there may indeed be some connection, but she was the only one of the three that really spoke to individual features leading to certain vocal qualities. I refer to the approach Linz and Peterson use, such as when a puppeteer simply looks at a puppet and invites a voice to emerge, as “organic.” I do not doubt this organic approach works for Linz and Peterson and may work for many others, but for me, their processes are much more amorphous, and I seek more clarity and definition. I wonder if this organic approach is the only way. Might there be another more methodical or prescriptive way to approach this task? When I have completed my study, I will use the newfound information to create voices for several puppets I have already built, but for which I have not yet been able to provide voices. This study may be able to assist other puppeteers who are struggling with this same issue. Also, if I am asked to build a puppet that has specific design or vocal qualities, I will have a better idea of how each of those elements inform the other in order to create a fully fleshed-out character. Finally, I desire to teach puppetry classes and workshops in the future for both children and adults. No matter what kind of information or data I discover after this research is complete, I am sure I will be much more prepared to answer question students may have concerning these connections.
The Plan

This thesis project is a traditional case study that will include three chapters of research and information, and a test.

Following the chapters on voice, character, and design, I will include an additional chapter which will describe my process of conducting the actual case study and the data I collected to answer my thesis question. Once the test is complete, I will analyze and quantify all of the collected data in order to determine whether connections do or do not exist between design elements and vocal choices in puppetry.

The paper will conclude with a final reflection chapter that summarizes the experience and articulates where my work as a puppeteer may take me in the future.
CHAPTER 2: VOICE

As I considered the scope of this project and the need for specific quantification of data, I knew I would need to use a voice system or pedagogy that would codify the specific vocal choices that were made by my research participants throughout the process. I have studied the work of Kristen Linklater, Arthur Lessac, and Edith Skinner in the past, but a large portion of their work either feels metaphorical and figurative to me, or it is simply not specific enough to address the needs of this case study.

Puppet Voices

I began to search for material that had already been written about creating puppet voices. To my surprise, I found that there had not been a lot written on the topic. Most of the research I was able to locate concerned itself with assisting teachers and librarians in creating puppet shows for children in public libraries or classrooms. A few thoughts and ideas, however, were worth noting from the five resources I chose to use.

Although their approaches are different, all five authors included and discussed their thoughts on producing a variety of vocal qualities. Vocal qualities are one of the most important aspects of a puppet character. In her book, Practical Puppetry A-Z, Carol R. Exner states, “An appropriate voice given to a puppet character can add as much depth as giving it a proper costume” (246). It is also important that a puppet’s voice is different from the puppeteer’s natural speaking voice so that the two can be differentiated to the viewer. Larry Engler and Carol Fijan assert in their book, Making Puppets Come Alive, “A good puppeteer should not let the audience become aware of the human behind the puppet. When giving the puppet a voice one should therefore use a puppet voice and not a human voice… they should not have the same voice as the
puppeteer” (120). I also feel this is important because a puppet is already a heightened and exaggerated being. Thus, it should have a heightened and exaggerated voice.

In his book *Puppetry: The Ultimate Disguise*, author George Latshaw identifies six attributes of the voice that can be changed to vary voice quality. They are:

- Pitch (Normal, Low, High, Falsetto)
- Speed (Fast, Slow, Normal, Erratic, Rhythmic)
- Volume (Loud, Soft, Normal)
- Force/Stress (punch, bland)
- Color (adjectives such as chilly, icy, slow, swift, hard, gentle, beautiful, gorgeous, and tingling)
- Quality (clear, suave, hollow, dry, gruff, nasal, shrill, cracked)

While these six attributes provide options for changing voice quality, Latshaw does not provide instruction on how to make the changes. Although I feel these six attributes are six different ways to change or vary one's voice, it lacks the information to tell me how to do it. What physical changes must occur in the vocal tract to speak with a gruff or nasal quality? How can I guarantee that it will be the same the next time I pick up my puppet and perform? Puppeteer and author Walter Minkel calls these vague descriptions “the fourth dimension” (17). I find these descriptions vague as well.

Exner also suggests that adding an accent or dialect be considered to “have an added dimension for your characters” (Exner 246). She recommends that the puppeteer select two or three that he feel he can do well, and stick with those; nothing is worse than a bad accent. If a puppeteer has an authentic British Received Pronunciation (RP), a Southern United States, and perhaps a Brooklyn accent, he is probably in decent shape.

Both Latshaw and Minkel provide strong warnings against using voices with speech impediments. “Avoid speech impediments; the lisp, stutter, and cleft-palate speech are handicaps
and should not be used for comic characterization. Good taste is a requisite for good puppetry” (Latshaw 65). “Using such voices makes fun of those irregularities and also makes a character harder to understand” (Minkel 20). I would surmise these warnings have been included in these specific books because of the target audience is generally young children. I would argue that speech impediments are a reality and therefore are open to use freely. I do agree, however, that the impediment itself should not be the target of a joke, and the voice should be easily understood.

Ultimately the puppeteer needs to heighten his awareness of the speech he hear on a daily basis. What makes a voice interesting? If you hear an interesting voice, try to recreate it and maybe even exaggerate it. “Many of us accept sound in a very passive way… We identify sound, but we do not analyze it to discover the general principles by which it was made. The puppeteer must become an astute listener to build a repertoire of interesting character voices” (Latshaw 63).

The final piece I gleaned from these books concerns how the characterization of the puppet and the associated vocal choices really are one and the same. When developing a character in terms of his age, sex, physical condition, emotional state, and environment, one realizes that some vocal choices become more obvious than others. Minkel states, “If you think of each puppet as the outward reflection of a complete character, you can begin the work that makes each successful puppet characterization “real” and not just a funny voice…” (16). He also believes that once a voice has been bestowed upon a specific puppet, that voice is unique to the puppet. “A voice is not separate from the rest of a character. It is one part of a complete ‘puppet personality,’ and it should not be interchangeable from one puppet to another” (20). I believe this is crucial when a puppeteer is voicing several puppets in one show, or has several shows that the same audience sees on a regular basis. It forces the puppeteer to be creative and expand his voice
library. Just imagine if Frank Oz used the same voice for Miss Piggy, Bert, and Grover on *The Muppets* and *Sesame Street*. It would not have been a success. So much of the puppet’s personalities live within their specific voices and the show’s success is due to the wide array of its characters. Ultimately it comes down to developing a puppet with a strong and clear personality. “The personality of your puppet is half the show! Show your audience an interesting personality” (Howard 12).

Although I found and located a few pieces of valuable information and agree with a lot of the things the above authors had to say, I still didn’t feel like any of their methodologies would work for my case study. I was still on the search for a system that offered specific methodology and the opportunity for successful repetition and consistency.

**Voice-Over Cross-Over**

The search led me to consider if there was any crossover between cartoon voice-over actors and puppeteers. Maybe a system or methodology has already been created or some research has been written that may link the two similar worlds.

I was able to locate several books written by voice-over actors. Although a lot of the material concerned itself with the business of voice acting, each book contains a chapter or so on the author’s process of creating voices for the characters. A lot of what I read and learned in the puppet books was reiterated in these resources as well, but it was a bit more methodical and much more specific.

In her book and accompanying CD titled *Talking Funny for Money*, voice-over actress Pamela Lewis clearly lays out her personal system for creating fun and new character voices. Her system fits neatly within the acronym “PAADRSC,” which she pronounces as “paid risk.”
The P is for “placement,” which she describes as “head voice, nasal voice, adenoidal voice, throat voice, and chest voice” (Lewis 23). Placement is basically where you, as the speaker or singer, may feel the sympathetic vibrations of your voice in different parts of your body. Ms. Lewis made the wise choice of supplementing the book with an audio CD, otherwise I would not have known what these different placements sounded like. The CD demonstrated each of the sounds and I could imitate each of them while listening, but I am not convinced I would remember how to perform several of them again without re-listening to the tracks, especially that of adenoidal voice.

The next letter stands for “attitude.” “This is the attitude in which you deliver the lines” (Lewis 143). When layering attitude on the voice you are developing, you want to color the character’s point-of-view of the situation by sounding angry, mad, annoyed, determined, scared, or even confused. Another way to add attitude to a voice is to give the character a personality trait. Ms. Lewis suggests making the character happy, bashful, grumpy, dopey, sleazy, sweet, sneaky, sexy, or nutty for variety (37).

Following “attitude” is another A, which stands for “age;” “the age that you use for a character, as in baby, teen, adult, senior citizen” (Lewis 143). On the accompanying CD, she describes making a baby sound by using an adenoidal placement, small throat with breathiness, bad diction, and low volume, similar to a sound coming out of an immature instrument. To create the sound of a senior, use little oxygen, tighten the throat, and pull back on volume and power. As I followed her directions, it was quite easy to imitate the sounds as she described them, but again, I would probably have to re-listen to the CD to do these voices again.

The next letter in the acronym is D, which stands for “dialect.” Ms. Lewis suggests that broad stereotypes are better for most voice-overs than subtle and nuanced accents or dialects of a
stage actor. “Those of us in the cartoon/character/looping area of voice-overs are primarily concerned with what I call ‘Hollywood Dialect,’ meaning authentic is less important than broad, clear, and funny” (Lewis 143).

The next R is for “rhythm:” “how fast or slow, staccato or steady you say something” (Lewis 143). This description is pretty straightforward and simply trying a line or two in several different ways will bring you results. The most important aspect of rhythm is the effect it has on the listener. Fast may sound excited, but it also may sound frenetic, nervous, or anxious.

Following rhythm is an S, which stands for “social level.” Ms. Lewis asks us to consider “what world your character comes from: rich, poor, uneducated, upscale, streetwise, and so on” (144). Layering one of these attributes on a character can add dimension and give the voice and character depth. A dialect may also emerge that reflects a social level. That is fine. She encourages one to not worry about going for big, broad stereotypes.

The final letter of the acronym is C, which stands for “celebrity.” “The ability to sound like a famous person is very attractive in this business” (Lewis 144). From my experience, especially when trying to give a puppet a voice, I tend to want to imitate celebrity puppets or use what I think of as a stereotypical “puppet voice”. I believe Ms. Lewis’ point is valid, as long as the imitation is altered in some way but still contains the vocal “essence” of the celebrity’s voice.

Overall, I find Ms. Lewis’ system manageable and, other than the few glitches I mentioned, it makes a lot of sense. I would find her system more valuable if I were simply creating sounds for a character and not attempting to define them for this case study. This system does not contain the specificity I need for this project.
Voice-over actress Elaine A. Clark has also contributed her thoughts to creating character voices in her book *There’s Money Where Your Mouth Is*. Ms. Clark and Ms. Lewis agree on many of the same things, but Ms. Clark’s system offers several other details.

Ms. Clark adds the consideration of the character’s location to her process. At first, I thought she was simply referring to the amount of volume one would need to be heard in any physical space, but what she is asking the actor to consider is more significant. “Where we are has dramatic impact on our actions, thoughts, and demeanor…If the action takes place in a restaurant, the voice actor needs to respond to such things as looking for a table, being seated, getting the waiter’s attention, talking across the table, ordering a meal, chewing food, hearing dishes crash, and paying the check” (Clark 47). This will color the performance and add reality to the scene.

In addition to considering location, she advocates the possibility of playing against initial instincts, or playing against type as long as your decisions are rooted to the truth of the character, justified, and informed. “Either play the character to type or contrast the script by playing against type, but make sure the character has a reason for being there and a foundation for sounding that particular way” (Clark 115). I remember watching the film *Being Elmo*, which is a documentary about the life and career of puppeteer Kevin Clash, the man responsible for creating the character of Elmo on *Sesame Street*. There was a part of the movie in which Clash described how another puppeteer was given the Elmo puppet and was having a difficult time making it work, or bringing it to life. He was trying to develop the character to type by giving it a “monster” voice and persona and it simply wasn’t working. Clash asked if he could give it a try and decided to play the character against type, giving it a high, sweet, immature sounding voice. Elmo came to
life and has become the Elmo we know today. Playing *against type* may not always work, but one should never rule it out.

Speaking of type, authors and voice-over actors Jean Ann Wright and MJ Lallo list a set of character types, or archetypes in their book titled *Voice-Over for Animation*. Merriam-Webster defines an archetype as “the original pattern or model of which all things of the same type are representations or copies” (“Archetype”). Their list includes “Realistic Characters, Classic Heroic Figures, Fantasy Characters, Anthropomorphic Characters, Symbolic Characters, and Everyman” (108). We can ascribe specific voice qualities to any archetype. While the authors encourage finding voices that are unique to each archetype, they caution, “When you try different voices, be sure that those voices can be understood easily. If the audience has to work to understand the character, they’ll miss the gags and the important story points” (Wright, Lallo 108).

After all of my reading and research of both puppetry and voice-over literature, I came to some solid conclusions and realizations. One is the acknowledgment that a crossover exists between the work of a voice-over actor and the work of a puppeteer when the later bestows a character with a voice. A further conclusion is that, while I found value in the literature of the aforementioned authors, I still sought a more specific and scientific approach for this project. A voice system I have studied and believe will work is Estill Voice Training™ (EVT™). EVT™ provides a systematic, technical, specific approach to voice study. The specificity of this system met my need to deconstruct the voices my test participants were creating for their puppets.
Estill Voice Training™ Background

EVT™ is a pedagogy developed by Jo Estill in the 1970s and 1980s. Ms. Estill began singing at a young age and became a performer who sang in some of the largest opera houses in the world. Although she was considered by others to be a brilliant singer, she had the burning question, “How am I doing this?” After leaving the performing world, she entered university to find the answer. By taking several elective classes in anatomy and physiology, she learned about the head, neck, vocal tract, and respiratory system, as well as phonation, resonance, and acoustics, and their influence on speaking and singing. She also began to conduct scientific research about the voice.

In 1981, with herself as a subject, doctors X-rayed her vocal tract as she sang in four different vocal qualities (speech, sob, twang, opera.) Upon evaluation of the images, she identified parts of her vocal tract that changed position, as well as the relative distance between those parts as she sang in those different qualities. It was during this time that she developed the Estill Voice Model™, which includes Figures for Voice™ that can be combined to create a multitude of both ordinary and unique sounds.

Three basic principles guide EVT™: 1) Estill Voice Training™ has no aesthetic bias, 2) All qualities are acceptable as long as vocal health is not jeopardized, and 3) Everyone has a beautiful voice (Klimek 1).

Estill felt that knowledge is power and that one must really understand how the voice works in order create sounds. She also believed that muscles move before a sound is produced, so the physical setup of a sound is crucial to understand. Third, breath responds to the conditions in the larynx. Finally, voice training is enhanced when craft (physical
mastery), artistry (aesthetics), and “performance magic” (metaphysics) are present in a performance.

Vocal Production

There are three main components to vocal production. The first component is “breath/power;” air from the lungs. The second component is “tone/source;” larynx and true vocal folds. The third component is “resonance/filter;” which includes structures above the larynx (aryepiglottis, velum, tongue, and other).

EVT™ teaches independent control of individual vocal structures and the acoustic consequence that result from movement of discrete parts. The structures over which we have independent control are head/neck, lips, tongue, jaw, velum, aryepiglottic sphincter, false vocal folds, true vocal folds, thyroid cartilage, cricoid cartilage, and the torso. The head, neck, and torso are support structures.

EVT™ requires that vocal practitioners learn how to isolate all of the vocal structures, as well as identify changes in the position of another person's vocal tract. A minute change in even one structure can make a dramatic change in voice quality.

The figure below shows each of the above-mentioned parts, for which Jo Estill designed “compulsory figures,” and their associated conditions.
Figures and Condition

Being able to hear the conditions of these figures will be the key to quantifying the data from the puppet performances later on. The chart below contains descriptors for these different conditions.
Table 1: EVT™ Listening Guide

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>CONDITION</th>
<th>SOUND OF THE CONDITIONS</th>
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<tr>
<td>True Vocal Fold Onset/Offset</td>
<td>Glottal</td>
<td>Tone begins or ends abruptly</td>
</tr>
<tr>
<td></td>
<td>Aspirate (Abrupt)</td>
<td>Onset – Sound begins with a breathy hiss, then a sudden burst or pop initiates the tone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset – Final tone suddenly becomes breathy</td>
</tr>
<tr>
<td></td>
<td>Aspirate (Gradual)</td>
<td>Onset – Sound begins with breathy hiss, then the tone gradually fades in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset – Final tone gradually fades out to breathy hiss</td>
</tr>
<tr>
<td></td>
<td>Smooth</td>
<td>Onset – Tone emerges gradually, no pop or hiss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offset – Tone disappears gradually, no pop or hiss</td>
</tr>
<tr>
<td>False Vocal Folds</td>
<td>Constrict</td>
<td>Sounds tight, strenuous, laborious, grinding</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Tone is clean</td>
</tr>
<tr>
<td></td>
<td>Retract</td>
<td>Sounds open and wide</td>
</tr>
<tr>
<td>True Vocal Fold: Body Cover</td>
<td>Slack</td>
<td>Sounds creaky, under energized, pitchless</td>
</tr>
<tr>
<td></td>
<td>Thick</td>
<td>Sounds loud, sturdy, confident</td>
</tr>
<tr>
<td></td>
<td>Thin</td>
<td>Sounds soft, light, insecure</td>
</tr>
<tr>
<td></td>
<td>Stiff</td>
<td>Sounds breathy, hissy</td>
</tr>
<tr>
<td>Thyroid Cartilage</td>
<td>Vertical</td>
<td>Sound of an untrained voice</td>
</tr>
<tr>
<td></td>
<td>Tilt</td>
<td>Sounds sweeter, vibrato may or may not be present</td>
</tr>
<tr>
<td>Cricoid Cartilage</td>
<td>Vertical</td>
<td>Normal speech</td>
</tr>
<tr>
<td></td>
<td>Tilt</td>
<td>Sounds loud, shout-like, belt</td>
</tr>
<tr>
<td>Aryepiglottic Sphincter</td>
<td>Wide</td>
<td>Sound is mellow</td>
</tr>
<tr>
<td></td>
<td>Narrow</td>
<td>Sounds twang-like, bright, loud, taunting</td>
</tr>
<tr>
<td>Larynx</td>
<td>Low</td>
<td>Sounds resonant, operatic, affected, dark</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Everyday speech, honest, unaffected</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Sounds child-like, innocent, lacks bass resonance, bright</td>
</tr>
<tr>
<td>Tongue</td>
<td>Low</td>
<td>Sounds dark, more resonant, rich, muddy</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Everyday speech</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Sounds bright, less bass resonance, clear</td>
</tr>
<tr>
<td></td>
<td>Compressed</td>
<td>Sounds louder, rich</td>
</tr>
<tr>
<td>Velum</td>
<td>Low</td>
<td>Total nasal resonance, muted, muddy, muffled</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Oral and nasal resonance</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Oral resonance, louder</td>
</tr>
<tr>
<td>Jaw</td>
<td>Forward</td>
<td>Sounds bright</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Sound is neutral</td>
</tr>
<tr>
<td></td>
<td>Back</td>
<td>Sounds dark</td>
</tr>
<tr>
<td></td>
<td>Drop</td>
<td>Sounds more resonant</td>
</tr>
<tr>
<td>Lips</td>
<td>Protrude</td>
<td>Sounds darker</td>
</tr>
<tr>
<td></td>
<td>Mid</td>
<td>Sound is neutral</td>
</tr>
<tr>
<td></td>
<td>Spread</td>
<td>Sounds brighter</td>
</tr>
</tbody>
</table>

EVTS™ borrows the term *attractor state* from Dynamical Systems Theory. It describes “a condition of stability during motor tasks” (Klimek, 7). Individual attractor states are the results of culture and training. This explains why each of us has a unique
voice, and why an individual’s attractor state can make some conditions easier of harder than others. For this case study, I will encourage participants to choose voice qualities that are different from their attractor states.

Once one is successful in mastering the figures, one can create “recipes” which are made up of different combinations of conditions. This is when all of the work pays off and it becomes enjoyable to create new sounds or replicate another person’s attractor state. This is where the bulk of my research lies. Once the puppet performance videos are recorded, I will listen critically to them and deconstruct the vocal choices the puppeteers made for their individual puppets. I will create a “recipe” for each voice based on each figure and its condition.

Having each of the recipes is crucial to the next part of the process, which is linking vocal choices to character.
CHAPTER 3: CHARACTER

Intro

Although it may be odd to consider, a puppet is ultimately an actor, once removed if you will. Just as human actors must develop the characters they are portraying on the stage, puppeteers or puppet designers must also fully develop their puppet’s character to bring it to life. Whether a human being is playing a role or a puppeteer is acting through a puppet, an audience should be able to perceive the personality, traits, and qualities of the given character.

Throughout this chapter, I will outline several methodologies I feel are helpful for character development, such as answering leading questions, using archetypes, applying attitudes and personalities to characters, and imitating others. The process of developing a character is not codified, but if the process is thorough and informed, it will result in rich, fully realized characters. “The key here is to create very original characters and be fully committed to your work…Let go, take risks, and really add your most unusual touches to this work” (Wilcox 67).

Leading Questions

Uta Hagen’s well-worn “Nine Questions for Actors” provides a reasonable point of departure when developing any character. Answering these same nine questions is also advantageous when starting to develop a puppet character. The nine questions are meant to lead the actor, or puppeteer/character developer in this case, to establish not only a character’s physical attributes, but create a character that has opinions, a point of view about the world around him or her, an awareness of his or her beliefs, prior history, and knows his/her place in their given circumstances. Ms. Hagen outlines her “Nine Questions for Actors” as follows:
1. **WHO AM I?** (All the details about your character including name, age, address, relatives, likes, dislikes, hobbies, career, description of physical traits, opinions, beliefs, religion, education, origins, enemies, loved ones, sociological influences, etc.)

2. **WHAT TIME IS IT?** (Century, season, year, day, minute, significance of time)

3. **WHERE AM I?** (Country, city, neighborhood, home, room, area of room)

4. **WHAT SURROUNDS ME?** (Animate and inanimate objects-complete details of environment)

5. **WHAT ARE THE GIVEN CIRCUMSTANCES?** (Past, present, future and all of the events)

6. **WHAT IS MY RELATIONSHIP?** (Relation to total events, other characters, and to things)

7. **WHAT DO I WANT?** (Character’s need. The immediate and main objective)

8. **WHAT IS IN MY WAY?** (The obstacles that prevent character from getting his/her need)

9. **WHAT DO I DO TO GET WHAT I WANT?** (The action: physical and verbal, also-action verbs) (Hagen 83-84)

Almost every resource I took into account for this chapter suggested considering at least one or more of her questions when developing a character. Question number one addresses the character itself, whereas the other questions are more about the situation in which the character finds itself.

This first question, “Who am I?” is the most crucial to explore as we are developing a character. Just as you should be able to articulate the details of your own life, such as your age, address, relatives, likes, dislikes, hobbies, career, description of physical traits, opinions, beliefs, religion, education, origins, enemies, loved ones, sociological influences, etc., you should be able to do the same for your character’s life. Some additional questions you may wish to consider “to add more color to a character are: What are you wearing?, What kind of lover do you like?, How large is your home?, Where did/do you go to school?, Hair product you use, and Favorite sport” (Wilcox 45). Once you’ve formulated your answers, you have developed successfully what actors refer to as their characters “back-story”. Don’t be afraid to allow your character’s back-story to morph, change, and grow as the rehearsal process progresses. You will begin to learn
more about your character during that time, and, allowing for these changes will add depth and truth to the character. You will never know all of the answers prior to working on the performance piece.

If you are working on a character from a script, remember to use the given circumstances from the text first, and then if there are details that are not mentioned, fill in the rest from your imagination, making sure each detail makes sense and can live within the world established by the playwright. “Develop the character round the facts that you know and make up as much additional back-story as you need” (Wright, Lallo 118).

Archetypes

Another way to go about developing a character is to start with an archetype. As I mentioned in the previous chapter, an archetype is “a very typical example of a person or thing” (“archetype”) or from the Greek *archein typos*, meaning “original pattern.” Beginning the process with an established archetype can provide a lot of built-in characteristics, which can then be adjusted as needed for your specific character.

Swiss psychologist Carl Jung “used the concept of archetype in his theory of the human psyche. He believed that universal, mythic characters—archetypes—reside within the collective unconscious of people the world over. Archetypes represent fundamental human motifs of our experience as we evolved” (Golden). Jung defined twelve main archetypes, which exist within three larger categories. They are as follows:
Table 2: Carl Jung’s Twelve Archetypes
Source:

<table>
<thead>
<tr>
<th>The Ego Types</th>
<th>The Soul Types</th>
<th>The Self Types</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Innocent</td>
<td>The Explorer</td>
<td>The Jester</td>
</tr>
<tr>
<td>The Orphan/Regular Guy/Gal</td>
<td>The Rebel</td>
<td>The Sage</td>
</tr>
<tr>
<td>The Hero</td>
<td>The Lover</td>
<td>The Magician</td>
</tr>
<tr>
<td>The Caregiver</td>
<td>The Creator</td>
<td>The Ruler</td>
</tr>
</tbody>
</table>

If you think about familiar characters, chances are they fit within one of these twelve archetypes. Where do you yourself exist?

In the cartoon world, Pamela Lewis claims there are “six typical characters: Teen Hero/Heroine, Professor, Villain, Bimbo/Thug, Alien, Cute Creature” (Lewis 33), but I would argue that there are many more. After performing a simple internet search for “archetypes”, I found a wonderful website run by Caroline Myss, “a five-time New York Times bestselling author and internationally renowned speaker in the fields of human consciousness, spirituality and mysticism, health, energy medicine, and the science of medical intuition,” that not only provides a long list of specific archetypes, but also gives a detailed description of each, along with a list of specific characters from film, drama, fairy tales, and religion that embody each specified archetype. Ms. Myss provides a list of over one hundred different archetypes on her website myss.com.

Depending on how specific you wish to be at the start of your exploration, you have the choice of whether to simply choose a single-word archetype, such as “hero” and build from that,
or invest in a lengthier archetype description such as those Ms. Myss provides on her website. Either approach will provide a starting point when using archetypes.

Attitude / Personality

If you would like to try a different approach, “naming characters can help you discover and explore each character’s personality, which will help you express that character’s emotion” (Oesterle 31). To assist with this, Mr. Oesterle, who is an author and animator, suggests creating a chart with five columns with headings such as: title (consisting of earnable or professional titles), first name (consisting of proper places in the world), last name (consisting of foods from around the world), description (consisting of personality traits), and profession (consisting of actual jobs). Mix and match words from each column to create a unique character.

Table 3: Oesterle’s Character Creation Chart

<table>
<thead>
<tr>
<th>Title</th>
<th>First Name</th>
<th>Last Name</th>
<th>Description</th>
<th>Profession</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Vermont</td>
<td>Teriyaki</td>
<td>The Bloodthirsty</td>
<td>Insurance Salesman</td>
</tr>
<tr>
<td>Princess</td>
<td>Matsumoto</td>
<td>Guacamole</td>
<td>The Noisy</td>
<td>Librarian</td>
</tr>
<tr>
<td>Chief</td>
<td>Detroit</td>
<td>Creamcorn</td>
<td>The Narcoleptic</td>
<td>Cartoonist</td>
</tr>
<tr>
<td>Professor</td>
<td>London</td>
<td>Lasagna</td>
<td>The Argumentative</td>
<td>Dental Hygienist</td>
</tr>
<tr>
<td>Crossing Guard</td>
<td>Atlantis</td>
<td>Knish</td>
<td>The Flirtatious</td>
<td>Cosmetologist</td>
</tr>
<tr>
<td>The Mystical</td>
<td>Pompeii</td>
<td>Potatoes</td>
<td>The Sometimes Heroic</td>
<td>Crossing Guard</td>
</tr>
<tr>
<td>Madame</td>
<td>Brigadoon</td>
<td>Asparagus</td>
<td>The Highly Contagious</td>
<td>Lumberjack</td>
</tr>
<tr>
<td>Sergeant</td>
<td>Jamaica</td>
<td>Hamhocks</td>
<td>The Litigious</td>
<td>Asst. Fast Food Manager</td>
</tr>
</tbody>
</table>
Can you imagine the character “Madame Matsumoto Hamhock, the highly contagious Dental Hygienist”? An image, character, and voice immediately emerge. Try a combination for yourself and see if a new and exciting character manifests for you to use. I would also encourage changing the column titles or items within the chart to allow for more options. Ask friends for some ideas to include. You are sure to create some very interesting personas. “The more creative the choice, the funnier, more unique, and more real the [character] will become” (Clark 49).

Pamela Lewis suggests that providing characters with no less than three traits will also spark fun and new characters (Lewis 41). She provides a list in her book that includes “happy, bashful, grumpy, dopey, sleazy, sweety, sneaky, angry, sexy, nutty, and baby” (Lewis 37), but any traits will work. How about a character that is quirky, laid-back, and has tongue-in-cheek humor, or one that would be described as warm, Irish, and mystical? Are you able to get a visual image of these characters just by contemplating the three given attributes? As you are playing with these traits, don’t forget that “you can assign a general energy for your character (such as laid back or uptight) and his/her strengths and vulnerabilities” (Wilcox 67) as well. Whether these traits emerge organically or you impose such traits upon your character, they are all great to ponder and explore.

**Imitation**

As human beings making our way through life, we cross paths with some unique and interesting people. Why not use them as character inspiration in your work? In the previous chapter I addressed imitating the voices of others, so why not consider imitating their characteristics and personalities as well? An exact imitation may not be the best approach of course, but I promote using these folks as inspiration.
I know a gentleman from my hometown who is the epitome of “a character.” He is hysterically witty, smart, and very opinionated. I have spent enough time with this fellow and could easily use him as inspiration for a character. “It’s great to base your characters on someone you really know personally…. These things help you find your characters (Wilcox 67).

Along with people we know from our own lives, we can also imitate familiar characters that have already been developed for theatre, film, or television. “Watch both new and classic films and television… Notice any interesting personality quirks that are unique…Use what you see. Remember to exaggerate” (Wright, Lallo 121). The exaggeration aspect is important to remember, especially for hand and mouth puppetry. It will enable the audience to perceive the character trait as a constant, for there is very little subtlety within this style of puppetry.

Combining aspects of different people or characters is a rich option. The movie *I Know That Voice*, is a documentary that explores the careers of working voice-over actors. Tom Kenny states that his character of SpongeBob SquarePants is a combination of Pee-wee Herman, Stan Laurel, and Jerry Lewis, with some other traits added into the mix as well. What would happen if you combined traits of Michael Jackson, Regis Philbin, and Brad Pitt? Try it for yourself and see what unique character comes up for you.

Ultimately, it is import to remember that no matter what traits you give your puppet character, they are authentic, real, and capable of coming to life through your acting choices. It is likely that over fifty percent of the work you do on developing your puppet character will never be seen or discussed during performance, but the mere fact that you are fully aware of who this character is will add nuances to your work that otherwise would not be there. You must connect with and understand your puppet character in order for the work to be strong. “These traits alone
do not create heartfelt characters. Truthful acting does that” (Wilcox 67). Remember, a puppet is ultimately an actor.
CHAPTER 4: DESIGN

Intro

Although voice, character, and design are the primary elements that bring a puppet character to life, it is character that drives the creation and construction of a puppet. Gender, age, nationality, occupation, personality, and all of the information discussed in the previous chapter will feed the design in certain ways, hence the previous inclusion of several approaches available to you for exploration of a puppet’s character development.

In the following pages, I will suggest a plan of attack concerning design, but feel free to allow it to be a fluid process. If you feel the need to adjust a feature you have already settled on, go ahead. Go back and make adjustments until you are pleased. The order in which one will approach each design element is not important. What is important is that you end with a design that has been informed by the character you’ve developed.

Feel free to play and break the rules. You will never know if something will work or not until you try it. If you feel inclined to attempt the exact opposite of what I suggest, that is wonderful and I support you. You will know if it works or not. Trust your instincts. Remember, “you’re creating a character the way you see it in your head, so it’s never wrong” (Oesterle 6).

Just as I looked to the animation world as a crossover for writing the voice and character chapters of this paper, I will do the same in this chapter. I got the idea during a hand puppet workshop I attended by professional puppeteer Mike Peterson of Jim Henson’s Fraggle Rock™. He stated, “Puppetry is simply live animation.” I had never thought of it that way, but as I considered his remark, I realized there is a lot of truth to his statement and it has helped guide my research for this case study.
Character Design

What is the job of a character designer? “A character designer is a traditional artist who creates original characters for the visual media. The character designer’s goal is to create characters that fulfill the needs of the script, scene, game, story, and suit the storyline” (Bancroft 13). As you maneuver through this chapter, keep this definition at the forefront of your thoughts, constantly checking to make sure the character is still original and it will work for your purposes.

It can be overwhelming to start the design process because there are so many options and directions to go. Pinpointing the main style category in which your character fits is the best way to begin. You will be able to focus all of your other design choices once this decision is made.

The six main style categories are as follows:

1. Iconic (extremely simple, very stylized, but not expressive) i.e. Hello Kitty
2. Simple (very stylized, more facial features, used for TV) i.e. Fred Flintstone
3. Broad (much more expressive, not subtle, big eyes, big mouths for extreme expression) i.e. Roger Rabbit
4. Comedy Relief (design is not broad/features are smaller, but humor happens through acting and dialogue) i.e. Nemo
5. Lead Character (realistic facial expressions, acting, and anatomy, emote like real humans) i.e. Cinderella
6. Realistic (just short of photorealism but with some caricature, comic book look) i.e. Princess Fiona (Bancroft 18-20)

Sometimes I find it helpful to work backwards through this list by looking at the example characters first. If the puppet character I have in mind is similar to Roger Rabbit, I can look at the style description of that character type and have a better idea of how to move forward with the other design elements. In this case, I would include big expressive features and make sure the puppet’s facial expression is exaggerated. Whether you work with an original idea or from Bancroft’s six style categories, finding the style category of your character early in the process is very helpful and will put you on the right track as you proceed.
Sketching

Whether the character is already living in your imagination or not, it is important to create a sketch of your design either digitally or on a piece of paper before you begin building in 3D. This sketch will serve as a visual reference point and huge asset as you build, but remember, you are always able and encouraged to make changes to the sketch throughout the process as you see fit.

Some people have a difficult time sketching, but as with skill, the more you do it, the better you get. If this is the case for you, I would advise tracing, which is a completely fine tool to use. I use blank puppet templates that are drawn with the body and specific head shapes I plan to use, and then sketch or trace features until it looks right. If you are looking for assistance, there is a plethora of resources both in print and on the internet that will provide material to trace for facial features. For example, simply type the words “cartoon eyes” in an internet search engine, and you will be provided a wide array of eye templates to sketch. The same goes for internet queries on cartoon noses, ears, and hairstyles. The zoom in/zoom out feature on a copy machine can assist with keeping proportions correct.
In the sample above, the body/head templates shown are not drawn straight on, but are at a slight side angle. If you wish to draw your design straight on at first for ease, that is fine, but “the side view is where you really start locking down the ins and outs of your design” (Bancroft 57). Using this view will enable you to see the shapes and contours of the features of the face much better.

**Overall Shape**

Let’s consider the essential shape that makes up your character. As humans, we unconsciously perceive and make associations when we see certain shapes. Shapes such as
circles, squares, and triangles act as visual cues that will become the basis of your characters personality. Do you see your puppet character as a circular kind of character, a square, or possibly more of a triangular type? This detail will become important as you move forward to design the other elements as well. “The overall shape will speak for the character’s personality even before he or she utters a word” (Bancroft 28).

“Circles evoke appealing, good characters and are typically used to connote cuddly, friendly types” (Bancroft 32). Chubby grandmothers, babies, and curvy female characters fall into this category. Superheroes or unintelligent bouncer types might be perceived as square characters. Have you ever been called or called someone else a square? “Squares usually depict characters who are dependable or solid, or play the heavy” (Bancroft 34). Triangles connote villains and give off a suspicious and sinister vibe. Think of villains in cartoons; they are mostly drawn with triangular shapes.

**Head Shapes**

A puppet’s head is most likely going to be the largest shape of all, so it is important that it be considered first in the design process. “Head shapes should remain conspicuous even in the final character design…The basic head construction does not just serve as a guideline for the finished drawing; it becomes a caricature of a ‘regular’ head” (Hart 11).

By instinct, you will probably want to start with a circle. We make the common assumption that all heads are circles. Take notice to the head shapes of several different humans who are clustered together. You will see that head shapes really do vary quite a bit. It is fine if you wish to start with a circle, but “it can also be limiting because the circle does not allow you to place more emphasis on one part of the face over another – it’s equal in all directions.
Limiting yourself to only one head shape risks monotony” (Hart 42). Remember, we are designing exaggerated characters.

Although head shapes go beyond the circle, square, or triangle, we still want to consider the essence of their shape as we select a shape for the head. For example a peanut shaped head is essentially a circle shape. It is made up of two circles, one larger circle on the bottom and a smaller, interlocking circle on top.

In his book titled 100 Cartoon Faces & Expressions, Joe Oesterle defines six head shapes and their insinuated personalities as follows:

- Round = Adorable
- Oval = Suave
- Upside-down Teardrop = Nosy
- Peanut = Goofy
- Bean = Tough
- Triangle = Nerdy

As you can see, Bancroft and Oesterle perceive triangular shapes quite differently. Both of their opinions are worth considering and make sense. A nerdy character might be designed with largest part of the triangle as the top of its head to imply that the character is smart and brainy, or on the other hand, a villain might be designed with triangular shapes to imply a scheming and sharp personality. Neither one is right or wrong. Both are worth exploring.

Author and cartoonist Christopher Hart approaches head shapes in a slightly different way. He describes head shapes as follows:

- Long Oval = Quirky and Funny
- Circle = Younger Kids
- Upside-down Egg = Females and Teens
- Thin Elongated Egg = Teens and Young Adults
- Tall Oval = Nerdy (Hart 41-47)
While there is certainly a variety of perceptions attached to the same shapes, I find both authors’ suggestions are helpful when considering the head shape design. As a side note, I should offer that if your puppet is supposed to be human and the design is just not looking human enough, consider giving the puppet a more defined chin. For some reason, we perceive a more defined chin as being more human.

When designing the Whatnots for this case study, I decided to use the puppet patterns of professional puppet builder Pasha Romanowski. Pasha owns and runs an online company called Project Puppet™ that sells a wide variety of patterns and materials for building puppets. As I was first learning to build, I used Project Puppet™ patterns. His detailed, step-by-step instructions are clear, concise, and simple to follow.

Project Puppet™ provides a pattern series called “The Simple Series” for people who are just getting started. These are the three patterns I decided to use for the case study. Pasha defines head shapes as “Roly” (circular and round), “Pinhead” (triangular, rounded angles), and “Melonhead” (squared-off, flatter top and bottom).

Project Puppet™ also sells another series for more advanced puppet builders called “The Forma Series”. Like the Simple Series, the Forma Series includes three additional head shapes. They do, however, resemble the three basic shapes discussed previously. They are labeled as “Rotundo” (circular), “Punto” (triangular, rounded angles), and “Ovale” (squared off). I have also used these patterns with much success. As you become better at designing and building, these patterns should simply act as a starting point. In order to create more interesting characters, you should move away from them and begin designing your own patterns and shapes for your puppet characters.
Skin

I believe that you can create a puppet out of any found object, but working within this specific style of puppetry, some choices become more obvious than others. Any fabric will work, but a fabric that contains some stretch in one or both directions will be of assistance while building. The stretch element provides some leeway in the material and will prevent creases and bunching. I, and many other professional puppet builders would agree that Antron® fleece is the best fabric to use for this Muppet style of puppet building.

Antron fleece is popular for its seam hiding capabilities. Its fuzzy pile makes sewn seams virtually invisible. This adds to the illusion of life of the finished puppet. The audience is not constantly reminded of the construction of the character by highly visible seams, and
thus is allowed to concentrate on the characters [sic] personality, actions, and interactions with other puppets and the audience (Romanowski).

Antron® fleece can be purchased only a few places, which makes it hard to acquire. It comes in white and is capable of being dyed using a product such as Rit® or a similar fabric dyeing product.

If you wish for the skin of your puppet to have a bit more texture, you may want to consider exposed foam. There are many advantages to using exposed foam; its greatest attribute is that facial details can be built up on the face by using smaller pieces of foam and contact cement, then carved down into the desired shape by using small sprung snipping shears or a Dremel® sanding disc. For best results, use open-cell reticulated foam, also known as Scott foam, in a ½ inch thickness at 35ppi (pores per inch) in a neutral color. Using a neutral colored foam allows for it to be dyed by using Rit® or a similar product.

Faux fur is also a fun option, especially if you are designing a monster or an anthropomorphic creature of some kind. Beyond the color of the fur, you will also want to consider the pile length. Pile length really depends on the needs of the character. If the character has a unified hair/fur length, then a short pile length may work just fine. If you desire different lengths of fur in certain parts of the design, then use a long pile fur and trim down the desired areas by using a product such as a Flowbee®, electric hair trimmer, or thinning shears.

When working with fur, you must always consider the direction of the nap, or in other words, the direction the hair is projecting from the material beneath. Under usual circumstances, you will want the nap to go down the head from the crown, all in the same direction, but if you are going for a disheveled look, try mixing up the directions of the nap. If you wish for the fur to
look matted and knotted like the *Sesame Street™* character Grover, simply boil the fur in water for a few minutes and let it air dry. This process creates a unique and unusual look.

The original Whatnots built for this case study had a reticulated foam understructure for the skull and were covered with Antron® fleece for the skin. Unfortunately after they were built, I learned that Antron® fleece is not a “loop” fabric and therefore the “hook” part of the Velcro™ system I had attached to the facial features would not attach to the Whatnots as well as I had desired. After this realization, I needed to replace all of the heads with a white/dye-able Velcro™ product I found online. It did not take the dye quite the same as the Antron® fleece and seems were a bit harder to hide, but it worked well enough for this case study.

**Features**

As you begin to design the individual features of your puppet characters remember to play and push the limits to see what might come up. Remember, “…there is no ‘right’ or ‘wrong’ way to draw the eyes, nose and mouth…but some ways not only look better, they are also more visually appealing to viewers” (Hart 21). Begin with the look you have created in your mind’s eye, then morph these features as you see the character come to life on the page. Let’s begin with the eyes.

**Eyes (Pupils, Lids, Bags, and Brows)**

As the adage goes, “eyes are the windows to the soul.” “We are taught from birth to look into each other’s eyes when we communicate. When an actor is in a tight close-up on-screen, we will look into the eyes first and foremost and then, peripherally, look at the mouth for emotional
cues” (Bancroft – Character Mentor). Therefore, the design of your puppet characters eyes becomes quite important.

Professional puppeteers use all sorts of items when building puppet eyes, but I would encourage you to consider ping-pong balls, half-globes, plastic or foam discs, black plastic dots for an all-pupil look, or buttons as a starting point. When placing the eyes on the design, consider their overall placement on the head. Not always, but in general, the closer together and lower on the face the eyes are, the more youthful the look. If they are placed far apart and higher on the head it gives the appearance of a more aged look.

There is a wide variety of eyes shapes to contemplate when designing. Just like head shapes insinuate a certain personality or character, so do eye shapes. Christopher Hart suggests the following:

- Circle = Common
- Oval = Humorous
- Flattened Oval = Droll, Sarcastic, Low Class
- Severely Flattened Oval = Intense
- Almond = Female (Hart, 24-25)

Eye shape as well as horizontal and vertical alignment should be considered when focusing on the design of your puppet’s eyes. A majority of the time, your puppet characters will have eyes that are the same size, line up with each other on the face, and are the same distance away from the center. There may be situations in which you will not want this. For example, if your character is goofy, silly, confused, or dim, you may want to consider designing one eye larger than the other or placing one eye higher than the other. Before making such a dramatic choice such as this, be sure that this is a permanent quality of the character and not just an expression for a moment in time (Hart 25).
The addition of eyelids is another choice to consider. Eyelids can add a “realistic” look to an eye, whether it is a human or animal character. They can also add a sense of age or sleepiness, depending on how much of the eye is covered by the eyelid. On the lower side of the eye, the addition of bags can add a lot of character too. Bags may insinuate old age and sleepiness as well, and it may also give the perception that a puppet is high on drugs.

Race, nationality, or ethnicity may also play a factor in the type of eyes you wish to use. In an attempt to be ethnically sensitive, Asian eyes look quite a bit different from Russian eyes, which look quite a bit different from Italian eyes. It is something you will want to consider.

The pupils are a crucial part of the eyes and “are especially expressive” (Bancroft 138). It is the pupils that give the puppet its focus. If the pupils are not exactly correct, the puppet can appear to be dead. “It is a well-known, basic fact, applicable to all scenic art, that the eyes must be aimed correctly…Figures who look past one another remind us that the puppet is dead matter and has its limitations as a means of expression” (Meschke 104). Unless you are going for a specific look or expression, the placement of the pupils should be placed as if the puppet is looking at an object approximately four feet away from its nose. When applying the pupils, it will look as if the puppet is slightly cross-eyed, but that is actually correct. They should not be dead center on the white part of the eye. The size of the pupil is also important. A small pupil will suggest a more humorous or neurotic look while larger pupils will imply happiness and a sense of joy (Hart 26). I would encourage you to try several sizes until you get the look you want. If you really wish to get fancy, try covering part of the pupil with an eyelid to give your character a more severe or appealing look (Hart 28).
You also have another very important choice to make when thinking about pupils, and that is if you want them to be all black or have an iris surrounding them. An iris will add a sense of reality to the eye and make it look less cartoon-like.

Puppets do not have to have eyebrows, but if you choose to add them, they can make a big difference. “Eyebrows are not just an afterthought. They are the exclamation point that drives home the expression” (Hart 24). In puppetry, eyebrows can be cut from fur or foam, or can be drawn simply with a felt marker, but their angle and size will definitely affect the expression and character, so be sure to design them with these thoughts in mind. “If the eyes are the ‘windows,’ the eyebrows are the ‘curtains’” (Bancroft, Character Mentor 29).

There are many things to consider when designing eyes. I encourage you to spend a lot of time with this element of the face, but in the end, you may choose to not even use eyes. One of the memorable characters, Dr. Bunsen Honeydew of The Muppets™ was designed with eyes. His designer simply used a pair of black-rimmed glasses that gives the illusion he is constantly squinting. This is a prime example of the notion “less is more.”

When I created the eyes for the case study, I provide participants with a wide array of choices. I chose to offer sets of eyes that had a variety of shapes, sizes, colors, and were made from different materials. Some had lids and some had bags. I also provided several sets of eyebrows made out of fur for participants to use. I believe the set I selected worked well for the project.

A nose doesn’t necessarily express emotion like the eyes do, but it tells a lot about a puppet’s character and personality. Joe Oesterle suggests, “a broken nose might imply that a
character is a tough guy. An upturned nose might mean a character is snooty. And a pug nose may belong to an adorable child or a hideous Pigman. The moral here: Pick your nose very carefully” (6).

Jack Keeley asserts that all common nose shapes seem to start with the letter “b”, such as bean, ball, balloon, and banana (Keeley 14). All of these shapes are all worth trying, but as always, make sure it works for the character.

In terms of alignment on the face, I suggest the nose be centered horizontally on the face, unless you are going for a very specific look. You have endless options for vertical placement. A nose far down on the face, sometimes covering a portion of the upper lip or part of the mouth, looks different from a nose placed some distance above the upper lip. Placement can insinuate different ages and can also create a lot of fun character choices.

The noses built for the case study were a variety of shapes, sizes and colors and made from different materials, such as felt, foam, and plastic. I enjoy going to craft stores and looking for lightweight items in interesting shapes that I can cover with fleece to create interesting shaped noses. Foam make-up applicators also make a great understructure for puppet noses with little or no carving. The color of the nose can be the same as or different from the puppet’s skin color. If you wish for the nose to be more noticeable and have more focus, choose a different color. Conversely, if the nose is a more subtle part of the design, make it the same color as the skin.

**Mouth**

In some styles of puppetry, puppet heads are made of a solid material that does not allow for the mouth to open and close. In hand and mouth puppetry, mouths must be able to be
manipulated in order to sync with speech or music. Unlike some styles of puppetry, in which the puppet’s heads are made of a solid material that does not allow for the mouth to open and close, the intention in this style is for the puppets to lip sync to speech and/or music, therefore requiring their mouths to be able to open and close. To my knowledge, all of *The Muppet™* and *Sesame Street™* characters feature mouths that move.

Mouth size and placement on the face are important design factors to consider. These two aspects will define the character’s personality the most. In general, the more jovial and light-hearted the character is, the larger the mouth should be, and the more serious and straight-laced the character is, the smaller the mouth should be.

Human mouths are located somewhere in the bottom fifth of the human face, but in puppet design, we have the option to keep it there, or shift the mouth to enhance the character. You may also want to consider how far the mouth protrudes or is recessed into the face. Your puppet character may have an under bite or an over bite. There is no limit to the choices one can make, so I would encourage you to play with all of these factors as you design in order to see how changing these attributes change the look and “read” of your character.

“Perhaps the most important facial feature when trying to convey emotion is the mouth” (Oesterle 7). Before you begin to build, you will want to consider how often your puppet character will need to show emotion changes. A hard mouth plate will not enable as many emotional options as a soft mouth plate. When using a soft mouth plate, the puppeteer can curve his top fingers convex into a frown or concave into a smile. Pushing his fingers out and pulling them back can also reveal additional emotions.

Another consideration to make is the color of the inside of the mouth. Although red and black are the most commonly used colors, any color will work if it informs the character. If your
character has a uvula, you will need to use a color lighter than black so that the “shadow” on the back of the throat can be seen.

There are many “add-on” options for designing a puppet’s mouth. One of the most common options is to add teeth. “Fangs can indicate a certain type or character, such as a vampire, werewolf, or an executive secretary. Missing teeth can portray other types, such as hockey players, small children, or corporate executives” (Oesterle 7). Maybe your character has only upper or lower teeth. Perhaps your character has braces, gold crowns, or a full-blown grille. Adding a tongue and/or a uvula can be an option. Other options include lipstick, a lip ring, a mustache, beard, or goatee. Character choice will determine if a feature is appropriate or not.

For the Whatnot Workshop, I decided to keep all of the mouths relatively the same for the sake of ease. One of the puppets had a slightly wider mouth than the others, and it was interesting to see the difference it made. I provided only three mouth add-ons (tongues, uvulas, lip rings). I felt those three options would make the most difference in creating vocal choices.

*Ears*

“Ears are challenging. Like the nose, they don’t convey much emotion on their own” (Oesterle 7). Although ears don’t convey much emotion, they can provide depth to your character. Ears should always be considered, but like anything else, they are not necessary to include.

Ears come in a variety of shapes and sizes. Some are shaped like a C, while others may be pointy like an upside-down V or like an E or 3. Larger ears gives the impression of an older man or a nerdy type, where as a smaller set of ears may allude to an attractive female or a baby-type character.
The placement of the ears is also important; not only how high or low they are placed from the horizontal centerline of the face, but also how far away they are from the vertical centerline. On a human head, ears are normally just below the horizontal centerline and 90° on either side from the vertical centerline. Puppet ears can be located anywhere. Remember, however, if your puppet has glasses, the ear placement will need to accommodate that. Unless the ears have a specific purpose like holding a pair of glasses in place, play with the placement until it is correct. You will know when it is right.

The ears have a few add-ons as well. Consider the many styles of earring a puppet can have on one or both ears. If your character is an animal or an older person, you may also want to consider the finer detail of adding a bit of hair coming out of the ears.

For the Whatnot Workshop, I created a wide variety of options. I provided a lot of different colors and sizes of the three shapes I listed above, which adequately fulfilled the needs of the participants.

**Hair**

A person’s hairstyle says a lot about his or her personality. I ascribe attributes about personality based on a specific hairstyle. When deciding on the hair you will use for your puppet, do the same. Long golden colored braids may be youthful, while a grey bun might suggest an elderly character. A multi-colored, razor cut haircut might suggest a punk-rocker stereotype, whereas brown shoulder-length straight hair with bangs may hint at more of a teacher’s-pet type. Baldness seems to suggest age and puppets with mullets are most likely trapped in the 1980s. Hair color also suggests stereotypes; redheads are soul-lacking gingers, blondes are dumb, people with jet black hair are “Goth”, and so on.
Beyond hair color, you will want to consider the material you wish to use. Faux fur is a great option, as is a human wig if the puppet is large enough to accommodate it. Other options include yarn, marabou feathers, chenille sticks, tubular insulation foam, or cut craft foam. Remember, if you use faux fur, consider the direction of the nap when building the hair.

Hair accessories are viable options as well. A bow, barrettes, or a headband can quickly add youthfulness to a puppet that is looking a bit too old, and putting a puppet’s hair in rollers may give it some age. Again, there are no limits or rules. Follow your instincts and trust in the character. Common sense is the key to hair design. Give the puppet what it needs based on its character. There is no need to complicate it.

For the Whatnot Workshop, I created five different hair options in a variety of colors. There were full wigs, smaller patches of hair, Mohawks, small tufts, and small strips that could be used as eyebrows or mustaches or beards. I also offered two options that were made of yarn and resembled dreadlocks. As I suspected, hairstyle had a considerable impact on the characters created in the workshop.

**Overall Layout**

Now that all of the individual head and facial features have been addressed, it is important to address what happens when they collectively create the character. Certain character traits emerge as the special relationships of these features change on the face.

In his book *Creating Characters with Personality*, author and animator Tom Bancroft suggests the following generalizations to consider:
**Table 4: Characteristics of Gender in Design**

<table>
<thead>
<tr>
<th>Age Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babies</td>
<td>Round, curvy, pudgy faces, no straight lines, large eyes, large pupils with a shine, lashes, overbite, low set ears, tiny round nose.</td>
</tr>
<tr>
<td>Children</td>
<td>More straight lines, longer limbs, features become smaller than babies.</td>
</tr>
<tr>
<td>Teens</td>
<td>Accessories like glasses and braces, trendy haircuts, smaller eyes that look down (insecure), bigger ears.</td>
</tr>
<tr>
<td>Adults</td>
<td>Smaller eyes, smaller ears, angular shapes, noses larger on men, smaller of women, bigger hair on women, eyes higher on the head on men, defined chins.</td>
</tr>
<tr>
<td>Seniors</td>
<td>Droopier and larger ear lobes, larger chins, larger nose, smaller eyes, more interior lines (97-104).</td>
</tr>
</tbody>
</table>

Oesterle also provides a valuable resource to consider regarding personality traits rather than simply the age factor. He labels a trait, and then offers what the layout of the facial features might look like to reflect that specific trait. Several examples include:
Table 5: Characteristics of Traits in Design

<table>
<thead>
<tr>
<th>Trait</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sly</td>
<td>One eyebrow higher than the other, round eyes with lids, high, close together, and toward the top of the head, large protruding nose, small ears, and a wide mouth with teeth.</td>
</tr>
<tr>
<td>Stern</td>
<td>Small black button eyes, close together toward the top of the head, large pointy nose, large ears, smaller mouth.</td>
</tr>
<tr>
<td>Grouchy</td>
<td>Big eyes with no lids, ski slope shaped eyebrows, wide potato shaped nose, ears that stick out, mustache, bald.</td>
</tr>
<tr>
<td>Sleepy</td>
<td>Big eyes, mostly covered with a lid, small pupils, bags under the eyes, disheveled hair, smaller round nose with large ala, small round ears, small mouth.</td>
</tr>
<tr>
<td>Judgmental</td>
<td>Large vertical oval eyes, mostly covered with a lid, lashes, small pointy nose, small mouth, lipstick, defined chin, small ears, old lady hairstyle.</td>
</tr>
<tr>
<td>Mischievous</td>
<td>Medium oval eyes higher on the head, one eyebrow above the other, small button nose, large ears, slight smirk, full head of hair.</td>
</tr>
</tbody>
</table>

My purpose for including these examples is not to provide an all-encompassing “absolute” way of building or designing a face, but rather to illustrate that adjustments of features do affect the characters age and persona.
Everything Below the Neck

The scope of this research is concerned primarily with facial features. Still, there are a few important things to mention concerning torsos and limbs.

The size and proportion of a puppet’s torso and its limbs compared to the size of its head will inform its character. Some puppets are only heads and do not have these design elements, such as an anthropomorphic tomato or beach ball puppet, but most puppets have at least a body and arms. Legs are rare, but might be considered.

A larger head with a scrawny little body, tiny little arms, and large hands will evoke a sense of lankiness and goofiness. Conversely, a puppet with a small round head, no neck, and a large portly torso with thick arms and small pudgy hands may suggest either a “mob boss” character or an old, chubby, and jolly grandmother. Bancroft suggests, “drawing a big head and a small body is one way to make a design cute” (Bancroft 90).

Accessories

Accessories can provide that final bit of punctuation for a puppet character. You may wish to contemplate a hat, eyeglasses, a beauty mark, clothing, a scarf, or anything else you may dream up, but remember sometimes less is more and simplicity may be the better choice (Hart 17). It will all depend on the needs of the character.
CHAPTER 5: THE TEST

The Plan

As I began the planning for the case study, I knew I would need a plethora of puppet design options available to my participants without having them spend hours of time building in a workshop. I also knew that the builds needed to be immediate, simple, clean, and not require the use of extravagant puppet building tools. The participants would need to be able to design and build a puppet quickly, spend a few minutes getting to know its personality, and then organically give it a voice. The solution I came up with was to build a series of five blank puppet head/body combinations and also create a wide variety of facial features such as eyes, noses, ears, and hair options that could be applied to the blank head/body pieces, very similar to the popular Hasbro™ Mr. Potato Head toy. I used a hook and loop Velcro™ system to assist with simple application and removal of the facial features. In this way, a multitude of designs could be executed very simply and very quickly.

Figure 4: Blank Whatnots
Source: Image by Author
In terms of the vocal design, I wanted participants to use the more common organic approach for this case study. Once completed, I took all of the data I collected, examined and notate each of the design elements used while the puppet was being built, and examine and notate all of the vocal qualities the puppeteer chose to use for that specific character to see if
there were instances in which certain design elements lead to specific vocal choices. For example, I looked to see if the same feature used on multiple puppets, like an orange triangular nose, yielded similar vocal choices in each puppet.

**Trial Run**

Early in the process, I decided to perform a trial run of the case study simply to see if it would provide me with the necessary and appropriate data to answer my question; “Are there connections between design elements and vocal choices in puppetry?” I set up a "Puppet Building Workshop" in the lobby of the theatre building in the Performing Arts Center at the University of Central Florida in order to attract undergraduate students to be participants in this project. Participation was strictly voluntary.

For this trial run I wanted to keep everything as simple as possible. First, the students were to each select a blank head/body piece of their choice, and then select all of the features they wanted to use on their individual puppets. They were encouraged to experiment and play by adding, removing, and changing features as much as they wished until they were content with the puppets they created.

Once their puppets were complete, I asked each participant to spend a couple of minutes getting to know his puppet character, give it a name, and then find its voice. I attempted to convey that I wanted the puppet’s voice to be vastly different from the participant’s normal speaking voice or attractor state. They were then asked to have their puppets cold-read a monologue from Neil Simon's *Brighton Beach Memoirs*, one at a time using the voice they had created. I had selected one of Eugene’s and one of Nora's monologues, one male and one female, depending on the gender of the puppet. If the participant’s puppet was gender ambiguous, he
could choose to read either. The content of the monologues was not the important part; it was more about seeing and hearing the puppet’s design and voice working together.

Each puppet’s monologue performance was video recorded so that the performances could be studied and evaluated at a later time. I felt it was important to video record only the puppets and not the puppeteers for two reasons. One reason was to assure anonymity and privacy. My other thought was that they would be willing to play more freely if they were not on camera.

Finally, each participant was asked to complete a questionnaire that included four specific questions:

1) What is your puppet’s name?

2) Name three personality traits of your puppet using the provided word bank.

3) How did you discover the voice of your puppet?

4) Write a brief description of what your puppet looks like.

![Personality Trait Word Bank]

**Figure 6: Personality Trait Word Bank**

*Source: Image by Author*
Endowing the puppets with proper names was important for two reasons. First, a name affects a character’s personality, and vice versa, personalities can also affect the name you give to a character. Second, using each of the puppet’s proper names enabled me to label the puppets easily without using the puppeteer’s proper name.

Twenty-seven students participated over the course of two hours. I reviewed all of the video material and created a document that merged all of the answers from the questionnaires into a single spreadsheet. I took the video and created a compilation, or "best of" video collage to provide an overview of the project for my own use. The twenty-seven puppet characters the students developed were unique, clever, and full of life. At the conclusion of the trial run, I felt sure that this type of experiment would provide the data needed to find the answer to my thesis question.

Preparation for the Case Study

Paperwork and Logistics

I approached the case study similarly to the trial run, but I expanded upon a few items based on what I had learned from the trial, as well as from writing the research chapters of this thesis.

The questionnaire was the first item that I adjusted. I assigned each student participant a number. This assisted me in keeping all of the videos and paperwork organized. The initial questionnaire asked only four questions (listed above), but I later determined the questions needed to be more specific, especially concerning characterization. I added questions concerning the puppets’ demographics, such as the puppet’s gender, age, and nationality. I also asked the
puppeteers to describe, in their own words, how their individual puppets sounded when speaking. I was not sure if I would need this information at the time, but I included the questions anyway.

During the trial run I ran a slideshow to provide the participants with instructions on what they were supposed to do. I learned quickly that having a slideshow was not the best way to achieve the distribution of instructions. The entire slideshow lasted approximately one minute, but participants would approach the screen in the middle of the instructions, thus missing important instructions that were given earlier. For the case study, I wrote out the instructions and hand them to the participants when they entered the line to begin. The instructions were copied on the opposite side of the questionnaire so that only one piece of paper was necessary. (See Appendix)

Beyond adjusting the instructions and the questionnaire, I also took care of a few logistical items. I reserved a room at Orlando Shakespeare Theater (OST) that I could use for a three-hour block of time, as well as composed and sent an email to the staff inviting them to participate in the event.

I was very pleased that this time around, OST provided me with a dedicated room with a small utility closet on the one side, which I could use as a private space for the video/audio recording. All of the Whatnots were displayed on a homemade PVC stand that held them in an upright position, and the hair and facial features were laid out on a table beside the Whatnots. Copies of the Personality Word Bank were placed the other two tables, which included chairs so that participants could sit down and complete their questionnaires when they were finished recording.

The following email message was sent to the staff to encourage their participation:
Do you love The Muppets? Do puppets fascinate you? Have you ever wanted to create, voice, and bring your own puppet to life? If so, I've got something for YOU!!

I will be facilitating a "WHATNOT PUPPET CREATION WORKSHOP" on Thursday December 11th from 9AM to Noon in the Patrons Room at OST as part of my graduate thesis research and case study. If you are around anytime during that 3-hour span and would like to play, please join me and pop in to create your own unique puppet character using blank "Whatnots" and an array of facial features. (Very similar to the FAO Schwarz Muppet Whatnot Workshop) The whole experience should only take about 10 - 15 minutes of your time. Your participation would very much be appreciated! All are welcome and encouraged, no matter your skill level! (Box Office, Costume Shop, Scenic, Admin, Electrics, Actors, Apprentices, Interns, Stage Management, Facilities...EVERYONE!! The more variety the better!!) Please stop by and play!! You will not be disappointed!

Sampling

I knew going into this project that I desired a diverse group of participants. Since the OST company is composed of a variety of actors, technicians, and administrators with varied backgrounds, they were the perfect sampling of people for the project. The company employs approximately fifty people of which I needed only fifteen to twenty to volunteer.

Like the trial run, participation in the case study was strictly voluntary and the participants were not compensated for their time, other than simply enjoying fifteen minutes out of their day playing with puppets. I did not feel the need to pre-screen the participants. Everyone had the ability to speak and had average hand/motor skills.

Video/Audio Recording

For this Whatnot Workshop, I made the decision to use an iPad instead of the small hand-held video camera I used during the trial run. I liked the feature that enabled the puppeteer to use the iPad screen as a monitor during recording. They were able to manage the recording themselves, which enabled me to be present with the others who were building and filling out the
final questionnaire in the other room. I used the same two monologues from *Brighton Beach Memoirs* as I used in the trial run.

The puppets and their given character voices were video/audio recorded so that the data could be quantified once the workshop was over. I was the only person who viewed the videos. Again, to maintain confidentiality, no human faces or “normal” speaking voices were recorded.

If a participant was not comfortable with his performance after making his video/audio recording, I had him delete the recording and redo it. The final videos were stored on the hard drive of my personal computer and were not duplicated. At the conclusion of the case study, they were deleted.

**The Case Study**

As participants entered, I handed them a two-sided document that contained both the instructions and the final questionnaire, pointed out they had a participant number they would need to remember for the recording, and then encouraged them to play as much as they wanted when building and finding their puppet character. I tried not to say too much because I did not want to influence the work they were doing, but I was there if they needed to ask a question. I also took note of their participation numbers and names on a separate piece of paper in case I would need the information at a later time.

It was interesting to see that a majority of the participants had a relatively easy time building their puppets, but had difficulty getting to know them and give them a voice. Although they were encouraged to follow an impulse and go with their first instincts, it seemed that they were tending to second guess themselves or judge the choices they were making, almost to the point of becoming paralyzed. Because I knew all of the people that participated, I was not
surprised to observe that the non-performers at OST were having a harder time than the performers/actors.

All participants did exactly what I asked and created rich and creative puppet designs, personalities, and voices. I enjoyed watching every one of them “find” his puppet’s character throughout the process.

Twenty-one people participated during the three hours. There were four employees from the costume shop, two employees from the education staff, two employees from the scenic department, four employees from administration, three employees from production, one employee from electrics, and five company actors. Four or five of the non-performers self-identified as actors as well, so essentially, there were half performers and half non-performers.

Quantification and Synthesis of Data

Once the workshop was over, I began to quantify the data from the videos. First, I created a spreadsheet that contained each of the attributes I was planning to compare.

I created individual columns, from left to right, first for the participant’s number, then subsequent columns for the puppet’s name, gender, nationality, as well as a place to include a small still photo of the puppet. I created a table with three rows. The top row included the seven design choices the each participant made (head color/shape, eyes, hair, nose, ears, tongue, and uvula). The middle row included the seven EVT™ elements I chose to analyze, (true vocal fold mass, false vocal folds, thyroid, cricoid, AES, larynx, and velum). The third row included the three personality traits the participants supplied from the word bank that best described their character. I included the participant’s answers to the questions, “Did the design of the puppet
inform the voice you created? If so, how?” and “Describe what your puppet sounds like (pitch, tempo, timbre, volume, energy, etc…).” (See appendix)

Once the spreadsheet was complete, I filled in all of the information from the questionnaires. Then I shifted to analyzing the design and vocal choices in the videos. During the first pass of watching the video, I focused on the design elements. I filled in each of the design elements the participants used (or didn’t use) for their puppets into the spreadsheet. During this same pass, I also searched for a frame in the video that clearly showed all of the design features of their puppet, then snapped a still photo to use in the “photo” column of the spreadsheet. At this point, all of the spreadsheet fields were complete except for the seven EVT™ cells.

Next, I focused on the vocal choices made by the puppeteers, which was no simple task. EVT™ contains a tool called Voiceprint Plus™, which is a “real-time spectral analysis program that can record, analyze, and play back the voice. Visualizations include spectrogram and power spectrum analyses. Voiceprint™ provides spectacular and meaningful feedback about pitch and voice quality…(Clinical Software).” My original idea was to use this spectrogram program, in cooperation with the information provided in the EVT™ Level One training book concerning the use of this program, to assist me in analyzing the vocal choices that were made. The training book provided helpful screenshots of the program analyzing each of the EVT™ attributes in each of their positions. I figured all I would have to do is play and record a sample from the videos into the program, look at the picture on the screen, compare it to the picture in the book, and then label the sound appropriately. It was not that easy. I was analyzing speech in real time, not isolated sounds.

When I realized Voiceprint Plus™ would not provide me the information I was seeking, I knew I would have to use my own ears and what I knew about EVT™ to deconstruct the sounds
within each of the puppet voices I recorded. The issue with this process is that my listening is perception-based, and not measurable, whereas Voiceprint Plus™ would have provided measurable data. I knew I could trust the spectrogram. It would have displayed increased energy in certain ranges of frequencies, and therefore inform me that a certain part of the vocal tract was in a certain position. Nevertheless, I forged on and was able to note my perceptions of each of the character’s voices. I had to replay the videos several times in order to catch each of the attributes I wanted to analyze, but I ended up feeling confident with my analysis.

**Analysis and Findings Summary**

With the spreadsheet complete, I began to analyze the data to see if there were any connections between design elements and vocal choices. I printed the spreadsheet and cut it into twenty-one individual strips, each containing all of the attributes of an individual puppet. I did this in order to easily compare puppets with similar attributes. For example, when I wanted to compare all of the puppets that had a yellow pinhead shaped head, I could line up only those strips next to each other. This enabled me to see all of the attributes right next to each other easily, without having to search through the entire document.

Based on the information I had to analyze, I felt it would be most beneficial to break the data down into eleven separate larger “design elements,” in which I would compare the vocal choices and personality trait of each element. As a reminder, those eleven design elements are: head shape/colors, eyes, hairstyle, noses, ears, tongues, uvulas, facial hair, age, and gender. As a further reminder, I have provided a figure of the EVT™ vocal tract parts and their positions that inform vocal choices.
The first larger category I dealt with concerned head shapes/colors. Participants had five choices to choose from in this category. The number in parenthesis denotes the number of subsets. The five subsets were: yellow Pinhead (6), purple Pinhead (4), blue Roly (5), blue Melon (2), and pink Pinhead (4).

All six yellow Pinhead puppet voices used thick true vocal folds, wide AES, and all but one had a low larynx. Their personalities were awkward, flustered, and naïve. The purple Pinheads, blue Rolys, and blue Melons were a mixed bag of vocal choices, and therefore no similarities were noted, but there were several connections in terms of character traits. A purple Pinhead was most likely to be a stoner type that is crazy, mischievous, and a bro-type, whereas a blue Roly was most likely to be a curious creature who was childish and innocent. A blue Melon had the best chance of being a devoted, caring, and loving character. The pink Pinheads had the
most similar vocal recipe across the board, and were most likely to be skittish, worried, and flustered. Although their true vocal fold choices were different, they all had mid false vocal folds, vertical thyroid and cricoid, mid larynx, and mid velum, which bares similarities to the Estill recipe for Speech Quality.

*Eyes and Vocal Choices/Personality Traits*

The second category I examined was eyes. I divided this group into six subsets for the sake of comparison. They are: small eyes with pupils and irises (5), eyes with bags (2), large eyes with medium pupils (4), eyes with lids (5), small all-black domes (3), and full ping-pong balls (2). There were no similarities among the puppets that had the small eyes with pupils and irises. Characters with these certain eyes seemed to be dazed, emotionless, lonely, unsure, nervous, and worried.

Only two puppets had bags under their eyes. They both had thick true vocal folds, mid false vocal folds, and relaxed AES. At times, they both tilted their cricoids, which made for similar vocal qualities. The interesting part about these characters was that although they sounded the most similar, their personalities were very different. One puppeteer described his puppet as being grouchy, spunky, and judgmental, while the other was described as sexual and uneasy.

The puppets with large eyes and medium sized pupils spoke with thick true vocal folds, mid false vocal folds, vertical cricoid and thyroid, and their vela were mostly in the mid position. Larynx and AES positions were the only structures that changed with these characters. Likewise, these puppets displayed similar character traits. They were mostly positive, caring, and hopeful.
Group four puppets had eyelids. There were no noticeable commonalities in vocal choices other than wide AES, but when assessing their personality traits, across the board they were vulgar, sassy, mean, punk, stoner types. Considering that eyes with lids make them look a bit more closed, the puppets all had a wide AES position, and the character descriptions of vulgar, sassy, mean, punk, stoner-type provided by the puppeteers, there seems to be a universal truth inherent in this combination. These characters would most likely have eyes that are a bit more closed and would have a darker sound to their voices. It was an interesting observation I felt should be noted.

The fifth group of puppets had small all-black dome eyes. Although these characters voices weren’t necessarily similar, the character traits were. These characters were most likely to be bored, mischievous, and annoyed.

The last group of puppets had iconic ping-pong ball eyes. As is the case with groups four and five, voices within this group were not similar, but the character traits were. The ping-pong eyes seemed to elicit a sense of timid nervousness and skittishness in the characters, which aligns with the information stated in the design chapter concerning eyes.

Overall, it seems the biggest discovery concerning eyes is this; as less of the whites of the eyes are visible, the characters’ traits become darker, more mischievous, and more vulgar, but when more of the whites of the eyes show, the characters’ traits become either brighter, happier and more joyous, or nervous, timid, and skittish. The design of the eyes didn’t seem to make as much of an impact on voice qualities, but it definitely affected the characters’ traits.
**Hairstyle**

In this third larger category, I examined hairstyle choices. The twenty of the twenty-one puppets designs seemed to fall into three smaller groups I was able to compare, which included: Mohawks (3), tufts (6), and full heads of hair (11). There was one puppet that was built without hair, so it was not considered.

Puppets with Mohawks and tufts of hair both displayed similar character traits. Those that featured a Mohawk were commonly described as young, punk/stoner, or Avant Guarde, whereas those who sported a small tuft of hair were described as loving, innocent, hopeful, and timid. Again, this seems to reflect human culture. It follows that a puppet with a Mohawk would be described as a bit rough, whereas a puppet with a little tuft of hair, much like a child might have, would exude more of an innocent and youthful character.

As many similarities as there were in character types, there were no significant similarities of voice quality within these two groups.

Most of the voices of the eleven characters that had full heads of hair, interestingly enough, had false vocal fold constriction. As well, puppeteers provided descriptions such as superior, assertive, and “total-bro type” as character traits. This seems not to reflect human nature, as people with full heads of hear speak with many different voice qualities.

**Noses**

Of the twenty-one puppets, eighteen had noses, while five puppets had no nose at all. Noses on the eighteen puppets were: big pink egg shape (3), blue triangle (2), small green ball (3), and small black dome (5).
The blue triangle nose group and the no nose group both showed some similarities in voice quality, but the other three did not. Puppets with a blue triangular nose were more likely to display thick true vocal folds, vertical thyroid and cricoid, and wide AES. The main vocal characteristic feature of the puppets without noses was false vocal fold constriction, which I found quite interesting. My assumption was that I might discover high velum placement across the board within this group since the characters did not have noses, but that was not the case. I wonder why false vocal fold constriction was the common choice. Were the puppeteers compensating for the lack of a nose by adding another vocal color elsewhere?

Out of the five groups, four of those groups displayed consistently similar characteristics. Characters with a big, pink, egg-shaped nose were described as shy and nervous, whereas the puppets with the small green ball nose were bored, emotionless stoners. The puppets that had the small black dome noses were described as devoted, loving, romantic, and caring, and the characters with no nose were more nervous, curious, easily embarrassed, and childish in nature. Puppets with the blue triangle noses had no consistent personality traits.

**Ears**

Of the wide variety of ears I provided, most puppeteers chose only 4: human shaped (shaped like a 3) (2), pointy (3), small round (shaped like a C) that match the skin color (4), small round (shaped like a C) that were a different color than the skin color (5). Seven puppets had no ears at all.

Overall, there were very few vocal similarities within each of the groups, other than the following exceptions. When a puppet had human shaped ears, they also had wide AES and a low larynx, which created a darker timbre to the voice. When a puppet had small round ears that were
a different color from its skin color, the AES seemed to be narrower, which created a brighter timbre to the voice. Might it be possible that the difference between the ear color and the skin color on a given puppet created more of a cartoon-type/non-realistic effect, therefore implying a cartoon-type voice? Many cartoon voices feature narrow AES placement.

Puppets that had ears had few similar character traits. Puppets with no ears, however, were described as curious, innocent, young, silly, and child-like.

**Tongues**

Analyzing the use of tongues was pretty simple and straightforward. The characters either did or did not have a tongue included in their design. Fourteen puppeteers include a tongue, while seven did not. In terms of voice quality, there were no commonalities. After considering the array of results, there were too many variations to find any connections. Because there were only two groups, common characteristic traits were also difficult to identify. In terms of the data compared, it is safe to say that the inclusion or exclusion of a tongue had little or no impact on vocal choices and character traits of these specific puppets.

**Uvulas**

As with the tongues, the analysis of the uvulae was also pretty straightforward. Only two puppeteers chose to include a uvula in their design, and interestingly enough, neither the characters, nor their voices were anything alike. Therefore, again like tongues, it is safe to say that the uvulae had little or no impact on the character traits or voices of these two puppets.
Facial Hair

Nine participants chose to use facial hair on their puppet characters. All of those characters were male. In general, puppets with facial hair had a low larynx. Due to the wide range of character traits among these nine puppets, no commonalities were found concerning their personalities either.

Age

Puppeteers’ choices of age fell into three ranges. It was very interesting to look at the voice qualities from each age group. Puppets that were within the range of fourteen to forty-six had voices that did not seem to reflect their given ages. There were four puppets within the age range of two to thirteen. All four of these puppets voices had stiff true vocal fold mass, three of them had a high larynx, and the two eldest had false vocal fold constriction. None of this was surprising. Stiff vocal folds suggest immaturity, high larynx produces a bright and youthful quality, and it is not uncommon for young teens to constrict their false vocal folds a bit.

On the other end of the spectrum, six puppets were in the forty-seven through three hundred twenty-one age range. All six puppet voices had thick true vocal fold mass, three contained false vocal fold constriction, and their larynges were either in a low or mid position, not high like the younger group. Again, these findings were not surprising. As people age, they tend to “sit” on their voices a bit more, which causes false vocal cord constriction and in some cases, their voices lower in pitch.
**Gender**

While one puppet was deemed genderless, there were fourteen male and six female puppets. Overall, the male puppets had lower larynges than the females, which was not unusual. Only one puppet had a tilted cricoid, and it was a male. These were the only two observations that were made concerning connections between voice quality and gender. All other attributes were as varied as the puppets.

**Summation**

Once all of the data had been collected, quantified, and analyzed, it was time to consider all of the information and supply a definitive answer to my initial thesis question: What is it about the individual design elements of a hand puppet that informs a puppeteer to create organically the voice that he or she produces? Although the evidence that surfaced was not as conclusive as I would have thought, I do believe I am able to say there were some connections, or at the very least, there were correlations that occurred between the puppet designs and their voices.

The larger and more important discovery I made while analyzing the data was this: the combination and arrangement of design elements encouraged the puppets character’s traits and personality to emerge, which then led to the vocal choice. Design elements informed character traits, and then voice quality emerged. I noticed during the analysis and comparison, in almost every instance, more similarity in character traits and design, than design and voice quality. The character traits would be very similar when isolating a certain design element, while vocal choices were often haphazard and lead to inconclusive results. I now realize I missed a crucial
part of the process when I was asking my initial thesis question; the effect of the character traits on voice quality.
CHAPTER 6: REFLECTION

Introduction

Several years ago I was working on a master’s degree in Guidance Counseling, which I eventually abandoned to pursue other interests. While I was learning about the proper way to close or finish a series of therapy sessions with a client, a professor introduced a tool that she referred to as “appreciations and regrets.” When using this tool, clients articulate both the things they appreciated and also the regrets they still may have about the therapy process or their personal growth and progress. I have used a variation of “appreciations and regrets” as a reflection tool in my own theatrical and teaching work many times since, because it provides both an opportunity to celebrate the successes of the project or class, and it allows for an opportunity to look at where the work could have been more successful.

Appreciations

Sketching and Design

At the start of the puppet construction process, I was neither comfortable nor interested in sketching and designing characters. I was interested primarily in how to build the actual puppets and, up to that point, had never begun a puppet with a sketch. I considered a puppet complete once I was satisfied with the design. As a result of inefficient planning, many of my first puppets were bland, boring, and lacked any sort of character. Now that I have spent a significant time reading, researching, and writing about design and sketching with characterization in mind, I feel my characters will reflect these new insights. I now look forward to immersing myself into the
process of building several new puppets with this newfound wisdom. My new goal is to create and build an original show with bold, rich characters that are full of life.

**Voiceover Career**

Like puppetry, voiceover work is also a craft that has intrigued me for many years. I was vaguely familiar with some of the more well-known voiceover actors, such as Mel Blanc from the Warner Brothers and Hanna-Barbera cartoons, and Hank Azaria, who voices many of the characters on *The Simpsons*. I now have a much broader knowledge base of other important names in the voiceover business and have had exposure to the careers they have built for themselves.

Since starting graduate school and studying the speaking voice intensely, I have considered beginning a career for myself in the voiceover industry. After learning the many specific details about the craft throughout this research and how differently each artist approaches his or her work, I feel I have gained the needed skills, especially concerning my ability to consider and create a variety of character voices, to begin to build an audition reel and start auditioning for roles. Along with the skills themselves, I also feel my confidence in this specific work has been boosted.

**Estill Voice Training™**

Ten years ago I was first introduced to the EVT™ at a choral festival in Pennsylvania. I remember being intrigued, excited, and inspired by the research and practicality of the work. I spent the following seven years making an attempt to study the system seriously, but due to money and schedules, I never managed to make it happen. During my three years of graduate
study, I was able to learn more from professors Steven Chicurel and Tara Snyder (both certified EVT™ instructors). I also attended one further workshop with Kim Steinhauer in Pennsylvania.

Choosing to use EVT™ as a major part of my case study pushed me to learn more about the work and actively use the information actively in my study and writing. I feel that I now have a much stronger grasp of the specific vocabulary and anatomy discussed within the system and my ears are more attuned to different sounds and permutations of voice quality. My hope is to use this knowledge to successfully test and earn an Estill Certificate of Figure Proficiency (CFP), and eventually work towards becoming a Certified Master Teacher (CMT). This thesis project was helpful in turning my desire to learn more about EVT™ into a reality.

The Creation of a Teaching Document

As stated in the first chapter, little has been written on the subject of puppet design that leads to voice quality. I am proud to have created a document that can be used both by others and myself to assist in new puppet character creation. As an educator, I plan to use portions of this paper to teach students how design and build multi-dimensional puppet characters for themselves. Both the Character and Design chapters of this thesis provide a step-by-step approach for a new student to get started.

Links to Acting

Another appreciation concerns the links I have discovered between puppetry and acting. I never really thought about how important characterization is to puppetry, but now I understand that it is crucial. As I stated earlier in the paper, a puppet is ultimately an actor. It has to have a
past, intentions, objectives, wants, needs, and to overcome obstacles. The more the design of a puppet is developed, the richer and deeper the character will become.

Professional Growth

The final appreciation I have concerning this project involves the overall professional growth I have experienced concerning my knowledge of puppetry. This project has encouraged me to attend workshops and classes that I have always wanted to attend but never made a priority. Since selecting this topic, I have attended two major puppetry workshops in the United States and Canada, and have plans to attend more in the future. In these workshops, I have had the opportunity to work with and learn from several of the best practitioners in the business. I wish to keep learning as much as possible so I can apply puppetry to my other work in the theatre, such as designing and directing.

Regrets

Test Participants

Many aspects of the Whatnot test were successful, but I do wish I had included more participants. I stated early in the process that I wanted at least fifteen participants. While twenty-one actually did participate, it was not enough. As I was quantifying and analyzing the data, I noticed there were several times I only had one sample in a particular category when comparing, which wasn’t helpful in finding connections. I had nothing to compare in those situations, which left holes in the data.
When I run this test again, I will aim to more than double the number of participants to approximately forty. There will be a greater chance to compare results if more samples are available.

*Whatnot Feature Adjustments*

The Whatnots and their accompanying features were built quite a while before I began researching and writing the Voice, Character, and Design chapters of this paper. This caused a clarity issue when analyzing the data from the actual test. The information I found and chose to include in the Design chapter was very specific in terms of the look of each feature and how that specific look feeds a character, but the Whatnot facial features I had did not match those descriptions. For example, in Chapter Four, I discuss quite a bit about the design elements of eyes, but the eyes I provided the participants during the test did not match any of the descriptions I presented. I was forced to work backwards and had to manipulate eyes to fit the description provided the participants. I did not realize the issue until I began to look at the data I collected. I should have created features first, and then created the description.

Many new projects are trial and error. There were several procedures I would change if I were to run this test again, but overall I feel it was successful. I was able to glean new and exciting information and connections, and I learned a lot in the process.

*Moving Forward*

Many additional creative ideas emerged while I was working on this project. I have conceived new puppet show concepts. A few unique character designs have also surfaced from my imagination while being engaged in this project. The new idea I am most excited to share is
the potential of using the Whatnot puppets to assist actors as they develop characters in a scripted play.

Starting with a blank Whatnot head and body, the actor would play with a variety of features by trying and changing those features on the Whatnot until a character emerges that reflects the character in the play. By combining the given circumstances of the show and by applying one of the methods I describe in Chapter Three, the actor would get to know their character. Once the puppet character is established, a voice based on that character should emerge. The actor should then hold a substantial conversation with the puppet character. He will then disengage from the puppet and begin to embody the character traits and vocal qualities of the puppet.

Usually characterization happens in an actor’s imagination. In this case, however, the puppet serves as a physical manifestation of that character. I hope to find whether it is easier, or more effective, for a human actor to imitate something they have created and are able to see, touch, and hear, even if it is a puppet, rather than something they have created in their imaginations.

My intention is to offer this exercise to emerging artists who may be insecure and who struggle with trusting their acting choices and their imagination. It is possible the exercise of building puppets, developing character, and voice quality can be effective for people with special challenges, such as autism. I am curious and excited to test these new ideas.

Puppets provide opportunities for artistic growth, personal growth, and serve as a creative outlet for actors and non-actors alike. The possibilities of puppetry are endless and may well provide new ways to express “the truth” of a character, and will continue to provide a means of expression for anyone who engages with one.
APPENDIX A: IRB APPROVAL LETTER
Approval of Human Research

From: UCF Institutional Review Board #1
FWA0000351, IRB0001138

To: Ryan Skiles

Date: April 07, 2015

Dear Researcher,

On 04/07/2015, the IRB approved the following human participant research until 04/06/2016 inclusive:

Type of Review: UCF Initial Review Submission Form
Expedited Review
Project Title: Connections of Voice and Design in Puppetry
Investigator: Ryan Skiles
IRB Number: SRE-14-0774
Funding Agency:
Grant Title: N/A
Research ID: N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form cannot be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu.

If continuing review approval is not granted before the expiration date of 04/06/2016, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in IRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophna Dzigielaueki, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Karielle Chap

IRB Coordinator

Page 1 of 1
APPENDIX B: WHATNOT WORKSHOP QUESTIONNAIRE
“Whatnot Puppet Workshop” Questionnaire

What was your puppet's name? ____________________________________________

Gender: __________ Age: __________ Nationality: ________________

Describe what your puppet looks like (Hair color, eyes, nose, facial hair, ears, etc)

____________________________________________________________________
____________________________________________________________________

Describe what your puppet sounds like (pitch, tempo, timbre, volume, energy, quality, etc)

____________________________________________________________________
____________________________________________________________________

Name 3 personality traits your puppet possesses (You may use the provided word bank to assist or create your own narrative to describe it's character/personality)

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Did the design of the puppet inform the voice you created? If so, how?

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
APPENDIX C: WHATNOT WORKSHOP INSTRUCTIONS
WHATNOT PUPPET WORKSHOP
Instructions

Step 1: Choose a “Whatnot”
- Pick the head shape and color you wish to use.

Step 2: Add and Remove Features to Create a Character
- You have the option to add facial features such as eyes, ears, nose, hair, tongue, uvula, or be creative and turn an existing feature into something new.
- Remember, sometimes “LESS IS MORE!”

Step 3: Get to Know Your Puppet
- Take a good look at your puppet.
- What is its personality? Attitudes? Beliefs?

Step 4: Give Your Puppet a Voice
- Once you get to know the character of your puppet, give it a voice. Allow it to be organic and unique, but it must be different than your regular speaking voice.
- Consider playing with pitch, tempo, timbre, volume, energy, quality, etc. if you are having trouble.

Step 5: Have a Conversation with Your Puppet
- Talk to it. Get to know it as a real character. Ask it questions. (You may be surprised at the answers you receive!)

Step 6: Video Record a Monologue
- Step up to the “Male” or “Female” monologue and record your puppet performing the monologue, beginning with your assigned “participant #.” Please let it be a dry read and really try to use the voice and characterization you found in the exploration in the previous steps.

Step 7: Complete the “Whatnot Puppet Workshop” Questionnaire
- Write your “participant #” in the top right corner and then fill out the questionnaire to the best of your ability. Upon completion, put the questionnaire in the “done” pile and you are free to go. Thank you so much for participating!!
APPENDIX D: WHATNOT WORKSHOP RESULTS SPREADSHEET
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<th>PUPPET NAME</th>
<th>GENDER</th>
<th>AGE</th>
<th>NATIONALITY</th>
<th>PHOTO</th>
<th>Body</th>
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<th>Hair</th>
<th>Nose</th>
<th>Ears</th>
<th>Tongue</th>
<th>UVula</th>
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<td>Ping Pong Balls</td>
<td>Green Tuft</td>
<td>Large Pink</td>
<td>Tongue</td>
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<td>Retracted</td>
<td>Vertical</td>
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<td>High</td>
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<td>Brown Hair, Lashes</td>
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<td>Pointy</td>
<td>Tongue</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Stiff</td>
<td>Mid/Constrict</td>
<td>Tilt</td>
<td>Vertical</td>
<td>Wide</td>
<td>High</td>
<td>High</td>
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<td>Orange tuft</td>
<td>Tongue</td>
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<td>Orange Wig</td>
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<td>Very Naive</td>
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<td>A Child of Earth</td>
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Whatnot Workshop Results
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LIST OF REFERENCES


Donmoyer, Jamie. "Design and Voice in Puppetry." E-mail interview. 07 Dec. 2014.


Linz, Peter. "Design and Voice in Puppetry." E-mail interview. 07 Dec. 2014.


Peterson, Mike. "Design and Voice in Puppetry." E-mail interview. 07 Dec. 2014.

