

PUPPET MOVEMENTS IN STRUCTURE-SPECIFIC TRADITIONAL PAPER CUT OUT ANIMATION PRODUCTION

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Abstract: Physical paper puppets are inanimate objects, but when we're speaking in terms of the production of traditional paper cut out animation, they become the actors and the souls that drive the movie. When shooting and animating traditional paper cut out animation, the puppets are laid flat on a surface so they can only move in limited directions compared to conventional 2D or 3D animation. As we know, each character in animated movie has its own personality and unique to each other. The challenge lays in bringing out the characteristics and personality of the character through the limited medium of paper puppet. In this qualitative research, puppet movements will be applied to quadruped cat characters in a public service announcement titled "Spay & Neuter". The puppet along with the visual design, segmentations, and joints were done in previous research. Qualitative observations and audio-visual materials are used to collect the data for references. Literature review will study the characteristics of cats, body language, behaviour, and principles of animation especially timing and exaggeration. Observation is conducted by studying the movements of real cats from online videos and direct observations and also studying how other animators animate cat characters in animated films. In the exploration stage, paper puppets will be animated according to the movement design while experimenting with the timing and frame rate of the stop motion to achieve the final results.

Keywords: character; animation, stop motion, puppets, paper cut out, cats

Introduction

Before starting animation production, deciding the looks and what technique to be used is crucial. There are a few aspects

that need to be considered such as story, concept, audience, production budget, team, and time frame. Therefore, understanding the project as a whole is important. Public service announcement "Spay

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& Neuter” was made to raise public awareness about the importance of controlling stray cats overpopulation through castration, also known as spay (for female) and neuter (for male) (Sunshinerescuegroup, 2015).

This idea is still uncommon in Indonesia and considered ‘cruel’ due to ignorance and lack of information. This situation can be easily observed through negative comments on social media posts whenever somebody try to speak up about it. Explaining often doesn’t work because of ego. Seeing that the majority of Indonesians tend to reject new and unpopular opinion, thus animation media needs to step in because animation has been known to have the unique capability to deliver sensitive issues and camouflage them into an entertainment that can be accepted by audiences without the feeling of being lectured (Wells, 1998).

This public service announcement will be distributed through social media. Social media has undeniably become part of modern life culture, especially in this gadget-oriented era. People share and response to many things that they find interesting across social media such as photos, status/ stories, pollings, and videos. It is easier to watch something on your phone because you can do it anywhere, anytime, while multitasking it with other things. However, within the short amount of time and tremendous amount of data, it’s easy to ignore and skip information. Accordingly, nonmainstream looks play an important role to grab the audiences’ attention. That’s why even though traditional paper cut out animation technique is considered obsolete among the rapid growth of digital animation, it is chosen because of the unique visual aesthetics resulting from gestures from animated figure, constructions, materials, and movement limitations (Shadbolt, 2013). This technique can also be done in a short period of time and doesn’t require a big team.

This research is a continuation of prior research which mainly focused on designing cat puppet segmentation and joint system.

Prior Research

“Spay & Neuter” public service announcement depicts the welfare differences between two female stray cats named Maggie and Bella. Bella who is spayed by the locals lives a better life than Maggie. Beside these two, there are a few other cats as side characters so a lot of cat puppets are needed to be made and animated. In this research, the area of focus is limited to Bella’s animation as the study case. Character design is an important part of animation preproduction process because a well-prepared concept of character design can make memorable films (Purwaningsih, 2018). According to the story needs, the concept of this public service announcement is delivered like a children storytelling so the overall look is designed to look as hand-made as possible, especially the puppets.

As the result from prior research, the puppet’s segmentations are designed to be as efficient as possible with necessary limb segments. The joints for the puppet’s limbs basically uses thread and tape but a little modification is added. This kind of joint allows the segments to rotate more freely. As for the puppet’s face, pocket and replace-ment method is used so the pup-



Figure 1. Final Design of Paper Puppet (Bella) for Public Service Announcement “Spay and Neuter Campaign”)

pet can show essential expressions and do some things like open/ close mouth and grooming the fur (Purwaningsih, 2020). The final design of Bella's puppet from previous research can be viewed in Figure 1.

Research Objectives and Method

As we can see from Figure 1, the structure of the puppet will affect limitations in body movements and facial expressions compared to characters in conventional 2D and 3D animation. Additionally, fluid movements, particularly in perspective angles is hard to achieve with flat cut-out puppets like this (Li, Yu, Ma, and Shi, 2007). This is a challenge especially when we are trying to animate cat movements that are smooth and elegant.

This research employs qualitative method as an approach by building the pattern from bottom up and moving back and forth between the themes and the database. While the process begins inductively, deductive thinking also plays an important role in qualitative research as the analysis moves forward (Creswell,

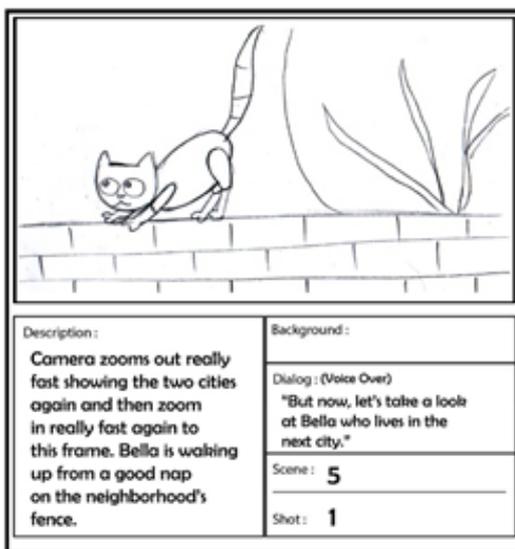


Figure 2. Storyboard panel of scene 5 shot 1

2014). Data are collected by qualitative observations and audiovisual materials.

To determine the scope of this research, the required movements are identified from storyboard breakdown which consists of shot, duration, and the context of the voice over. Based on the contrast and importance of the shot (the turning point of the story), scene 5 shot 1 is chosen. The storyboard can be viewed in Figure 2. This shot shows Bella, the spayed cat, sleeping and then wakes up to jump down (out of frame). From the voice over we can see that the narrator wants to show

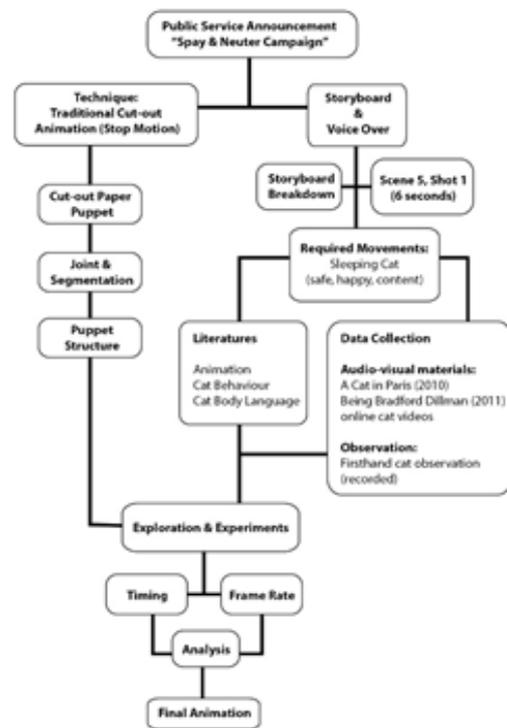


Figure 3. Research scheme

contrast of life quality compared to cats in the previous city. From this breakdown, the movement that needs to be designed is sleeping cat which feels happy, safe, and content for the duration of 6 seconds. The detailed research scheme is shown in Figure 3.

Animated film *A Cat in Paris* (2010) and *Being Bradford Dillman* (2011) are used as audio-visual materials to study how other animators animate cats. Relevant online videos of sleeping cats that are found in youtube.com are used as well as reference. As for the qualitative observations, author will directly observe the movement and body language of sleeping cats that meets the criteria. This data and then used in exploration stage where the timing is adjusted to the duration and frame rate while still deliver the intended message through movements.

Literature Review

In animated film, characters are the actors so the movements are crucial to be fluid and look as believable as possible. Disney's animator formulates 12 principles of animation as a set of guidelines to animate characters which are Timing, Exaggeration, Squash & Stretch, Slow In Slow Out/ Ease In Ease Out, Staging, Appeal, Solid Drawing, Anticipation, Secondary Action, Follow Through & Overlapping Action, Arc, and Straight Ahead vs Pose to Pose (Sultana, Nekhat, Lim, Peng, Meissner, and Nico, 2013). Although it's no doubt animator uses all of the principles in the animation (solid drawing is the exception in stop motion animation), based on the research problem timing and exaggeration are the main factors.

Timing is the most involved principles in animation, it works together with other principles to portray character's emotions. For example a sad character tends to move slower than happy character. Exaggeration works by amplifying or minimizing some aspects of the movements in order to emphasize actions or emotions of a character.

Another literature that is needed to shape the direction of the movement design for cat puppets is cat behaviour

and body language. By nature and inclination, cats' body are build for speed. Cat moves gracefully, daintily, and sedately. When a cat feels good, the ears are erect and pointing toward forward direction, and whiskers are relaxed. An alert expression, pricked up ears and a glossy coat suggest that a cat has a balanced diet and a healthy, contented life. At the rest of familiar touch, it may purr and "knead: its paws. Cat's tail bones are joined by a complex system of small muscles and tendons, making the tail capable of a great range of movements. This anatomy enhances balancing potential and has also developed as a barometer of the cat's emotional state (Edwards, 2010). If the tail is up, generally it means something positive and signals friendly encounter. When the tail is down, it signals fear or anxiety (Weiss, Mohan-Gibbons, and Zawistowski, 2015). Fear and anger also expressed by spits, hisses, and low growls.

Movements Study

To better understand the movements, several audio-visual materials are observed such as animated films containing cat characters and online videos of cats taking a nap that are found in youtube.com. The animated films mentioned are *A Cat in Paris* (2010) and *Being Bradford Dillman* (2011). The first film is chosen because the cat plays an important role in the film so a lot of screen time can be observed. The later is chosen because of the similarity of the technique which is paper cut-out animation.

Figure 4 is a sequence of a clip from *A Cat in Paris* (2010). This animated film uses frame by frame 2D animation. The clip shows Dino (the cat's name) is taking a nap on a couch and then wakes up to jump. The whole action takes 10 seconds

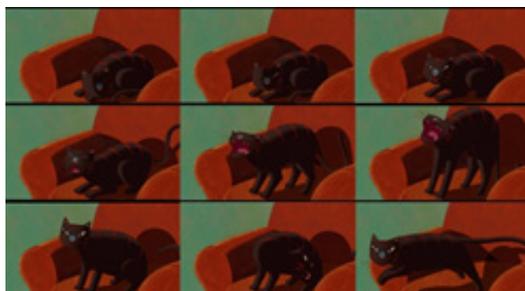


Figure 4. Sequence from *A Cat in Paris* (2010)

duration to complete. During his nap, we can barely see any movement at all from Dino. When Dino wakes up, he yawns and then does a little bit of stretching. And then he continues to groom his fur and then finally jump off the couch. The movements are all fluid and it seems that the animator wants to make it realistic and detail.

The approach is a bit different in *Being Bradford Dillman* (2011). This animated film which uses traditional cut-out animation doesn't aim for realistic movement. The movements are intentionally rigid and jaggy. The cat's movement from Figure 5 shows the sequence of a sleeping cat that wakes up. The cat doesn't yawn and stretch its body. It is understandable given the limitations of the puppet. The movements are fast and use just a few frames.



Figure 5. Sequence from *Being Bradford Dillman* (2011)

During the nap, we can see that the cat slightly moves its tail as a sign of relax. It is also because the tail is the part that can move more freely than other parts of

the puppet. The cat needs to be moving even if it's just a little bit so the audience aware of its presence. The sequences can be viewed in Figure 5 below.

Beside cat's movements from an animated film, some videos of real life cats are also observed. Author uses a video titled "Why Does My Cat Sleeps with Me? – 5 Reasons You'll Love to Know" uploaded by channel AnimalWised (published April 7, 2018) in youtube.com. In this video we can see several cats taking a nap but as a sample, author only choose one.



Figure 6. Sequence from "Why Does My Cat Sleeps with Me? – 5 Reasons You'll Love to Know" (2018) (<https://www.youtube.com/watch?v=8B2esiq24Hg>)

The sequence can be seen in Figure 6 below. Here we can see the cat is sleeping on a couch in curling position, covering its face. There are no notable movements during this action other than the stomach as a result of breathing and the tail's movement. The cat swings its tail rhythmically, showing that it's relaxing.

Another audio-visual material data is titled "Cat Sleeping in Front of a Gas Fireplace – 3 Hours – LHP" uploaded by channel LittleHomeProjects (Published on November 26, 2017) in youtube.com. As the title suggests, this is a 3-hour long video showing a cat sleeping in front of a fireplace. The cat does a lot of different poses during sleeping, but only one part is used as a sample. Similar to other videos, during the nap, even though the poses are varied and changing, cat is almost still. The only notable movements are the



Figure 7. Sequence from “Why Does My Cat Sleeps with Me? – 5 Reasons You’ll Love to Know” (2018) (<https://www.youtube.com/watch?v=8B2esiq24Hg>)

stomach and tails. The sequence can be seen in Figure 7 below.

For qualitative observation data collection, author directly observe cats’ behavior. The cats are chosen based on the similarity of the criterias which are safe, happy, and live a contented life. The cats are also spayed and neuter by the owner. Two different cats are used as observations. The results are consistent with other data. The body is mostly still but ears may be twitching a little in response to external factors such as noise or contact with insects. The cats in the observation videos are not in a deep sleep, most likely they are just starting/ trying to sleep. That’s why the tail is still moving. In a deep sleep state, cats barely moving at all except for the stomach. When wake up, they don’t always do stretching. The sequence from the observation can be seen in Figure 8 and Figure 9.

From the literatures and observing all of the cat videos either from animated movies or from real life cats, author found several important points, which are:

- Cats sway their tails to express several feelings including annoyed, anger, and relax. The difference can be seen from the timing of the movements. Slow and rhythmic movements indicates the sign of relax/ content.

- During a deep sleep, cats barely

moving at all except for the breathing. Tail movements usually occurs when they are not fully asleep (drowsy).

- Stretching after waking from a



Figure 8. Sequence from Observation Video 1 (Source: author)



Figure 9. Sequence from Observation Video 2 (Source: author)

nap doesn’t always happen.

- Animation techniques and shot duration can be important in deciding what motion to show. Frame by frame animation has more freedom to show fluid and detail movements, whereas cut out animation is limited due to the puppet structure.

Results

Animating cat puppets for traditional paper cut-out animation is a challenge because it involves 2 aspects contrast to each other. Cats has fluid movements but it has to be animated using paper cut-out which is rigid and 2 dimensional. From the data collected, we can conclude that

even though cats are mostly still during sleeping, occasionally some of the body parts are moving such as ears and tails. When the cats wake up, they usually yawn and stretch their bodies. Some of these movements are limited by the structure of the puppet. Although the joint and segmentations are designed as efficient as possible, but still, the paper puppets are two dimensional which can only face right or left. Therefore, exaggeration and careful timing need to be considered to make sure the characteristics of the cat can be portrayed.

The final result of the design can be seen in Figure 10. According to the voice over, Bella lives in a city where the citizens are kind to stray animals that they care enough to spay and neuter them. It indicates that Bella is in a safe environment where she can relax even when she's out in the open space like the wall here. To show that she's taking a nap, her eyes are closed using replacement technique. Inflating



Figure 10. Sequence of Puppet Movement Final Result
(Source: author)

and deflating stomach are impossible to achieve with this structure so other characteristic needs to be exaggerated in the animation which is moving the tail a little bit. Even when moving the tail, swinging it back and forth needs to be done by considering the timing because too fast can result in showing that Bella is angry and annoyed.

Next, Bella wakes up and then jump off the wall. To prepare the audience that Bella is going to wake up, author adds anticipation by twitching the ear as if something such as noise or insects wake her up. In the duration of six seconds, it is not possible to add details like yawning and stretching. And also by looking at Being Bradford Dillman (2011) which uses similar technique, the movement doesn't need to be detail because the puppet's structure cause the movement to have its own style and uniqueness.

Conclusion

Animating cut out puppets can be a challenge. Puppets in traditional paper cut-out animation are not meant to be able to move as fluid as other technique such as frame by frame 2D or 3D animation. In fact, the imperfection of the movements is what makes this technique unique and stylistic. Details in movements have to be reduced, leaving only the strongest characteristic that represent the message. That's why it is important to collect as much data as possible as references in animating the puppet.

The structure of the puppet has a tremendous impact in deciding what kind of movements or which part of the puppet can be used to exaggerate the action and emotion. Timing also plays an important role.

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