

USAGE OF 12 ANIMATION PRINCIPLES IN THE WAYANG KULIT PERFORMANCES

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Abstrak— Wayang kulit merupakan salah satu animasi tertua, namun hingga kini belum ada penulisan lebih lanjut yang membahas tentang hubungan animasi dengan wayang kulit itu sendiri. Dengan demikian, tulisan ini bertujuan untuk memperlihatkan hubungan antara animasi yang kita kenal saat ini dengan pertunjukan wayang kulit, menggunakan 12 prinsip dasar dari animasi sehingga terlihat persamaan penggunaan teknik yang ada dalam hubungannya dengan proses yang lainnya.

Kata kunci— Teknik animasi, 12 prinsip animasi, wayang kulit

Abstract— *Wayang Kulit has been known as one of the oldest animation; however, there is no definitive methodology that supports the development process of these animation performances that we know nowadays. This paper aims to give an overview of using the famous 12 principles of animation in the Wayang Kulit performance. A qualitative study of the Wayang Kulit Performances is described, aiming at finding the similarities between the traditional animation techniques and those techniques used in this shadow puppet shows.*

Keywords— *animation techniques, 12 principles of animation, wayang kulit*

I. INTRODUCTION

In the new technology era, animation has grown rapidly with a variety of forms from simple hand writing to multimedia. The pioneer animators from the Disney Company came up with some great research on the fundamental principles of a good animation. These principles known as the Principles of Traditional Animation, was brought by Disney's animators Frank and Ollie in their book "*Disney Animation – The Illusion of Life*" in 1981[6].

In 1987, Lasseter came up with an additional principle of "Personality", which shows that in animation, a character's actions and movements are the results of its thought processes. With this added principle, made the most known of the 12 Principle of Animation[2].

According to Don Bluth, animator and director of Disney, Walt Disney interprets animation as "life". It is made with the purpose to create an illusion of life so audience can see a character has its own personality that lives. This philosophy became the bases of all animation. These fundamental

animation principles will be used in this paper and further discussed in the following section.

Wayang Kulit is the Indonesian shadow puppet theatre, which already been acknowledge in worldwide organization about The Masterpieces of the Oral and Intangible Heritage of Humanity. It was a list maintained by UNESCO with pieces of intangible culture considered relevant by that organization.

The goal of this paper is to take a closer look at 12 principle of animation used in wayang kulit performances. The animation principles designed by Disney animators themselves, will act as guidelines to test the quality of animation used in wayang kulit performances techniques, by analyzing the use of the 12 traditional animation principles in it.

Meanwhile, Sukatno [5] describes the term of designing wayang kulit that history recorded been made and performs in inscription dated 930 CE, as two distinct interpretations. Firstly is the aesthetic notion of designing something to create the desired perceptual responses and secondly the meaning notion of design as the creation of plans and models from which has its own meaning and desired artifact each character that performs[5].

Only from that basic elements can be shown the correlation of wayang kulit and animation. Therefore a deep analysis of wayang kulit performances is needed to prove the existence of wayang kulit as one of the oldest animation and its timeless techniques that more or less are similar with the 12 principles of animation that been conclude in 1987.

II. LITERATURE REVIEW

In this section several existing literature is described to give an overview of the Wayang Kulit shadow puppet performances and related theories in the field of animation. The technique used by Wayang Kulit to create the shadow on the screen so the audience can see it as 2D animation is described. Some major theories in the field of animation are also presented.

A. Wayang Kulit

Indonesian Wayang Kulit has already been known as originating on Java by UNESCO. Wayang is an elaborate performance style which includes music and puppetry. It has

spread throughout Indonesia, and has become quite diverse across its range. The shadow puppets are projected on a lit screen from behind. The puppetry is accompanied by complex music utilizing gamelan drums and bronze instruments. Wayang has been an important part of Indonesian culture for many years, with the puppeteers regarded as repositories of moral and aesthetic values. Wayang narratives were drawn on native traditions from these areas, as well as from India and Persia.



Pic.1.1. Process of making a Wayang Kulit

Wayang Kulit uses finely carved and painted leather puppets moving behind a screen to make the audience see their shadows only. Wayang is an Indonesian word for theatre, literally "shadow" in the Javanese language; one of the local language. The Javanese word for shadow or imagination also connotes "spirit." While the term is used to refer to this kind of puppet theatre, sometimes the puppet itself is also referred to as wayang.



Pic. 1.2. Dalang and the Wayang Kulit characters behind the scene

As Wayang Kulit was performed behind the screen and showing the reflection of the puppet's shadows to the audience, they saw it as only the silhouettes of the moving puppets without seeing the hands of the puppeteer, or usually called as *dalang*. Here we can see the similarity between Wayang Kulit and a simple 2D animation that was brought to the public in the late 19th century. On the other hand, Wayang Kulit was already known and could entertain many people since its debut in 930 CE.



Pic 1.3. Miniature of Wayang Kulit Performances' stage

Performances of shadow Puppet Theatre are accompanied with complex traditional instrument called *gamelan* in Java and *gender wayang* in Bali.

B. Animation

The word "animate" means to make something come alive, to moves and acts as if it's has its own mind. It literally came from the Latin word "*anima*" which means soul, live, life, spirit; or "*animare*" which means the vital breath. Animation has become the most nimble of media.

Animation means by which to present new visual vocabularies that brilliantly visualized and provided simulation models to help us understand more. It has become an essential ingredient in multimedia content that almost anything can be brought to life and be imbued with personality, twigs, clay, drawings, objects, computer meshes, and many other possibilities that come cross in people's mind to make it comes alive.

1) As the fast growing of animation, some artist s and animators put through their thoughts of animation as follows [1]:

"Animation is arguably the most important creative form of the 21st century... it is the omnipresent pictorial form of the modern era" - Paul Wells

"Animation can explain what the mind can conceive" - Walt Disney

Animation film visualises the invisible. The creative imagination gives life to the abstract and the amorphous" - Veronique Steeno

"...animation works best as an abstract form, where it fully demonstrates its intrinsic capability of moving non-representational lines and material which fall outside the orthodox domains of 'realist' constructions and agendas. Animation of this sort may be recognized as more specifically bound up with the desire to express profoundly personal, sometimes conscious, sometimes unconscious, aspects of human thought, feeling and experience. The liberating freedom of the medium has a direct correlation with the variety of work achieved by certain animators and artists, who are not merely seeking to find the most appropriate means by which they express their vision, but to progress the medium itself." - Paul Wells, 1998

"... We're confronted with such massive, serious problems as a society, on a world level, that animation as a medium of

communication can deal with the abstractions of these problems that a camera can't." - John Hubley

"...the ultimate test of what animation might be would be life that is created rather than just photographed... I always think that's the basic magic of animation: to see the naturally inert come to life. Even if it's alive. It just rivets. It shouldn't happen and we are just riveted by it. It's a form of magic,alchemy" - John Canemaker

History of Animation [7].

Animation that we know now doesn't appear instantly. It's really "molded and combined" from a lot of things to reach the form of animation as we know now.

The human's ability to see, hear, feel and many other senses, brings the desire to share those experiences with others. With creativity, they learn to duplicate what they see first, starting by trying to duplicate its shapes and put it on medium so it will appear some kind of symbol or drawing. As the ancient time, human using drawing to retelling what was happened in their life to others. This will be the beginning of animation.

In the history of life, shows that whether it in ancient Egypt, Greek, French, Iran, China, India to Indonesia, founded the historical sites with humans drawing. Between 15000 – 13000 BC, symbols were use in story telling on the cave wall at *Grotle de Lascaux*, French.



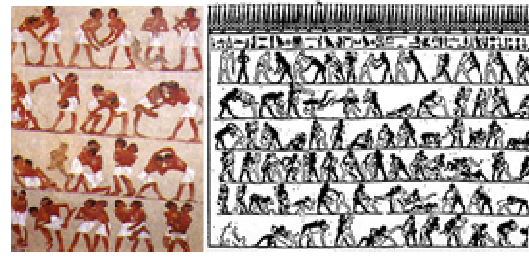
Pic. 2.1. Still image of a horse & cattle painted on the cave walls of Lascaux caves, northern slopes of the Pyrenees, South central French.

In Iran, a 5200 years old earthen bowl was found that has five sequential images painted along the side, showing phases of a goat leaping up to nip at a tree. This was recognized as the beginning of sequential images of drawing.



Pic. 2.2. A five image sequence that create a story telling of the way of life of a goat, painted on the Persian vase found in Iran.

Other ancient drawing can also be seen in the symbols that the ancient Egyptian made to create stories which we know now as Hieroglyph. Besides the symbols, they also try to use drawing as well to show humans, animals or other objects. One of the famous ancient motions drawing from Egypt was found in the burial chamber mural, approximately 4000 years old that shows wrestlers in action.



Pic. 2.3. Ancient Egyptian depicting apparent sequence of images illustrating the dynamic poses as used by wrestlers.

The beginning of animation also shown and grew in Indonesia as in South East were noted that Wayang Performance was recorded in an inscription dated 930CE. One of it started to grow from the painted of wayang characters on a long papyrus paper, called Wayang Beber. Wayang Beber is story telling performance using a long rectangle size with stick on each side so it can be put as some kind of screen with images that has been painted.



Pic.2.4. Picture taken of Wayang Beber performance in year 1900



Pic.2.5. The image on Wayang Beber, shows some characters in one of the scene story.

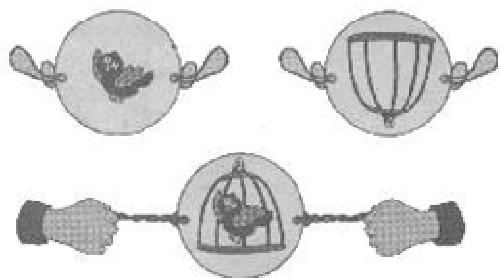
Later on, Wayang Beber metamorphoses into Wayang Kulit. All the characters that been painted in Wayang Beber are became personalized. Each character comes to individual 2d puppet made from bull's leather with improvement of moveable parts of the body. As each character can be move separately it vigorously brings a whole new dimension to the performance and known as Wayang Kulit performances [5].



Pic 2.6. Wayang Kulit puppets that personalized from the characters in the Wayang Beber story

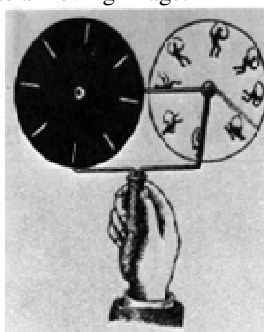
Wayang Kulit performance still exists until now days in the modern era.

Moreover, in the Victorian era 1824, animation begins to evolve when John Ayrton Paris demonstrated Thaumatrope. A small circulated card that has 2 sides with different image where the disc or card attached with a string, and when it twirled quickly, will create an illusion that the two images on each side became one image.



Pic 2.7. Image of Thaumatrope

In 1826, Joseph Plateu created Phenakistoscope, disc of sequences images on the circulate side that when it turn circling, will create a moving image.



Pic 2.8. Phenakistoscope

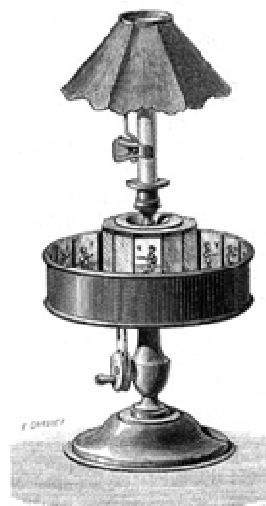
While in China, Zoetrope was invented by the prolific inventor Ting Huan in 1834. Zoetrope is some kind of device to see the rotating sequences images in the tube with a little hole to peep, that create an illusion of movements from the image.



Pic. 2.9. Zoetrope 1834

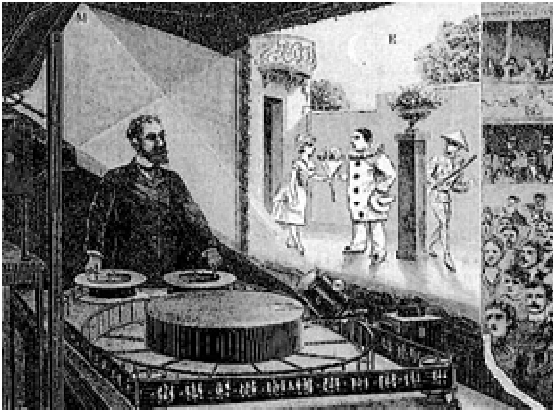
And then the animation vigorously developed into a flip book that was first patented in 1868 by John Barnes Linnet. Flip book is more likely closer to 2d modern animations which create the illusion of motion.

As the technologies are increase more sophisticated Zoetrope was created in 1877 called Praxinoscope. This device has mirror in the middle of the tube to gives efficiency way to see the motion of the rotating image on it.



Pic. 2.10. Praxinoscope

The Praxinoscope invented in 1877 by the Frenchman Charles Emile Reynaud. This later on will lead to invention of Theater Optique which is beginning of the cinematography.



Pic. 2.11. Theater Optique. Paris 1892 Pic. 2.11. Theater Optique. Paris 1892

C. Disney's Animation Techniques

Much has been said about the traditional animation techniques defined by Disney [Thomas 1981]. The applicability of these techniques in 3D animations has been acknowledged [Lasseter 1987];, though the actual method of use depends on the medium that is used. In this paper we will use the definitions of these classical animation principles as listed by Lasseter:

1. Squash and Stretch

Squash and stretch is to defining the rigidity and mass of an object by distorting its shape during an action.

2. Timing

Timing is the spacing actions to define the weight and size of objects and the personality of characters.

3. Anticipation

Anticipation is the preparation for an action.

4. Staging

Staging is to presenting an idea so that it is unmistakably clear.

5. Follow Through and Overlapping Action

Follow Through and Overlapping Action is the termination of an action and establishing its relationship to the next action.

6. Straight Ahead Action and Pose-To-Pose Action

Straight Ahead Action and Pose-To-Pose Action is When the two contrasting approaches to the creation of movement.

7. Slow In and Out

Slow in and out is the spacing of the in between frames to achieve subtlety of timing and movement.

8. Arcs

An arc is the visual path of action for natural movement.

9. Exaggeration

Exaggeration is accentuating the essence of an idea via the design and the action.

10. Secondary Action

Secondary action is the action of an object resulting from another action

11. Appeal

Appeal is when creating a design or an action that the audience enjoys watching.

12. Personality

Personality is the characteristic of each.

III. ANALYSIS OF WAYANG KULIT PERFORMANCES TECHNIQUES

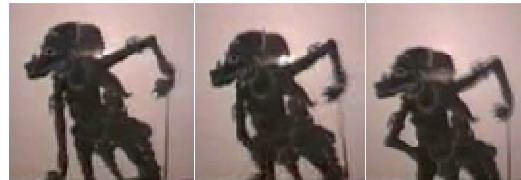
A. Method

To define whether the classical animation principles as defined by Disney really are applied in the several parts of wayang kulit performances, a qualitative analysis of the application was conducted. The authors of the current study spent time in the wayang kulit performances investigating the possibilities and find applications of each of the principles.

B. Results

1. Squash and Stretch

Squash and stretch is visible when looking at any character in the act.



Pic. 3.1. Showing the bent movement.

2. Timing

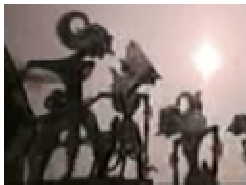
In the big character such as *Buto*, or the giant in the story, the character will move slow and heavy. In the other hand, the small character will move faster and light. From there it will show the timing that a *dalang* shows to create the volume of each character.

3. Anticipation

Example is the movement of before hitting something in the fight scene. The puppet will moves its hand to the back first before it moves to the front, to the rival. This first movement before hitting shows the anticipation movement that will bring the feel of natural moves.



Before hitting



The hand goes back

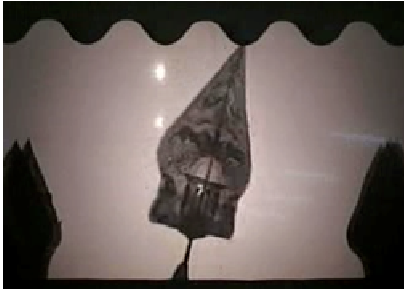


Then the hand hit.

Pic 3.2. Anticipation movement before hitting, it also shows the follow through, overlapping movement and secondary action.

4. Staging

Perform all the characters in the middle of the screen with 2 *gunungan* as the border of left and right screen. As the scene begin, usually will started with the fade in character from the center. As the story goes on, each character can be staging from each direction depend on the story and how the *dalang* want the audience follow the direction.



Pic 3.3. Positioning the *gunungan* in the center to attract audience's eyes to the center of stage before the scenes begin.

5. Follow Through and Overlapping Action

In the fighting scene, some effects are created naturally as the 2 puppet are collided to each other that will create one movement to another. It shows from the movement to the hands and other parts of the body too.

6. Straight Ahead Action and Pose-To-Pose Action

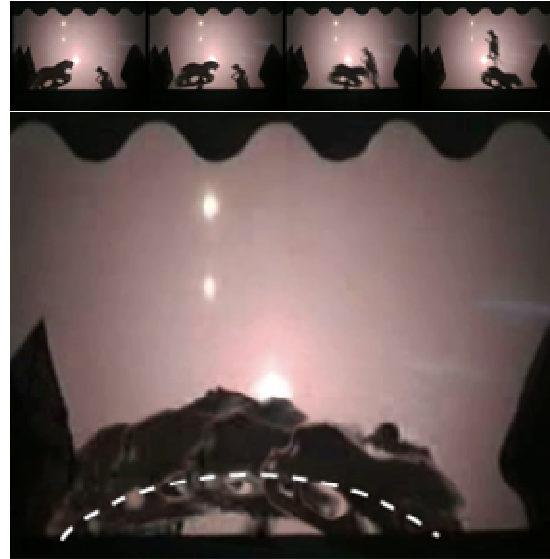
In every action, there's a moment where the character pose in the middle of the action. Example in the fighting scene, after hitting the enemy, sometime the character will pose to laugh in the middle of fight where the opponent were fall down. This will create more interest in the act.

7. Slow In and Out

This can be found in the beginning of the performances, that the *gunungan* was first appear in the screen. Sometimes it can also be seen in the dramatization movement that the *dalang* want to show, whether it in the fight scene or in the other scene.

8. Arcs

The esthetics of arcs is found in the pattern that *dalang* use to move the wayang. Usually it shows when the character is walking or jumping. This natural pattern is automatically used as the characters moves as it's alive.



Pic 3.4. The arc shows in the jump of a tiger.

9. Exaggeration

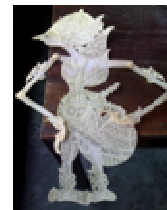
The exaggeration can be found in many scenes of the wayang kulit performances. It became one of the most interesting points in the acts. Example, in the fight scene, only with one movement of hitting, the opponent is showed as if it was bitten ten times that makes the opponent turn over and over.

10. Secondary Action

In every action there will be the secondary action to shows the natural movement to create illusion of living things. This is showed in the movement of the hand harmonizing when the character is walking.

11. Appeal

The colorful and well crafted design of wayang kulit puppet is designed to be appealing to its target audience. Such as the character of *Gatot Kaca*, has the accessories on its back, as the wings to show that it has the ability to fly. This characteristic will appeal to others.



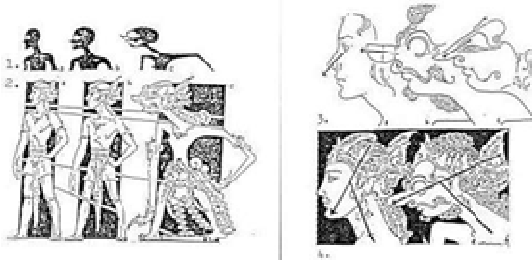
Pic. 3.5. Well crafted wayang kulit character of Gatot Kaca.



Pic.3.6. Gatot Kaca character (on the right side), appeal then others.

12. Personality

Each and every character of wayang kulit has its own personality. From the appearance and the way it acts has different style. Therefore wayang kulit is well known of its characters that has the similar personality in human being.



Pic. 3.7. The comparison of Human character with Wayang Kulit character.[8]

IV. DISCUSSION

After this study some issues remain for discussion: in wayang kulit performances, some of the animation techniques are not visibly used. Possible explanation for this can be the difficulty of moving the 2D puppet to act. Another explication can be found in that the player of wayang kulit or as known as *dalang*, wanted to make it relatively easy to add more style. Because it is necessary to keep audience interested can be a good strategy to achieve this.

CONCLUSION

Many of the 12 traditional animation principles techniques were found in different parts of the wayang kulit performances shows the level of usage of the individual techniques.

TABLE 5.1. THE VISIBILITY OF 12 PINCIPE OF ANIMATION IN WAYANG KULIT PERFORMANCES

12 Principles of Animation in Wayang Kulit	Visibility
Squash and Stretch	High
Timing	High
Anticipation	High

Staging	High
Follow Through & Overlapping Action	High
Straight Ahead Action & Pose-To-Pose Action	High
Slow In and Out	High
Arcs	High
Exaggeration	High
Secondary Action	High
Appeal	High
Personality	High

Disney has clearly designed their own animation techniques in mind. Wayang Kulit however has been designed to be used by low-end systems. It appears that this design requirement has limited wayang kulit performances as animation with the well tech animation now days.

The fact that a wayang kulit action cannot be animated as the animators would have liked as in drawings or above and the 2D puppet also makes it hard to create actions, doesn't withdraw a *dalang* to be creatively moving all the characters to act naturally as if it's comes alive and has its own movements.

However, by acknowledging that those 12 principles of animation are used in Wayang Kulit, defined the fundamental conclusion that Wayang Kulit is one of the oldest well prepared and design animation.

Animation techniques in Wayang Kulit are thus closely related to creative possibilities, and higher imagination. Without the feeling of control of the story to come alive, a wayang kulit performance can be as beautiful as an animated movie.

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