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Relationship Between The Art of Wayang Kulit and Disney's Twelve Principles of Animation

Dahlan Abdul GHANI¹, Sidin Bin Ahmad ISHAK²

Abstract

Disney's 12 principles of animation are a standard guide used in both traditional and modern animation around the world. Some researchers believe that wayang kulit or shadow play puppetry is the first known example of animation in history. This paper will explore the fundamentals of Disney's 12 principles of animation that exist in wayang kulit. The main assertion of this paper is that Disney's 12 principles were inspired by wayang kulit as it is practiced in Southeast Asia. Focus will be placed on elements of wayang kulit including puppet design and movement as well as narrative. These elements will then be compared to Disney's 12 animation principles with the insertion of related works. Lastly, the principles that already existed in wayang kulit prior to the actual conception of animation as defined by Walt Disney himself will be examined. It is hoped that this paper will be able to verify the inspiration that Disney's 12 principles of animation gained from the aesthetics of shadow play puppetry.

Keywords: Disney's, 12 principles; Wayang Kulit; shadow play; animation; puppet; movement; performing arts.

Introduction

The Malay word *wayang* means 'shadow'. Shadow play as a medium can be described as a performance setting in which the light source originates from behind the screen between which there are moving objects that block the light, thus creating moving shadows (Mary Beth,1992). According to Leslee Asch (2010), shadow play puppetry is the perfect union of the theatre, which puts ideas

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into action and visual arts, which give them form (Leslee Asch,2010). Puppet actors are creative actors – they are designed to fit a specific role and to illuminate the essence of a character. Puppet theatre is also innately interactive. Shadow play theatre is said to have its origins in India, China, Egypt, Southeast Asia (Indonesia, Thailand and Malaysia), Turkey and Europe. Malaysia in particular has served as an avenue that links and is influenced by disparate shadow traditions. Some of these influences are probably not unidirectional (Fan Pen Chen, 2003). This study focuses on Malaysia’s form of shadow play entertainment known as wayang kulit (refer to Fig. 1) which distinctively reflects the Malay culture in terms of its linguistics and performing elements. According to Patricia Matusky (1997), wayang kulit is the pre-eminent form of shadow puppetry theatre in Malaysia and its stylistic differences seem to be particularly evident (Patricia Matusky, 1997). It can be called a hybrid approach that uses human puppeteering skills and animation principles to create entertainment. Today however, the art of shadow play is slowly disappearing due to lack of interest from the younger generation. Compared to Chinese shadow play, the visual styles portrayed in dramas basically consist of silhouettes using hard paper which are transparently projected onto a white screen. In Turkey, the famous shadow play *Karagöz* is performed from behind a semi-transparent screen on which the play’s characters and objects cast shadows. The characters are distinguished by the colours of their shadows and nicely carved patterns (Fan Pen Chen, 2003). In essence, shadow play contains three basic elements which are the screen, puppets and light. One of the more renowned figures in the international shadow play scene was German-born Lotte Reiniger. Reiniger was not only an acclaimed animator (refer to Picture 1.0); she displayed a passion for film with directing credits for *Das Ornament des verliebten Herzens* (*The Ornament of the Enamoured Heart*) (1919). Reiniger adopted the role of the oriental storyteller but at the same time allowed the narrative to be subjected to a purely technical interest. Her husband helped to inspire her work by introducing her to cinematography.

Figure 1.0 A Wayang Kulit Kelantan performance in Malaysia



Animation can be defined as a motion picture made by photographing successive positions of inanimate objects (such as puppets or mechanical parts) or an animated cartoon or film made from a series of drawings simulating motion by means of slight progressive changes. Hassan Muthalib (2003) points to wayang kulit as the first known example of animation (Hassan Muthalib,2003). In 1926, Reiniger created her first feature film called *The Adventures of Prince Achmed* using wayang kulit-based visual styles in a silhouette technique she invented. According to Khor & Yuen (2009), wayang kulit can be seen as the origin of animation; Walt Disney took much inspiration from wayang kulit prior to his career in animation (Khor Keng Khia & Yuen May Chan,2009). Disney had a vested interest in influencing the public's perception of animation. The combination of performing arts such as wayang kulit created a hybrid synergy in performing arts. In this paper, the visual aesthetics of wayang kulit in Kelantan are used as a case study with emphasis on two major aspects: character design and movement. The connection between Disney's 12 principles of animation and wayang kulit will also be examined. In order to understand the extent of the influence of the principles on wayang kulit performances, there is also a need to review other relevant animation principles that exist in traditional wayang kulit.

Art of Wayang Kulit in Malaysia

Puppet Design

Puppets are a powerful interface of fantasy and creativity (Oscar Mayora, Cristina Costa, and Andrei Papiatseyeu, 2009). The word "puppet" comes from the Latin *pupa*, meaning "doll." However, puppets are more than dolls for they represent an illusion of life. According to Ghazali Abdullah (2007), wayang kulit reflects the tradition of expressing emotions and ambitions creatively through the communication process of shadows reflected on a white screen called the *kelir* (Mohd Ghazali Abdullah, 2007). In wayang kulit, puppet designs are basically carved out of cleaned and dried cow skin. They are different in size as the shorter ones measure six to nine inches in height while taller ones can go up to 36 inches high. Since the audience knows from the beginning that the puppet is not really alive, the puppeteer must breathe life into the puppet. As a non-living object, the act of bringing a puppet to life is always a metaphor. Its nature, therefore, is metaphorical. Metaphor is also embedded in anthropomorphism, an innate and pervasive perceptual predisposition based on simulation, ambiguity and metaphor. It is a concept rooted in the perceptual, and artists ranging from Palaeolithic cave painters to puppet makers and 3D animators have used it to great effect. Patrik Power describes the concept of anthropomorphic personification as being so pervasive in cartoons and 3D feature animation that it is now virtually synonymous with these genres in terms of stylistics.

In the context of wayang kulit, anthropomorphism can be as applied to an intentional puppet character that can play and resonate on any number of aesthetic levels: creative ambiguity, semiotics, play of representation, imagination, symbolism, appeal to children, fantasy, surrealism, humour, magic realism, subversion, irony, satire, jouissance and so on. A puppet's character is conveyed through its expressions. In a sense, the audience is as much the manipulator of the puppet as the master puppeteer or *dalang* is. The puppeteer is not the character being played, and the mastering of the puppet and the character depends on the proficiency of the puppeteer controlling the puppet's threads. The puppeteer, by means of his or her skill in performance, can turn an audience into devotees.

Walt Disney recognised the benefits of acting and 'started production on Snow White by acting out the entire script, playing every character himself as skill of performance'. This was important because he wanted animators to study expressive motion scientifically, and to have an 'appreciation of acting' (Disney, 1935). In Kelantan, wayang kulit typically consists of 65-120 puppets representing principal characters from the Indian epic *Ramayana* (Ghulam-Sarwar Yousof, Syed Ahmad Jamal, 2007). Characteristically, the figures of noble or refined characters such as heroes and heroines (Seri Rama, Laksamana, Siti Dewi, Sirat Maharaja etc.) are slim and tall whereas those of the rougher or coarser characters such as the villain Rawana, Indrajit and the ogre characters are large and bulky. The content of Wayang Kulit Kelantan is often referred to as a cycle of stories based on *Hikayat Maharaja Wana*, one of the two major literary Malay versions of the Hindu epics *Ramayana* with the other being *Hikayat Seri Rama*. Storytelling and puppet characters are the means of conveying the story to the audience.

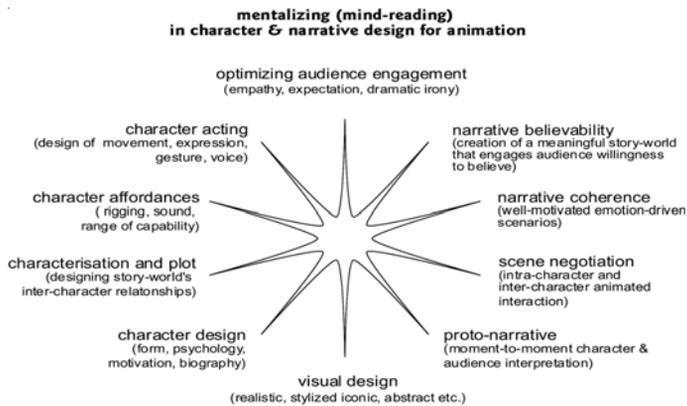
This is similar to film animation which requires story structure, plot and narrative in order to convey stories to the audience.

Narrative

According to Patrick Power, a storyteller practices mentalising at a minimum of three nested levels: 1) to plot action and motivation for any given character in a story; 2) to create believable and well-motivated interactions between characters within the story (Power, 2008) and 3) to predict how an audience might interpret these scenarios (see Fig. 2). Audiences like a good story but said story can be told or implied through different visual styles. In assembling visual styles in wayang kulit, the audience relates the story to them or fills in the spaces between the scenes. What role do shadow puppets play in this aspect then? A puppet needs to be a presence; it must be an object that emanates a seeming perception of the larger space around it. If a puppet has a sense of the vastness around it, for example, there should be a relation to something, even if we watch it standing alone. This presence is what gives life to the entire picture. In a sense, the puppeteer is not manipulating the puppet directly, but instead manipulates the

puppet's surroundings. Metaphorically speaking, creating a complete puppet entity means creating a new world.

Figure 1. Simulation-based mentalizing or mind-reading is involved in diverse aspects of narrative-based character animation.



Characteristics

Disney realised that many of his animators failed to master intentionality and intuition and needed more training in character motivation. In a memo sent to his office in 1935, he mentioned “*that they did not understand what really makes things move: why they move – what the force behind the movement is*”. In most instances, the driving force behind action is the mood, personality or attitude of the character or all three. To illustrate, the famous Master *Dalang* Pak Hamzah painted the faces of ape warriors red to show their aggressive nature. The character of Pak Dogol or the “clown of god” in Wayang Kulit Kelantan is a man vested with authority over the rural population and possesses a bald head, high-bridged and long nose and dark skin. Overall, these ideas are convergent with animation principles such as anticipation and overlapping action. This suggests that besides technology and technique, an animator or puppeteer should be educated in caricature, motivated action, acting and story construction with regard to animation or shadow play. Johannes Itten (2008) describes colour as life, for a world without colour seems dead (Itten, 2008). As a flame produces light, so light produces colour. As intonation lends colour to the spoken word, so colour lends a spiritually realised sound to form. Harmony implies balance or symmetry of forces which can be found in the puppet designs of wayang kulit. Colour symbolism is also used, especially in the case of noble characters. For example, Seri Rama is always painted in green, Laksamana in pink or orange, Sirat Maharaja in yellow while Hanuman is painted in white and Pak Dogol must be black. These colours are not regarded as a guide to the temperaments of the puppet characters as is sometimes alleged to be the case with Javanese puppets. Instead, the innovations are made to

make the puppets more attractive to modern audiences. They are painted with translucent ink so that coloured shadows are cast rather than the usual black silhouettes. These colours are derived from Hindu symbolism (Yousof, 2004). The principal noble characters are carved so that they stand upon a boat-shaped or dragon-shaped “vehicle”.

Visual Styles in Wayang Kulit

Steve Tillis (1992) defines the puppet as a theatrical figure perceived by an audience to be an object, that is, given design, movement and speech to fulfil the audience’s desire to imagine the puppet having life, creating double vision, perception and imagination, pleasurably challenging the audience’s understanding of the relationship between objects and life (Tillis, 1992) Meanwhile, Jiri Velt-rusky (1983) suggests that shadow puppets do not qualify to be called “*puppets properly*” and look more like pictures. In contrast, Tillis argues that shadow puppets are three-dimensional objects that are essential what they are. Similar to other kinds of theatre performance, movement in shadow play puppetry involves investing the puppet with meaning and representation. In an article on Signs in Chinese Theatre, Karel Brusak describes how different actions by actors can signify the presence and character of particular objects and animals without the help of props; the ‘actor can support his action and remnants’ which are parts of imaginary things (Brusak,1939). Jindrich Honzl called this phenomenon *scenic metonymy* (Honzl, 1976). Velt-rusky (1983) observed “the similarity of the puppets to the represented being so slight or remote that is unidentifiable in repose. Certain puppets are invested with meaning through action: movement, the special effect of fire or lamps, speeches, sometimes delivered in a normal human voice while the puppet is motionless”. His statement delivers two important points: that movement is not only the action that furnishes meaning but rather creates meaning in the form of a subject matter. Also, the point of movement is a crucial role in representation especially in wayang kulit, and is alternately known as the actor’s role (Vetrusky, 1940). The concept of movement is significant as it highlights the connection between movement in shadow play and in animation. Most Wayang Kulit Kelantan characters have a single articulated arm, especially main figures such as Seri Rama, Laksamana, Sita Dewi and Sirat Maharaja as shown in Fig. 3. However, comic characters such as Pak Dogol and Wak Long have two articulated arms, and some have movable legs, jaws and eyebrows. For example, after the painting process is completed and gold highlights are added to the swords and trimming of the clothing, the pieces of the puppet’s arm are tied together at the elbow and the shoulder’s pivot points. The articulated joints are then threaded all the way through holes in the joint constricted at both ends with a small piece of string.

Figure 3. The puppet characters Seri Rama, Sita Dewi, Pak Dogol



The final step is to add a thin bamboo rod to the end of the puppet arm. This is done by wrapping some string around the end of the stick and then putting it through a hole in the hand and knotting the end. Mary Beth Osnes (1992) states that the stick must be long enough for the puppeteer to stage-manage the arm from below without having his hand projected in the shadows on the screen. Additionally, the jaws attached to the puppets have moveable mouths (such as Pak Dogol or Maharisi). A string is tied from the top of the spring to the jaw to hold the jaw in place, and another string is tied to the bottom portion of the jaw to pull open the mouth. The bottom string has a loop in order for the puppeteer to hold the puppet at the base with one hand and manipulate the mouth by slipping one finger through the loop. According to Amin Sweeney (1972), shadow play in Malaysia is performed on a stage known as the *panggung*. The *kelir* is positioned slightly towards the audience which is seated on the ground (Sweeney, 1972).

A shadow play story usually takes four to five nights to complete. The traditional aspects are mainly regarded as a medium of aesthetics among the society. Lamps or *pelita* are hung in the middle of the screen at eye level with the *dalang* who sits on the floor. This method allows him to control the puppets by moving in contrast with the light reflected on the screen. Puppets with one articulated arm are set in a dignified limiting area because one cannot risk having a character like Seri Rama come into sight thoughtlessly. The *Dewa Perempuan* and *Dewa Laki-laki* puppets that appear during the opening sequences in Wayang Kulit Kelantan have no articulated arms or limbs to allow movement even though they appear in a fighting posture and with a weapon in hand. Moreover, the distinctive shadow distortions are visible (refer to Fig. 4) in many scenes, especially during the Dalang Muda Episode or prologue in fighting scenes. For example the apprentice puppeteer or *dalang muda* will begin the prologue with a leaf-shaped puppet (*Gunungan* or *Pohon Berigin*) moving offscreen. The sage puppet (Maharisi) then

makes its entrance along with the battle of two godlings followed by the war music. Here, the movements of the *Gunungan* or *Pohon Beringin* are fast and cross-over silhouette shadows appear on the *kelir* to show that a battle is happening. In terms of animation, images or other mechanical movements, certain movements of parts of the body are based on the frame-by-frame concept.

The question is whether movement in wayang kulit is really animated. The *dalang* projects the shadow of his puppets onto the *kelir* during a performance. The *kelir* is mounted on a wooden or metal frame in such a manner that it tilts inwards slightly, facing downwards at the *dalang*. The *kelir* is usually adorned with a decorated border, tassels or other decorative features. According to an interview in March 2010 with Seri Neng Buah, a former puppeteer at the Ministry of Heritage Malaysia, the *kelir* is a symbol for the spirit of humanity including love, war, peace and freedom. Therefore, it should only be touched by pressing the puppets towards it during fighting scenes in order to show the fighting effects; otherwise, it should remain flat and calm throughout other scenes with only mild occasional touches. Again, the concept of animation seems to appear within the shadow play itself. If we look very closely, all animations are projected through various display panels such as television, cinema screens, computers, cellphone screens and other basic devices. Wayang kulit seems to have the same philosophy as animation based on the discussion above. Another important figure that is related to movement in wayang kulit is the *Gunungan*, which is also referred to as the *Kekayon* or *Pohon Beringin* (Refer to Fig. 3). The *Gunungan* has a symmetrical leaf shape and stylised trees decorated with flowers, birds, monkeys which are related to the cosmology. The *Gunungan* represents two mystical Hindu symbols: the Tree of Life which nourishes and sustains all animals and the Wishing Tree which symbolises the Celestial Wishing Tree, a myth bearing a solar symbol or cosmos (Mohamaed Ghouse Nasaruddin,2009). In the context of movement, the *Gunungan* serves to establish a sacred atmosphere and represents a doorway into the netherworld. At the beginning of each wayang kulit performance, the *Gunungan* is placed at the centre of the *kelir* to indicating that the entrance is closed.

It is removed once the play begins, symbolising that the entrance is now open. As described by Khor & Yuen (2009), there are visibly distinctive shadow distortions (refer to Figure 4) in many scenes, especially during the *Dalang Muda* Episode and in fighting scenes with battle music accompanying all fights. In fact, many of the non-representational movements of the *Gunungan* or *Pohon Beringin* (synced together with music and sound effects) will evoke the intended atmosphere without representing a specific object or person.

Picture 4. The *Gunungan* is placed at the center of the *kelir* with shadow distortion effects



During quiet scenes, the *Gunungan* moves slowly across the screen several times. When a scene calls for a more excited atmosphere, it moves faster back and forth to give it the appearance of vibrating vigorously. Fragmentation in wayang kulit can be considered a precondition of montage or moving image (silhouette) movements that are relatively close to the puppet's pictorial representation; the movements are exaggerated while the puppet itself functions similar to a picture overwhelmed by movement.

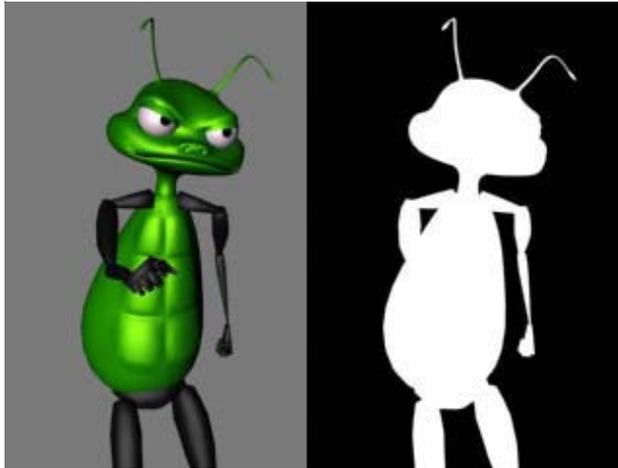
The Animation Principles

The history of animation generally refers to the early production of traditional animation. The term "animation" as explained by Halas (1991) is "the essence of animation" which began in the early twentieth century. It is a series of images that appear to be in motion. To define the exact criteria of animation, the Twelve Principles of Animation were produced in the early 1930s by animators at the Walt Disney Studios. According to Tito A. Balgrive (2003), these principles were used to guide production and creative discussions as well to train young animators to be more efficient. These twelve principles became one of the foundations of hand-drawn cartoon character animation. Animators developed their own techniques for animating characters, and when these techniques were recognized as being effective, they were passed on to other animators. The principles were outlined in detail in the book *The Illusion of Life: Disney Animation* (1981). The twelve principles also helped to transform animation from a novelty into an art form. By applying them to their work, these pioneering animators produced many

of the earliest animated feature films that are now considered timeless classics such as *Snow White* (1937), *Pinocchio* and *Fantasia* (1940), *Dumbo* (1941) and *Bambi* (Balgrive, 1942). Although the principles were developed for traditional hand-drawn animation, they also apply to both two-dimensional (2D) and three-dimensional (3D) computer-based animation. The question here is how can wayang kulit be considered animation, and does it really make use of the twelve principles of animation? This chapter will provide a brief analysis of the principles, while the next chapter will discuss how they fit within the context of wayang kulit and its relation to animation.

- *Squash and stretch* is the first principle and is used to exaggerate the amount of non-rigid body deformations, usually with the purpose of achieving a comedic effect. According to Tito A. Belgrave (2003), it is also used to convey the sense that an animated object has weight and volume. For example, imagine a ball bouncing up and down. As the ball strikes the ground it squashes downwards and stretches outwards to the sides, forming an oval shape. John Lasseter (1987) also stated that this principle can be applied to all manner of objects, particularly when they are in motion and can strike another object or come to a sudden halt.
- *Anticipation* is the second principle which helps to guide the audience's eyes to where the action is about to occur. Anticipation, including motion holds, is especially useful for announcing surprises. In preparation for a major action, a character may execute another action as a warm-up. For example, a jumping character may bend down prior to jumping in the air and a golfer may perform a backstroke prior to doing a forward stroke to strike the ball.
- Thirdly, there is the principle of *Staging* (Fig. 4) or *mise-en-scène*. This principle focuses on translating the mood and intention of a scene into specific character positions and actions. Staging key character poses in the scene helps to define the nature of the action. Staging is also a technique used in visual storytelling. It is important to ensure that the audience can clearly see what is happening in a story, which is what staging a scene helps to do. There are many staging techniques that can be used to tell a story visually such as hiding or revealing the centre of interest and a chain reaction of actions-reactions. Staging can also be aided by contemporary cinematic techniques such as slow motion, frozen time, motion loops and hand-held camera moves.

Figure 4. Stage actions of animation in silhouette



- *Straight-ahead action* and *pose-to-pose* are two different animation techniques that provide fairly different results. In the early days of hand-drawn animation, *pose-to-pose* action became the standard animation technique because it breaks down structured motion into a series of clearly defined key poses. In *straight ahead* action, a character moves spontaneously through the action one step at a time until the action is finished. This usually involves drawing a series of animation frames, in turn, from the beginning through to the end. In using this technique, it can be easy to lose sight of a character's size and proportions and to accurately gauge the timing of an action. Consequently, the resulting effect can look rushed. Meanwhile, *pose-to-pose* animation is a planned method of animating. Typically, the animator draws the first and last poses of an action and then draws the in-between frames. In *wayang kulit*, puppet designs consist of a developed form of moving objects. The fascination with puppets reaches far back into history, revealing our yearning to play god, to exert domination over our human experience. The puppets in *wayang kulit* offer a focus on signs of design, movement and speech as core aspects for building puppet aesthetics.

- *Slow-in and slow-out* (also known as 'easing' or 'ease in-ease out') consist of slowing down the beginning and the end of an action, while speeding up the middle of it. A snappy effect is achieved when motion is accelerated and retarded in this way. In 3D computer animation, *slow-ins* and *slow-outs* can be fine-tuned with digital time-editing tools. When using motion capture techniques for cartoon-style animated characters, it is essential to remind performers to do *slow-ins* and *slow-outs*. The inverse variation of this effect, a *fast-in* and *fast-out*, is often seen in TV commercials and music videos where the beginning and end of the sequence are accelerated while the middle is slowed down to give it a surreal or dreamy feeling.

- *Follow-through and overlapping action* are two techniques that help make an action richer with detail and subtlety. Follow-through action consists of the reactions of a character after an action; it usually lets audiences know how he or she feels about what has just happened or is about to happen. In overlapping action, multiple motions influence, blend, and overlap the position of a character. In 3D computer animation, a lot of the common follow-through motions of clothing and hair, for example, can be animated with dynamics simulations. The layers and channels in 3D computer animation software allow us to mix and blend different overlapping motions from different areas of the character. Using *arcs* to animate the movements of characters helps to achieve a natural look because most living creatures move in curved paths instead of perfectly straight lines. Non-arc motion comes across as sinister, restricted or robotic. Software constraints can be used to force all or some of the motion within arcs. Even motion-captured performances can be fine-tuned with curve editors as long as the motion is not flattened.

- *Secondary action* consists of the smaller motions that complement the dominant action. In 3D computer animation, we can take advantage of layers and channels for building up different secondary motions. For example, we can build a layer for hair, a layer for a character's hat, a layer for the cape and so on. On the other hand, *timing* is the precise moment and amount of time that a character spends on an action. Timing adds emotion and intention to the character's performance. Most 3D computer animation tools allow us to fine tune the timing by shaving off or adding frames with non-linear time-editing. Timing can also be controlled and adjusted by placing each character on a separate track and using sub-tracks for parts of the character such as *the head*, torso, arms and legs. According to Lasseter (1987), the timing principle is extremely important as "... it gives meaning to the movement – the speed of an action defines how well the idea behind the action will read to an audience. It reflects the weight and size of an object, and can even carry emotional meaning.

- *Exaggeration* usually helps cartoon characters to deliver the essence of an action. Much of exaggeration can be achieved with squash and stretch. In 3D computer animation, we can use procedural techniques, motion ranges and scripts to exaggerate motion. The intensity of a moment can be increased with cinematography and editing instead of relying on performance alone. *Solid drawing* as it was called in the 1930s emphasises the clear delineation of shape necessary to bring animated characters to life. Solid and precise modelling helps to convey the weight, depth and balance of a character and also simplifies potential production complications due to poorly modelled characters. Animation rigs are at their best when they are optimised for a specific personality and motion. Strict attention to silhouettes when aligning characters to the camera is necessary.

- Character personality, or *appeal* as it was originally called, facilitates the emotional connection between a character and the audience. To illustrate, the characters in Pixar's animated short *Geri's Game* (Fig. 5) are well-developed with interesting personalities. All of them have a clear set of desires or needs that drive their behaviour and actions. Complexity and consistency of motion are two elements of character appeal that can be easily developed with 3D computer animation. Writing down the ways in which the character moves, how he/she reacts to different situations and how he/she relates to other characters can help to define the character's main characteristics. Fine-tuning the personality with the key poses then helps to complete the character.

Figure 5. A character in *Geri's Game*, a short film by Pixar (Copyright \ Pixar.com)



Overall, this chapter has briefly explored the twelve principles of animation and their contributions to the animation industry. While they were originally intended for traditional animation, it appears to be useful in contemporary computer animation. The question is how do these principles fit into wayang kulit? Can wayang kulit also be defined also as a product of animation instead of a theatre form?

The Relationship

This segment examines some of the features in Disney's 12 principles of animation that can also be found in wayang kulit. As aforementioned, *squash and stretch* are used to exaggerate the amount of non-rigid body deformations, usually for the purpose of achieving a comical effect. If we pay close attention to the movements of wayang kulit puppets, the characters performed by the *dalang* move freely as silhouettes across the *kelir*. Even though the shape transformation for squash and stretch in wayang is not totally visible, it is indirectly used by the *dalang* to entertain the audience. The squashed position can show the puppet's form either flattened out by pressure or bunched up and pushed together (Thomas

& Johnston, 1995). The stretched position always shows the same form in a much extended condition. Movement from one puppet to the next forms the very basis of animation.

In terms of comprehension, the audience at a wayang kulit performance will not be able to understand the scenes playing out on the *kelir* unless there is a planned sequence of actions leading them clearly from one activity to the next. They must be prepared for the next movement and expect it before it actually occurs. This is done by preceding each major action with a specific move that helps to build the audience's anticipation of what is about to happen.

Anticipation can be as small as a change of expression or as big as the largest physical action. Before a puppet runs, gathering himself like a spring or vice versa, he draws back in the opposite direction, raising his shoulders and one leg as he aims himself at the place of the next activity. Anticipation can also create the perception of weight or mass. For example, a huge puppet (such as Raksasa or Bota characters) might lean back before standing up whereas a smaller person (Pak Dogol) might just stand up. Most of the puppets in wayang kulit are singularly articulated by manipulating the thin bamboo stick attached to their palms. The only exceptions are the characters of Pak Dogol and Wak Long who have two moveable arms and a moveable chin. The puppets are deftly manipulated by the *dalang* with anticipatory moves. These moves may not show why a character is doing something, but there is no doubt about what he is doing or what he is going to do next. With this expectation in mind, the audience can enjoy the way it is done.

In wayang kulit, the *staging* process (Fig. 6.) is clearly defined through staged actions so that a character's personality is easily recognisable. Similarly, staged actions help an idea or expression to be seen and a mood to affect the audience. For instance, Wayang Kulit Kelantan performs stories from the local version of *Ramayana* and local lore and legends. Staging aims to retain the point of every scene.

Figure 6. Puppets Seri Rama (left) and Sita Dewi (right) in wayang kulit involve staging



To illustrate, the character Seri Rama is described as a royal and noble character who possesses extraordinary physical and supernatural powers. Similarly, the *Pohon Beringin* represents the Tree of Life i.e. the Celestial Wishing Tree or Myth bearing a solar system. Even with modern coloured 3D graphics, silhouette actions are more clearly delineated and thus preferred over frontal action. In early Disney animations, characters appeared in black and white compared to puppet characters which have always appeared in a variety of colours. All actions in animation were shown in silhouette form because if a character moved its black arm in front of its black body it would disappear. Thus the action had to contrast against a white background. Disney animators realised that even without this technological limitation, actions were more clearly visible in silhouette as how it is practiced in wayang kulit. Disney's works have often been described as fictional hyperrealism and as manifestations of animation that come closest to a delineation of reality (shadows, anthropomorphism, scale and perspective).

As mentioned earlier, the straight ahead action approach enables animators to literally work *straight ahead* from the first drawing, getting new ideas while proceeding, having no plan and knowing only the story point. With the *pose-to-pose* approach, the animator has to think about the story and what drawings and poses may be needed to tell it. In wayang puppetry, the *dalang* constructs puppets from cow or buffalo hide in the form of stylised human shapes or an amalgamation of human and animal forms. If we look closely, the puppets in wayang kulit are basically a representation of movement forms. For example, Seri Rama wields a weapon in one hand while the other hand is used to communicate.

Each time Seri Rama 'interacts' with the audience during a performance, the *dalang* moves his arm in time to match the plot, mood and expression of the play. Therefore, it can be concluded that straight ahead and pose-to-pose definitely

exist in wayang kulit. All of the actions are well thought out, and the timing and poses are planned so that even in the early stages, the actions are easily understood by the audience.

Discussion

From this research, it can be concluded that Disney's 12 principles of animation have a basis in wayang kulit practices. The art of shadow play puppetry as a whole has existed since 1000 B.C while traditional animation was pioneered by Disney in the early 20th century. Therefore, the fundamental principles of traditional animation were obtained by observing the world around us from puppets to movements and staging spectacles. Although wayang kulit is slowly disappearing, its significance in regard to traditional and modern animation has given it a new dimension. Wayang kulit is thus not simply a theatre form. It is an animation that involves performing arts features and should be studied further by animators around the world.

Another interesting fact in the relationship between wayang kulit and animation is the puppet's movements. Each movement is known as animation and is executed by the *dalang* or puppeteer. However, in hand-drawn and computer animation the *animator* is the person responsible for the movement of an object or cartoon. In comparison, the *dalang* is mainly responsible for character design, craft and colouring, music, narration and most importantly, the movements of the puppets. The puppeteer is a one-man show that is accompanied only by musicians but is able to mesmerise the audience for hours. Meanwhile, the animator's expertise lies in colouring, background, character design, animation, rigging and many other aspects. The animator's task is basically to look after the animation in line with the story provided. All of the principles collaboratively support the main goal of animation: to entertain. A successful animation or theatre performance must come from an entertaining idea, which is then brought to life by the animator or puppeteer based on the fundamental principles of traditional and computer animation.

Conclusion

It is hoped that this research will serve as a knowledge-sharing foundation for people interested in studying wayang kulit for computer animation purposes. Based on the analysis in this chapter, it is strongly believed that Walt Disney studied and adapted the 12 principles of animation from wayang kulit. Hopefully, this research will contribute to future developments in puppetry entertainment, and more can be done to preserve the value of wayang kulit to the world in general and Malaysians in particular. Should wayang kulit actually disappear completely, future generations will be able to view it in the form of digital puppetry animation, videos, virtual reality, augmented reality and other technological platforms as a new alternative.

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References

- Abdullah, M.G. (2007). *Symbolism in Wayang Kulit Kelantan* (Shadow Play Puppet Kelantan). Journal: ASWARA, Vol 2. Acting. *Semiotica*, 9-27.
- Akkuzhyna, Y. (2008). *Principles of Traditional Animation*. Presented at the Seminar on art-of-color/htm.
- Asch, L. (2010). *The Art of Contemporary Puppet Theatre*". Katonah Museum of Art Article, Education Department.
- Belgrave, T.A. (2003). Applying the 12 Principles to 3D Animation. Presented at the 3D Festival in Copenhagen. From the 3rd Edition of The Art of 3D Computer Animation and Effects which premiered at SIGGRAPH 2003.
- Brusak, K. (1939). Znaky na cinskem divalde. *Slovo a Slovesnonsts*, pp: 91- 98. Character Animation at Saarland University.
- Chen, F.P. (2003). Shadow Theatre of The World. *Journal Asian Folklore*, 62, 22-64.
- Disney, W. (1935) Memo from Walt. URL <http://www.animationmeat.com/pdf/nine-oldmen/MemoFromWalt.pdf>. 2007 (consulted 2 July).
- Halas, J. (1991). *Contemporary Animator*. Boston: Focal Press Publishing.
- Honzl, J. (1976). Dynamic of The Sign in The Theatre. Ladislav Matejka and Irwin Titunik (eds). *Semiotics of Art*, 74-93. Cambridge : MIT Press.
- Itten, J. (2008). *Art of Color*. Online Resource : <http://aphototeacher.com/2008/09/13/the->

- Khia, K.K. & Chan, Y.M. (2009). *A Study on the Visual Styles of Wayang Kulit Kelantan and Its Capturing Methods*. Sixth International Conference on Computer Graphics, Imaging and Visualization. IEEE Journal.
- Lasseter, J. (1987). Principles of Traditional Animation Applied to 3D Computer Animation. *Proc. of SIGGRAPH Computer Graphics*, 21, 35- 44.
- Matusky, P. (1997). Malaysian Shadow Play and Music - Continuity of An Oral Tradition. The Asian Centre.
- Mayora, O., Costa, C. & Papiatseyeu, A. (2009). *Theater Puppets Tangible Interactions for Storytelling*. ICST Institute for Computer Sciences, Social Informatics and Telecommunications Engineering. LNICST 9, 110–118.
- Muthalib, H. (2003). *Spices of the Cinema: The Influence of Anime on Malaysian Animation Filmmakers*". Journal International Anime and Manga Forum, Tokyo, Japan. Organized by the Agency for Cultural Affairs, Japan.
- Nasaruddin, M.G. (2009). *Traditional Malay Theatre*. Dewan Bahasa & Pustaka Press, Kuala Lumpur.
- Osnes, M.B. (1992). *Thesis : A Survey of Shadow Play in the Malaysian Traditional Shadow Play Puppet Theatre*. UMI 300 N, Ann Arbor, Colorado.
- Power, P. (2008). Character Animation and the Embodied Mind–Brain. *Animation: An Interdisciplinary Journal*, 3(1), 25–48.
- Sweeney, A. (1972). Malay Shadow Puppets. The Trustees of the British Museum.
- Thomas, F. & Johnston, O. (1995). *The Illusion of Life: Disney Animation* (Revised Edition). Hyperion.
- Tillis; S. (1992). *Towards The Aesthetics of the Puppet: Puppetry as a Theoretical Art*. Greenwood Press, London.
- Vetrusky, J. & Clovek, A. (1940). Predmet Na Divadle. Slovo a Slovesnonsts. Puppetry and
- Yousof, G.S & Jamal, S.A. (2007). The Encyclopaedia of Malaysia – Crafts and the Visual Arts. Archipelago, Singapore.
- Yousof, G.S. & Inu, P (2004). *Essays on Traditional Malay Theatre*. National University of Singapore.