The Use of Anthropomorphism in the Animation of Animals

What all animators should know

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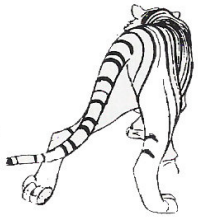
Figure 1: King Kong directed by Peter Jackson (2005)

'One of the most remarkable features of our domesticated races is that we see in them adaptation, not indeed to the animal's or plant's own good, but to man's use or fancy.'

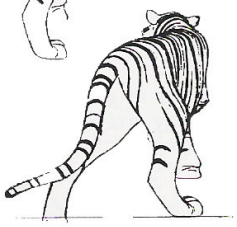
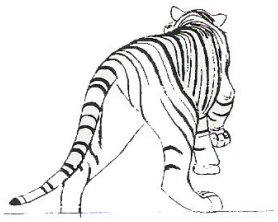
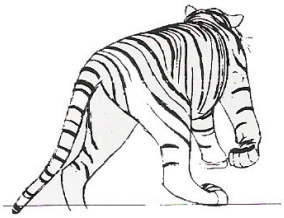
-CHARLES DARWIN, The Origin Of Species

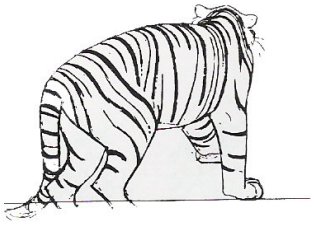
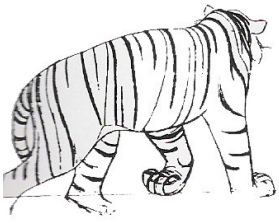
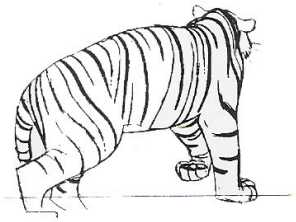






Contents

"Humans use animals to transcend the confines of self and species; they also enlist them to symbolize, dramatize, and illuminate aspects of humans' experience and fantasy. Humans merge with animals in stories, films, philosophical speculations, and scientific treatises. In their performance on many stages and in different ways, animals move us to think"

(Daston and Mitman 2005)

Abstract

Anthropomorphism, originally the word referred to as the attribution of human forms to gods (Daston and Mitman 2005) is now commonly considered as the attribution of human characteristics and qualities to non-human beings, objects or natural phenomena (Wikipedia 2006) The context of this study will be concentrated on the use of anthropomorphism being applied to animals in animation. This paper will be aimed towards animators and therefore will assume the reader has a basic understanding of general animation principles, particularly in the field of computer animation.

Introduction

Animated features have always incorporated anthropomorphic characters, from as early as Gertie the Dinosaur (1914), through to today's computer animated features such as Madagascar (2005), Stuart Little (2002) and Finding Nemo (2003). Cultural critic Akira Mizuta Lippit describes modernity as, 'the disappearance of wildlife from humanity's habitat and the reappearance of the same in humanity's reflections on itself: in philosophy, psychoanalysis, and technological media such as the telephone, film, and radio' (Lippit 2000 cited Daston and Mitman 2005). This study will focus on the media of film, in particular, animation. During the current surge of anthropomorphic uses of storytelling in animation, the animator must consider why such techniques are used, if he/she is to get the best out of their animation. Frustratingly, a dearth of documentation is available to animators on this subject and therefore intentions for this paper are to fill this gap in literature by producing a collection of everything animators should know before approaching the animation of their own anthropomorphic characters. It is intended for all animators who want a better understanding of how anthropomorphism has come about, why it is used in the field of animation, where it is leading to, and how they can exploit their understanding of its use in other fields to strengthen their own character designs and animations.

Anthropomorphism is a huge area of interest; this paper will focus on the following particular areas. We will look briefly at the Greek roots of the word and its links with science and religion. Its relationship with these two areas sparks great debate and therefore we will cover the topical debates surrounding anthropomorphism in other fields and relate it to our field of interest, animation.

Having provided a background on anthropomorphism, the reasons for its use in the field of animation in particular will be discussed. For the sake of animation studies, anthropomorphism will be broken down into the animation of physical qualities/attributes and the animation of psychological/emotional qualities/attributes. Physical qualities will be briefly discussed, but at the forefront of this paper will be how to animate the anthropomorphic psychological elements of a character, and this is where research of acting will be drawn greatly upon.

A key topic discussed will be acting for animators. The study of acting and review of acting literature will help animators to arrive at the depths of what brings to life any character, not just anthropomorphic. This acting knowledge will then be applied to animation principles along with human/pet relationships in order to arrive at conclusions useful for animators and character designers alike.

Rationale

The word Anthropomorphism comes from two Greek words, άνθρωπος (*anthrōpos*), meaning "human", and μορφή (*morphē*), meaning "shape" or "form". The suffix '-ism' originates from the morpheme '-isma' in the Greek language (Wikipedia 2006). Until recently, one of the greatest crimes in science was to be accused of being anthropomorphic (Downer 2002). People have always been very ready to believe that animals are like us in having feelings and purposes acting upon us. Kennedy (1992) in *'The New Anthropomorphism'* argues that it was Rene Descartes that sowed the seed of a materialist conception of human behavior when, some three centuries ago, he broke with tradition by arguing that animals were, in principle, machines.

Bela Balazs, in *Theory of The Film* (1952) paraphrases Marx with, 'The root of all art is man,' she goes on to comment that when we see the face of things, we do what the ancients did in creating gods in man's image and breathing a human soul into them (Balazs 1952). Anthropormorphism in terms of animation could be seen as a natural progression of this, but there are still issues surrounding it.

Something of the religious taboo still clings to secular, modern instances of anthropormorphism, even if it is animals rather than divinities that are being humanized (Daston and Mitman 2005). There are also moral as well as intellectual elements to critques of anthropomorphism. To imagine that animals think like humans…..is a form of self-centered narcissism, one looks outward to the world and sees only one's own reflection mirrored therein. (Daston and Mitman 2005) Daston

and Mitman (2005) link Anthropomorphism with Anthropocentrism, that is, when humans project their own thoughts and feelings onto other animal species because they egotistically believe themselves to be the center of the universe. They describe how critics compare this to a kind of species provincialism, comparable to those of ignorant tourists visiting another country and assuming the residents will have the same customs as back home.

Many studies of anthropormorphism around are based on these debates and focus on whether or not we should make use of anthropmorphism. Science students are so readily encouraged against using anthropomorphism as an approach to animal behavior, as Keeton (1967 cited Kennedy 1992) remarks,

> Almost all our words have some sort of human connotation, imply some sort of human motivation and purpose. But such motivation and purpose may have no relevance to the behavior of other animals, and we must constantly guard against unwarranted attribution of human characteristics to other species.

Consequently, are we, as animators, considering the differences in anatomy and so forth, thus too making the wrong approach as to how we animate animals?
Animators for years have studied and observed animals, but for many, including my own, their experience is of learning how to animate humans prior to animals, and therefore cannot help relating their new-found knowledge to prior studies of human movement. Is it possible to purely observe with a fresh eye? There is also the argument that people nowadays find it easier to think with animals than with other people (Daston and Mitman

2005). Should animators be concerned that there is some form of 'dumbing down' occuring in the industry, are we at the risk of patronising our audiences? For animators, anthropomorphism is here, and seems likely to stay. These issues will not be discussed further in this essay but they are addressed to stress the importance for animators to at least be aware of the background and debates surrounding this topic if they are to come to a firm understanding of why and how they should make use of it in their own work.

Aware of the background of anthropomorphism, lets suggest why it is popular in the field of animation. Daston and Mitman (2005) in *Thinking with Animals: the How and Why of Thinking with Animals* argue that it is no wonder anthropomorphism has been assiduously refined (in all areas of interest, not just animation), 'money, love and power are all to be had by thinking with animals.' They put this mostly down to the empathy they create in us, but this is not enough for animators, we need to know *how* this empathy is invoked. The question of why anthropomorphism is used in animation is one that all animators should ask themselves. For if we are to reach our audiences in the way that animation requires, especially in requiring audiences to suspend their disbelief, we have to know why it is that we are using anthropomorphism and consider each time what it is bringing to our audiences that other techniques simply cannot bring.

The Use of Anthropomorphism

Firstly, let us briefly consider the reasons for using anthropomorphism in other areas and contexts, this will allow conclusions to be drawn as to why it suits the field of animation so well. As addressed by Doniger (2005) in her essay on Zoomorphism in Ancient India, Freud (in *The Interpretation of Dreams*) and Ernest Jones after him (in *On The Nightmare*) wrote about the ways in which animals often replace, in dreams, people toward whom the dreamer has strong, dangerous, inadmissible and hence repressed emotions (Jones 1949 cited Doniger 2005).

Doniger (2005) summarises this as the dreamer displacing emotions felt toward people he cannot bear to visualise directly in his dreams and so projects these emotions onto animals. Daston (2005) presents the idea that theologians and psychologists were centrally interested in two aspects of the human/non human comparison: thought and feeling and in each case inquiries into the mental world of non humans served to refine our own ideas of human understanding and emotion.

Serpell (2005) on the discussion of human and pet relationships makes a comparison between anthropomorphism and the human condition, Anthropomorphism and pet keeping are powerful antidotes to what Searles once called the 'existential loneliness of the human condition.' Serpell concludes that by allowing ourselves to be actively involved in non human lives, we are provided with the opportunity to bridge both the conceptual and moral gulf that separates us from other animals.

Daston and Mitman (2005) describe how by using animals as actors we strip characterizations, so often found in fables, such as the cunning fox, the brave lion and so on, down to prototypes. The benefits of this are noted as being able to simplify a narrative down to a point that would be found flat or allegorical if the same tales were recounted about humans. They describe how with animals we do not feel the same need to know the individuating details we feel the need to know about other humans, and thus can ensure that with the use of animals as actors, we won't lose the moral of the story in any such clutter of detail.

Stripping these characterizations down to prototypes, means the audience can relate a lot more to the characters in question, as they are more universal, without being bland. In terms of animation, this is more related to storytelling and scriptwriting than a technique of the animators themselves, but one they can certainly take advantage of.

There is also another argument that the common use of anthropomorphism is related to the 'human's longing to transcend the confines of self and species, to understand from the inside, or even to become an animal' (Daston and Mitman 2005). Daston (2005) explains that this is 'a desire with a long history and that it was once directed as ardently to angels as it now is to animals.'

Paul Wells (2002) in *Animation: Genre and Authorship* comments in his glossary that we can use anthropomorphism to redefine characteristics, or more notably, draw our attention to characteristics taken for granted in live action film representations of human beings. This audience attention to characteristics would be a lot harder to achieve if we were bogged down by the need to know individuating details about humans as discussed

by Mitman. It is therefore apparent that there is no one reason why anthropomorphism is used in animation. There are a number of reasons however, as to why it suits the context of animation so well; animals create great empathy in humans, this empathy can be combined with a simplified narrative to provoke genuine feeling from audiences. The loneliness of the human condition is one that many pet owners can probably relate to, in real life and in animated film, combine this with the use of anthropomorphism to draw attention to characteristics and we have animation that audiences can completely identify with.

'The creatures looked outside from pig to man, and from man to pig, and from pig to man again; but already it was impossible to say which was which.'

George Orwell: *Animal Farm* [1946]

Physical/emotional differences

Balazs (1952) attributes the singular magic of animals on film to their self-conscious nearness, 'The particular thrill of observing animals on film consists in knowing that they are not playing at something but actually living….Even when their performance is drilled, only we know that it is theatre.' Although here, she is referring mainly to wildlife type documentaries, she goes on to draw an important link between actors and animals,

‘Every actor’s aim is to arouse the illusion that his grimaces are no mere ‘impersonations’ but rather the expression of authentically present feeling. Yet no actor is able to outdo the animals in this respect’ (Balazs 1952). If actors are unable to outdo animals in this respect, how is that the majority of anthropomorphic animation achieved by the animators (who have to be half artist, half actor) are so completely compelling and believable?

Hooks (2003) describes how ‘both Stanislavsky and Ivan Pavlov, the famous Russian scientist, investigated the connection between internal experience and its external expression.’ Both Stanislavsky and Pavlov came to the conclusion that the body and soul are so closely attached that they do have an influence on each other. Prior to this, many scientists believed that the body and soul were distinguisable entities with little influence on each other. According to Hooks, ‘these two men proved through scientific means that every feeling, every thought, every decision, every mental procees is transmitted through the body and manifests itself through external expression.’ Human behavior consequently becomes a continuous, psychophysical process- what Stanislavsky referred to as the psychophysical union (Hooks 2003) For the purpose of this paper, it will be beneficial to think of anthropomorphic qualities in character animations as consisting of the physical and the psychological as according to Moore (1991), ‘If you fulfil only the physical side of the action, it will be dead, and if you are interested only in the inner side, it will be equally dead’ (McGaw et al 2004 cited Moore 1991). By being aware of the different ways we can categorise anthropomorphic qualities, we will be able to distinguish what we need to bring together in order to bring anthropomorphic animation to life.

Physical Qualities

In terms of physical qualities, the evolution of man plays an important role. Pisk (1975) observes the walk of four-legged animals, particularly those of the cat family, and notes, 'The thrust of the limbs starts from the vertebral column and consequently moves to the pelvis, shoulders and legs. The spine reacts to every foot-fall.' Pisk comments how man moves in a similar fashion, as Leonardo da Vinci observed: 'The walking of men is always after the universal walking of animals with four legs' (Pisk 1975) One key point that Litz Pisk makes in *The Actor and His Body* is 'The actor does not move for movement's sake and he does not beautify movement for beauty's sake'. Similarily the animator should not animate for movement's sake, he should not focus purely on the physical aspects as, like Stanislavsky observed, actors must find strong reasons for these actions and commit wholeheartedly to carrying them out (McGaw *et al* 2004). It is worth noting here that should animators wish to *begin* their focus with looking at the physical differences/similarities between humans and animals, the photographic works of Eadweard Muybridge contain useful walk cycles of humans on all fours.

Platt (2000) describes how to create the anthropomorphic hybrids mastered in Disney animations, the Disney animators would

> Study the creatures involved, film and analyse their movement, examine the texture of fur and muscle, even investigate the skeleton, But sometimes they are inspired by the personality of an actor who is performing the character's voice

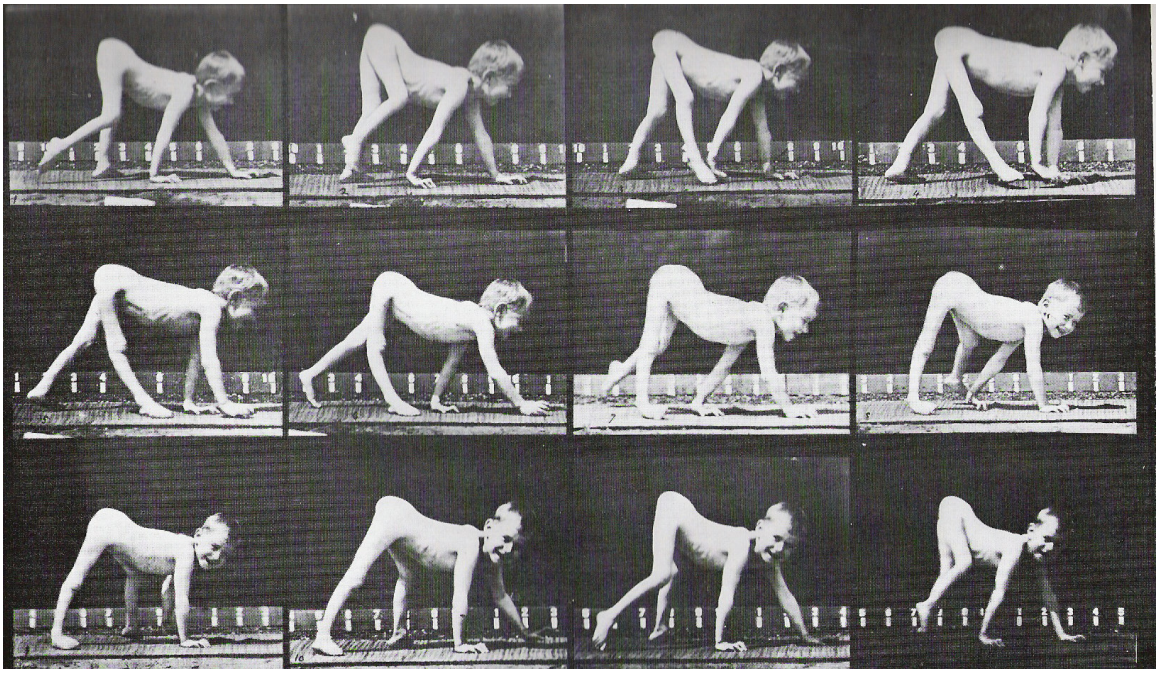


Figure 2: Paralytic Child Walking on All-Fours (Image and Caption taken from Muybridge [1957])

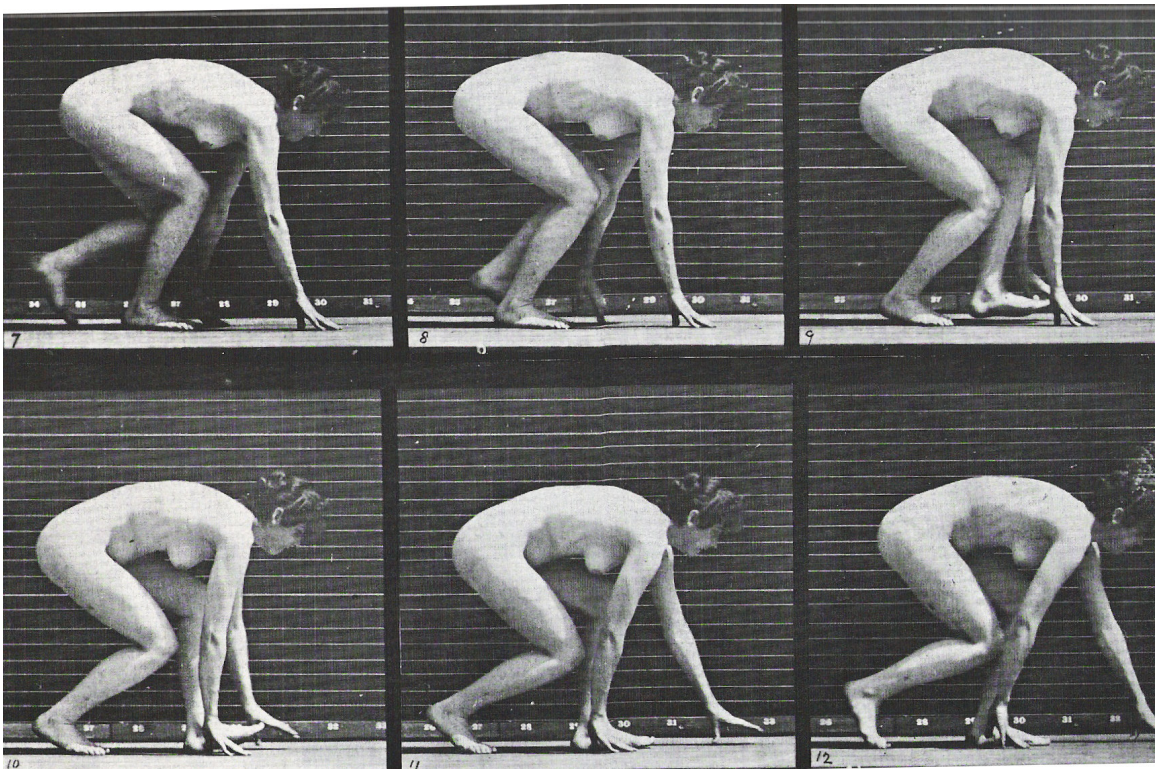


Figure 3: Woman Walking On All Fours (Image and Caption taken from Muybridge [1955])

Psychological Qualities

'There is an infinate amount to learn about acting because there is an infinite amount to learn about life'

(Bennett 2006)

I am not an actor by any means. But after surveying acting theories and concepts, I have extracted the essentials of what animators need to know, as this will help greatly in animating the emotional/mental qualities of anthropomorphic characters. Where I refer to the techniques used by actors, it is to be assumed that animators should take on these theories, unless otherwise indicated.

Acting has been described as the 'study and communication of human behavior in service of telling stories' (Bennett 2006). Animators must be expert storytellers in order to communicate to their audiences. Walt Disney saw characterisation as the driving force of a story, he would spontaneously act out his characters in the Disney studios in the 1930s (Platt 2000). The study of acting theories will enhance this ability to communicate. Mastering anthropomorphic animation requires a solid understanding of how to and by how much to extract qualities and personality from a person to an animal, an area a solid understanding of acting will help greatly with. Thomas and Johnston in *The Illusion of Life* (1981) compare the animator to the actor in animated films, 'He is many other things as well; however, in his efforts to communicate his ideas, acting becomes his most important device.'

Constantin Stanislavsky, whose 'pioneering work for the Moscow Art Theatre at the turn of the twentieth century laid the foundation for much of our current acting technique' (McGaw *et al* 2004), advised actors, 'You are your own instrument…Pianists have their pianos, painters have their canvases, but actors have only their own bodies and spirits' (McGaw *et al* 2004). Animators cross over many boundaries. They should not be thought of as just artists with their canvases. Preston Blair, veteran animator, defines animation as 'both art and craft; a process in which the cartoonist, illustrator, fine artist, screenwriter, musician, camera operator and motion picture director combine their skills to create a new breed of artist- the animator' (Wells 2002). For animators to bring their art work to life, they must make use of their own bodies and experiences as actors do. McGaw *et al* (2004) quote Stanislavsky,

> The first step actors must take is to discover a logical sequence of physical actions the character they are playing would carry out in the given circumstances. They begin with the physical actions because they are tangible.

Perhaps this is key to the downfall of many animations. Animators too begin with the physical actions, yet don't always follow through with making these actions personal. This follow through is no more essential than in the use of anthropomorphism, which requires a combination of physical and emotion qualities for it to succeed.

Notably, not all elements of acting theory will cross over as easily to animation studies. Stanislavsky frequently emphasized that 'small physical actions, small physical truths and the moments of belief in them….acquire a great significance on the stage'. (McGaw *et al* 2004)

Animation is the illusion of life, a heightened reality. Many elements have to be greatly exaggerated or caricatured for them to read well to their audiences. In terms of facial animation, a subtle, gentle movement of a facial muscle can evoke emotion so strong, that here Stanislavsky's theory applies. In terms of body language however, it is not always applicable.

McGaw *et al* (2004) remind actors that trying to play a state of being will only lead you to stereotyped movements and gestures such as clenching your fists to show anger and reminds them that they cannot act a state of being, an emotion or condition. Animators should therefore not try to act the emotion but act the action. When you are angry you don't think to yourself, I am angry, I am now going to show anger by frowning, you just do it without conscious thought.

Whilst this is excellent advice for animators, Daston and Mitman (2005) in *Thinking With Animals* on why anthropomorphism is used suggests that substituting animals as actors 'strips the characterizations down to prototypes.' Reinforced by Kramer (2005) in *Thinking With Animals* on the anthropomorphic photography of Tim Flach, he comments,

> Unlike photographs of human beings, whose referential scope tends to be constrained by the markers of class, gender, race, age and nationality, photographs of animals rehearse a realm of interpretive conventions that can bypass human stereotypes.

This too applies to animation; although animal imagery has its own cultural meanings attached to it, it could be seen that animators are already at an advantage in avoiding this stereotypical behavior in the animation of anthropomorphic characters.

Case Study: Midnight Cowboy

Hooks In *Acting For Animators* (2003) advises animators to try to think of your human character as an animal. There are numerous examples of these crossovers in film and literature, and one particular example features the highly proficient acting skills demonstrated by Dustin Hoffman in the 1969 film *Midnight Cowboy*. Hoffman's character, Ratso Rizzo, actually moves like a rat, this isn't an accident, 'Hoffman regularly uses animal images in his characterizations' (Hooks 2003).

Hoffman's character is as an ill, crippled con-man. He leans forward in his walk, and moves in a shuffly, bouncy way of someone walking on all fours. His head is often leant forward, with him looking up with his eyes and not his neck, and his body language consists of sharp, short movements, akin to the rhythm of a rat's movements. Hoffman pinches his nose when he eats, and twitches his head now and then, but in a very subtle way. In the dream sequence where him and Joe Buck (Jon Voight) are frolicking happily on the beach, the rat imagery in Hoffman's acting diminishes slightly as he imagines his better life. A specific scene where the rat imagery is particularly strong is when Hoffman is cleaning other people's shoes, manically scrubbing at the shoes as if it were food. Another relevant scene for animators to study is when Hoffman and Voight are walking across a bridge and their outlines are in silhouette. This is a clear, cohesive example of zoomorphism at its best in a way animators can observe and use.

Animators wishing to study the use of zoomorphism in film and literature further may find the following examples found in Ed Hooks' *Acting for Animators* (2003) beneficial to their studies. Marlon Brando in *A Streetcar Named Desire* is using the image of an ape in order to find the rhythm and grace of his character, Stanley Kowalski. Tommy Lee Jones when portraying the lawman in the movie, *The Fugitive*, is noted by Hooks behaving like a wolf whenever Harrison Ford, the fugitive is near, by raising his head and sniffing the air. Alma in Tennesse William's play *Summer and Smoke* is birdlike with her highly strung, skittish, behaviour similar to that of a stork or heron, wary but regal.

Figure 4: Screen Shot from 1969 film Midnight Cowboy. Observe the hunched over silhouette of Dustin Hoffman using animal imagery in the acting of his role as 'Ratso Rizzo'

Figure 5: Screen shot from 1969 film Midnight Cowboy. Hoffman's use of animal imagery, in particular, that of a rat, is shown through the hunched over manner he looks up at his co-star, looking up with his eyes more than his neck.

Figure 6: Screen shot from 1969 film Midnight Cowboy. Hoffman hunches over the shoes, manically scrubbing at them like an animal to food.

The future of Anthropomorphism

On considering where the animation industry is heading in terms of anthropomorphic animation, here is a relevant place to bring in the concept of zoomorphism. Zoomorphism is the opposite of anthropomorphism, and refers to the 'representation of animal forms in ornaments, or to the representation of gods in the form, or with attributes, of non-human animals, and also the transformation of humans into beasts' (Wikipedia 2006). The area we are going to focus on is the representation of non-human animals. Doniger (2005) in Thinking With Animals in Other Times argues,

> Anthropomorphism may be more common than zoomorphism, but it tells us comparitively little about animals whereas zoomorphism is more complex; although this time a human being is the explicit object, the bestial qualities imputed to the human usually reveal an observation of animals more detailed.

This topic is so apt as we are entering a very exciting time for Motion Capture Animation which brings together ideas discussed in the review of acting and anthropomorphic literature. Motion Capture is the process of recording a live motion event and translating it into usable mathematical terms through the use of tracking and combining a number of key points in space over time to obtain a single three dimensional representation of the performance. To summarise, it is 'the process of translating a live performance into a digital performance' (Menache 2000).

Motion Capture Animation hasn't always been successful in terms of anthropomorphic or zoomorphic animation. Consider a case study of the (1998) film *Godzilla.* Menache (2000) quotes Karen Goulekas (associate visual effects supervisor) on the reason for pulling the plug on motion capture,

> The motion captured from the human actor could not give us the lizard-like motion we were seeking…We found that the Godzilla motion we wanted was one that maintained the sense of huge mass and weight. No human actor could give this result
>
> (Menache 2000)

Richard Chuang (vice president of PDI) once concurred,

> The mapping of human motion to a character with nonhuman proportions doesn't work, because the most important things you get out of motion capture are the weight shifts and the subtleties and that balancing act of the human body
>
> (Menache 2000)

Notably, he did go on to concede that there may be performers that could portray these differences. The recent films of MoCap actor Andy Serkis, have proved that such performers exist. Actor of Gollum in the *Lord Of The Rings Trilogy* and Kong in the recent 2005 *King Kong* movie, Serkis' contribution has been described as, 'Something we've never seen, an entirely new category of computer-enhanced acting. With not a word of dialogue, he brings to life a close cousin to man with whom we can empathize, yet is never too human-like' (Covert 2005)

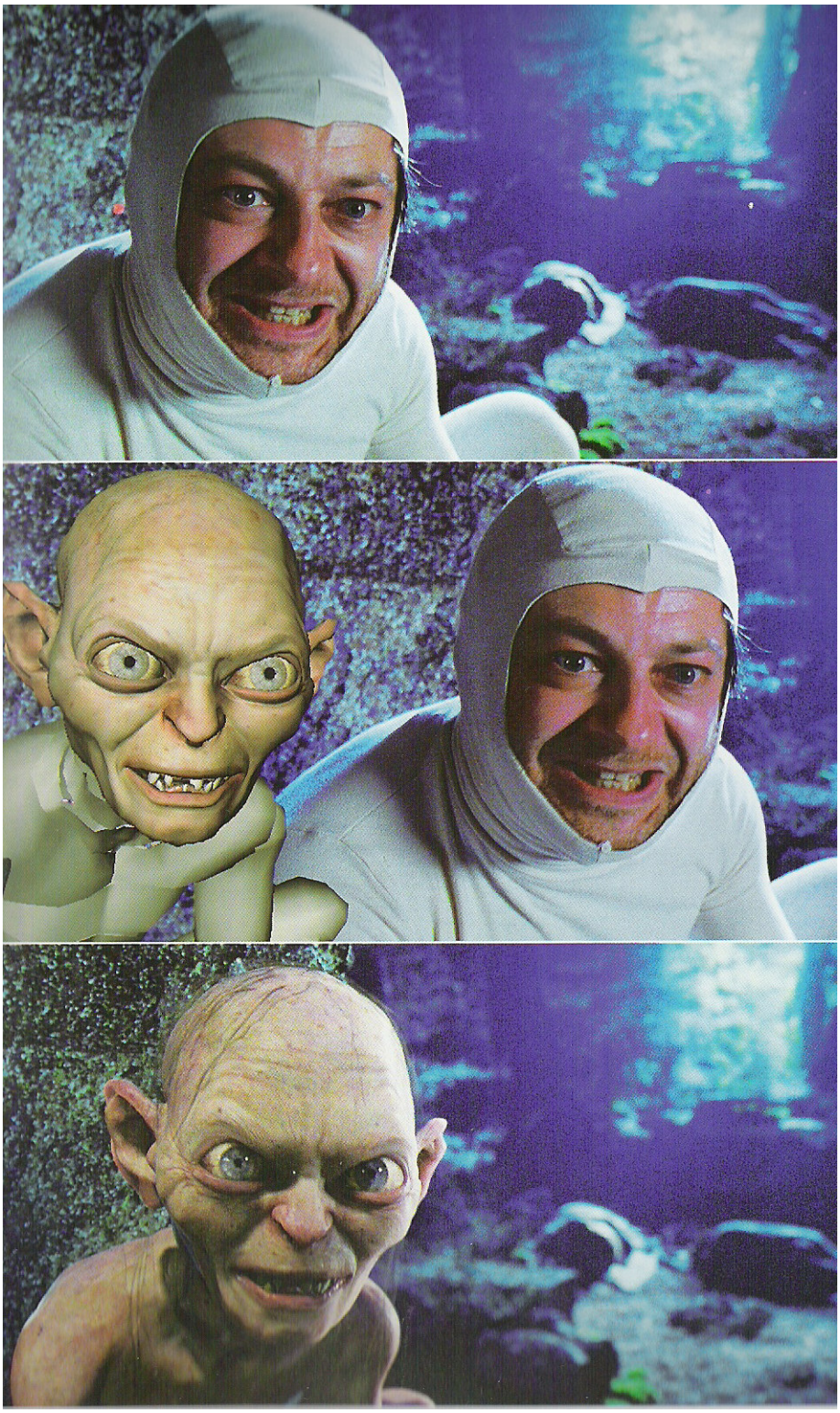


Figure 7: An example of zoomorphism at it's peak; motion capture actor Andy Serkis brings to life the character of Gollum in the Lord of the Rings Trilogy (Image taken from Serkis [2003])

This is not to say that zoomorphism is to take over anthropomorphism, or that Mocap will take over animation, for that is another debate all together. But what the animator should take away from this, is the balance Serkis is able to acheive. Serkis' understanding of acting theories combined with his study of animals means he is able to bring together the perfect fusion of animal and human characteristics to create a totally believable performance. Hence the importance placed on animators having at least a basic knowledge of acting studies to recreate such powerful animations.

'The magic of Disney is based on anthropomorphism'

(Platt 2000)

Animation

Relating live performances and acting to Disney's twelve basic animation principles outlined in T*he Illusion of Life*, Menache (2000) states: The following principles of animation cannot be accomplished with motion capture:

1. Squash and Stretch
2. Anticipation beyond physical boundaries
3. Follow-through action beyond physical boundaries
4. Exaggeration beyond physical boundaries (Menache 2000)

The animator should consider these principles in relation to any motion references studies they do to achieve anthropomorphism, i.e. studying the physical attributes/qualities

The following principles of animation are natural to live performances:

1. Overlapping action
2. Straight-ahead action
3. Ease-in and ease-out
4. Arcs
5. Secondary motion (Menache 2000)

Animators will benefit from study of acting in relation to these principles, as they come naturally to performing live. The following principles of animation require work whether a character is animated or performed:

1. Timing
2. Appeal
3. Personality
4. Staging (Menache 2000)

These are principles that perhaps cross both areas and bring to light the haziness of where to draw the line between physical and psychological qualities in anthropomorphic animation.

Daston (2005) argues that in contrast to the anthropomorphism of Aesop's fables fused with morals or the bestiary tradition or the automatic anthropomorphism exploited by childrens' stories and Disney films, the anthropomorphism in these two cases was 'deliberate and investigative.'

Throughout this study the use of anthropomorphism has proved to be greatly advantageous to animators, but not always just to get a moral across in their story. Even so, how does this come so naturally to them? According to Serpell (2005), this is due to the natural ability of the human mind,

> As far as is known, other animals (with the possible exception of some of the great apes and, perhaps, dolphins) lack a theory of mind, or the capacity to attribute mental states to others.

He goes on to state how humans have been described as 'natural psychologists', with the power to explore other minds by the light of their own subjective, that is, emotional, mental experiences. Animators are the ones who take advantage of this natural ability. Also discussed in Serpell's essay (2005) is the human ability to use 'reflexive consciousness', the ability to automatically apply our knowledge of what it is like to be human, to understand and anticipate the behavior of others. McGaw *et al* (2004) draw on this idea with the introduction of the idea that actors simulatenously develop their inner and outer techniques,

> Their outer technique depends on a trained voice and body to provide an effect instrument for communcating the meaning of a play to the audience. Their inner technique allows them to use their own life experience and historical imagination as a means of finding and understanding the subtext of their character's behavior.

As animators, our trained technique is our ability to animate, our ability to draw or use computer software to communicate our ideas.

Our inner technique, alike actors, requires us to use our own life experience and historical imagination to place ourselves in our character's shoes. In the field of computer animation in particular, we seem to be bogged down with technology in feeling that if we master the software, we are mastering animation. But not all artists are animators. Not all people who can draw beautifully can animate. We must work on developing both parts of us if we are to master such techniques as anthropomorphism in animation.

The role of cinematography

The framing and cinematography of how anthropomorphic characters are represented is hugely influencial on how they are received as Balazs (1952) suggests,

> In the film it is the art of the angle and set-up that reveals this anthropomorphous physiognomy in every object and it is one of the postulates of film art that not an inch of any frame should be neutral- it must be expressive, it must be gesture and physiognomy

Kramer (2005) reiterates this view in another context, 'The right photographic angle can spotlight a species in human imaginaries'. He recounts how photographer Tim Flach's brilliant staging of the animal subjects photographed 'unleashes a floodtide of identification in viewers'. Attempts to describe the subjects in frame are near impossible without using some sort of anthropomorphic description. Even Kramer himself does this as he describes the bats as 'wrapped up in their wings like opera cloaks.'

Kramer (2005) on the discussion of the animal photographic works of Flach, describes how his photographic series on the Australian fruit bat was received at the 2001 awards ceremony of London's Association of Photography as the most human photographs of the year, 'Ironically, most of the competing entries showed human beings, Flach's did not' (Creative Press 2001 cited Kramer 2005). Flach seems to have mastered the use of anthropomorphism in a single shot. If as a photographer, he is able to create the empathy inferred by anthropomorphism in a single pose, animators should place recognition on pose and framing to be equally as important as the study of movement itself. Kramer even goes as far to argue that the bats are capable of moving viewers more than images on human models in the same poses would.

Another aspect of Flach's work that should be brought to the animator's attention is the context in which Flach places his animals, as this can create anthropormorphic notions in even the most unhuman-like characters. According to Kramer, Flach does not rely on the obvious symbolism of props to treat his subjects, such as dressing up a chimpanzee in a suit and tie, but instead transposes a visual system of references from the treatment of human subjects to the treatment of animal subjects (Kramer 2005). Consequently, it may not always be the animals themselves we are identifying with, but the familiar context in which they are placed. This aspect crosses over to animation just as powerfully. A notable example being recent television show 'Father Of The Pride', the equivalent of an American family sitcom, yet the lead roles are played by computer generated lions.

On anthropomorphous physiognomy Balazs (1952) is referring not only to the anthropomorphic representation of animals, but objects alike. As this is not our focus, we will not dwell too much on this, but animators should be made aware there are areas of research in terms of cinematography that can aid them in the respresentation of their characters.

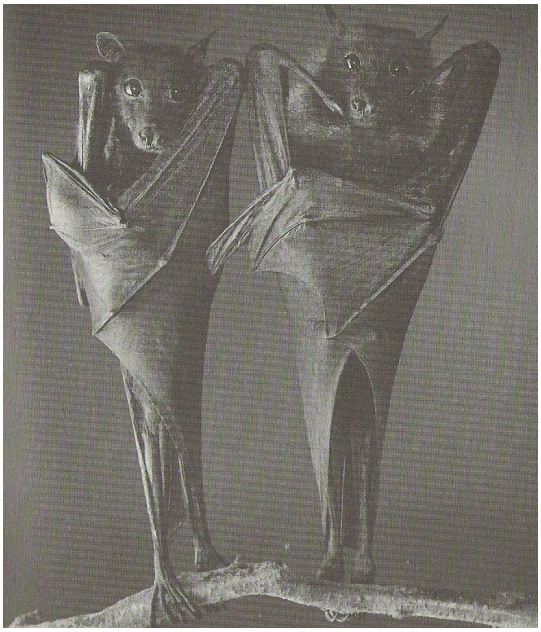


Figure 8: 'Egyptian Bats' by Tim Flach.

By flipping the photographs of bats hanging upside down, Flach has taken advantage of the use of composition and framing to compose an emotionally charged anthropomorphism image. (Image taken from Daston and Mitman [2005])

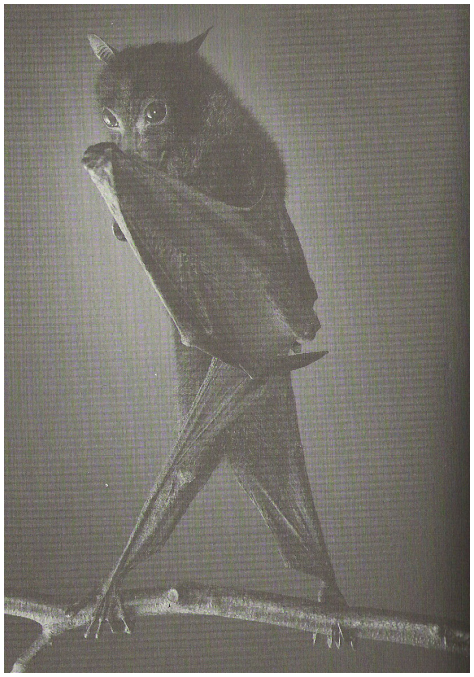


Figure 9: 'Opera Bat' by Tim Flach

An example of how much a key pose that audiences can identify with as being human, can reinforce anthropomorphic qualities in animals (Image taken from Daston and Mitman [2005])

Pet and Human Relationships

Animators should also recognise the importance of anthropomorphism in the actual character design of the subjects being animated. Balazs (1952) points out (on the discussion of animals on film) that all animals are actually caricatures of certain human types, 'They carry the physiognomies of humans, and at the same time, keep their own lovable and honest animal faces.' What stands out here is the use of the word 'honest' in Balazs' description. The element of trust we place in animals is much stronger than those we place in human beings. Why is this? Much of this trust is related to the animal's inability to talk to humans.

Serpell (2005) describes how Sheila Bonas and colleagues at Warwick University recently undertook a survey to get people to evaluate the different kinds of social support they derive from both their human and non human relationships. She found that although human relationships scored higher overall in terms of aggregate social support, pet dogs actually scored higher than humans in terms of their ability to provide 'reliable alliance and nurturance' (Bonas 2000 cited Serpell 2005). She puts this down to their in ability to talk; because they were unable to talk, pet animals are also unable to judge or critisise their owners, lie to them, or betray their trust (Bonas 2000 cited Serpell 2005). Serpell (2005) comments,

> Anthropomorphism rules because, for most people, any other interpretation of the animal's behavior- any suggestion that it might be motivated by other than human feelings and desires- would instantly devalue these (human and pet) relationships and place them on a more superficial and less rewarding footing.

Although the animal stars of animated films are customarily given the ability to talk, this human/pet relationship is deeply influential towards how audiences perceive the characters, and animators are able to use this to their advantage.

Character Design

'No matter how loveable, heroes are always upstaged by a furry friend. Because even a crab can be cuddly'

(Platt 2000)

Figure 10: Disney's The Little Mermaid (1989) 'To give a crab such a warm, cuddly personality is a considerable triumph for the animator' (Platt 2000)

Copyright Disney Enterprises

In terms of character design, much has been commented on the use of neotenic qualities, that is, the retention of juvenile characteristics in the adults of a species. Evolutionary biologists, such as Stephen Jay Gould, have suggested that we identify with certain species or animal characteristics like Mickey Mouse that display neotenic features similar to that of humans, 'Disney animators knew well that the large eyes of Bambi would elicit an emotional response from audiences more akin to the affection displayed toward a human child than if they had drawn the deer's eyes to scale' (Gould 1979 cited Daston and Mitman 2005).

Figures 11 & 12: Early character designs for Disney's Bambi 1942 [Image taken from Bambi dvd]

Platt (2000) on Disney's animal sidekicks argues that no matter what the characters are, be it mammal or crustaceans, they might as well be human, they talk, behave and think like human beings. Thomas and Johnstone (1981) comment that we can certainly push our character designs, but they must essentially retain human characteristics in order for audiences to identify with them, 'He can be more heroic, or bigger than life, or meaner than sin, but basically he has to be human enough for the audience to understand him and identify with the problems he faces in the story.' Disney essentially set the standard with this idea when he commented the most important point was that the audience should be able to identify with a distinct personality. Walt said,

> Without personality, the character may do funny or interesting things, but unless people are able to identify with the character, its actions will seem unreal. And without personality a story cannot ring true to the audience.
>
> (Disney cited Platt 2000)

Conclusions

It is hoped that animators can realise from this study that anthropomorphism is a hugely powerful tool used in the animation industry today to provoke reactions from audiences. This paper has purposely focused on the emotional/psychological aspects of anthropomorphism as these are areas that are hugely lacking in documentation for animators. The physical aspects of the anthropomorphic crossover can be mastered through the observation of animals, through watching wildlife videos and studying anatomy. But in order to create really clever animations, animations that are inspiringly subtle and perseptive, we need to recognise the importance of understanding acting theories to get to the depths of what makes a great character, and subsequently, a great animation.

It has become apparent from this study that successful zoomorphism in animation cannot be achieved through the study of animal movement alone. Nor can it be achieved from the study of human movement alone. To do so we run the risk of creating soulless animation, animation that just looks like a cycle of movement. Animators who study both acting and movement advantage themselves with the ability to cross over their skills into both anthropomorphism and zoomorphism.

It is hoped that animators can take away from this paper the importance of being aware of the use in anthropomorphism in other fields to enable the ability to open minds to how we approach such animation. Animal characters don't necessarily need to talk to be considered human-like. The photography of Flach proves this, and shows the animator

just how much can be achieved through the study of pose and cinematography alone.

Figure 13: 'Monkey Eyes' by Tim Flach (Image and caption taken from Daston and Mitman [2005])

As Aristotle observed, the distinctive mark of the animal is self-locomotion;

> They move themselves, with all of the roaming autonomy movement implies. Unlike dolls or robots or any other product of human skill, animals are not our marionettes, our automata (which originally meant puppet in Greek). They are symbols with a life of their own. We use them to perform our thoughts, feelings and fantasties…. We may orchestrate their performance, but complete mastery is illusion.
>
> (Aristotle cited Daston and Mitman 2005)

Making use of motion reference studies and acting studies, animators are well on their way to achieving the complete mastery of illusion, the Illusion of Life that is animation.

Critical Analysis

This project has allowed the discussion of why anthropomorphism's role in animation is such a fascinating subject. Initial plans for this project were to research into anthropomorphism, in particular what are the key aspects of it that make it so successful and believable in 3D animation and to then use this knowledge to animate a simple 3D human character with animal-like characteristics and qualities. The proposal noted that this would draw on Acting for Animators research, but to what extent could not be anticipated at this early stage. Its success would be dependent on whether the audience would be able to guess what animal the character is imitating, or representing. The final output, a research paper which concentrates greatly on acting for animation, is far from initial plans, but the usefulness of the research produced in relation to animation was found to be of great significance, and thus the consequent changing nature of the project evolved. This changing nature will be revealed through the description of the research process.

Initial research began with observing animal walk cycles in *The Animators Survival Kit* and the photography of Eadweard Muybridge. Sketches were produced (see appendix) and observations made of video of footage of animals. Preliminary tests were setup in Maya with a simple human character to see how flexible the character rig would be through positioning the character into a number of extreme key poses to observe how well this worked. An illustration in *The Animator's Survival Kit* was to be the starting point of inspiration at this stage, featuring a drawn walk cycle of a human on all fours.

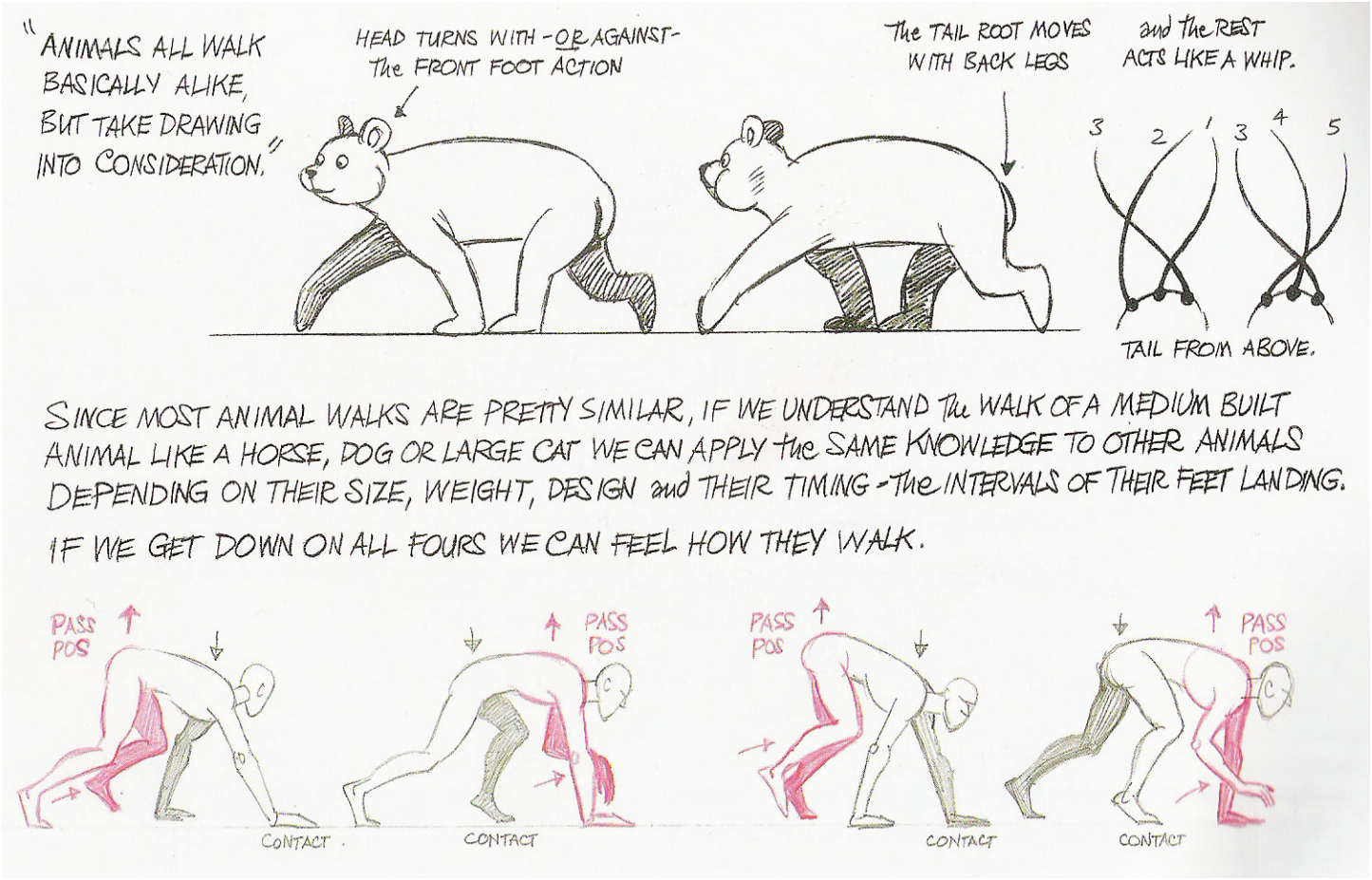
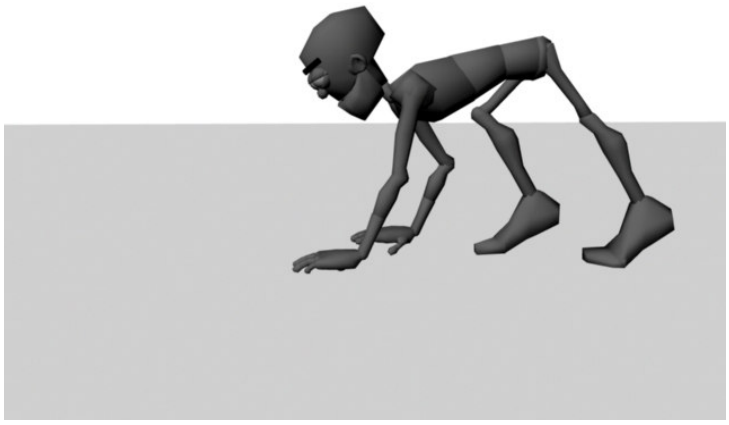


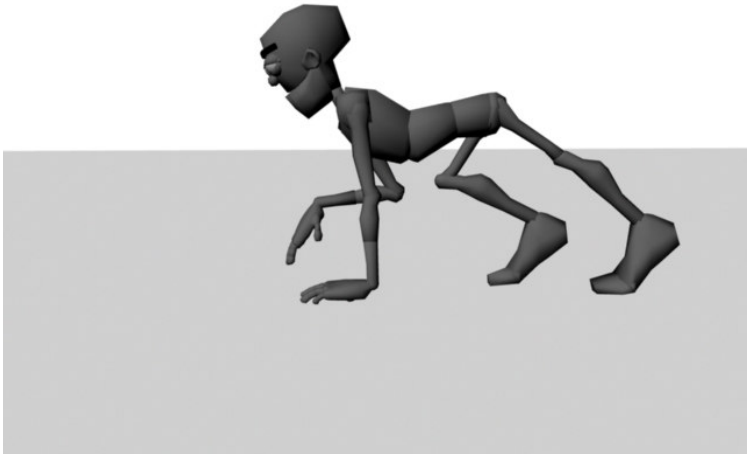
Figure 14: The initial drawings used as a reference to the first animation tests produced: an animal walk cycle in a human body (Image taken from WILLIAMS, R. *The Animator's Survival Kit [2001])*

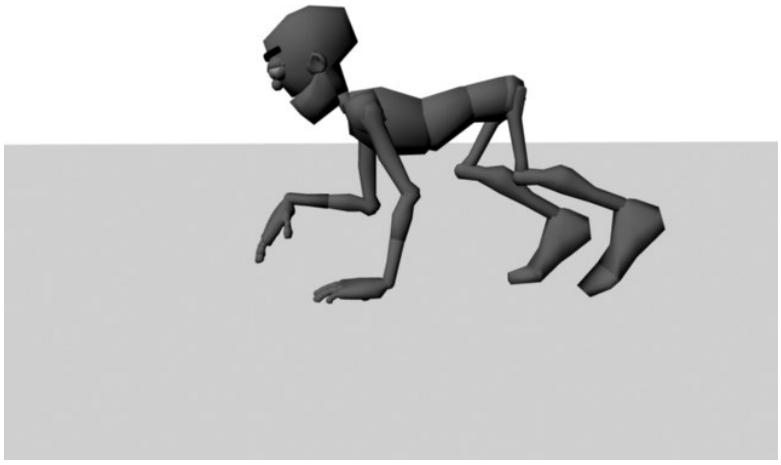
At this stage, a quick animation test was produced using the walk cycle references shown above. Concerns were that there would not be a human rig available for public use that would be able to move in the way animals do on all fours. The rig found proved to be incredibly useful for the cause as it had an IK/FK switch on the arms, which meant the arms could be planted onto the ground alike the feet. It also gives the animator the ability to interactively change the proportions of the character, useful for getting the human character into the animal-like poses required, by lengthening the arms for example. The rig used for these experiments is called LowMan and can be found at

http://lichiman.aniguild.com/?s=lowman

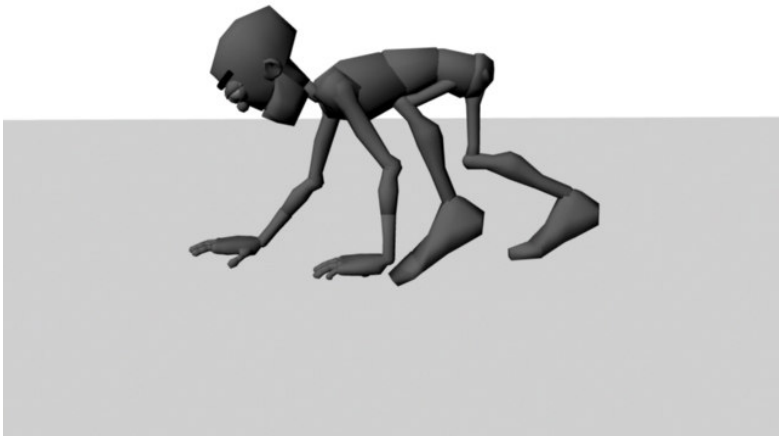
First three Renders of Initial Animation Tests: Taking a cartoon human rig and, using the walk cycle from The Animator's Survival Kit as reference, testing out some frames

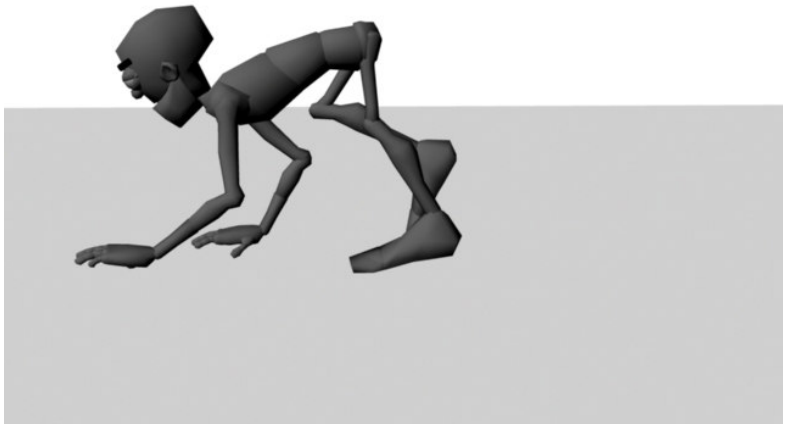






Final Three Renders of Initial Animation Tests: Taking a cartoon human rig and, using the walk cycle from The Animator's Survival Kit as reference, testing out some frames





Although the few frames produced looked good and worked well, problems with this approach was that it felt very much like a motion reference project, and increasingly superficial to what an animator should try to achieve. It didn't present enough of a challenge, and soon the desire to create an actual performance rather than an observation became apparent. Considering the best rig found was cartoon-like and verging on a mechanical looking human, there appeared to be a lovely motion developing but little inspiration and emotion provoked in playing back the frames animated.

Animation was put on hold and research diverted back to initial inspiration for this project, the work of Andy Serkis, MoCap actor in the *Lord of the Rings Trilogy* and *King Kong.* Serkis' book, *Lord of the Rings: Gollum: How We Made Movie Magic,* inspired the study motion capture animation from an actor's point of view. From here, research was led much more into acting literature and the huge potential this knowledge has for animators became apparent. The writings of Ed Hooks in *Acting for Animators* provided an invaluable insight into actors and films notable for their animal imagery. It also provided a link to related literature in the field of acting that would be beneficial towards animators, in particular, the writings of Stanislavsky. The case study of Dustin Hoffman in *Midnight Cowboy* was the most inspiring film studied for animators interested in this area of research. Hoffman's movements in the film were studied closely, followed by the study of film reference of rats. Amazing was the similarity, yet perceptive subtlety Hoffman managed to achieve. At this stage the idea changed to producing an animation of a human character behaving like a human, but with qualities/characteristics of an animal, alike Hoffman's performance.

Finding this to be an actual exercise for actors in the book *Acting Is Believing*, this exercise was taken on in order to challenge both acting and animating ability.

> Choose an animal or inanimate object for observation. Study it carefully. Remember that you can observe through all of your senses, not just sight. In addition to how the animal looks, consider how it feels, how it smells, how heavy it is, and possibly how it tastes. List all of its characteristic qualities. Plan a short individual scene, either with or without lines, in which you impersonate a character with these qualities.
>
> (McGaw *et al* 2004)

What a mistake the first approach was to producing a good animation, for although they were only preliminary tests, no one particular animal was kept in mind when testing out key poses. This is not how animators should go about producing an anthropomorphic animation. Stanislavsky commented that if you begin with the physical actions, the emotion will come from that (McGaw *et al* 2004), but animators are stripped of some of the physicality that is experienced when we go through the motions of movement. All sense of spontaneity can be lost through the tediously slow task of inputting this into the computer, and thus we must have a clear idea of the emotion we are trying to convey before we begin with the physical actions.

My major project features anthropomorphic animation, and thus I was keen with innovations to turn this on its head and focus on the opposite approach- zoomorphic animation. This would be innovative for me, as I have never produced any type of

zoomorphic animation before, and also felt that zoomorphic animation is not so common in the animation industry and therefore would be innovative in this way. Increasingly, research on acting and anthropomorphic animation in order to understand zoomorphic animation revealed itself to be helpful the major project research. So often throughout the research process, thoughts and ideas were discovered that had the potential to be so useful towards animators in general that I would note them all down, even if it was just to aid with major project research. Eventually it came to my attention that I had gathered a great deal of information that provided an insight into how the acting profession can help animators. I felt passionately about sharing what I had learnt with other animators, and thus decided to produce a research paper about anthropomorphism, but almost as a guide for animators. I wanted the paper to be a culmination of everything I would love to have known before starting this project with the initial proposed idea of producing an animation.

A plethora of the methods and techniques learnt through this research has been theoretical, instead of practical. Producing an animation research project without actually producing a final animation reflects the entire nature of this project. The relevance of this in terms of animation can be reinforced by a famous Disney quote on The Principles of Animation, 'When we consider a new project, we really study it…not just the surface idea, but everything about it' (Disney cited Thomas and Johnstone 1981). It is only at this stage, after weeks of research, that I would feel ready to put the theoretical techniques learnt into practical use with a firm confidence in what I was doing.

Final output is a paper that I feel addresses a definate gap in research for animators. Apart from Ed Hook's *Acting For Animators*, and *The Illusion of Life*, there is little literature available that stresses the importance of acting for animators. This lack of research is notable in Computer Animation literature in particular, and perhaps is the reason why so many computer animations are letdown by the notably poor animation contained within them. The lack of literature available was made even more apparent by the handful of acting books made available to animation students at Bournemouth University Library. Much of the literature assessed had to be obtained elsewhere via the internet or purchasing books myself.

Of course, it would have been hugely satisfying to produce the intial animation proposed, but am also glad that I diverted my research in the way I did. As stressed before, I did not want this to become just a motion reference project, as this is not the key to producing good animation. If I had carried on animating as I initially began, I fear I would have ended up with a half-hearted animation that was was not innovative in the way I initially planned. We can change the form of animation, we can take characters out of context, but there is a lot more to anthropomorphic animation as discussed in the literature review. The research culminated in this paper will now be used as a guide for animating the anthropomorphic character in the major project, and hopes are that final outputs will be a successful Innovations research paper useable as a reference for the animation of my major, resulting in a more successful animation for the Major project, instead of two not so successful animations.

The issues brought up in this paper will affect how I go about animating my Major Project. One of the key things I found by looking at anthropomorphism in other contexts, such as photography, was how much framing could help creating the anthropomorphic empathy in characters on screen. Next stage in terms of Major Project will be to reassess all cinematography in the block test to ensure I am taking advantage of this area of discussion.

If this project could be approached again, I would change little about it as I have learnt a considerable amount. I would start my research earlier so that a short animation could be produced to demonstrate findings. Surprisingly, the Innovations study has left me wishing I could change the animation for my major from an anthropomorphic perspective, to a zoomorphic perspective, as this area I believe challenges animators a considerable amount more. I cannot possibly cover everything I understand about animation in this one short paper, as the study of animation is a long journey which is constantly built on. I would hope the reader is drawn to the acting research of the paper, as this is what I have found most relevant and surprisingly useful as an animator. As the quote in my paper suggested, 'There is a great deal to learn about acting because there is a great deal to learn about life' (Bennett 2006). Computer animators who do not come from a traditional animation background are often resorted to the self-teaching of animation skills. The use of acting for animators is one that was studied briefly on the second year of this course through the Specialist Project, but personal progress made in terms of understanding and appreciation of animation is considerable. I feel passionately that there should be literature available to computer animators specifically highlighting the issues addressed in this paper.

What I hope this paper will achieve is to make animators more critical and aware of the techniques they are using in terms of theoretical issues such as anthropomorphism to entertain their audiences, and place this on equal footing with the actual practical techniques used to communicate their ideas. It is hoped that from reading this paper, animators will be at least enlightened, particularly those involved in Computer Animation, of the positive effects studying acting can have on their work, and perhaps encourage more students of Computer Animation to take up these ideas and read further into the subject.

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22. *Midnight Cowboy.* 1969. Film. Directed John SCHLESINGER. USA: MGM

Images Used In Text

Figure 1:

Image [online]. 2006. Film. *King Kong 2005.* Available from: http://www.salon.com/ent/movies/review/2005/12/14/kong/story.jpg

Figure 2:

Paralytic Child Walking on All-Fours
(Image and Caption taken from MUYBRIDGE, E. 1957. *Animals In Motion.* NY: USA: Dover Publications Inc. 31.

Figure 3:

Woman Walking On All Fours
(Image and Caption taken from MUYBRDIGE, E. 1955. *The Human Figure In Motion.* NY: USA: Dover Publications Inc. Plate 148.

Figures 4, 5 & 6:

Screenshot. Film. 1969. *Midnight Cowboy.* Directed John SCHLESINGER. USA: MGM.

Figure 7:

Image taken from SERKIS, A. 2003. *The Lord Of The Rings: Gollum: How We Made Movie Magic.* London: Collins.

Figures 8, 9 & 13:

Images taken from DASTON, L. AND MITMAN, G. 2005. USA: Columbia University Press.

Figure 10:

Film Image [online]. *The Little Mermaid [1989].* Available from: www.dcltribute.com/towelsculpture/sebastian.htm
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Figures 11 & 12:

Images taken from Film. 1942. *Bambi.* Directed by Walt DISNEY. USA: Disney.

Figure 14:

Image taken from WILLIAMS, R. 2001. *The Animator's Survival Kit.* NY: Faber and Faber Ltd.

Further Reading:

1. WILLIAMS, R. 2001. *The Animator's Survival Kit.* NY: Faber and Faber Ltd.

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APPENDIX

Initial sketches produced to aid with preliminary animation tests: