

The Old vs New, Cardboard and Computers.

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Film and Television

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Introduction

Practical effects are physically produced special effects, created without the need for computer-generated imagery or other post-production techniques often using props or special gear to produce an effect for camera. One of the earliest examples of film practical effects was in *A Trip to the Moon* (Méliès, 1902) where the use of sets, costume, props, smoke and



explosions are believed to be the first of their kind to be used on film with Méliès showing that cinema could be more than just real life and that you could create fantastical life on film.

Since then practical effects have gone from strength to strength, with the idea book of practical effects being added to consistently as the century went on, key examples being *Metropolis* (Lang, 1927), the most expensive film ever made and debut of the Schufftan method utilising miniatures to save on building massive sets, *The Wizard of Oz* (Fleming, 1939) one of history's first ever technicolour films and because of that the method of matte painting could truly come to life, as the process of painting a seemingly impossible world and blending it with life, made it become a staple part of making films for decades to come even surviving to the modern day as digital matte paintings.



Stop motion is one of the oldest forms of animation with the earliest recorded stop

motion appearing in 1898 and has never really gone away possibly being at it's most popular in 1933's *King Kong* with pioneering work from animator, Willis O'Brien leading from the front yet it was his protégé, Ray Harryhausen that would make stop-motion an indispensable weapon in film's practical effects repertoire as Harryhausen inspired the likes John Lasseter

(Pixar), Steve Spielberg, George Lucas (ILM), John Landis, Peter Jackson (WETA) and Tim Burton amongst others and that's quite a list already.

I would go even further into special effects, but I feel that these practices are the main ones I wish to focus on throughout this dissertation as I attempt to answer my question at the start and so I will move onto computer generated effects.

Visual effects is the process by which imagery is created or manipulated of a live action shot in filmmaking. It often involves integrating of live action footage (often integrated itself with special effects) and generated imagery (either digital or optical effects) in order to create realistic environments, animals and objects that would ultimately too difficult to capture on



film and these are mostly are completed during post production, meaning that it is carefully planned and choreographed in pre-production and production..

Examples of such things are often aliens,

alien worlds or creatures long dead or having never existed at all like Smaug the dragon in *The Hobbit* trilogy (Jackson, 2012, 2013, 2014,). Keeping with a Tolkien theme, one of the most famous examples of visual effects is the creation of the Stoor Hobbit, Gollum. Portrayed by Andy Serkis using a combination of real-time motion capture and key-framing combining the two methods for the very first time to create something fans of *The Lord of the Rings*, Peter Jackson or visual effects themselves have not forgotten in a hurry.

Chapter 1– Practical effects

Before I go into my first Case Study, it would be a good idea to give an idea of what it is I want to find out from looking at the two King Kong films. My main objective is to find out whether a massive improvement in filmmaking technology across all departments makes a better film or are people put off by the reliance on technology? To do this I have picked out certain storytelling aspects to use as comparative tools alongside purely technology-based comparisons. These include characters and their appearance and movement and Story worlds and their sub-categories of environment, landscape and performance.

CASE STUDY – KING KONG (1933, Directed by Merian C. Cooper and Ernest B. Schoedsack)

Before going into the technology that brought the 8th wonder of the world to life, I'll start with how Kong as a character works, being that he obviously is a stop-motion animated gorilla with no speaking lines so the focus will be mainly upon his appearance and movement for this part and for his modern counterpart. Starting on his appearance, Kong's obvious trait is his size, theoretically standing 30 – 40 feet tall, his size gives him an almost unnatural feel, given how normal gorillas are similar to humans, adding to the shock factor about him. Kong is based upon Western Lowland Gorillas, but they display prominent belly and buttocks naturally so the modeler's decided to streamline the armature's torso to minimize the comical and awkward aspects of the gorilla's physique, possibly making it easier to animate as well without such intricacies in the way.

Kong's movement, although based on a gorilla, is let down by technological limitations, where the framerate of the camera is slower than the human eye sees but considering that he is a stop motion animation using an entirely new technique for such methods as I will discuss later. His movement is obviously primal but has hints of human influences, with both

directors, Cooper and O'Brien having wrestling and boxing experience in their youth and it shows certainly in how he fights the prehistoric creatures on the island. Kong uses his left paw almost to guard his face as a boxer would do as well as using well-known wrestling moves such as the "trip-out" and "snap mare" winning the fight against the allosaur using this move.

The environment of Kong's world is the untamed, unseen by man Skull Island. One of two locations seen in the film, Skull Island is inhabited by prehistoric creatures such as Tyrannosaurus Rexs and Stegosaurus, of which Kong has no problem fighting to protect Ann. As I'll explain later, Matte painting was used to create a feeling of depth of the landscape of Skull Island, making it appear much large than it actually is and much more mysterious, which I believe might be helped by the black and white of the film even if the matte paintings were done in colour, the backdrops seem to just blend to together adding to the mystery of the Island, which I will now explain in the next part of this chapter.



King Kong atop the Empire State Building

Ever been playing Scalextric and your cat swings a paw, wiping out a car with ease. As annoying as it is, on the scale of the car, it probably felt and looked like a scene from a disaster movie, which in reality is not too far from how they were made around the turn of the 20th century. Taking the 1933 spectacular, *King Kong*, it is a film well known for using ground-breaking special effects some of which were conceived decades before the digital age came around with methods such as stop-motion animation, rear projection, matte painting and miniatures of which the numerous creatures of Skull Island were created. Throughout this first chapter, I will be exploring these different methods of special effects used within *King Kong* and how they were used to help the film tell its story to the maximum.

Heading straight in and going straight to the lead character Kong, upon approval of a test reel, model maker Marcel Delgado constructed Kong in one-inch-equals-one-foot scale, meaning and the two 18-inch models would look 18 feet tall on screen and the 24-inch model, built for the scenes in New York, such as the one above, would look 24 feet tall.

However, it was the construction of these models that changed stop-motion animation forever as prior to Delgado, stop-motion models were often made out of clay, making them difficult to reposition in between shots. Delgado changed this by firstly creating a skeleton out of Duralumin before adding other materials on top, such as cotton, latex and foam rubber thus

making them not only more realistic looking but also easier to handle on set. The same process was used for the many prehistoric creatures of Skull Island, a Duralumin skeleton, as seen here with the Brontosaurus, with “flesh” built on the top, some of which still visible on the back. In addition, this particular model was modified to carry out live action movements as well as stop motion, hence the wheels and handles on the side.

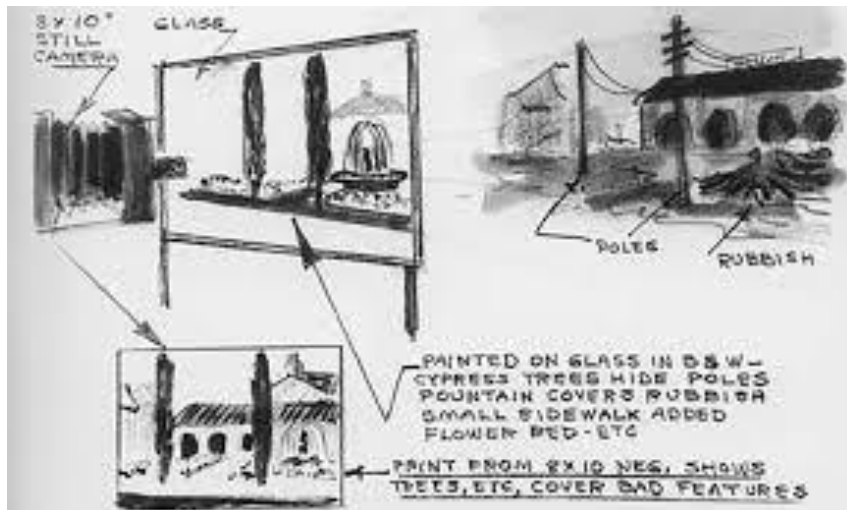


When it came to actually filming the stop-motion scenes, the process was painstaking and difficult to achieve and complete with the iconic fight between Kong and the Tyrannosaurus-Rex taking seven weeks once the crew realised that

they could physically not stop filming as it would result in inconsistency of the creature movements and the intensity of the lighting dropping over days of filming.

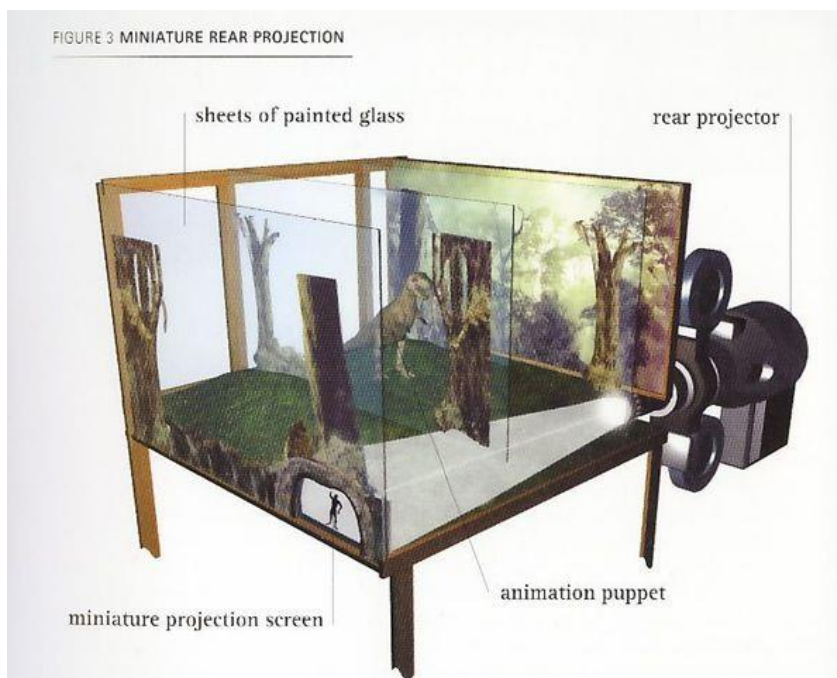
However, problems were encountered mainly with the models prolonged exposure to studio lights as the rubber skin quickly dried out, often requiring a total rebuild of Kong and the dinosaur's facial features so wooden replicas were made for test shots before the actual models were placed in and animated.

The technique of matte painting has been around since the turn of the 20th century, being used by the legendary filmmaker George Méliès to outstanding effect before being adjusted by Norman Dawn for his 1907 film, *Missions of California*, he used matte paintings to make destroyed buildings whole again and hiding objects like telegraph poles behind trees on the glass, as the man himself illustrated below.



King Kong utilised matte paintings to create the backdrop of Skull Island when the crew of the Venture first arrive on the island and was painted on glass by painters, Henry

Hillnick, Mario Larringa and Byron C. Crabbe which then was composited with separate bird elements and rear projected behind the ship and the actors, large native village along with jungle backgrounds using several layers of painted glass to create a deep, dense jungle environment.



Miniature Rear Projection Process

The most difficult task facing the special effects crew was bring the separately filmed stop-motion animation and the live action footage, making the interaction seem believable. Willis

O'Brien, the special effects supervisor, used a process called "rear projection" which was greatly developed during the 1930's and after much experimentation, O'Brien and his team had perfected miniature rear projection where they built small jungle sets with small areas where rear-projected images could be put onto miniature screens, it's most famous use during the film is where Kong fights the Tyrannosaurus while Ann watches from a tree.

The animation was filmed first and during these periods of animation, model creatures were manipulated fractionally as the rear projected image was advanced by one frame while Fay Wray spent twenty-two hours sitting in a fake tree, acting her observations of the battle while being filmed by the camera filmed her reaction. This set-up allowed the creatures and the people to be lined up frame-by-frame and because of this painstaking process, the animation of Kong took over a year.

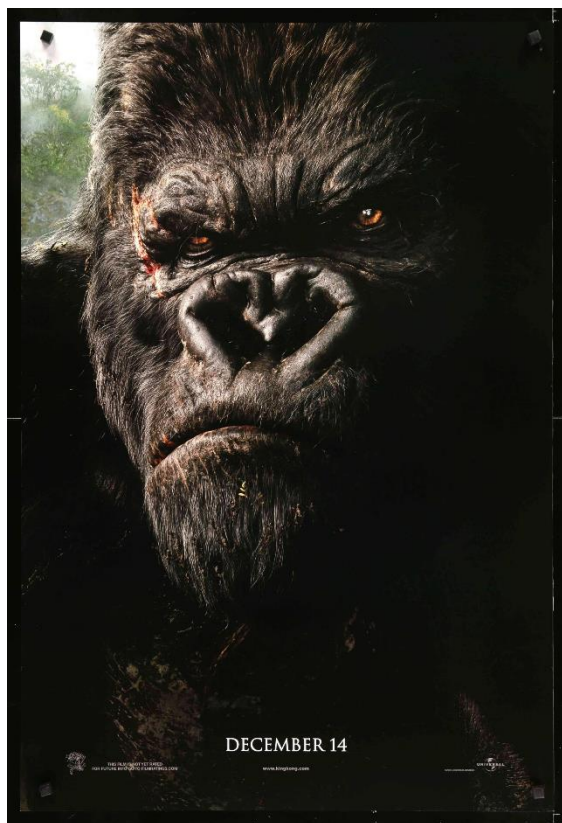
The culmination of all these techniques came in the scene where Kong fights the snake-like reptile in his lair, using the combination of a miniature set, stop-motion for Kong, background matte paintings along with rocks with smoke, mud and real water and two rear screen projections of Driscoll and Ann. The final result although only a few minutes for the whole scene, which admittedly shows its age, is quite the spectacular and must have been amazing to watch when it came out for the first time in 1933 as it was re-released in 1942, 1946, 1952 and 1956: each time to great box office success.

Chapter 2 – Computer effects

For my second chapter, I will be using a similar structure to my first chapter but using a more modern case study of the modern version of the film I used.

CASE STUDY – KING KONG (2005, Directed by Peter Jackson).

When Peter Jackson first saw the 1933 film, he was nine years old and by the time Kong slipped off the Empire State Building at the end of the film, he was in tears by the TV. Jump forward 3 years and Jackson is attempting to recreate the film using a Kong made of wire and rubber and faux fur. Jump again to 1995 and Jackson initially said no but became “quickly disturbed by the fact someone else would take it over and make it into a terrible film; that haunted” before saying yes to Universal. 1996 rolls around and Universal Pictures has turned on and pulling the plug on a new King Kong film by 1998. Then finally, in 2003, production restarted, with the film launched in 2005 with Jackson at the helm.



Once again, I'll be working through my picked-out storytelling aspects to use as comparative tools alongside purely technology-based comparisons once again including characters and their appearance and movement and Story worlds and their sub-categories of environment, landscape and performance. Before going into the technology that re-brought the 8th wonder of the world to life 72 years later and how this new Kong as a character works, being that he obviously is no longer a stop-motion animated gorilla whereas now he is Andy Serkis in a

motion capture suit so the focus will be mainly upon his appearance and movement for this part and for his modern counterpart.

Starting once again with Kong's physical appearance, the new version is roughly the same height as his 1933 counterpart and is once again based upon Western Lowland Gorillas and again the decision to streamline the rendered model's torso to minimize the comical and awkward aspects of the gorilla's physique, possibly in keeping with the 1933 original of which Jackson is huge fan. This new version of Kong allows for a more detailed creature, with 2005 Kong showing more scars and more "human-like" features such as expressions, with the picture above showing Kong to have what I'd call "Grumpy Old Man".

The movement of Kong is one of the biggest changes with the advancement in technology. He is no longer limited to slow frames and the subtle movements of the stop-motion method, with the full capabilities of a human being in control, with the beast being a 3-D model, created with motion capture and digital animation. Kong's actions and expressions to be matched with those of actor Andy Serkis, someone who I will get onto later in this chapter.



Another of the biggest changes is the world of Kong, primarily Skull Island and secondly New York. Whereas 1933 Kong, utilised matte painting to create the island and cityscapes, the 2005 used the power of computers to build Skull Island to a scale the 1933 version could

only dream of with an example being that the digitally-rendered 1933 New York City is so detailed, that it contained ninety thousand separate buildings and because of this advanced world building, the other creatures within Skull Island including the many dinosaurs, bugs and sacrificing natives could be brought to life with more detail and more realism allowing them to not only interact better with each other, especially during the epic 3 v 1 fight between the T-Rexes and Kong culminating in a 1 v 1 battle between Kong and the final T-Rex is an almost move-for-move remake of 1933 Kong's clash right down to Kong playing with the jaw.

At long last we get on to the visual effects and the genius of Andy Serkis when given a digital character. Having worked with Serkis before in *The Lord of the Rings* trilogy with the successful performance of Gollum, Peter Jackson recalled Serkis and the motion capture technology for King Kong. If it wasn't obvious, Andy Serkis and King Kong aren't exactly proportionally matched but thanks to several leaps and bounds had been made by WETA Digital as to the way that motion from Serkis was acquired from his face and body, with his face in particular being littered with tracking markers just so Kong had that human influence on him, allowing to for such facial expressions as the "Grumpy Old Man" from earlier.

From the off, Jackson determined that he did not want Kong to behave like a human so extensive hours of gorilla research were conducted. When Serkis was cast in 2003, he prepared for the role by working with gorillas at London Zoo and then traveling to Rwanda to



observe the actions and behaviours of gorillas in the wild. Christian Rivers, Weta Digital's supervisor to all of

Kong's performance, explained that the detailed facial performance capture with Serkis was accomplished because of similarities between human and gorilla faces. Serkis also had to perform directly opposite Naomi Watts and was even decked out in ape proportions just so Watts wasn't staring into the void of blue and green so Weta fed the raw capture data combined with the essence of what Serkis produced and fed it directly into CG Kong using several methods of motion capture. These included optical, electromagnetic and mechanical. King Kong used an optical system which consists of a lightweight suit, many reflective dots and 70 motion capture cameras that fed capture information into an army of computers, 15,000 on the set of King Kong, which were running 3-D motion-capture software. The motion capture studio is a huge warehouse with bare-bone sets with simple structures, designed to simulate the terrain and props of which Kong interacts with because they're not seen by the camera, only the dots on Andy Serkis are seen.

Once Serkis was in the suit, technicians placed 60 optical markers on his body and another dozen on his face, as seen in the image below. Each marker is placed on a key position, typically a joint or a particular muscle, with a group of markers representing a muscle group or body segment. To track this movement, 52 cameras surround the set to track body markers and another 20 to track the facial markers with every camera having a ring light around the lens to light up the markers back to the cameras, allowing each camera to track all of the markers it can see at any time. The data is fed to the computer which create a 3-D "marker cloud" that represents Serkis' body. The transition from human motion to gorilla motion was one of the most difficult aspects of this capture process, an aspect unique to King Kong but the software does a lot of the work to convert human motion to gorilla motion in real time.

Something that was easily dealt with on the set of the 1933 King Kong was the fur for Kong as the armature had rabbit fur to make Kong look furry and more realistic. However, for the 2005 film, Kong's fur was the hardest to animate and Weta digital face similar challenges when animating Gollum, another of Serkis' characters. Weta needed to create digital fur that not only looked realistic but also reacted to the changing lighting and keep up with Andy Serkis' movements as well. This was achieved via a bespoke grooming solution, called "Barbershop" which is a system still used by Weta today that around the time of King Kong could enable 30,000 to 40,000 clumps of hair and that's only on Kong's head along with collecting mud and leaves as he stomped around on Skull Island. This picture shows how thick and real Kong's fur looks despite being entirely computer made.



Chapter 3 – Best of both worlds.

In this third and final chapter, I will be using this space to compare and contrast the two King Kong films that I based my previous two chapters on, the 1933 version and the 2005 version. To do this, I will once again use the same storytelling aspects I used as comparative tools to write about both films, deciding which film is better at each aspect before comparing the two using technology-based comparisons and finding inspirations taken from the films.



Starting with character, both versions of Kong are very similar as there is no major changes to how Kong works, he is still a giant gorilla taken from his native island to New York City before breaking out and going on a rampage, climbing the Empire State Building before falling to his death all while protect Ann throughout. Obviously, the biggest change is how the two versions, 1933 Kong is a stop motion, hand animated creature and would have been made in the order of:

1. Ease of Use – The model of Kong was designed with an internal skeleton to make him easier to animate during a time when it took a long time to do stop motion animation.

2. Realism – Looking at the 1933 Kong, you'd say that yes, he is a gorilla but not exactly an accurate one. He's got comical eyes and a comical way of behaving. To us in the modern day, it all looks a bit naff but to those seeing it in 1933, it would have been unbelievable viewing.

The 2005 motion capped version is something to be in awe of. From the technology used to bring Kong to life to the little details on him with scars and cuts, adding depth and intrigue to this character, adding questions about his life before being discovered.

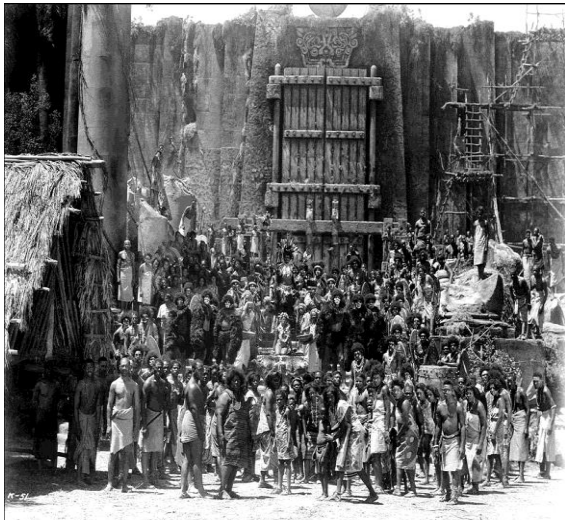
Regarding the criteria above about Kong, I've mentioned previously how 2005 Kong was designated to be as gorilla as possible with extensive gorilla research being carried out as well as methods to make the computer-generated beast as real as possible.

When it comes to the Kong as characters, the 2005 Kong has an advantage over his 1933 predecessor by being able to build up more of a character, showing him to be more than a raging beast, showcased by two scenes, first where Kong takes Ann to a cliff on Skull Island and Ann amuses him to keep him calm and it is during this scene, Kong shows human-like emotions and reactions for the first time as all we've seen of the giant ape is primal instincts and emotions but these human emotions such as playfulness and laughter provoke a reaction of similar to that of a child as obviously the only humans he has encountered before are the native people who aren't as intelligent nor advanced as the Americans who arrive on the island.

The second scene showcasing the character development of Kong is a moment of calm during his escape from the theatre in New York, he finds himself in Central Park and encounters the Central Park Lake frozen over and after initial hesitation, begins to play on the ice, entertaining Ann which makes him play more before a shell interrupts him. This is once again an example of Kong showing his age/maturity with childlike reactions to a phenomenon that

would be common to others but assuming Kong has never seen snow before, to him it's an entirely new experience.

When it comes to the story worlds of both the 1933 and 2005 films, despite them sharing the same locations of New York and Skull Island, both locations have entirely different feels to them between the 72-year gap. Starting in 1933, the sets are different depending on who is being filmed either the people or the beasts. The people have life-size sets and objects to interact with as seen below left with the giant doors to the native village, where as the beasts can only interact with each other and the other sections of island built to their scale such as the top of The Empire State Building however, mixing the beasts and the people together



used the Rear Projection technique I discussed in chapter one, which allowed Kong to be there with the actors.

Moving on to 2005, the need for rear projection was redundant as the use of blue screen composite meant the process of having Kong and the actors together on a screen was

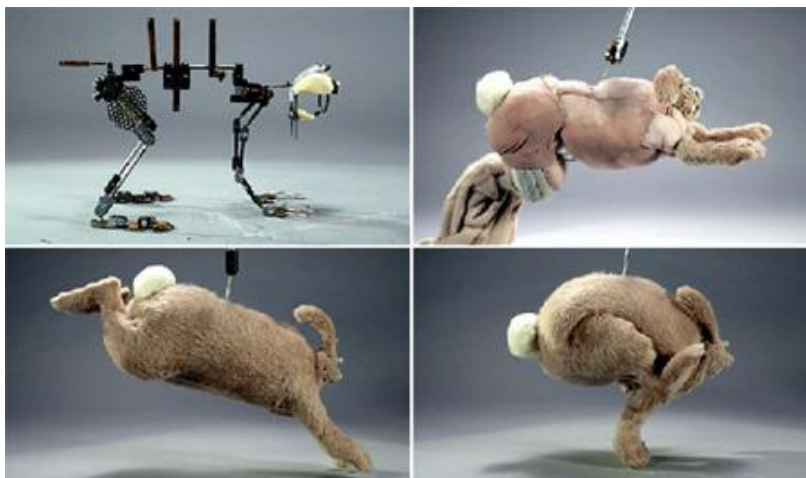
seamless. Kong, being played by Andy Serkis in a motion-capture suit, was able to interact with Ann Darrow, played by Naomi Watts, meaning that the relationship between the two is more believable due to this increased interaction.

We now come to the sharp point of the last three chapters, the technological comparison. Taking the



72-year gap between the films into consideration is important as the world changed considerably in that time, with the general technology level accelerating all the time. When the 1933 King Kong came out, the world was a rapidly changing place, with the golden age of Hollywood 20 years in and the talkies becoming mainstream 6 years prior, allowing an entirely new type of visual entertainment on the big screen to become bigger and bigger. None came bigger than King Kong when he made his screen debut but as much of a big deal on screen he was, off the screen was where real giant steps were being made

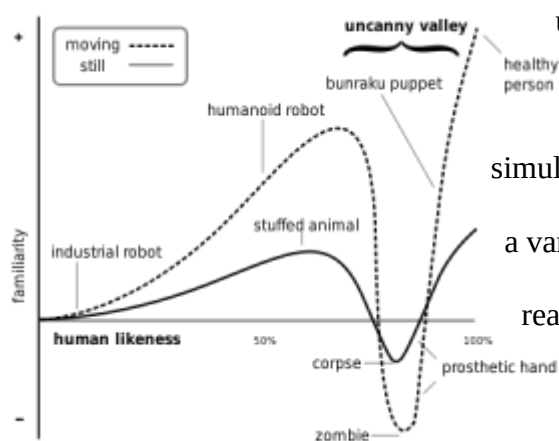
The stop motion animation was revolutionary as I have previously mentioned with the internal skeleton of the 8th wonder of the world is a technique which is still in use in cinema today, especially the stop motion world. An example of this in use was in Aardman animation's *Wallace and Gromit: The Curse of the Were-Rabbit* for the Were-Rabbit itself, pictured below, which had an internal mechanism that allowed the animators to move the



model with minimal touching of the fur covering, thus avoiding the tell-tale impressions left by their fingers. Whether Kong's skeleton inspired this is unknown but the *Curse of*

the Were-Rabbit clearly took inspiration from King Kong, as the climax of the film featured a spoof of King Kong of which the 2005 version directed by Peter Jackson released the same year.

Jump forward nearly three-quarters of a century and the world has once again changed to one hardly recognizable from the one in 1933. Cinema is a worldwide phenomenon with worldwide recognized stars leading massive blockbuster pieces which leads nicely into the 2005 *King Kong*, the motion capture technology was a catalyst for Peter Jackson to carry on making films using it including films such as *The Hobbit* trilogy and *The Adventures of Tintin*. It also allowed for other companies to start using the technology to make films that otherwise wouldn't be possible, a massive example of this is James Cameron's *Avatar*. The first ever movie to pull \$2 billion in from the box office and a worldwide success. Reportedly James Cameron was convinced that *Avatar* could be achieved after seeing Gollum in *The Lord of the Rings* franchise, another of Peter Jackson's films. One issue of the increased use of motion-capture technology is a phenomenon now known as the Uncanny Valley. The



uncanny valley is a common unsettling feeling experienced by people when audio/visual simulations and androids closely represent humans in a variety of ways but are not quite convincingly realistic.

Conclusion

After extensively researching both films use of technology whether that be the stop motion animation and revolutionary rear projection of the 1933 film or the motion capture suits and blue screens of the 2005 film, it would be easy to say that the 2005 film is the superior film due to the spectacular nature of the film and how good it looks visually but as important as these factors are when considering a good film, it should not be all you base your opinion on. The 2005 film has the best storytelling and acting over any other of the Kong franchises, however it suffers at being nearly 3 hours long, 87 minutes longer than the 1933 original, which is something that Peter Jackson does tend to struggle with as a filmmaker.

However, the 1933 version is still the American monster movie that all other American monster movies are compared to, with it's ground breaking stop-motion animation and an iconic story which still holds out to this day despite the 2005 version being vastly superior in terms of special effects and performance.

Personally, both films stand out for their own reasons, each excelling at something the other falls but for this conclusion, I have decided that I will try and find a film to best compare their best attribute against to which I will draw a final conclusion upon before finally answering my question I set out to answer right at the very start.

Beginning with the method of Stop motion. 1933 King Kong has to wait a long time before anything comes as close with possibly the only contender being the 7 headed Hydra from *Jason And the Argonauts* (Chaffey, 1963). Ray Harryhausen was the key figure for the film's practical effects, who you may recall from my introduction was the protégé of Willis O'Brien who was the key figure on King Kong, 30 years later. Harryhausen worked magic on Jason, creating Thalos, a combination of an actual character from the original tale and the Metal man of Rhodes, the 7 headed Hydra who although is easy to imagine, it was incredibly

difficult to bring to life. However, the pinnacle and most famous scene, is that of the skeletons rising from the dead something that took four and a half months but was worth the time spent.

It should be pretty obvious that I have a great admiration for the computer work done for the King Kong 2005 movie and it really is a spectacular effort and to find something of similar work and standard was difficult without beating the dead horse and mentioning *The Lord of the Rings* once again and so this time I decided to look for a film that matches up to the basics of King Kong, so a large monster disturbed by mankind which goes on a rampage all created within a computer generated world. There was only one option, Godzilla. Released in 2014, directed by Gareth Edwards and forever one of two options of who would win in a fight between him and Kong, the prehistoric alpha predator shares many a common theme with King Kong as both are the product of painstaking CGI while also use practical effects as well.

For the final part of my conclusion, I will be answering the question I set out right at the start of this dissertation which was “How do practical effects (special effects) compare to computer generated effects (visual effects) in terms of creating realistic worlds and characters?”. A simple initial answer would be that the creation of worlds and characters depends on what you’re creating them with, practical effects or visual effects? If you’re using practical effects, your character will have to sacrifice a certain of human qualities even if they are a robot, gorilla or dragon, as there will be no easy to allow them to convey characteristics as King Kong showed in 1933, he was purely a gorilla who showed a form of affection to one character, limited by the technology at the time and then compared with his 2005 counterpart, the newer Kong has the ability to showcase emotion, be more animated in his movements because the technology allows him to do so which is why more wild characters are put into computers.

However a counter argument of this would be the original *Star Wars* trilogy, where all the characters were people in suits and they all felt as real and relatable as if they were actually Wookies and Ewoks and the same could be said for the worlds and universes as well, each planet visited has its own unique way about it, Hoth is cold and inhospitable and Endor is one big forest but because these were physically created, they feel more real than the worlds of Mustafar and Coruscant which were both computer generated.

Returning the original question, the answer depends on where and who your film has in it. If you want to create a fantasy world with wacky aliens, you will need to create it on a computer or get a very good practical effects expert to help you and your massive budget. However, if you're going for a relatively normal world, with normal people then this can be achieved with good practical effects and the slightest use of visual effects should you need to make it look that little bit better. But if you are looking for that mix then practical effects can be achieved if you think outside the box a bit in terms of using simple items around you to achieve your desired effects.

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