

Title:

2d & 3d animation cartoon investigation

Abstract:

In the following research analysis, an investigation within 2d and 3d cartoonish style has been undertaken. From historical background analysis to contemporary work, this evaluation questions the relevance and effectiveness that both media transcend into the animation industry. Looking within the shape value of different animations a correlation to the formation of movement has been explored and outlined throughout.

“Animation is not the art of drawings that move but the art of movements that are drawn.”

Norman McLaren (Manning 2009, p.113)

Written document that I will submit during my talk to individuals interested in this area of study. In order to understand and define the annotations I have created a two way explanation of the topic.

1.1 Introduction

Movement is part of the human mechanism, from our primate nature the need to capture movement, stood within the human psyche and is a genetic attribute that unconsciously one is urged to observe and mimic (Baran and Davis 2014, pp.231-232). The ability to capture and record movement has thus been a quest that for long time mankind wanted to achieve.

Considering what Walter Benjamin (Benjamin 2010, pp.34-35) and Roland Barthes (Barthes 2010, p.353) include within their observations about reality and the concept of mechanical reproduction era one is ought to understand the essence that is routed within the formation of film making and that of animation which is

directly connected to the lives and events in the real world.

1.2 Ancient Animators

Looking at the archaeological discoveries of the Altamira and Lascaux caves, one can observe and understand how these wonders shed initiations to the animation world we know today. Although they are representations, of animals, they provide clear observation of the surrounding life and the current world.

Looking close to these depictions one can trace attributes that hints the formation and essence of moving image and that of animation. From the number of depictions juxtaposed on top of each other, to multiple limbs one can see the component and essence of movement presented.

This within archaeological significance and a scientific gathering could have been done to evaluate and replicate the rapid speed of the hunting animal. Through a flickering torch within these wonders the cave could have been the initial screening aspect of narrating achievements and wonders of the outer world. Some studies also allude that the shadow of the individuals could have interacted directly on the animals presented.

The sense of volume and three-dimensional aspect that the animal is depicted shows a sense of observation and logic within alluding something that is deep and well defined (Malpas 2014, pp.65-79).

1.3 Telling stories

Throughout the history of art one can observe that narratives and shape language of the different eras had an aesthetic and form to which it could provide means of how it could communicate with one another. This paved way for the formation of different media and forms. In the same respect, so did the ideology of animation and its medium.

Similar in the historic evidence of moving image animation has developed and moved into developing multiple creative ways into communicating a narrative, ideologies and cultural differences. The Magic Lantern and the Camera Obscura were amongst the initial inspirations that drove into developing the concept of projecting images and eventually laying foundation for animation work to begin and expand. Two-dimensional aesthetic was the initial kind of medium that allowed the notion of gathering individuals and sharing narratives and depictions.

Pioneers, such as Joseph Plateau, Isaac Newton, paved way to the development of 'Thaumatrope', 'Zoetrope' which marked significant innovation to the animation birth. Together with this celluloid advancement such as that of Le Prince 'Roundhay Garden Scene' (Prince 1888), to Edward Muybridge in 'Sallie Gardner at a Gallop' (1897), sequential experiments of motion and dynamism started to be achieved. This had an influential aspect to individuals such as Marcel Duchamp into creating pieces that infused the element of capturing motion and layering effect. Paving way into this innovative in scientific enquiries

such as that of Jean Martin Charcot with Albert Londe photographic aid provided deep analytical studies to the muscular and physical developments of the time (Tatsumi 2009, p.129-134). Further studies by the physicist Etienne Jules Marey, through works such as in the 'Falling Cat' (Marey 1894), 'L'homme Machine' (Marey 1885), and 'The Wave' (Marey 1891) unveils how significantly important scientific enquiries were into developing 'chronophotography' (Latsis 2015, p.1-40); a key element that initiated the cinema.

Artists and Visionaries had an important role into configuring themselves within these technological advancements. The possibilities into expressing an emotion through a new perspective allowed individuals such as the Lumiere Brothers, Winsor McCay, Dziga Vertov and Charles Csuri (Kerlow 2009, p.37-47), to manipulate and configure a way into narrating their story and pushing the mediums potential. Through the technological advancement of 'vector line graphic', towards 'raster graphic' (Shostakok 1988, p.97), individuals such as that of Robert Abel and N.Magnenat Thalmann and D.Thalmann (Magnenant-Thalmann 1988, p.55-62), saw direct potential into altering the medium's initial purpose to one that could virtually portray human anatomical feature, texture and light. The rapid development of technologies and simulations of programmed means of recording data, gave rise to multitude of options for visionaries to develop further and exploit. To this animation has gained and been in forefront in developing its own voice within the moving image industry.

1.4 Animation Design and Movement

Animation can be subdivided mainly into two forms, mainly that of the 'orthodox animation' and that of 'experimental animation' (Carter 2016). These two types have different attributes to the development that they seek to develop within.

1 The Orthodox (Carter 2016) way of animation is one that is broadly influenced from convention, something that is regular and mundane to the approach and aesthetic of the development. In most cases this approach does not seek to identify the voice and presence of an artist but rather keeps it vague and conventional.

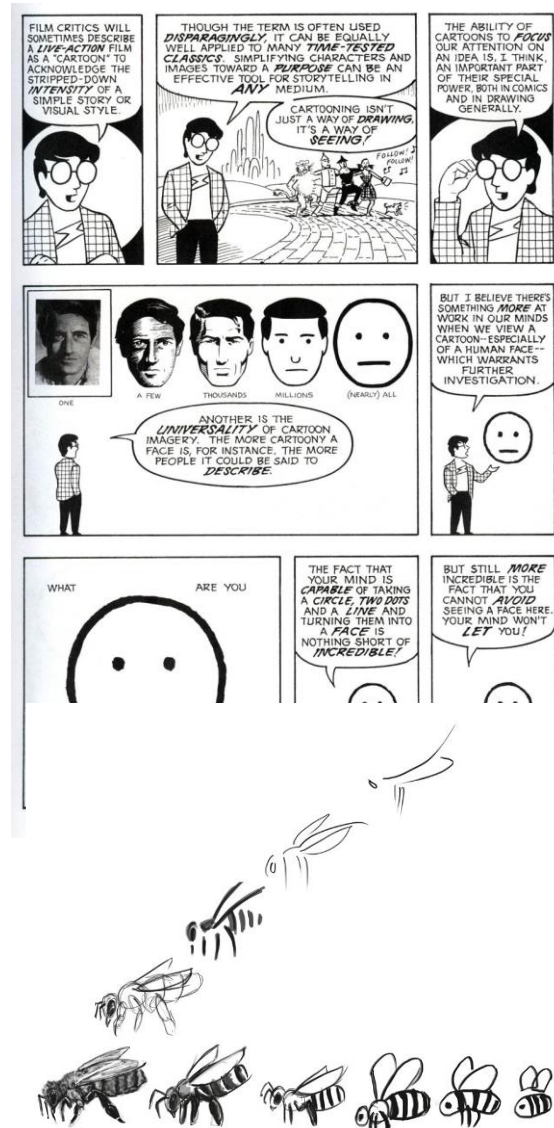
2 The Experimental way (Carter 2016) of animation is taken into another level of expressing a narrative. In most times in this way of approaching animation the individual is given a voice and viewers can understand this is authentically from the artist at hand. This approach is non-conventional and blooms within abstract areas that evolve one another.

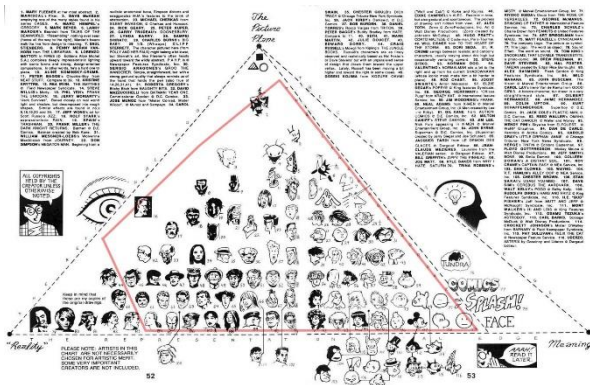
This broad dichotomy distinguishes only the overall approach of animation and one ought to question how does any aesthetical convention correlates with the approach of animation? Is there a formula to all of this?

Animation work in its totality does not live within its own agenda, meaning it is not a component outside a movie, but in most practises a solid animation, is correlated within a solid pipeline and structure. This thus hints vividly that animation is not a detachable artefact but resonates aspects of other components which derive from the design aesthetic of the pipeline at hand.

'This reflects the more generally holistic constitution of the 'artefactual' and the contentful: artifactuality and content both

depend on their locatedness within a larger horizontal context that encompasses agents, objects (including artefacts), and world.' (Malpas 2014).





Looking within the triangulation method that Scot McCloud develops within his definition of comic studies, one can see a relationship within the aesthetic and development of form and how an image can be striped into extremities, valuing the sheer iconography that represents the overall essence of the work itself. This gives light to the way animation movement is approached within a character. On the Left-hand side of the diagram where realism is the dominant feature one can define it as a place where we find 'Motion Capture' and 'Rotoscope technique of animation' whereas on the opposite corner we find the most extreme form of animation, leaving the top corner for the abstract expressive animation. To some extent the visual and the shape language of the design animation as well correlate profoundly with the relation of animation given. One can argue that a simplified ball in comparison to a highly detailed character, will define and be shaped in different means and measure. The more simplified = more room for extreme deformation possible, whereas the more defined and detailed character = is limited within his rig deformation system and in general it lacks freedom of development.

1.5 Shape Language

Like anything in design and aesthetic research and development within the shape language of the animation and more specifically the characters can

allow us to understand the formation and development of animation. The 'scope' and 'definition' drives us into understanding the motion and formation of one's working flow (McLaughlin 2005). In this aspect, the true motivation of pre-production can lead to the development of engaging the relevance of 'form, color, texture, and action of the creature investigated' (McLaughlin 2006).

This way of engaging and developing an animation can allow for the animation process to be more defined and more specifically given a leading factor towards which identity and motion it can be defined into.

"As a determining factor for believability in animation, authenticity functions on two levels. First, we suspend our disbelief and engage with the character; there is no question of the character's aliveness. Second, through characterization, we experience an authentic being whose inner intent is communicated outwardly, and made unmistakably clear." (Bishko, 2007)

Through the development of 'the principles of animation' within the Walt Disney studio, a formation of structuralism gave birth to the notion of cartoon animation. "...a more subtle kind of action with more complex acting and more meaningful expressions developed. The animation became so sophisticated that it was almost impossible to recognize the basic principles. The medium had developed into an art form" (1981, p.95). This development has been thus the foundation upon which animators and more specifically studios could develop their basis and create alternative approaches to that of Disney.

Hence, looking within a conventional development of animation, one can acknowledge contrasting animation directions that initial animation companies such as 'Warner Brother', 'UPA' and 'Hanna Barbera' (Bishko, 2007) employed within their aesthetic in relation to the motion it eventually conceived into. More specifically taking on the notion of 'cartoonish'

aesthetic one can see variations within the naturalism and stylistic formation within the developing of moving images.

From individuals, such as Tex Avery, Bob Clampett and Chuck Jones a new derivation of aesthetic has been conceived from the formation founded in Disney (Bishko, 2007). To this economy and formation of tackling movement has allowed to the formation of a stylistic development that has brought about the development of both the 2d Animation aesthetic transferred within contemporary 2d styles.

In the following section, we shall consider deeper ways of cartoon animation that has been adapted within 2D and 3D animation and the contrasting dichotomies that lie within the development of both.

1.6 2D Animation

2D Animation is considered the traditional way of animating that has been used within the late 1800s. For the relevance and significance of this paper we will be exploring the orthodox method of animation, more specifically the cartoonish stylistic approach within this subgenre.

1 Smear

Motion blur is mainly derived from live action, and this is caused through a photographic process and how images are captured whilst in motion. In animation, we find this when using the 'smear' effect. In cartoon animation, this effect is used to create something that convinces and projects an exaggerated means of movement.

2 Multiples / Ghost Image

This technique is done through combining multiple limbs when the character reacts to something or is about to get into sudden quick motion. As seen in the above image of Tom and Jerry this technique in

most cases is employed within other techniques such as smears. In this way, we get more exaggerated and further developed notions of movement.

3 Dry brush / Swishes

is another technique that brings further the notion of movement and motion throughout an animation sequence. This technique allows individuals to understand and mark further the line of action that the scene indicates throughout. In most instances this approach indicates well the 'arcs of movement' that the character is projecting throughout.

These techniques are usually modulated and employed from one aspect to another. Considering the aspect of 'Body, Effort, shape, space and phrasing' (Bishko, 2007) one can understand the development aspect within the cartoonish approach. This paved way to the idea of the main action leading into the secondary one, and how with these transitions we find the different components that drive and connote to the alluded understanding of cartoon animation.

Limited Animation / Stylized Animation

In general overview of what characterizes Cartoonish 'interpretative' animation stands within the amount of technical approaches that the two-dimensional film/series incorporates within its lexical value of the show. As mentioned before the shape language of a character indicates the amount of dynamism that there could be within the development and formation of a scene.

4 Stagers

Case Study examples

Approaches of 2D animation aesthetic

Disney – Aesthetic was more directed towards a more naturalistic way of approaching animation. It still followed the concept idea of the principles of animation, but this way of developing was more diverged into looking within live-action footage and then the animator would find a way to express the definition of what he saw.

Disney prioritized volumetric form and 'believable effects of gravity on mass' (Bishko, 2007).

Examples:



<https://www.youtube.com/watch?v=LWwO-h7ZSlw>

Warner Brother – This way of aesthetic far exceeded the development that Disney had made and it rebelled into developing something that would contrast vividly the notion of naturalism. The ideology that the company has employed was more directed into developing something that brings more energy and 'gag' movement within the system by

taking everything and having stronger and bolder means of expressing an idea. Hence the target audience, was more mature and thus the presentation of characters had to be done in a meaningful and take all the energy into creating 'sudden, strong, direct and bound effort' (Bishko, 2007).

UPA and Hanna Barbera style although it was limited through its way of development it still had the ability to explore the different 'low budget' and inclusion of sound within the pipeline development. (Bashara 2015, pp.82-101)

"Contemporary vector-based animation for TV and the internet is built on these three basic Animation Principles"

Current animation studios incorporate:

"Anticipation, squash and stretch of Follow through" (Bishko, 2007).

4.1 3D Animation

Computer generated animation has developed throughout the past couple of decades. The transition from 2d animation has allowed animation aesthetic work to be more efficient in means of production, enhance line and colour quality, and a possibility to interact and have a flexible outlook to the formation of animation work with the different achievable perspectives. With this development, there have been various technological developments within the techniques used in attempt to define further foundations that 2d animation has accomplished and find a new way and means to express the development of a new spectrum of expressing an idea.

From feature film development that is effectively diverged to address children and families, to a more economical and low budget series that prioritize mainly children audience, a degree of variations and

techniques has been employed to evoke a sense of movement and flow in the work.

Considering the techniques employed and how they changed from 2d to 3d will provide a clearer observation to the intent of the development of this work.

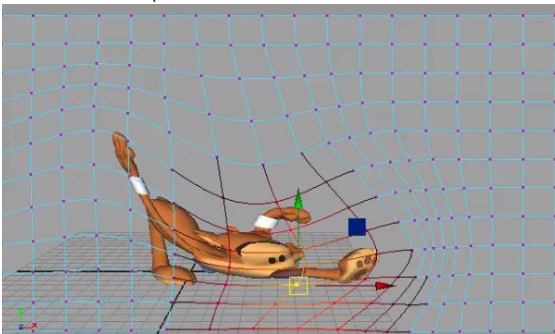
1 Smear

Like 2d animation development process 3d animators have sought to obliterate effect of motion blur, by creating a smear effect.

The dilemma of smear and motion blur, has been an increasing factor within the development of cg animation. In most 3d animation feature films an increasing element of motion blur has been present within the development of in-betweens. This element has reduced the essence of the in-between frames, losing in a way the effect and permanence of the movement. All of this has been done in ways to reduce the gap from an action another.

Example of this is the boSmear tool that allows the user to deform the 3d object and replicate a smear way of translating a pose (Osborn 2015).

In this way, the character can be translated and transformed in various shapes that would allow the character to 'cover a large spacing gap' (Osborn 2015). Hence through the manipulation and development of a mesh, animators can easily sculpt the intended pose.



In recent animation developments, this factor has been increasingly worked upon taken for account

examples such as: Hotel Transylvania, Peanut Movie, Spookiz Series, teaser trailer of Popeye, Cloudy with a chance of Meat-Balls various techniques such as including in-between in-between has focused into decreasing the motion blur effect that devalue contrasting abilities from one action to the next.

2 Multiple

The development of multiples within 3d animation is regarded is developed through referencing the rig in the scene and making it go on top of the main character acting as a multiple limb effect. At times within a more sophisticated and developed animation this is done through a multiple limb rig that would effectively have the capability to work with the notion of repeating various actions.

As seen with 'Duffy duck's Rhapsody' of 2011 episode the multiple effect similar as found within earlier warner brother development, it is employed within other exaggerated elements such as smears and dry brush effects. This manner of animation, allows the audience to see a better motion and arcing between one action to the other. Although this is a 3d animation rendition of the original 2d animation, in such example one can acknowledge the effectiveness and ability to keep up the consistency that shape up this certain shape language.

5 Dry Brush / Swooshes

Dry brush development is at major time found within line of actions and motion lines that allude the notion of rapidity and speed. Within the 3d animation this is done by following the movement, and if in majority of times trailing along the movement. Most of the time is a solid line and there are times where the intensity of the line of streaks that allude movement, are presented as faded assets through the development of this process. This technique

although still employed within limited animations, it has been obliterated from major 3d films, where multiples and smear have been a more preferred approach. Nonetheless, one can still find studios and films that still incorporate such an element. Such a trait is more diverged into aesthetic such as 2d MGM and Warner Brothers Aesthetic, and to some extent when these sequels are revisited in 3d animation they try to keep its effectiveness and presence throughout. This is done to keep on with the given formula that transmitted from 2d and eventually to 3d.

Example Road Runner

Twat Twat animation

6 Stagers

'a stagger is an effect where the character is usually straining and vibrating as they 've continuing in each direction, until they have reached their extreme pose' (Osborn 2015).

Examples

I Tawt I Taw a Puddy Tat

Road Runner Wile E. Coyote 2014

In both these examples we find the shear understanding of stagers.

6.1 2D vs. 3D Animation

Case Study

To comprehend and understand the value of both 2d animation 3d animation a comparative analysis has been developed through out these studies. Taking on the motion techniques that prevail in both media as discussed before.

In 'The Dover boys of Pimento University' – 1942 (Osborn 2015) one can see that from frame to frame the development of smear brings out a constant and rapid movement effect that dynamically brings out fluidity to the scene.

In this animation one can understand that the smear effect is one that is over emphasised and when one looks deeply in the manner it is executed in the most extreme and vivid ways. The shape at times is deformed into a completely different way, from which the proceeding action, where nonetheless the carried locomotion is transferred from one aspect to the next.

Although the shape of the character is vividly transformed and deformed in the most extreme way, the deformation is noticeable when played at normal pace. The beauty of this is that although Chuck Jones (Carter 2016) dismantles the form, the flow and movement from one frame to the other stand as flawlessly accurate.

The follow of motion and action, together with the camera movement is in synchronic element which allows that viewer to get involved within the mishaps that the cynical character is trying to do to female character. The extreme and exaggerated way of animating, makes this work "a visceral" and "emotional" (Osborn, 2015, p.29) aspect towards conveying the message of such work.

Being a limited animation series, one can acknowledge that the stylistic approach in attaining movement had a significant value within the progression and development of the animation industry that looked away from naturalistic and organic forms that Disney employed.

On the other hand, considering this aesthetic, within the 3d development realm (Abrams et al. 2017), an animation that can be translated and compared to this level, is work from Genndy Tartakovsky; more specifically from 'Hotel Transylvania 1 & 2'. This movie is all 'about the energy, the performance and the posing'(Sarto & Tartakovsky, 2012).

Taking on the technical developments developed into removing and reducing motion blur, that this

movie had to implement one can understand the strengths and quickness that the 3d pipeline can have in relation to the 2d aspect.

A factor that Tartakovsky (Failes 2015) had to work on was the limitation that the rig had and how this could have been manipulated in ways to accommodate the deformation and extreme poses that he did within the daily reviews of the animation. As found in the following part of this study one can acknowledge “this exaggerated motion gave an incredible level of extra effect to the performances” (Sony Pictures 2012).

From cloth simulation, to extreme poses and contrasting smear effect the production, and posing done from the animator, brings out a clear challenge and effective element within this approach of animation. Unlike any other 3d animation, this technique finds a close link and relation to the movement achieved from earlier pioneers of 2d animation. Apart from this the team has developed a ‘Genndy blur’ (Sony Pictures 2012) effect that reduces and sharpens the motion blur caused from one action to the next.

What is inspiring about this is the fact that the animation follows different multitude of emotions and actions. Different from the rest of the production this sort of animation, has times to which deformation, and exaggerated forms of animation is explored in deep ways. Whereas moments of sheer seriousness and low sense of energy retain elements of realism that create an impactful approach to the innovation of creating something different and diverse.

To make this study effective and current I looked and contacted a company that although its small in its essence the element that they are trying to evoking is one that is like that of both the pioneers of Chuck Jones and Genndy Tartakovsky.

Spookiz founded, by the Keyring Studio from South Korea, is a relatively new animation series that as the

director told me during a correspondence is all about creating something innovative, fresh and different from the current scenario of animation. Unlike any Korean company this one, tried to attach and make adult audience engage within this slapstick animation.

The style that they utilise is one that is quite unconventional and as Joon Win Yong, told me he tries to keep all the animators free and as much loose within their approach of animating. Although they still abide to basic foundations that are universal language to any animation company, through loose rig system, limited animation frames, together with the inclusion of a ‘lattice’ animation method they create something that is effective and resonate well the traditional artefacts that pioneered before.

2.4 Understanding the language and transmission of medium

The dilemma that both approaches can effectively bring about is whether one is better than the other. To this one can never have a clear and good answer to it. Yet understanding effective aesthetic and the shape language and drive within each medium one can acknowledge and get close to understanding the iconographic value that strengthens each development.

Like anything formed in the history and contemporary art, animation is translated from different medium into different traditional and cultural ideologies that evoke and reflect the development and ways of creating an animation. What is rightly amazing in both elements is the amount of relevance that both approaches have had. Trying to acknowledge the time and the difference in technique and value approach, these animations have sought to create a language and analogy for the presence and essence of the characters at hand. All motivated to entertain and evoke emotion to a larger audience, that can break

and make the relevance and significance of the presented narrative.

References

- Abrams, S., Pelly, L., Barkan, R., Evans, L., Cruz, C., Marcus, G. and Bakija, M., 2017. Genndy Tartakovsky: Cartoons, Not Animation | Village Voice. [online] Villagevoice.com. Available from: <http://www.villagevoice.com/2012/09/26/genndy-tartakovsky-cartoons-not-animation/> [Accessed 25 May 2017].
- Amidi, A., 2014. Warner Bros. Will Release 3 Animated Features in 2017-'18. [online] Cartoon Brew. Available from: <http://www.cartoonbrew.com/feature-film/warner-bros-will-release-3-animated-features-in-2017-18-99222.html> [Accessed 25 May 2017].
- Anon, 2011. Jelly Jamm English. Princess Smile. Children's animation series. (S02 - E67). [video] Available from: https://www.youtube.com/watch?v=DljON_NOzBk&t=1s [Accessed 26 May 2017].
- Anon, 2016. Are these the first ever images of a volcanic eruption? [online] Mail Online. Available from: <http://www.dailymail.co.uk/news/article-3393401/Are-images-volcanic-eruption-Daub-s-red-white-pigment-cave-walls-thought-depict-natural-disaster-36-000-years-ago.html> [Accessed 25 May 2017].
- Anon, 2016. Hotel Transylvania 2 Cloth Simulation - CGMeetup : Community for CG & Digital Artists. [online] CGMeetup : Community for CG & Digital Artists. Available from: <http://www.cgmeetup.net/home/hotel-transylvania-2-cloth-simulation/> [Accessed 25 May 2017].
- Baran, S. and Davis, D., 2014. *Mass Communication Theory*. 7th Revised edition. Belmont, CA: WADSWORTH Publishing CO INC.
- Barthes, R., 2010. *Camera Lucida*. 1st ed. New York: Hill and Wang, a division of Farrar, Straus and Giroux, p.353.
- Bashara, D., 2015. Cartoon Vision: UPA, Precisionism and American Modernism. *Animation*, [online] 10 (2), 82-101. Available from: <http://journals.sagepub.com/doi/full/10.1177/1746847715587421> [Accessed 16 May 2017].
- Beck, J., 2012. "Daffy's Rhapsody" talkback. [online] Cartoon Brew. Available from: <http://www.cartoonbrew.com/shorts/daffys-rhapsody-talkback-57082.html> [Accessed 25 May 2017].
- Benjamin, W., 2010. *The work of art in the age of mechanical reproduction*. 1st ed. Lexington, KY: Prism Key Press, pp.34-35.
- Bishko, Leslie (2007) 'The Uses and Abuses of Cartoon Style in Animation' , *Animation Studies* 2, URL (consulted September 2010): <http://journal.animationstudies.org/category/volume-2/leslie-bishko-the-uses-and-abuses-of-cartoon-style-in-animation/> Google Scholar
- Bordwell, D., Thompson, K. and Smith, J., 2017. *Film art*. 1st ed. New York, NY: McGraw-Hill Education, p.139.
- Carter, C., 2016. *Animated Mise-en-scène and Aesthetic Harmony: An Expansion of the Traditional Principles of Animation to 3D Computer Animation*. PHD. Queensland University of Technology.
- Failes, I., 2015. Going off-model: Hotel Transylvania 2. [online] fxguide. Available from: <https://www.fxguide.com/featured/going-off-model-hotel-transylvania-2/> [Accessed 18 May 2017].
- Falling Cat*. (1894). [film] France: Étienne-Jules Marey.
- Kerlow, IV., 2009, *The Art Of 3D Computer Animation And Effects*, pp.5-47: Hoboken, N.J. : Wiley, c2009., Bournemouth University Library Catalogue, EBSCOhost, viewed 24 September 2016.
- L'homme Machine*. (1885). [film] France: Étienne-Jules Marey.

Latsis, D., 2015, 'Landscape in Motion: Muybridge and the Origins of Chronophotography', *Film History*, 27, 3, pp. 1-40, Art & Architecture Complete, EBSCOhost, viewed 24 September 2016.

Looney Tunes, 1942. The Dover Boys at Pimento University (1942). [video] Available from: https://www.youtube.com/watch?v=shHniEcn_gc&t=195s [Accessed 25 May 2017].

Looney Tunes, 1944. Hare Trigger. [video] Available from: https://www.youtube.com/results?search_query=yosemite+sam+first+appearance [Accessed 26 May 2017].

Looney Tunes, 2012. Daffy's Rhapsody. [video] Available from: <https://www.youtube.com/watch?v=Ala8dGr1soU&t=9s> [Accessed 25 May 2017].

Magnenat-Thalman, N., 1988, 'The Making of a Film with Synthetic Actors', *Leonardo. Supplemental Issue*, p. 55, JSTOR Journals, EBSCOhost, viewed 24 September 2016.

Making of Hotel Transylvania 2 Animation - CGMeetup : Community for CG & Digital Artists. [online] CGMeetup : Community for CG & Digital Artists. Available from: <http://www.cgmeetup.net/home/making-of-hotel-transylvania-2-animation-2/> [Accessed 25 May 2017].

Malpas, J., 2014. With a Philosopher's Eye: A 'Naive' View on Animation. *Animation*, [online] 9 (1), 65-79. Available from: <http://jeffmalpas.com/wp-content/uploads/2013/03/With-a-philosophers-eye-a-naive-look-at-animation.pdf> [Accessed 16 May 2017].

Manning, E., 2009. *Relationescapes*. 1st ed. Cambridge, Massachusetts: MIT Press.

Mccloud, S., n.d. scottmccloud.com - The Big Triangle. [online] Scottmccloud.com. Available from: <http://scottmccloud.com/4-inventions/triangle/12.html> [Accessed 17 May 2017].

McLaughlin, T., 2005. Taxonomy of digital creatures: interpreting character designs as computer graphics techniques. ACM SIGGRAPH 2005 Courses on - SIGGRAPH '05. [online] Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.724.2978&rep=rep1&type=pdf> [Accessed 16 May 2017].

McLaughlin, T., 2006. Taxonomy of digital creatures. ACM SIGGRAPH 2006 Courses on - SIGGRAPH '06. [online] Available from: <http://dl.acm.org/citation.cfm?id=1185808> [Accessed 17 May 2017].

MGM, 1949. Dollhouse scene -Tom Jerry. [video] Available from: <https://www.youtube.com/watch?v=OcQsaltGNKA> [Accessed 26 May 2017].

Mündermann, L., Corazza, S. and Andriacchi, T., 2006. *The evolution of methods for the capture of human movement leading to markerless motion capture for biomechanical applications*. *Journal of NeuroEngineering and Rehabilitation*, [online] 3 (1), 6. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1513229/> [Accessed 1 May 2017].

Osborn, K., 2015. *Cartoon character animation with Maya*. 1st ed. London: Bloomsbury, pp.10-168.

Roundhay Garden Scene. (1888). [film] UK: Louis Aimé Augustin Le Prince.

Sallie Gardner at a Gallop. (1878). [film] USA: Eadweard Muybridge.

Sony Picture Animation, 2014. Genndy Tartakovsky's POPEYE Animation Test. [video] Available from: <https://www.youtube.com/watch?v=M1lzJuwJD9k> [Accessed 26 May 2017].

Sony Picture Animation, 2014. Hotel Transylvania. [video] Available from: <https://www.youtube.com/watch?v=9ZmxDBbO01o> [Accessed 26 May 2017].

Sony Pictures, 2012. Hotel Transylvania: Genndy Tartakovsky Blur Shot Build. [video] Available from: <https://www.youtube.com/watch?v=y5lp2XBYleI> [Accessed 25 May 2017].

Tatsumi, T., 2009, "Book Reviews: "Atomic Light (Shadow Optics)", *Science Fiction Film and Television*, vol. 2, no. 1, pp. 129-134.

The wave. (1891). [film] France: Étienne-Jules Marey.

Tonnioli, S., 2011. SCHOOL PROJECT FROM THE PAPER TO CGI : Tom and Jerry. [video] Available from: <https://www.youtube.com/watch?v=uZkKMWw8Wik> [Accessed 26 May 2017].

Warner Brother, 1960. The Flintstones - The Swimming Pool. [video] Available from: <https://www.youtube.com/watch?v=XaMOw7Rw3x4&list=ELvywUR7-omxI> [Accessed 26 May 2017].

Annotated References List:

Manning, E., 2009. *Relationescapes*. 1st ed. Cambridge, Massachusetts: MIT Press.

An interesting fact that I found in this article was the correlation that there was within the development of animation and the equation of movement within it. As found in the referenced quote this element in animation has stood as an essential key philosophical aspect that deviates making animation but is rather considered as an art form.

Baran, S. and Davis, D., 2014. *Mass Communication Theory*. 7th Revised edition. Belmont, CA: WADSWORTH Publishing CO INC.

This book discusses the connection that there is between man and the notion of movement. It goes into describing how this is something integral and within the human formation.

Barthes, R., 2010. *Camera Lucida*. 1st ed. New York: Hill and Wang, a division of Farrar, Straus and Giroux, p.353.

This book discusses the element of photography and how this development has taken over a new kind of

consciousness. The relationship that Barthes discusses within the element of memory and permanence is one that triggers something close to the presence of animation and the development it was given within.

Benjamin, W., 2010. *The work of art in the age of mechanical reproduction*. 1st ed. Lexington, KY: Prism Key Press, pp.34-35.

In this famous paper Walter Benjamin brings about interesting facts in regards to the development of industrial revolution and the relevance and fading of authenticity. This paper drifts into the notion of the eye watching over and how everything in the system is under some sort of control. This has been used to show the same connection that I find within the development of animation.

Malpas, J., 2014. *With a Philosopher's Eye: A 'Naive' View on Animation*. Animation, [online] 9 (1), 65-79. Available from: <http://jeffmalpas.com/wp-content/uploads/2013/03/With-a-philosophers-eye-a-naive-look-at-animation.pdf> [Accessed 16 May 2017].

An interesting fact that I found in this article is the connection that there is within the development of the ancient ancestors where the initial animators that developed the notion of animation. Through the development of multiples limbs and aspect of dimension, this article states that they could be nicknamed as the godfathers of the earliest form of animators and story tellers.

Tatsumi, T., 2009, "Book Reviews: "Atomic Light (Shadow Optics)", *Science Fiction Film and Television*, vol. 2, no. 1, pp. 129-134.

In this book the author discusses the innovation and development of science and art and how they interpolate with one another. This as well had influence within animation development.

Carter, C., 2016. *Animated Mise-en-scène and Aesthetic Harmony: An Expansion of the Traditional Principles of Animation to 3D Computer Animation*. PHD. Queensland University of Technology.

This PhD dissertation goes into depth and is truly something that engages and allows the viewer to understand the untouched elements within animation.

Abrams, S., Pelly, L., Barkan, R., Evans, L., Cruz, C., Marcus, G. and Bakija, M., 2017. Genndy Tartakovsky: Cartoons, Not Animation | Village Voice. [online] Villagevoice.com. Available from: <http://www.villagevoice.com/2012/09/26/genndy-tartakovsky-cartoons-not-animation/> [Accessed 25 May 2017].

In this article, I got to know well and understood several notions in regards to Genndy Tartakovsky.

Osborn, K., 2015. Cartoon character animation with Maya. 1st ed. London: Bloomsbury, pp.10-168.

This book has helped me understand the general overview of the notion cartoon style.

Mccloud, S., n.d. scottmccloud.com - The Big Triangle. [online] Scottmccloud.com. Available from: <http://scottmccloud.com/4-inventions/triangle/12.html> [Accessed 17 May 2017].

In this reference, I could understand and grasp the notion of having animation not just something that lives on its own, but rather an entity that lives within its own environment and development.