



**Animating observed emotional behaviour: a
practice-based investigation comparing three
approaches to self-figurative animation**

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i Abstract

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This research explores different animation approaches to rendering observed emotional behaviour, through the creation of an animated artefact. It opens with an introduction to the research and the methodology chosen before progressing to a review of academic and practitioner-based literature associated with observed emotional behaviour. Building upon this foundation of literature, the thesis outlines how the artifact was created with a practice based approach drawn from Haseman's cycle of creation, feedback, reflection and then creation. The main research question is augmented by a series of contributory questions that explore the research through iterations of animation drawn from a base of live action footage of observed emotional behaviour. These exploratory iterations progress through motion capture, rotoscoping and finally freeform animation. The completed artifact and its findings are explored first through a perception study and then a production study.

This thesis is based on the investigation and discourse of observed emotional behaviour surrounding the use of animation, specifically, the direct study of the observation of emotional behaviour through the application of animation as a tool of research. It aims to provide a basis of discussion and contribution to knowledge for animation practitioners, theorists and practitioner-researchers seeking to use less performative and exaggerated forms.

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1: Introduction

This research is presented along with a short exploratory film of live action and animated elements, (henceforth referred to as the research *artifact*) using a variety of animation techniques to explore the subtleties of observed emotional behavior. Through adopting cyclical development methods, this artifact was developed as a result of audience feedback as well as being informed by the relevant academic literature and my personal reflection as an animator. At each stage, conclusions were drawn, which informed further testing before a final conclusion was drawn based upon this iterative process. Through the chapters of this thesis, the academic literature and animation practice informing the creation of this artifact are presented.

The completed (10 minutes long) artifact can be viewed here. <https://vimeo.com/164232007>

1.1 Working definitions

Throughout this thesis I refer to myself as a “practitioner-researcher” with the aim to provide research that might be of value to other practitioner-researchers (as well as animation practitioners and animation theorists) and to place myself in the field of other *practitioner-researchers*. In his thesis (2011), Sloan defines himself as a “practitioner researcher” a term taken from Gray and Malins definition which sits within the remit of practice-based research, defined thus,

“In the role of the ‘practitioner-researcher’, subjectivity, involvement, reflexivity is acknowledged; the interaction of the researcher with the research material is recognized. Knowledge is negotiated – intersubjective, context bound, and is a result of personal construction. Research material may not necessarily be replicated, but can be made accessible, communicated and understood.”

(Gray and Malins, 2004, p 21)

Sloan highlights the difficulties inherent in research that relies on the interpretation and method of a single practitioner (2011) but suggests methods to mitigate these problems. A

more detailed discussion of these problems and how I applied his suggestions to my own research is discussed in chapter 6.

Within my interest in practice as research, (described further in section 1.5) I wished to investigate observed emotional behaviour (henceforth referred to as OEB). This drew me into looking at a variety of research literature, both practical and academic to provide the foundation from which my own research might be drawn, and this in turn lead me to re-assess and reflect upon my own practice in light of the prior work being made by researchers within this field.

This research is about comparing three different approaches to animating OEB. The skeleton upon which this approach was based consisted of animating across live action footage, using self-figurative animation. It was Crafton (1984) who first defined the term self-figuration, describing it as a reference to the artist within a film, frequently overt, in the form of depicting the artist's hand or even the artist themselves as part of the film. As silent films were superseded, so self-figuration became more subtle. Furniss defines self-figuration as "the tendency to tell highly personal stories and to include oneself in the animation ... most apparent in animation produced by independent artists working outside the studio system" (1998, p.70). Independent filmmakers are able to be "more overtly self-figurative because of the fact that they worked in a one-person or small-crew setting, which allows the artwork to retain a greater degree of creative control and personal meaning" (1998, p.70). It should be stressed now, that while the artifact involves filmed footage of the practitioner researcher, overworked with animations made by the practitioner-researcher, self-figuration in itself is not the driving message of this research. In chapter 3, I go into details as to why I chose to film myself, rather than hiring actors. In summary, I wished for a non-acted performance, of authentic emotional behaviour, however stilted or awkward the performance might be.

This leads on to defining the definition I have used throughout this thesis, of Observed Emotional Behaviour (OEB). This term is designed to encompass body language, facial expression, implicit communication (as described in chapter 2.3.1) and some measure of verbal tone of voice *within the context of an animation practitioner-researcher*, rather than a psychologist. As such OEB differs from the psychology definition of non-verbal communication and implicit communication described in chapter 2.3.1, terms which are inadequate to describe the spirit of this research, which is more concerned with observing and comparing footage of

observed emotional behaviour through animation. Furthermore, the live-action basis of artifact was filmed as a single piece of footage, with the differing animation approaches overlaid upon a single, 10 minute segment in time specifically to comb over that same section of time and *see how it changed according to how the animation was approached*. The footage however, does not repeat, instead, the animations drop in and out of the same 10 minute piece, but the dialogue runs its course without repeating. The piece is intended to be viewed as a *slice of unbroken time*, with the different approaches taking up the story, leaving it, and returning to it. This differs from Tupicoff's film, *His Mother's Voice* (1997), which repeats dialogue with two different approaches to rotoscoping the footage (see chapter 6.5 for further discussion of Tupicoff's film).

1.2 Foundations to the research

In this section I will look at the general background and motivations that lead me towards this research which has evolved out of my own experience (spanning 10 years) of working as a games animator within the games industry. In that time, I felt there was (and to a certain extent still is) a struggle within the games industry to adequately express the nuances of OEB within games animation. While there are numerous reasons that I personally experienced as to why this is an issue, not least: a lack of training, shortage of time and often limited resources and the cyclical nature of many games animations (animations such as walk cycles, run cycles, attack cycles, which need to be organized into loops that can easily be called upon via the games engine to react to input from the player) The quality and precision of artwork in computer games is constantly evolving, and while artwork periodically steps back to cope with new hardware (such as returning to more simple graphics for mobile phone games) the general trend is to hardware that can express more nuanced characters, characters that need to be able to express themselves convincingly through animated OEB. Thus I felt that I could, through my research and experience, pursue a subject that could in time provide benefit to the games industry in this regard, to the wider animation industry as a whole and contribute in some small part to the growing body of academic work spearheaded by Tinwell (2014), Tinwell et al (2009, 2011), Sloan (2011), Sloan et al (2009, 2010), Kennedy (2013, 2015, 2017) and Young (2011, 2018).

Throughout the development of this research, I have disseminated the progress of my research to the academic animation community in the form of a yearly conference presentation at the Society for Animation Studies and other conferences such as CAKE and Confia (running from years 2013 - 2017.) This has allowed me to build up a measure of informal verbal feedback directly through these conference presentations from a range of international academics drawn from a variety of University Institutions, with three published papers (listed in appendix I) resulting from these presentations.

Furthermore, I have fed my research directly into my own teaching of the next generation of computer animators in my role as senior lecturer.

The study of animation within the context of theory and theoretical writing remains a relatively new field of scholarly activity. According to Pilling, “A constant complaint of academics and of students in film, media and production courses is the relative paucity of critical and theoretical writing about animation” (Pilling, 1997, p.x). However, great inroads have been made since Pilling made this complaint. While a core of practical “how to animate” books such as Richard Williams *Animators Survival Kit* (2001) are readily available to the animation practitioner, for those requiring more academic discourse an established field of theorists (Buchan, 2006; Leslie, 2002; Manovich, 1997, 2002; Wells, 1998, 2002, 2008; Ward, 2004, 2005, 2006, 2011) have widened the literature available to the practitioner-researcher.

In recent years, Tinwell (2014), Tinwell et al (2009, 2011), Sloan (2011), Sloan et al (2009, 2010), Kennedy (2013, 2015, 2017) and Young (2011, 2018) have drawn the threads of practice and research closer together, with particular reference within the field of 3D animation. Sloan, Kennedy and Young in particular, weave animation practice with their prior experience as animators, (with Kennedy offering a further dimension of the animator-actor-researcher,) into their research, and it is this exciting approach which strikes a chord with my own work, offering a valuable field into which my work might be viewed as an adjunct to their established research.

1.3 Research aims and objectives

The aim of this research is to explore and compare through practice and supporting literature, three different methods of appraising, processing and animating subtle OEB across a segment of time. But why explore with three different animated approaches, 3D motion capture,

2D rotoscoping and freeform 2D animation? The early root of this question was born from casual conversation with past work colleagues and current industry professionals such as Sydney Padua ¹ Althea Deane ² and Jim Southworth, ³ these 3D animators revealed to me how their own journey began within 2D animation, but in order to find work, they had to adapt and self-teach themselves to master 3D animation. Althea Deane and Jim Southworth in particular, used this training to transition from being specialist film animators to specialist games animators. While this is anecdotal experience, this route of starting with 2D before progressing to 3D seemed to mirror my own experience of teaching 3D animation ⁴ where students explore the fundamentals of animation through hand drawn techniques, either directly onto paper with lightboxes or “hand” drawn onto computers using such software as Flash, Adobe Photoshop and TV Paint. Regardless of the medium, the principle is the same, to begin with “hand drawing” to conquer the fundamentals before progressing to 3D animation. ⁵ This was in contrast to my own background, where in truth, I had begun my journey as an animation practitioner directly into the games industry and directly into 3D animation, bypassing any formal training in 2D techniques entirely. In this I was not alone, with many of my co-workers within the games industry having taken a similar route, though generally presenting themselves as more generalist artists rather than specialist animators.

¹ Sydney Padua is a film animator and animation lecturer credited on films including *Marmaduke*, *Clash of the Titans*, *The Golden Compass*, *The Chronicles of Narnia: Prince Caspian*, *The Iron Giant*, *Quest for Camelot*, and *The Jungle Book*. Refer to the bibliography for her personal website.

² Althea Deane is a games animator who began her career as a 2D animator at Cosgrove Hall Films, before self-training in 3D and moving into 3D computer games animation, with game credits including *LittleBigPlanet*, *Killzone2*, *Batman Begins* and *Harry Potter and the Sorcerers Stone* for the PS2, Xbox and NGC. Refer to the bibliography for her personal website.

³ . Jim Southworth is a games animator who started as a freelance 2D animator for television, videos and commercials before migrating to computer games development, working as a 3D animator on games including *Eyepet & Friends* on the PS3 and *Blade 2* on the PS2 and Xbox, now working as an animator for augmented reality games in Sony London. Refer to the bibliography for his personal website.

⁴ BA 3d Animation and Games at Middlesex University (2018a) taught the fundamentals of animation through 2D techniques for 7 years, only changing to fully 3D teaching in September 2017. The merits of this change of approach will be reassessed in September 2018.

⁵ Further examples of 3D Animation degree courses that start with or focus on 2D before 3D (at the time of writing) can be found at the University for the Creative Arts (2018) Animation BA Hons; University of Hertfordshire (2018) BA (Hons) 3D Computer Animation and Modelling and the University of Chichester (2018) 3D Animation and Visual Effects.

The course upon which I have taught and contributed to over the past 8 years has followed a trajectory of teaching 3D students via a grounding of 2D within their first year before moving exclusively to 3D in their second and third years. However, as the course evolved to meet the needs of industry and students, the teaching of 2D animation became marginalized. The rise of accessible software such as Cinema 4D has allowed students on BA 3D Animation and Games to test and practice the fundamentals of animation directly into a 3D computer generated world, with 2017 marking the first year of full departure from official teaching of 2D within the course to full immersion into 3D from the first week of teaching.

As such, this mirrors my own experience, of animating directly into 3D within my industry career and bypassing 2D animation in the process. However, this also sounds a note of caution. Are we right to remove 2D training from animation courses? The argument for removing 2D from BA Animation and Games was that the students needed to grapple with 3D as quickly as possible, in order to master it efficiently, and that the fundamentals could just as easily be taught via 3D software approaches. If students who intended to enter the 3D animation industry were taught 2D animation, could this distract them, slow them down in their mastery of 3D, or even waste their time with a skillset they would not need?

My research seeks to compare animation methods through the lens of different animation approaches. By testing and comparing these approaches, I hoped to review if aspects of observation might be tempered or improved by approaching the traditional animation practitioner's path "backwards" from 3D to 2D in the hope of refining nuances of OEB rendered in 3D. This work aims to test approaches against each other, to potentially drill down to finding the most efficient method of instilling observation through practice, and through the refining and dissemination of the results, find possible benefit for future students and industry professionals approaching animation (specifically within the study and rendering of OEB). If such is the case, how might these explored methods be approached most efficiently for the time-poor world of the animation student and animator, and could a case be made to re-introduce 2D techniques into the repertoire of 3D animators? For those practitioners and practitioner-researchers interested in OEB, how might the exploration and comparison of these three approaches provide value and contribution to knowledge?

1.4 Research questions

In order to articulate these aims, it would be necessary to be guided and focused upon key research questions. These research questions are presented in the form of a main research question supported by contributory questions. This follows the exploratory research or “inverted pyramid” approach defined by Andrews (2003).

“In the inverted pyramid design, the relationship of contributory questions is obvious: by asking a number of initial questions, a sharper sense of the whole direction of the research can be honed, with a single, main research question or hypothesis emerging in due course”

(Andrews, 2003, p47)

Within this system, the contributory questions are answered first within the thesis, in order to answer the main question. (As opposed to subsidiary questions that are answered after and in addition to the main question.) This “contributory” method meshes well with the narrative and exploratory journey approach of my own research, and how the thesis is laid out. As each method of animating the same original filmed piece is explored, the thesis begins with a chapter on motion capture, leading to a chapter on rotoscoping, leading to a chapter on hand-drawn animation. Once each method has been assessed, a conclusion and comparison can be teased out through this self reflective journey, working “backwards” from 3D motion capture and finishing with hand drawn animation.

1.4.1 Main research question

In a comparison of 3 approaches to animation style, taken from live action footage of subtle, non-acted, non-exaggerated happy and sad emotion, which (if any) might best explore understanding and perception of animated observed emotional behaviour for the animation practitioner?

1.4.2 Contributory questions

1. How might an exploration of motion capture animation of the body of a non-human avatar inform the reflection of a practitioner?

2. How might an exploration of rotoscoped animation of the face of a human character inform the reflection of a practitioner?

3. How might an exploration of hand drawn animation of a simplified cartoon character inform the reflection of a practitioner?

Exploration of each contributory question is detailed in chapters 3 to 5 respectively, as a method of unpicking and answering the main research question through cyclical enquiry. In chapter 6 an animation perception study is conducted upon the artifact as a whole, and from this study and the three stages of the contributory questions explored through chapters 3 to 5, (though the application of Haseman's cycle of feedback and reflection informing the next stage of research), a supplementary study is conducted to expand and augment upon the findings generated by contributory question number 2. This study was conducted in order to test the contribution to knowledge generated from the research detailed in chapters 3 to 4 and from the initial production study, to test this as a contribution valid beyond the practitioner-researchers own experience into a finding reiterated by other animators, in this case, student 3D animators. Further discussion of this can be found in chapter 6 and chapter 6.4 in particular and is presented as an adjunct to the research as a whole.

1.5 Methodology

With a research approach based upon exploration through practice, practice as research methodologies seemed most suited to the work in general. It would be founded on the assumption that animation can be one (of many) ways of expressing, exploring and disseminating information (Eisner 1991; Finley, 2005) or in this case, animated OEB. Practice as research is an umbrella term encompassing various pathways where a researcher uses arts practice as a component of their research. This approach offers particular benefits for the researcher, since, as Leavy notes, "visual images are a powerful communicative tool with the potential to help us see things in new ways. Therefore, researchers are using visual imagery as a part of data analysis as well as a medium to represent data" (Leavy, 2015, p.263).

Nelson (2013, p.26) points out the problem that practice (as an act in itself,) is sometimes not considered to count as research and suggests three approaches that the artistic practitioner should apply to their work, which I have taken up in my own investigation.

1. *A product*: In this case, my artifact, a ten minute animation containing elements of live action, motion captured animation, rotoscoped animation and “freeform” animation.

2. *Documentation*: The process describing the creation of the artifact, its journey, and feedback and reflective practice along the way, see chapters 3 to 6.

3. *Complimentary Writing*: See chapter 2 Literature Review, but also, within chapters 3 to 6 I revisit such academic literature as is pertinent to each iteration of the artifact that was instrumental in informing each stage of the process of creation of this artifact.

1.5.1 Evocative research

While practice as research suited my research in general terms, a more focused methodology was required that would fully utilize the use of a practice piece, an exploratory artifact, as a method of academic research. In this section, I outline the methodology of evocative research, closely linked to a cyclical reflective approach, such as was used within this research.

A first methodological consideration for me was to come to terms with whether and to what extent my research was primarily ‘effective’ or ‘evocative’ in nature. In his paper discussing the approaches taken by doctoral students, Scrivener (2000) defines two approaches to artifact-based doctoral work. The first is defined by the creation of a problem-solving artifact, such as “a robot arm that can pick up eggs” (2000, p.1). Such research he defines as technological research generally rooted in design. However, the second approach he defines as a more creative production approach, generally undertaken by practitioners wishing to use research to expand upon their own practice.

Hamilton and Jaaniste (2009) expand upon Scrivener’s definitions. They define the technical, problem-solving research as *effective research*, and define the creative production approach as *evocative research*.

“The research is not the pursuit of a known problem as such, but is driven by individual, or broader cultural issues, concerns and pre-occupations. The artifact that embodies the research is, in turn, not the solution to a known problem and it may have no obvious use as an object. Instead, it contributes to human experience more broadly. We would extend Scrivener’s interpretation and say that the research intent, and the role of the artifact, is to produce affect and resonance through evocation.”

(Hamilton and Janniste, 2009, p.4)

Evocative research, as described by Hamilton and Jaaniste (or *creative production* as Scrivener defines it) involves elements of intuition and analysis, “while evocative research may evolve intuitively through the interests, concerns and cultural preoccupations of the creative practitioner, it is rounded out and resolved by analytical insights” (2009, p.8). Evocative research draws roots from Schön’s theories of cyclical reflection in action (1983), and the enquiry cycle from action research described by Haseman (2007, p.152). The artist presents an artwork, an artifact or an exhibition in order to gain informal feedback from viewers. The feedback is reflected upon, and the insights gained are fed back into the next iterations of the artifact. “The purpose of gathering such insights is to allow the artist to reflect upon the project and its evocation and affect and to see their work through the insights of others, which may shed new light on the practice and its possibilities” (Hamilton and Jaaniste, 2009, p.9).

Drawing from this basis of evocative research, my artifact was constructed as a cycle of reflection on OEB in animation theory, practice and concepts, giving rise to animated artifacts used as a mode of expressing research, which are then reflected upon in order to birth the next iteration of animated artifact to progress the research. The construction of the research questions, using iterative contributory questions connected to each section of the artifact, applied one after the other in order to excavate iterative conclusions to contribute towards answering the main research question also ties in with this approach. Gray and Malins further define this generation of research via practice.

“The practitioner is the researcher, who identifies researchable problems raised in practice, and responds to these through practice...sometimes the generator of the research material,

sometimes the self-observer through reflection and through discussion, sometimes the observer of others for placing the research in context, and gaining their perspective.”

(Gray and Malins, 2004, p.71)

Taking Gray and Malins’ definition and putting it into the context of my own research, I felt there was an area within my own past professional field that I could contribute to via theoretical and conceptual exegesis, with a created artifact deliberately comparing different animation approaches across the same filmed sequence in time.

This heavy emphasis on the artifact as a mode of expressing research is a by-product of practice as research, which in itself “challenges [the] taken-for-granted assumption that legitimate knowledge of what is or is not valued is best expressed in words, whether spoken or written” (Mathison, 2009, p. 36). Haseman takes this idea further, breaking it down into three symbolic research categories. (2007, p.151)

1. Quantitative - symbolic numbers
2. Qualitative – symbolic words
3. Performative – “Symbolic data, the expressive forms of research... it not only expresses the research, but in that expression becomes the research itself”.

(Haseman, 2007, p.150)

My research is qualitative, expressed in symbolic words through this thesis, but also expressed in symbolic data – the creation and viewing of an animated artifact, reflected upon using qualitative methodologies written in text form and informed by reviewing existing literature on the subject. Sullivan writes how “visualization strategies are at the heart of what it is that artists do as they see and know things through images, and this capacity shapes and informs actions” (2005, p. 194). While the use of artistic media such as images, video, performance and indeed animation are a valuable resource for expressing and exploring research concepts, possibly in ways that mere text cannot fully describe, the artifacts themselves must be backed up by an exegesis, evolving out from the practical body of work. Inasmuch as the artifacts are important, continued reference to existing research and literature

is required to inform the practical work created, and each chapter reviews literature pertinent to the iteration of the artifact and its journey to completion.

It should also be noted that an artist-theorist, or practitioner-researcher, by their very nature in creating artworks (in this case animations) cannot help but bring in their own experience, perspective and background into the work, but while these interpretations might be subjective, they can provide a basis for theorizing practice by providing a personal narrative of the work in question. It cannot be denied that this thesis is infused with my experience and journey, indeed, personal experience is woven intimately into the documentary discussion of the artifact itself. Kennedy describes how animators imbue a personal expression into their work, "*the animator's hand* is revealed through the choices an animator makes in terms of caricaturing an action, intention, thought, or emotion within the body and the face" (2017, p.305). But he also adds a note of caution, in that observers to the art of 3D animation can assume that the act of creating 3D animation is more effortless than it actually is, involving the "rote pressing of buttons with little creative or technical control from the animator" (2017, p.303). Milhova (2013) and Sobchack (2009) also discuss concerns that a lack of understanding of the practical process of creating animation can lead to the assumption of a lack of effort, and by inference, a lack of value. I would extend this beyond 3D animation into the assumption by some non-practitioners that rotoscoping is an "easy" option as it is "just tracing," an attitude I have come across when teaching my students, whose hopes of producing quick and easy animation are swiftly dashed on contact with the reality of the rotoscoping process in practice.

This infers a difficulty of presenting an animation artifact itself, as part of a thesis submission, with the risk that observers may trivialize the practical component of the submission. Kennedy exhorts that it is the responsibility of the practitioner to help demystify the process of animation, "For the sake of a more holistic understanding of the act of animating, it is up to 3D animators (especially those with academic ties) to elucidate their creative processes and the nature of the labour involved therein" (2017, p.308). I have tried to take up this gauntlet within the chapters detailing the practical sections of this submission, and hope that my thesis might be added to the body of work already submitted by practitioner-researchers such as Sloan (2011), Sloan et al (2009, 2010), Kennedy (2013, 2015, 2017) and

Young (2011, 2018) with the aim to encourage more animation practitioners to make the jump into more formal research.

As a comparable animation-practice research project, Sloan also comments on the use of Haseman's cycle within his Emotional Avatars thesis, defining himself as a "practitioner-researcher" using "iterative studio practice" (Sloan et al., 2010, p.1). He notes that the inquiry cycle method described by Haseman meshes well with his own exploration of computer generated facial expression through practice as it "allows for discipline-specific tools (such as animation software) to be used as part of goal orientated and iterative creative production. As such, the inquiry cycle has been adopted as the primary method of generating knowledge through creative facial animation practice for the 'Emotional Avatars' project" (Sloan et al., 2009c, p.677). Sloan's research focuses on the use of computer generated facial expressions, specifically, 18 animations spanning the emotions of happiness, sadness, fear, disgust and surprise which were then presented to observers to "to test observer perception of individual dynamic emotional expressions based on four factors; identification of emotion, confidence of identification, intensity of emotion, and authenticity of expression" (Sloan et al., 2009b, p.63). For Sloan, it was important that his 18 animations were "created and refined" by his own hand, drawing from reference material of facial expressions, and making "judgment calls" based upon his own experience as an animator (Sloan et al., 2009a, p.1). Specifically, "Instead of replicating life, a creative imitation of life was used to enhance the recognition and believability of the expression" (Sloan et al., 2009a, p.2).

This research differs from my approach in that through the animation practice of creating my artifact, I was focusing specifically on *replicating life*, firstly through the close replication of body movements via the use of motion capture data, and secondly through the use of closely observed rotoscoping of facial expressions. However, I discuss Sloan's work further in chapter 6, to draw attention to his choice of method, in particular his use of animation perception and animation production studies, which I have adapted to my own work. Thus I hope that my research can be viewed as running in parallel. Sloan (like myself) worked as a Games Artist, and his emphasis on the approach and role of the practitioner-researcher strikes a chord with my own approach and background, though Sloan focuses primarily on the use of computer generated faces to conduct his research, while my work is more of an observation of three

animated approaches, delving into 2D techniques as well as computer generated motion-captured animation. However, both our approaches utilize Haseman's post performance reception study method, (2007) adapted to the field of animation, see chapter 6 for a fuller discussion of how this method was applied within the context of my own work.

Furthermore, in light of the difficulties of approaching research through animation, I conducted a personal interview with Susan Young, conducted on the 6th March 2018, in the hope of gaining insights into methods and approaches that involve the creation of animations as part of a thesis. Young is a respected professional animator with an extensive portfolio of animated works in both film and advertising, and is currently exploring "the therapeutic potential of animation in relation to psychological trauma at the Royal College of Art as part of a practice-based PhD" (Young, 2012).

Young described to me the personal importance of her work, as a medium to help process her own traumatic experiences with the intention of drawing upon autoethnographic methods. She told me how the start of her research had been drawn from a "hunch" and "feelings" that her own animation practice had been helpful to her in the past. "I know it works, so why does it work?" Her approach was to create films as a method of exploration and illumination. "I started with a hunch and feelings, the first film explored the hunches, and from that I was able to refine my work through to my second film." Young described how she wanted to refine her work within the "wider autoethnographical content, to understand where I was situated." She recorded her own responses to creating her films, wanting to see how she would change between the first and second film, and evolving her questions from this creative and reflective process. She has conducted personal interviews with 14 people, a mix of practitioners and therapists and is now in the process of using this feedback to inform her next and final film. "Animation two helped me refine my questions, then feedback and interviews of from that will inform my third film."

While my own work will be pursuing an evocative rather than autoethnographical slant, a measure of autoethnographic exploration did occur, evolving from the impact of the freeform animated section had upon the research, and how it departed from the main body of the research but also helped to define and test it. In chapters 3 and 4 I scrutinize OEB directly though the use of closely observed animation techniques. However, in chapter 5 I depart from

this close scrutiny to use freeform animation, to explore the contrast between the differing techniques, and to investigate ways in which these techniques might be lacking but also how they might inform the freeform stage, in order to build up a richer, more complete picture of these techniques taken together. Thus in chapter 5 I revisit Young's work and autothenographical influences in more detail. The journey undertaken by Young and myself has parallels, perhaps drawn from our background as practitioners, Young in traditional animation and myself in 3D computer games animation. As Young summed it up during her interview.

“The making is incredibly important.”

For Young, this meant that her research began on a *feeling* and a *hunch*, explored through an initial film. Self-reflection on this process, the journey of creating helped inform her second film. From there, she continued her reflection but augmented with feedback from interviews from showing her work, and now she is in the process of using this qualitative data to inform her planned third animation, using her practical component to draw out her questions and feel a way forward to solutions.

In this, my research follows a remarkably similar trajectory. Like Young, I have begun on a hunch and a feeling drawn from my own experience, I have used a series of 3 animations to explore and refine my research questions, using reflection and feedback to refine each new animation in sequence in order to feel out a final conclusion.

However, my methodology is drawn more from Haseman's cyclical approach (2007), whereby a product is made, reviewed, informs the next cycle which is then reworked, reviewed to inform the following cycle, etc with a view to taking an iterative journey through practice and evocative reflection. The creation of the artifact was designed to harness this iterative process, in a similar iterative process of practice described to me by Young regarding her research.

Beginning with an initial creation of raw footage, the artifact was divided into phases, with each phase needing to be completed and reviewed in order to inform the next phase. Each creative cycle or *phase* of the process was taken as an opportunity to use animation as an evocative and reflective tool, with each phase informing the next. Phases 3 to 5 addressed each contributory question in turn, while phase 4 applied a perception and production study to the

research, adapting Haseman's post performance reception study method to the application of animation as a tool for research, reflection, and the generation of feedback to inform the research. Further details of this process are defined below in section 1.7 where each chapter and phase is outlined.

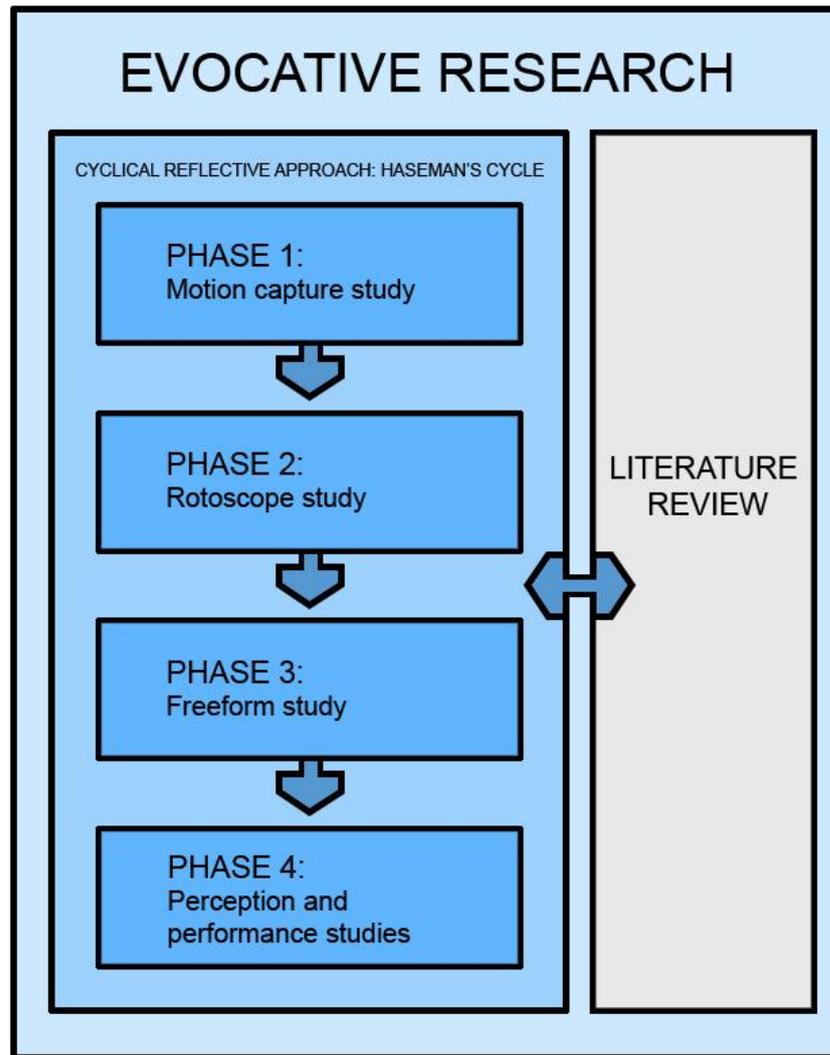


Fig 1.1: Methodology diagram

It should be noted, that while the phases are iterative, with each phase informing the next, the final conclusions and contributions are drawn from the thesis as a whole, with the use of contributory questions explored via these phases informing the main research question.

1.6 Ethical considerations

Approval was sought and given from the school's ethics committee regarding such considerations as informed consent, right to privacy and protection from harm. A full copy of this form can be found in the appendix J.

1.7 Overview of the structure of the thesis

Chapter 1

This chapter introduces the foundations inspiring the research with its aims and objectives. The research questions, including the use of contiguous contributory research questions are outlined, as is the overarching methodology behind the research.

Chapter 2

This chapter delineates the fields touching upon my research in order to establish the context of my research, including subjects and individuals who have informed and inspired the work. I begin with animation practice literature and how practitioners have discussed methods of expressing emotional behavior in practice, followed by a review of animation theory literature informing the academic influences to the artifact, before a brief exploration of psychology literature pertaining to emotional behavior and how central themes within implicit communication might be applied by the practitioner-researcher within animation. The chapter concluded with a brief overview of subjects connected to my research but currently beyond its scope.

Chapter 3

This chapter introduces *phase 1*, the first iteration of creating the practical element of the artifact, pertaining to the first contributory research question.

How might an exploration of motion capture animation of the body of a non-human avatar inform the reflection of a practitioner?

An outline of how motion captured data was used to construct and animate a 3D avatar is described, with reference to literature informing this initial process. Initial feedback of viewing this preliminary work is discussed, and a conclusion drawn.

Chapter 4

This chapter introduces *phase 2*, the second iteration of creating the practical element of the artifact, and pertaining to exploring the second contributory research question.

How might an exploration of rotoscoped animation of the face of a human character inform the reflection of a practitioner?

This chapter discusses the use of rotoscoped animation within the artefact with reference to animation theory on rotoscoping used in animation documentary, psychology research on facial expression and Sabiston's rotoscoped animation *Roadhead* (1998). Initial viewer feedback is discussed with a short conclusion drawn.

Chapter 5

This chapter introduces *phase 3*, the third iteration of the artifact, building on from chapters 3 and 4 and pertaining to the third contributory question.

How might an exploration of hand drawn animation of a simplified cartoon character inform the reflection of a practitioner?

Drawing inspiration from Young's research into using animation as an exploratory tool. This part of the artifact described the more self-reflective insights that evolved from this final iteration. The implications of using free-form animation within the artifact are discussed and a conclusion drawn.

It is important to stress, that the initial three stage animated experimentation process, as detailed in chapters 3 to 5 was part of the journey of myself as a practitioner-researcher. Exactly replicating this process would be difficult as other practitioner-researchers would be working

and reacting from their own personal backgrounds and interpretations. However, as is discussed further in chapters 6 and 7, I feel that there are some insights and contributions revealed though this journey that might be of benefit to other practitioner-researchers, theorists and practitioners. This resulted in 2 further phases being introduced, specifically detailed within chapter 6.

Chapter 6

The animations were cut together into one artifact and presented to viewers. Using techniques similar to those used by Sloan in his thesis (2010), and drawing upon Haseman's post performance reception study method (2007) two additional steps were added. These two steps began with *phase 4*, an animation perception study. Based on the experience and evocative reflection gained in chapters 3 to 5, combined with the initial feedback gained from phase 4, the perception study, an initial conclusion was formed.

That of the three forms explored, the rotoscope approach had the greatest impact on both the practitioner and (to a lesser extent,) viewers to absorb and render observed emotional behavior. Would this finding have value beyond the practitioner researcher to other animators at an exploratory stage in their practice?

In order to test this finding, and importantly, to depart from personal reflection into testing if this research might have value beyond the personal to other animators and practitioner researchers, *Phase 5*, an animation production study was conducted. Chapter 6 concludes with a discussion of this study and starts to bring the research in the context of the perception and production studies together.

Chapter 7

Final discussion and conclusion to the research is drawn, including contributions to the field of animation within the context of OEB and animation theory and practice.

2 Literature Review

Part I: Animation Practitioners

Books and articles related to animating OEB written by animation practitioners; animators, animation tutors, actors and filmmakers. In particular, the tension between trying to be explicit and impart clarity of meaning through the use of exaggerated body language, facial expression and gestures, and the urge to return to source material and render a more naturalistic look. How have practitioners sought to walk this divide and how does this discourse inform the background to approaching my artifact and research.

Part II: Animation Theory

Books and articles written by academics and theorists within animation and filmmaking, covering the expression of emotional behaviour, but also informing the self-reflective documentary aspect of my artifact, and discussions of the ways in which various animation approaches, in particular, rotoscoping, draw directly upon live action footage, and how these discussions might inform my research.

Part III: Psychology literature and studies.

Books and articles connected to the exploration of OEB within the field of psychology and clarifies the definitions used within psychological research. This section touches upon how psychology research in this field might provide possible insights to the animator practitioner interested in OEB.

Part IV: Connected subjects beyond the scope of this PhD.

Subjects and avenues related to my research but which I cannot for the moment expand into within the precise remit of this research.

2.1 Part I: The Animation practitioner

A large component of my research involves the creation of an artifact – itself containing examples of animation that I (as an animator and practitioner) have animated myself. This large practical component cannot be pursued without clear consideration of the established techniques and writings of animation practitioners within professional debate, informing the practical (animated) component of my work with their direct experience. Their writings form a body of primary literature that help to identify the mores and assumptions about the communicative powers of the animated body within the field of animation practice.

2.1.1 Animation practice literature

Many “Animation Practice” books are written by people who are themselves practicing animators, such as Richard Williams the animation director for *Who Framed Roger Rabbit* (1988), and whose book *The Animator’s Survival Kit* (2001) is considered something of a bible to animators, but this “practice and industry” literature will also include actors such as Andy Serkis, actor for Gollum on *Lord of the Rings* (2001, 2002, 2003) and Ed Hooks, who teaches acting for animators at such studios as Disney and Electronic Arts. (I was privileged to attend and participate at one of his workshops during my time working at Sony as an animator.) It will also include cartoonists such as Scott McCloud, who while not an animator, has written “how to” books on the principles of comic creation that drill down to the essentials of expressing character and emotion visually and provide interesting and succinct methods for an animator to tackle the difficulties of expressing emotion within a character.

Frank Thomas and Ollie Johnston, as pioneers in animation working in Walt Disney’s studio in California, witnessed first-hand the evolution of animation as an art form in its own right, and the difficulties early animators had in animating OEB. Early silent film relied on an exaggerated acting style, and animators had to evolve from these examples into more refined and subtle modes of expression with the advent of sound and the ability of characters to speak. Even in the early days of Disney’s studio, these animation pioneers were aware of the link between film acting and animation, “The actor and animator share many interests; they both use symbols to build a character in the spectator’s mind. Certain gestures, attitudes, expressions, and timing

have come to connote specific personalities and emotions, some regional, others universal” (Thomas and Johnston, 1981, p.474).

Disney in particular wanted to drive his animators into what he termed as “realism,” meaning in this context for the characters to be realistic in the way they moved. One animator at the studio was asked by Disney to re-draw and re-draw his sequence over and over, until eventually, frustrated and annoyed, he over-exaggerated and distorted the scene, in the hopes of outraging Disney with an over the top (unrealistic) sequence, but Disney loved it. “There, Dave, that’s just what I wanted” (Thomas and Johnston, 1981 p.66). While Disney continually asked his animators for realism, (and in this, live animals such as deer were brought into the studio for the animators to study directly during the production of *Bambi*), what he actually was asking for was for the animation to be *convincing*. Thomas and Johnson describe one animator commenting on Disney’s quest for realism. “I don’t think he meant ‘realism.’ I think he meant something that was more convincing, that made bigger contact with people, and he just said ‘realism’ because ‘real’ things do...Every so often [in the animation] the character would do something unconvincing, or to show how clever the animator was, and it wasn’t real, it was phony” (Thomas and Johnston, 1981 p.65). This quote is of particular significance as it expresses the differences in defining the term “realism” and at the end of this chapter I describe in more detail the definition of “realism” in academic literature. The term is difficult and mutable, and I would, speaking as an animator myself, prefer to refer back to the quote above, in that an animator does not strive to be *realistic*, an animator strives to be *convincing*. Within the context of my research, I am seeking to draw from filmed footage of OEB, examples of rendered motion exact to the original footage (motion capture) to rotoscoped footage (traced, and copied from the original, yet tainted by being hand drawn through my own perception,) to “convincing” motion within my free-form animation. (Refer to chapters 3-5 for more discussion on this linked directly to my artifact.)

Here is the beginning of a disjunct between animators’ opinion and execution, but also between deliberate exaggeration and attempts to produce a more “subtle” effect. Williams writes, “we should keep words to a bare minimum and make everything as clear as we can through pantomime ... It’s a great idea to study silent movies. Although much of the acting is laughably hammy and corny – it’s all very clear” (2001, p.324). Conversely, Thomas and

Johnston warn that overacting in order to maintain clarity and communicate unambiguously with the viewer can cause the character to “lose credibility” (Thomas and Johnston 1981, p. 482), particularly when trying to express the inner working within a character’s mind.

This raises the recurring problem all animators face, and one which practitioners raise again and again, the tension between explicit acting and restraint. By how much and by how far should an animator exaggerate or overemphasize gestures, body language and facial expression in a character to get the point across? Too little and too subtle, and the character’s expressions will be so vague as to be incomprehensible and meaningless to the viewer. Too much, and the personality of the character becomes distorted, an annoying, over-exaggerated pantomime.

Within the context of my own artifact, I wished to step back from the established conventions of animation, the “clarity through pantomime” that Williams (2001, p.324) suggests through the intent study of my own real emotions expressed through more inhibited OEB. This would be different from the more common approach of creating an animation, where an animator must deliberately create and act out through their animation (usually from a storyboard, itself taken from a script.) In the case of my artifact, I wished to avoid acting and pantomime and return to root gestures, by which I mean, that I would be filmed talking and behaving fairly naturally, rather than deliberately acting out a character from a script. However, an examination of how animators approach gesture (acted or directly observed within rotoscope animation) is needed to draw out the background behind animated approaches.

The term realism and realistic occurs frequently, and a moment should be taken to define the use of this word within this particular context. Realism is frequently used in the context of verisimilitude, or how real a narrative might be to truth or real life, or in the context of animation, in particular, computer generated animation, this often refers to effects to render close likenesses: skin rendered on a computer avatar that appears real, backgrounds that might be mistaken for photographs but exist only within a computer. However, within the context used by these practitioners, “realism” is more about how believable a character is. Peter Lord and Brian Sibley describe how the animation of Aardman studios is often complimented by viewers for being realistic, when the clay characters are anything but realistic in the usual definition of the term. Lord and Sibley attribute this reaction to the quality of the animation, which, they point out, is deliberately *unrealistic*.

“All the animated movements that we do, however understated or natural they appear, are bigger, bolder and simpler than ‘real life’. Real movement, the sort of thing you would see if you analyzed film of a live actor, always looks weak and bland when it is closely imitated in an animated version”

(Lord and Sibley, 2004, p.134)

Thomas and Johnston raise the practice of rotoscoping in the Disney studios, more precisely, the use of photostats to streamline the rotoscope process for use by animators.

“...whenever we stayed too close to the Photostats, or directly copied even a tiny piece of human action, the results looked very strange. The moves appeared real enough, but the figure lost the illusion of life. There was a certain authority in the movement and a presence that came out of the whole action, but it was impossible to become emotionally involved with this eerie, shadowy creature who was never a real inhabitant of our fantasy world”

(Thomas and Johnston, 1981, p.323)

A fully rotoscoped character seemed at odds with the world the animators were trying to create, it did not sit harmoniously within the ‘rules’ of the Disney ‘reality.’ This raises the idea that one can be technically competent, in drawing or rendering the character motion of a scene, in all ways appearing to be “correct” but at the same time appearing flat and almost dead. I am reminded of the time I visited the Louvre in Paris in the hopes of seeing a picture painted by Vigée Le Brun, a female Rococo-style painter (1755-1842). I located one of her paintings, a rendition of a mother holding her child on her lap, and it had been hung next to another painting of a mother and child in the same posture, painted by an artist whose name I do not recall. I was struck by the difference between these two paintings. Both showed good understanding of light and shade and perspective. There was nothing wrong with either of these paintings technically, and yet one appeared flat, genuine, but in the manner of a photograph, while the other, appeared to be alive. As if you could lean forward and speak to the occupants within the frame. I recall staring at both pictures for some time, trying to work out how they

could both appear to be accurate and yet so different. My belief is that Le Brun had gone beyond merely painting what was in front of her, but had (in a sense) over-painted an extra dimension, a larger than life flourish, in the same way that modern animators will take (perfectly correct) motion capture footage and “hand animate” over the top of it, adding the odd bit of extra anticipation and exaggeration to trick the viewer into seeing something that is, in effect, striving to be more real than reality. This is a technique I have attempted myself in my own work, not just in animation but also when manipulating photographic stills. In such cases, I will brighten the eyes, darken shadows, lighten areas, change or mute colours. The photograph is the original, yet I am drawing on top of it using my own judgment to render it more interesting, or to make it appear more convincing, a poor computerized cousin to Vigée Le Brun dabbing just the right amount of cream paint to eyes or lips, extra to what she was seeing, but deliberately placed to inject vitality to the rendition of her subject.

Scott McCloud pushes this boundary further, pointing out that a character rendered with basic or technically crude anatomy can appear more alive than well rendered, anatomically correct characters, gesture being the catalyst,

“Artists who concentrate on anatomical accuracy but *neglect* gesture, may create technically ‘correct’ figures, but the results may be utterly *lifeless* – while artists with technically ‘*incorrect*’ figures but a *strong* sense of gesture may produce art that seems *real* and *alive*”

(McCloud, 2006, p.115).

It is worth noting, that McCloud is speaking here about still frames from a comic, just as a painting is a still frame. Vitality can be more than a dab of cream paint, the cartoonist might try to compensate for the lack of detail in his or her figures by accentuating gesture. Animation takes that gesture further, by showing it over time in a complete movement. For the purposes of this research, I will be pursuing OEB across time (animation) rather than details on stills (painting).

This parallel of capturing gesture runs to rotoscoping, be they rendered via photostats, through the use of layers in computer art software or through the use of Rotoshop software pioneered by Bob Sabiston (1998). These methods create accurate results, and yet can appear

mechanical and lifeless compared to a hand drawn animation (created by a skilled animator). I will expand on this in Part II of the literature review, but it is worth noting that Thomas and Johnston are not entirely dismissive of the photostat technique, pointing out that while a camera can faithfully record all the information passing through its lens, it is incapable of selection or emphasis. An animator, when working with rotoscoped or Photostat footage, “chooses only those actions that relate to the point of his particular scene; then he strengthens those until they become the dominant action, with everything else either eliminated or subordinated. What appears on the screen is a simple, strong, direct statement that has clarity and vitality” (Thomas and Johnston, 1981, p.323). The metaphorical dab of cream paint.

While many practitioners seem more comfortable discussing body language and gesture in terms of technical advice and professional experience within their field, others had looked outwards into the fields of film study and psychology. Derek Haynes and Chris Webster draw attention to the need for animators and directors to pay closer attention to non-verbal communication, pointing out that animated characters rely on body language to express themselves, in particular when a single character is unable to express itself via speech and interaction with another character, or that omitting body language altogether will engender a state of unease and unnaturalness in the viewer. They warn against the dangers of relying on only one cue to indicate an emotion, and that all characters, even minor, background characters with no speaking role need to express emotion.

“In a piece of limited animation, where there isn’t much chance to do much more than pose her, her body language needs to seem like a reasonable response to what is going on, while being a pose that could reasonably be held.”

(Hayes and Webster, 2013, p.114)

This calls into spotlight the problems faced by animators, who may be under strict deadlines and monetary constraints. Limited animation is an animation term describing a cost-cutting style of animation where frames, stills and holds are used, often a large still which the camera can pan across, this is a swifter and cheaper way of filling up seconds. One frame (drawing) or still can be held over many seconds, rather than having to animate 12 drawings or frames for

each second. Since it is a technique originally designed to save extra drawn frames (and thus the time and effort) of an animator, it is generally used in hand-drawn animations (be they drawn on paper or on a computer). It is still possible to use limited animation to pin-point an emotion or attitude, (by ensuring the held still shows good gesture, or a dramatic pose) but McCloud points out that facial expressions are constantly on the move when a person is communicating. This can be problematic in limited animation where a frame might be held across many seconds. A comic book artist, or indeed an animator working in limited animation has to be proficient enough in expressing emotional behaviour to isolate an “emotional average” (McCloud, 2006) to stand for a single comic panel or a held pose. Indeed, considering how fluid and often fleeting expressions can be, is it even practical for an animator to laboriously animate every single flutter of expression? (More details on this subject in Part III, psychology theory.) Conversely, the right pose and expression, at the right time, can give the viewer an at-a-glance insight into a character, without the need to explain themselves in dialogue. In terms of shorthand, symbolic gestures and expressions can be used by animators to swiftly get their point across (and such motifs are particularly popular in limited animation where there may be little time to draw out a complex play of emotion.)

“Symbolic expressions don’t rely on an understanding of real facial expression to work. A simple doodle or two is usually all it takes. Some begin their lives as simple pictures of actual physical reactions such as sweat...and then drift into the more abstract territory of pure symbols. Others are strictly metaphorical and require you and your audience to both “know the code” before the message can get through. Symbolic expressions are closer to the written word in the sense that their meaning is fixed regardless of how they’re rendered...just as a word means the same thing regardless of handwriting or font choice.”

(McCloud, 2006, p.96)

Here McCloud is using the term “symbolic expression” within the context of the comic book genre and animation field, in particular Manga animation, where the use of these symbolic expressions and ciphers is particularly popular. In Part III I will discuss “symbolic gestures” as the term is defined in psychology theory. There, a *symbolic gesture* is a learned gesture that is

easily understood providing it is couched within its cultural context, such as a hand wave to symbolize a goodbye, or a thumbs up to indicate approval (Mehrabian, 1981; Ekman and Friesen, 2009). *Symbolic expressions* as McCloud describes, are drawn cartoon ciphers that indicate a reaction or emotion. A sweat-drop drawn on the forehead to indicate a character is stressed, a cross-like icon drawn on the forehead to indicate anger, or more on a more basic level, an upturned semi-circle to indicate a smile.

I will investigate more deeply the base emotions that span across cultures in Part III (Psychology Theory) but for now, it is important to remember that symbols of expression can be culturally based. Blood shooting out of a character's nostril is understood in Japan to symbolize sexual arousal, but such a symbol to a western audience ignorant of Manga conventions might be construed as an unfortunate (and slightly inexplicable) nosebleed. For the purposes of this research I will be focusing more on root gestures and expressions rather than specific regional coded ciphers. Returning to core expressions, McCloud points out that it is not necessary to be able to render countless variations of expression on a character. A combination of dialogue and story teamed with only a few root expressions, a curve and lean of a mere line can express posture, and this simplicity can be enough to carry a successful comic (and perhaps, a simple but engaging animation too). However, a comprehensive understanding of the range of body language, facial expression, pose and gesture allows a comic artist (or animator) to render the basics with greater control, and also to connect more deeply with a wider range of audiences, whose understanding of a character's emotion must be drawn from their own knowledge of human interaction rather than a more niche understanding of comic book conventions.

A greater understanding of key expressions, through the face and the pose of the body as a method of expressing OEB is a vital tool for the character animator: Writing some decades back, Thomas and Johnston hoped that "someday, animators may be able to advance into the areas of hidden meanings, sly suggestion, even double entendre" (Thomas and Johnston, 1981, p. 469). I would argue that this day has already come, or at least the need for animators to express such hidden subtleties is already here. The cultural history of cartooning began with film, where throughout the 20th century, the rise of "classic" animations such as Disney's *Snow White*, (1937) or the high jinks of Warner Brothers' Looney Tunes were the popular rendition of

animation in the west, while in Eastern Europe puppet animation and stop motion were popular, and in Japan Manga animation dominated. Now if you switch onto the children's channel of your television, you will see 3D animation, (including the use of computers, tablet and phones for watching animations where 3D animation still dominates.) There is likely a generational gap, in that a younger person asked to name an animation might think of a computer generated animation such as *Shrek* (2001) or *Frozen* (2013). One might not automatically think of special effects animations where computer generated characters might rub shoulders with live action characters, such as Gollum in *Lord of the Rings* (2002) or even less obvious examples where seemingly normal looking characters are added into live action to enact stunts and acts too dangerous or impossible for real actors to achieve. In these cases, and increasingly, the subtleties of OEB need to be called into play in order to carry off an increasingly sophisticated rendering of animation that appears to fool the viewer into believing it to be live action footage. Hooks (2003) believes that micro expressions and greater subtlety will be demanded by audiences as the level of photo-realism increases, forcing animators to express these intricacies. Even though individual viewers in an audience might not be able to explain the theory behind expression, we are all nevertheless attuned to expression with our daily interactions with others. The question is, with all these different approaches, limited animation, full animation, embracing or rejecting symbols, how can animators train themselves to greater understanding of all the nuances of OEB? All these approaches appear to have merit, and can adequately express an interesting and convincing character. It falls to the animator to choose the approach appropriate to their project and render it as skillfully as they might hope to achieve.

2.1.2 The animator as actor

Given these new contexts of changing animation practice, there is a body of literature emerging that countervails the more established discourses that championed exaggerated body language. These new discourses often draw relations between acting techniques and animation (Kennedy, 2013; Hooks, 2003) and are of significance within the context of my own exploration of more nuanced forms of expression.

Animators and animation studios have been looking to acting skills for inspiration for many years, though there is a difficulty in making a simple translation between the two professions, in that the two skills are not directly interchangeable. Thomas and Johnson note how an actor must feel an emotion in the moment, enacting it, then moving onto the next moment whereas “the animator has to stop time while he captures the elusive moment, dissects it, recreates it, and gets it all down on paper” (Thomas and Johnston, 1981, p.502). Hooks goes further, explaining how an actor must remove emotional blocks in order to be in the moment, and to avoid indication or anticipation, while an animator lives by indication and anticipation. Hooks’s training for animators had to be modified, without the removal of emotional blocks. An animator doesn’t need to know how to “cry on cue because, if she were to do that, she wouldn’t be able to see to animate” (Hooks 2003, p.x). By using method acting, the Stanislavski technique of thinking or recalling yourself into an emotion, an actor strives to feel that emotion, on the understanding that it will manifest in their body. An animator might do the same, and resort to a mirror to view themselves within their emotion, but they must still dissect and translate that emotion into the animation, physically drawing each quirk of lip or brow, or tweaking the shape of a facial muscle on a computer screen. The process is slowed down. What might be over in minutes or seconds for an actor must be laboured over for days by an animator.

Williams believes that the underlying emotion within an animator can taint an animation. Thus a happy animator will taint a sad scene with happiness, while a sad animator might darken a happy scene. He recommends teaming sad animator to sad scene, happy animator to happy scene where possible (2001, p.319), though a professional animator should be able to handle any scene regardless of what inner turmoil they might be facing. This concurs to some extent with my own experience of animating, but the converse can occur, with a sad scene lowering an otherwise happy mood and a happy scene raising your spirits. Hooks refers to Laban theory (see Chapter 2.4.4) and the need for animators to think of an attitude or emotion with the whole body, not just close ups of the face. For inexperienced animators, such as students I have taught lip-synch to, it can be hard enough thinking beyond the correct mouth movements for speech, let alone adding facial expression, *and* head movement, *and* whole body movement. As animators, we need to think and consciously move every part of the body. In the case of 3D computer animation, with rigged characters, this means thinking how an emotion or attitude

will flow through every bone in the body, every bone in the rig, and of course, having awareness of the appropriate emotional behaviour for that particular point in the narrative. My own personal technique is to act out the action, not necessarily in front of a mirror, but instead trying to “feel” the attitude and weight in the pose within my own body. Hooks recommends filming oneself, as using a mirror is distracting. Half your attention is on acting the pose, and the other half is on watching it, not to mention that your body might be contorted in an unnatural manner in order to see into the mirror. In my own conversation with Paul Chung, supervising animator on *Shrek the Third* (2007) and *Madagascar* (2005) Chung also advised filming oneself acting out variations on a part as reference for animating, showing me clips of his own self-filmed reference.

In most recent developments, motion capture technology has provided a bridge between the immediacy of acting and the freezing down of time of animating. In regard to motion capture techniques, Hayes and Derek describe the rise of a new form of acting, the “animated performer” (Hayes and Webster, 2013, p.185) citing Andy Serkis as a prime example of this new breed. In his work for *Lord of the Rings* (2001, 2002, 2003), Serkis remarks on his experience working in the motion capture studio, and that having run through various different options for acting out a fight scene with a non-existent character (to be composited in from live action later) the simplest and least complicated rendition seemed the most convincing.

“when you’re telling a story frame by frame, the temptation is to animate a character to be busy all the time, but it’s often more powerful to do nothing. Watching the scene played back is like watching a silent movie where every emotion is carried in ‘pantomime’ – you really know if you’re told the story or not”

(Serkis, 2003, p.36).

Serkis seems to be implying that subtlety is needed, which raises the previously discussed suggestion that modern animation (intermingling seamlessly with live action in a 3D form) needs to be more sophisticated in its OEB.

Again, like the animators of Disney commenting on using photostats, Randall Cook, (animation design supervisor working with Serkis) comments on the importance of the

animators not simply mimicking the motions of Serkis, but instead, trying to reach for the same understanding of Gollum that Serkis was reaching for, “an imitation of a famous person by an impressionist, no matter how much it sounds like him, is still just an impression, and often exaggerated and unreal” (Serkis, 2003, p.84). They were expected to use the live action footage of Serkis as *reference*, in order that the 40 odd animators working on Gollum would not result in 40 odd versions of Gollum, yet at the same time injecting their own spirit into the animation, not simply copying. The technology has moved on considerably since the early days of photostats at Disney, such that those early animators would not even recognize the complex technology involved, and yet we have come full circle, to the same fundamentals of animator working within and transfiguring through their art, live action footage via new technology.

“Live action could dominate the animator, or it could teach him. It could stifle the imagination, or inspire great new ideas. It all depended on how the live action was conceived and shot and used.”

(Thomas and Johnston, 1981, p.319)

2.1.3 Conclusion

There are of course points where the basic mechanics of action are of more importance than acting per se. The photographs of Muybridge, taken roughly between 1875 and 1881 are still used as reference by animators today for walk cycles and animal gaits, an example of cutting edge technology of the time being used to provide information and reference for artists (Muybridge, 1984). Complex and skilled movements, such as the motion of named professional footballers within a football game (Silicon Dreams Studio, 2000) or specialist mechanics attending to a Formula 1 car in a game (SCE Studio Liverpool, 2005) are perfectly suited to the accuracy derived from motion capturing such professionals and specialists directly. However, outside of these specialist situations, the ability to express emotion has always been of importance to animators. Thomas and Johnson sum up the three key problems that animators face, in brief:

1. Knowing what a character must do within the scene.

2. Having the skill to execute it as an animation.
3. Capturing and articulating, often over many days, an emotion or attitude that an actor might express in minutes.

(Thomas and Johnston, 1981, p.502)

In the past, in traditional animation, this often involved exaggerated movements. A hand drawn character might have a very stylized face and body and could not express the subtleties of emotional behavior, being obliged to express the distilled essence of a movement. However, as technology creates increasingly more complex avatars, animators are now having to consider the more hidden aspects of OEB, to render characters that appear ever more human. It is the smaller, subtler movements and gestures that I hoped to explore in my research.

In this section I have explored the means by which animators (practitioners) understand they have to express bodily movement, their quest to render their animations convincing and compelling. The examination has discovered animation as being in part governed by conventions of representation (and forms of coded communication), and part by an attempt to spurn symbols and capture “true” movement and gesture. An animator is free to use either method, though that freedom might be curtailed by lack of time and money, thus an animator must make decisions to combine or reject a method depending on the restraints imposed (studio style, manpower and skills available, lack of time). Ironically, it is often exaggeration and simplification that seem to make animation more “lively” (rooting an animation within a coherent imaginary “world”), though this effect is also at other times produced by an increase of subtle nuances which make animation less wooden or semaphored – so an animator in fact has to negotiate a path between these extremes.

What is “convincing” is very much dependent on different contexts, with the integration of live action and animation in cinema, for example, creating expectations that animation be increasingly nuanced and naturalistic, fitting into the aesthetic world of the realist film, which is quite different from the expectations of a hand-drawn animation from the 1930s.

Within the context of my own artifact, I was also heavily restricted in time, resources, skills and limited to a single womanpower of one animator. Thus I have tried to process from this part of the literature review, a path of my own, drawn from the many different paths in the creation

of my artifact, which I will describe in further detail (with reference to the rest of this literature review) across chapters 3 to 5.

2.2 Part II: Animation theory

The base footage of my artifact involves a documentary style interview, and while the purpose of the artifact was not designed to explore documentary animation as such, it forms the foundation over which the observation of emotional behaviour through animation was based. I touch upon and introduce a foundation of academic literature pertaining to animated documentary within this next section, before returning to this literature within chapters 3 and 4 to discuss how it links to the creation of my artifact and the application of academic influences directly to my research.

2.2.1 Documentary animation

Documentary animation might be considered to be more concerned with engaging with authentic physical expression of its subjects within scenarios that tend to take on a more serious message. Caricature, exaggeration and pantomime are generally less in evidence, particularly when the subject matter addressed might be considered to be sensitive, distressing or even addressing trauma. A more sensitive and nuanced approach might more appropriate for such themes. As such, the academic literature addressing the use of animated documentary can provide valuable observations on how animators might approach more serious topics via more restrained rendering of OEB.

To begin, why use animation when live action will do? Paul Wells notes that “animation does draw the viewers’ attention to significant, and sometimes unnoticed aspects of the character, however, and once more demonstrates its usefulness as a different *medium*” (Wells, 1998, p. 28). It was this ability of animation to heighten small motions that drew me to the idea of creating an animated artifact in order to scrutinize subtle gestures more closely. By filming myself being interviewed on happy and sad subjects, I could create, not so much a narrative animation, but perhaps something closer to what Wells defines as “animation with *documentary tendency*” (Wells, 1998, p.28).

Why use a documentary format, animated or otherwise? In his book, *The Subject of Documentary* (2004), Michael Renov lists four functions that documentary (not necessarily animated) brings into play.

1. To record, reveal, or preserve.
2. To persuade or promote.
3. To express.
4. To analyse or interrogate.

(Renov, 2004, p.74)

It is the first and last points which interest me, the ability that Renov notices for documentary to tease out emotion, by virtue of the distance *and* intimacy conveyed when a person talks into a camera, often allowing them to speak more freely than had they been talking to a person. The camera, “functions as an incitement to confession” (Renov, 2004, p.127). With regards to analysis and interrogation, Renov observes that documentary, in particular the self-documentary or video-diary, allows the film-maker an opportunity to reflect and look inside themselves, “The camera is... a kind of two-way glass that retains a double function: it is a window that delivers the profilmic to an absent gaze and, at the same moment, a reflective surface that reintroduces us to ourselves”(Renov, 2004, p.197).

Honess Roe describes three categories into which documentary animation inserts: Mimetic, Non-Mimetic and Evocation (2011, p.225). I will describe these functions and how they mesh with the context of my artifact.

1. *Mimetic*: Honess Roe defines this term as animated footage that is used to substitute for missing or unobtainable footage. Such as Winsor McCay’s 1918 short, *The Sinking of the Lusitania*, one of the very first uses of animation in a documentary format, with animation used to express a scene which had no live action footage to show. More modern examples might include animated nature documentaries featuring extinct dinosaurs or other historical, previously unfilmed footage. A realistic approach is usually aimed for, or at least as realistic as can reasonably fit the technological resources available and adequately express the tone of the

piece. Within the context of my artifact, while the original footage (of live action film) is available, (and was edited into the final artifact to provide a context to the piece as well as a visual “reset” for the viewer) there is a case to be made that the mimetic approach can be used through animation even when original footage is available. Filmmakers can on occasion make a choice to animate instead of producing live action footage, because of copyright reasons, expense of filming or obtaining original footage, for safety when enacting stunts, or even as an aesthetic choice, such as choosing to render living actors as computer generated characters, (such as Zemeckis’ *Beowulf*, 2007). Thus I would argue that a measure of mimetic substitution can be voluntary. Thus I chose to begin work on my artifact with a motion captured, computer generated animation, mimetically substituting a dinosaur sythespian (computer generated character) for my own live action filmed person. The context of “realistic” (by which I mean, trying as far as technically possible to maintain close to the original body movements of the original person) substitution could be resolved by the use of motion capture. This would maintain the integrity and purity of the original motions, while at the same time refreshing and resetting the look of the character. The movement remains wholly mimetic, though the physical appearance of the characters might diverge, resulting in a semi-mimetic rendering.

2. *Non-Mimetic*: Honess Roe (2011, p.225) defines this as replacing real footage with animation which is generally more artistic in approach (not intended appear “real” but clearly and obviously animated, but at the same time remaining true to the original filmed footage (for example, changing the look of characters to conceal their identity but otherwise reproducing their body motions though animation, either from rotoscoping directly from filmed footage or animating to a recorded voice-over.) Non-mimetic substitution makes no attempt to hide itself as an animation, though it might still be dealing with real, non-fiction events. Sherbert Studio’s *Wonderland, The Trouble with Love and Sex* (2011) falls into this category. In this film, couples were recorded talking about intimate issues. It was imperative that they retain their privacy, while still being broadcast on national television using their own voices. Sherbert substituted animated characters, who bore no physical resemblance to the original people. The stylized and clearly animated form allowed distance to be placed between the real people and their cartoon

avatars, allowing confidentiality of the original interviewees, while additionally making difficult and potentially sexualized subjects more palatable for television viewers.

To explore this approach within my artifact, I chose the technique of rotoscoping which seemed ideal for capturing details of motion and visually re-presenting them to the viewer. While the rotoscoped animation is still based off the live action footage of my face, the live action has been directly substituted with a deliberately stylized, hand drawn facsimile.

3. *Evocation*: This is defined as a way of expressing difficult concepts such as emotions and states of mind, often using more abstracted modes of animated expression. Honess Roe points to the use of the animated documentary as a “tool to explore and reveal hidden or forgotten pasts, demonstrating the medium’s capacity for documenting the world from a subjective point of view” (2011, p.229). As the final part of my journey through the production of the artifact, I chose a looser, more emotive and free-form approach to expressing the live action footage.

However, as Paul Ward points out, there is an inherent danger of using animation for documentaries, an “inbuilt scepticism” on the part of the viewer who is aware of seeing footage in an artificial or second-hand manner (2011, p.296), rendered and displaced from the original footage. It is here that the duality of the animated documentary comes to the fore, with the danger of distortion or loss of information coupled with the ability to heighten and underline information of the other. A chance to see information from a different perspective, seeing new and previously overlooked details, to conceal and simultaneously expose (Ehrlich, 2011, p.5). As such, I hoped that by exploring these three concepts defined by Honess Roe via the creation of a self-figurative, animated documentary inspired artifact, I might be able to unravel the hidden or overlooked, evolving and comparing each approach as I worked in order to:

1. Self-reflect as a practitioner on the different approaches to animating and expressing emotion. How would the different approaches compare and inform my understanding?
2. Present the artifact to an audience (with a feedback questionnaire) so try and ascertain which (if any) of the approaches best enabled viewers to pick up on emotional cues, and from their feedback, how future research might build on their responses.

To conclude, “animated films offer us an intensified route into understanding the real social world, by virtue of the peculiar dialectic that is set up between knowing that this is a film about a real person (and we can hear their actual voice) and knowing that what we are looking at is an animated construction, with nothing of the indexical correspondence that we have become so accustomed to” (Ward, 2005, p.91). I further explore and apply the categories of *Mimetic Substitution* and *Non-mimetic substitution* within the context of my artifact, see chapter 3 for a more detailed explanation.

2.2.2 Movement, mo-cap and the uncanny valley

In the creation of my artifact, I would be rendering myself using different approaches to animation, a 3D avatar or synthespian, 2D Rotoscoping and a more abstracted, caricatured drawn version of myself. In this regard, care would need to be taken in the design of my characters, in particular, the 3D computer generated avatar, which would be the most at risk of falling into the “uncanny valley.” It was Masahiro Mori who first expounded the concept of the “uncanny valley” in 1970 in a piece regarding the sense of familiarity on observing robots, “I have noticed that, as robots appear more humanlike, our sense of their familiarity increases until we come to a valley. I call this relation the “uncanny valley” (Mori, 1970, p.35).

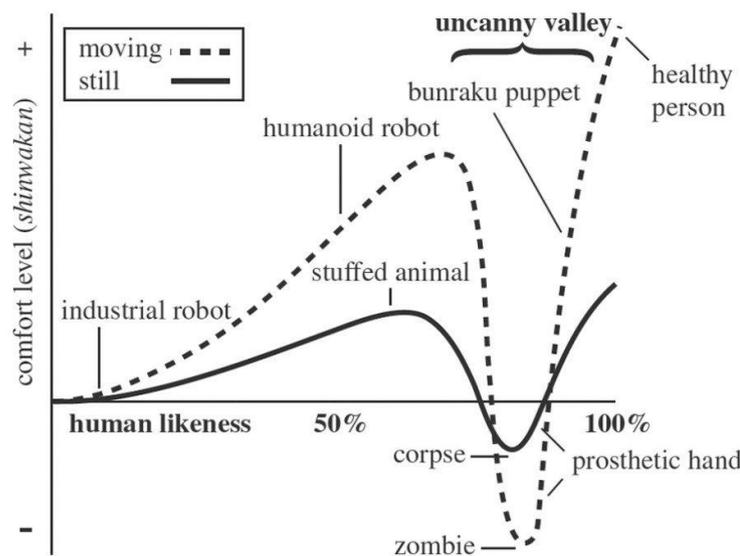


Fig 2.1: Graph taken from Mori’s paper (Mori, 1970)

The reasoning being, that as robots are built to look more and more human-like, they become more and more appealing, until a crisis point is reached, the “valley” in the graph. This is where the robot or android is now sufficiently lifelike to appear almost human, but enough is lacking for the impression to be that the human is dead, a zombie or seriously ill, thus the graph dips as the perception of revulsion, or that the robot is unappealing or discomforting. This concept of the uncanny valley has been taken up particularly in the case of computer generated avatars or synthespians (Geller, 2008; MacGillivray, 2007; Pollick, 2009; Tinwell, 2014). 2D hand drawn characters might have minimal facial expressions, but being simplified and stylized, often with no attempt to appear realistic, they fall into the left side of the valley, as unrealistic, but appealing.

Burleigh (2011) questions the theory of the uncanny valley, interpreting the eeriness of the Uncanny to fear in his subjects, stating that his results suggested more that “eeriness is related to threat avoidance or terror management. Disgust and unattractiveness [more generally cited by Mori as the prime causes of uncanny] provided relatively weak contributions to an explanation of eeriness” (Burleigh et al., 2013, p.52). In some ways I do agree that the nature of uncanny is related to threat avoidance, which in itself, may manifest itself as disgust. In regard to my own, very visceral experience of the uncanny valley at work, I was fortunate to view an android created in the likeness of Philip K Dick, created by Robotics Designer Dr David Hanson, and displayed at the 25th Annual Conference of the Society for Animation Studies (2013).



Fig 2.2: Dr Hanson's android, photography author's own

On first seeing the android, seated next to the stage, and facing me (with the back of its head concealed) my immediate thought was that this was a delegate, but a delegate with extreme paralysis, who would be presenting his paper through the means of communicative technology. Even after realizing that this was an android and not an immobile, or even, heaven forbid, a dead person, the android continued to catch me out, (albeit only for a few seconds) each time I left the room and returned at a later point with the android placed in a new position (often surrounded by people, which further reinforced the default assumption that this was a wheelchair using delegate deep in discussion with other delegates.) In regard to his own robot, Hanson has observed, “presently even the most realistic robots may seem partly dead, because in many ways they are. They are only partly aware. They shut down instead of going to sleep, and then they sit there frozen. They break. These flaws in a humanlike appearance, can remind us of our own mortality” (Hanson, 2006, p.4).

In connection, much has been written (MacGillivray 2007; Bode 2006; Pollick 2009; Geller 2008) about the failures of certain films with synthespians, often motion captured, who are critiqued as having fallen into this valley. In brief, while synthespians might look good in stills, the minute they start to move the lack of nuanced human motion (especially with regards to the

complex facial muscles of a real human being), create unease in the viewer, pitching them into the Uncanny Valley. MacGillivray contends that “Mori’s Uncanny Valley idea might work for robots, but cannot be translated directly to animation as it is nothing more than a way of describing poor animation” (MacGillivray, 2007, p.8). She points to successful computer generated characters such as Gollum in *Lord of the Rings* (2001, 2002, 2003) whose facial animation was overworked by animators using filmed footage of Serkis as reference and did not rely on facial motion capture (Serkis, 2003). I would put forward my own theory that the more successful computer generated characters tend to err on the side of monstrosity. Gollum is hideous and emaciated, with abnormally large eyes and ragged teeth, his facial expressions and even body posture tending to be exaggerated to fit the extreme nature of a creature rent apart by years of bearing the ring. The Na’vi of *Avatar* (2009), while more attractive in looks and bearing, have distinctly non-human faces, that appear to draw inspiration from cat faces, and while many cat owners might claim that their own cat is very expressive, the expressions on a cat’s face are very minimal compared to a human, albeit quite normal for a cat. I would opine that both Gollum and Neytiri the Na’vi, fall on the left slope of the Uncanny Valley, thus as viewers to these animations any lack or imperfection of human expression we are more content to overlook, as neither character is truly human, or as Tinwell observes, the “non-human characteristics of the Na’vi race such as blue skin and large ears reduced a viewer’s expectations. Therefore, and deviations from the human norm in a Na’vi character’s facial expression and behavior was more acceptable and did not elicit the uncanny” (2014, p.193).

Tinwell (2014) explores the connection between the Uncanny and 3D generated avatars, with particular reference to facial expression via CG headshots. In her experiments, Tinwell compared filmed headshots of actors against computer generated headshots. These headshots ran the gamut of the 7 emotions put forward by Ekman et al of anger, disgust, fear, happiness, sadness and surprise (Ekman and Friesen, 1971, 2009; Russell and Fernández-Dols 1997). Tinwell’s experiments aimed to gain further insight into “the possible functional significance of the experience of the uncanny” (Tinwell et al., 2011, p.23).

“The uncanny may be related to the importance of being able to swiftly and accurately detect the emotion being expressed by another as it helps us predict their likely behavior. When a

combination of tone of voice and facial expression is used to indicate a person's affective state, the recipient expects a confirmatory congruence between the two. Any observed incongruence alerts people to oddness and the possibility of unpredictability of behavior which is alarming (even distressing and scary) as it may present a potential threat to personal safety. Hence, the sensation of uncanniness may serve to act as a sign of unpredictability and danger."

(Tinwell et al., 2011, p.23)

To further explore the triggers of the perception of the uncanny in viewers, Tinwell also presented CG headshots where the viewers were able to observe and make comparisons between CG animated headshots where all the face had been animated to represent the key emotions, and CG animated headshots where the upper face was deliberately disabled (Tinwell, 2014, p.82). As might be expected, viewers perceived the CG animated headshots where the upper face had been deliberately disabled as more uncanny than the CG animated headshots where efforts had been made to animate the entire face. However, intriguingly, the results were not uniform over all the emotions, with sadness being found to be the "least" strange of the emotions when the upper half of the face was frozen. Tinwell posits that viewers might be more tolerant of abnormal facial expressions due to feelings of empathy at a sad and distressed character (Tinwell, 2014, p.87). Based on my own findings through studying the face through rotoscoping and then hand animation sadness, I would expand upon this theory. Through rotoscoping, I discovered that the facial sad expressions can become slower, and more constrained, particularly when a person might be trying to neutralise (hiding the emotion with a poker face) or deintensify their expression, (reducing the expression while still expressing it). (See chapter 3.3.2 which discusses Ekman and Friesen's categories of expression.) In sadness in particular, a deliberate lack of expression in the upper face, which can occur when a person is struggling to hide or tamp down their sadness, could be considered normal, and thus not register to viewers as uncanny.

Likewise, Tinwell found that the expressions of happiness upon the CG (fully animated) characters were considered more uncanny by viewers, (in contrast to the partially animated characters expressing happiness, which otherwise might have been assumed to be more

uncanny than the fully animated characters) a result she puts down to the perception of viewers that they were being presented with a false smile (Tinwell, 2014, p.90), (see chapter 3.3.2. where I discuss the findings of Duchenne and the Duchenne or false smile.)

Tinwell puts forward various problems inherent in mastering the expression of emotions within a CG character, notably, that the lower pixel and polygon construction of in-game characters and the heads that she used for her experiments, are not precise enough to express the complex folds and wrinkling required to fully express the nose wrinkle of disgust and the eye crinkle of a genuine smile (Tinwell, 2014, p.89). With this in mind, Tinwell suggests that “It may be the safest, and arguably, the most cost effective strategy to just include characters with a reduced human-like appearance in games and animation, but would this not be an admission of defeat?” (Tinwell, 2014, p.194). Building on Tinwell’s findings, I too felt that the current technology available to me was not of a level adequate to the research I wished to pursue. Thus while Tinwell experimented with comparing live action facial expressions with animated (constructed) CG facial expressions and compared again to the same expressions with the upper facial region disabled, I wished to approach my work from the opposite direction, as an animator who began in computer animation and computer generated characters, but would research backwards via hand drawn techniques, rotoscoping and hand drawn animation.

Both Tinwell and Sloan (see chapter 6) utilize computer animation practice as a method of research, just as I have used computer animation practice to explore my research, however their work focuses more on the construction of facial expression through CG animation, with the key facial expressions filmed and animated in isolation, for direct head to head comparison. My work builds on and runs in tandem with their research, a complimentary approach that explores facial expression not through the creation of CG heads, but through the exploration of hand drawn rotoscoping and hand drawn animation, starting with motion capture, then moving into drawn 2D animated research. My aims and research questions are also complimentary but different, being more about the direct observation of natural OEB, placed within the context of the dissection through three stepped animated approaches of two examples of specific and real experience. Instead of a short animation of a head expressing a specific emotion in isolation, the basis for my artifact was filmed directly in a pseudo documentary style designed to capture the raw emotion of the animator as performer. The footage captured the full body but also the build

up to expressing the emotion and the change and movement of these expressions over time. These sequences were chosen to express truthfully upon experiences, rather than acting or attempting to animate up the experiences.

This represents a complimentary but otherwise unique approach designed to explore and reveal fresh new insights, building and complimenting previous research within this fascinating and important (at least to animation practitioners) subject.

Moreover, with regards to my own direction of research, I was not pursuing a photorealistic character design or working with a CG generated facial model or rig. However, an understanding of what helps to define a convincing or believable expression on a character's face is mandatory in order to achieve a convincing and believable character, be it a stylized potato creature or the latest in VFX synthespians. On a trip to Dreamworks in 2013, I was privileged to be shown their latest 3D software, designed in-house and at the time used to create *How to Train Your Dragon 2* (2014). The software was easy and intuitive to use (at least for someone such as myself, with experience in 3D animation software). So easy in fact, I felt almost as if I could put my hands inside the computer screen and pose the characters as if they were physical, stop motion puppets. One might ask, with software so easy, and the increasing advances in motion capture technology, are animators even needed? I would say yes, *good* animators are still required, to adjust and refine motion captured footage (one can still not motion capture a dragon) and certainly to animate non-motion captured footage. As John Lasseter (director at Pixar) asserts,

“The term CGI is a misnomer - the computer doesn't generate the images. That would be like calling traditional animation Pencil-Generated Imagery. No matter what the tool is, it requires an artist to create art.”

(Wood, 2013, p.31)

2.2.3 Rotoscopy

In investigating rotoscoping, I was interested in the way that I might use this technique as a method of studying facial expression in detail. For clarity I will introduce this method here, including within the definition of rotoscoping, the Rotoshop technique developed by filmmaker and animator Bob Sabiston, the Disney use of Photostats and common modern rotoscoping techniques, before describing how rotoscoping relates to my artifact specifically and in greater detail in Chapter 4.

Early rotoscoping involved a rotoscope machine, a device originally invented and patented by Max Fleischer, and used for his *Out of the Inkwell* series (1919-1929).

“This was simply a projector converted to focus one image at a time, from below, onto a square of clear glass mounted in a drawing board. When drawing paper was placed over the glass, tracing after tracing could be made, each sheet kept in register by pegs at the bottom of the glass. It was tedious work and time consuming, but this was the way it had been done for twenty years.”

(Thomas, Johnston 1981, p321)

Thomas and Johnson go on to describe how Walt Disney organized the printing of each frame onto paper, “Photostats” which could now be placed (and traced) over an animator’s drawing board. While the process was still slow, it sped up the original mechanism considerably. After this early technique, animators entered the domain of computers and software as a means of capturing live action, Paul Ward describes the Rotoshop software of Bob Sabiston as “a sophisticated form of digital mark-making” (Sabiston, 2012, p.73). Rotoshop is often misconstrued as an automated system for filtering and converting live action footage, as if a button can be pressed and the computer will just spit out cartoonified work. Rotoshop software will attempt to second guess in-betweens, but still requires the ruling marks to be made by animators in key frames. Sabiston’s *Roadhead* animation (Sabiston 1998) is a great illustration of this effect. As the footage is passed from animator to animator the style and interpretation of the footage changes. Sometimes scratchy, sometimes clean line, sometimes

highly stylized, sometimes striving for realism. As Sabiston himself clarifies the process behind Rotoshop.

“With motion capture and the like, you are having the machine *record* something that becomes the spine, even the heart, of the animation derived from it. With Rotoshop, you are hand drawing the expressions and forms that you see. It is usually traced, yes, but even then you are starting with something hand drawn. There cannot help but be the smallest stamp of the artist in every line. From the very beginning, before it even enters the computer, the artwork is coming from someone’s head. The computer assistance happens afterward, and it springs from your artwork. That’s very different in my eyes.”

(Sabiston 2012, p.79)

Finally there is the “rotoscoping” technique I used on my own artifact. In which I took live action footage and placed it as a layer beneath a second layer used for “tracing” the imagery, using Flash software and a digital pen on a tablet. This is often what students of animation are referring to when they say they will be “rotoscoping” their work. That is, not using a film projector in the original definition of the term, but a type of software (such as Photoshop, Flash, Aftereffects or TVPaint,) where live action footage can be layered and traced (generally with a digital pen) to a fresh, drawn, layer.

All of these techniques draw (literally) on the same basic premise, being methods in which live-action can be transferred into drawn form. This differs from motion capture, where motions are digitized and fed directly into software where they can be attached to drive a 3D rig. Returning to Sabiston’s description, rotoscoping techniques, while on the surface traced, can also be “tainted” and translated via the eye of the animator, acquiring an extra quality of their own. This demonstrates the duality of the rotoshop process, which can be used as a tool for drawing out and accentuating gestures and motion, and as Ruddell suggests, a way of getting the viewer to see “both under and between” otherwise ordinary motions.

“it is very specifically the use of animation that raises questions of visibility and exhibitionism; the animation both solicits our attention and problematizes the representation of the body, movement and gesture (as well as potentially disrupting the fictional, narrative world).”

Honess Roe further dissects the role of rotoscoping techniques with regard to documentary animation, where as a filmed, live action speaker talks, the viewer watches, attempting to decipher the veracity of the confession, or to be moved from the emotion of the speaker as they speak, not just by the quiver in their voice, but perhaps the distress on their face when recounting a traumatic experience. Animated documentary “reveals the world of the interviewee channeled via the animator(s)” (Honess Roe 2012). Depending on the animator, important details of expression might be overlooked, others brought forward for consideration, or even distorted, subtly changing the meaning of the dialogue, whether deliberately intended by the animator or entirely by mistake or chance. This in some ways has parallels with painters such as Le Brun, as discussed earlier, where the painter (or in this case the animator) might deliberately play up or play down, remove or add small details in order to capture their own interpretation of a character. Such might be done deliberately through the skill or experience of the painter or animator, or unintentionally imbued into the piece from a lack of skill and experience, or lack of time from an overly restrictive deadline.

At best, rotoscoping techniques open up a fresh view of movement and gesture, seen through the animators eye, “a tool of clarification, explanation and emphasis” (Honess Roe 2012, p.3), but at worst, when the footage is hastily and quickly traced, perhaps due to time restraints, monetary restraints or the artistic limitations in the animators, the results can be “strange, eerie, or out of place” (Ward, 2006, p.233).

2.2.4 Conclusion

In Part II of my Literature Review I have examined approaches to Documentary Animation in regard to how I might best approach my own artifact, itself structured as a documentary-style interview (rather than an acted narrative story.) I have examined how documentary, and animated documentary might be used as part of the self-reflective process of my artifact, to record, reveal, and to analyze and interrogate (Renov, 2004, p.197). In chapter 3, I go into further detail on these subjects, defining how I broke down my artifact into mimetic and non-mimetic substitution sections.

I have examined difficulties of rendering myself as a computer generated character, with difficulties of falling into the Uncanny Valley, (refer to Chapter 3 to see how I have considered these discussions in designing my computer generated avatar.)

Finally, I have reviewed literature pertaining to rotoscoped animation, and how it can be used as a method to examine and highlight minute details of motion, expression and gesture,

“Animation extends outside the boundaries of the genre of film to include the compulsive vernaculars of everyday life, yet we tend to notice expressive movement only when it is projected out of reach on the screen.”

(Cartwright, 2012, p.71)

Thus I have endeavoured to draw upon animation, via rotoscope, and its modern sibling motion capture, as a form of reviewing the intricacies of everyday OEB, literally in the sense of the term re-viewing; viewing motion a second time, through the eye of the animator, but also, through the distillation of animation itself. Though seeing live footage revisited in animated form, be it rotoscoped 2D or motion captured 3D, we can be drawn to notice previously overlooked or mundane gestures.

What is being sought here, is the use of animation within these technologies as a means for reflection and scrutiny, in particular, the intent scrutiny of nuanced and restrained OEB (as opposed to exaggerated or deliberately over-emphasised renderings of emotional behaviour) and as such, the eye of the animator is an integral part of this process. In Chapter 3 I go into a more detailed description of the use of motion capture to analyze movement, and in chapter 4 I review how discussion and literature on rotoscoping was applied to my artifact.

2.3 Part IV: Psychology theory

There are already examples of animation theorists looking to the sciences for answers that could be constructively applied to the world of animation. Patrick Power laments the “dearth of theoretical analysis of animation compared to other art or media” (Power, 2008, p.25) and suggests “broadening and deepening the research context for animation” (Power, 2008, p. 26) by investigating such disciplines as neuroscience, psychology, anthropology and other science-based areas. Andrew Buchanan also points at other disciplines as a rich source of information and method for animators and animation theorists, particularly within the context of facial expression (Buchanan, 2007, p.75).

Thus in my efforts to connect to information relevant and specific to my own chosen subject of OEB studied through animation, I have included this section of my literature review to draw upon papers and books from the discipline of psychology, focusing upon where it touches upon the psychological term non-verbal communication, in particular, non-verbal communication involving the human face and body (as opposed to the organization of spaces and environments) to explore how psychological findings might be brought into or considered appropriate to the rendering of expression and emotion in animation.

2.3.1 Terms and definitions within psychology theory

Both Tinwell (2014) and Sloan (2011) reference back to the specific term, *non-verbal communication* (henceforth referred to as NVC) within their research. The term is drawn specifically from psychology research, especially within the context of Ekman’s work (which I will discuss later in this chapter and return to in chapter 4). Tinwell notes that “the stimuli used in my experiments have featured vocalization narration, yet tilts of the head and gesture are integral parts of NVC in social communication” (2014, p.72). She draws upon the tenets of NVC as integral to her research regarding “the implications of voluntary versus involuntary facial movements when detecting “false” expressions” (2014, p.72), in particular where her experiments deliberately disable the upper facial region of her computer generated faces (created and provided by Sloan) to provide a disjunct to the viewer when the deliberate lack of NVC appears to be misleading and even uncanny to the viewer (2014). Within the context of my own work, I am attempting to see which animation approaches might best highlight subtle

nuances that include the area covered by NVC, small and perhaps overlooked body motions, to draw attention to them to viewers, but also potentially to animators who can then weave the observation of these subtle nuances into their own work.

However, Mehrabian, in his studies of communication (touching upon body language and facial expression) prefers the term “implicit communication” (Mehrabian, 1981, p. 2). For Mehrabian, implicit communication includes the use of words, the inflexion of speech, the placement of grammar to contradict or elaborate upon communication, and the placement and design of environments to influence a viewer or participant, aspects of communication that this research will not be investigating. The populist term “body language” implies a code that might be deciphered, as if a body language could be expressed in the form of a phrasebook or dictionary, but in the terms of this research I hope to explore complexities of movement that might be explored and expressed not in textual forms but through the visual medium of animation. Since my own research encompasses spoken word within the artifact, married to animation used to heighten the non-verbal elements of the root footage, NVC might be considered a problematic and potentially misleading term, though Mehrabian’s term of “implicit communication” might be considered a more appropriate definition. The subject of NVC is interwoven into my research and will be touched upon in this chapter, but for the purposes of my own research I will be using the term observed emotional behavior (OEB), as a more holistic term around the explorative research through animation I am trying to achieve.

2.3.2 On Movement and motion

In 1973 Gunnar Johansson published his findings on a famously evocative experiment he had devised to study the perception of biological motion. Attaching flashlight bulbs to an assistant dressed in a dark suit, the motion of the assistant was filmed against a dark background in an attempt to capture motion in relation to the key joints of the human skeleton. This method was found to be unwieldy, involving trailing wires, so a second method was devised. Eerily precognizant of what would become a well used method of computerized motion capture. “Small patches of tape, (15mm diameter), which have a surface of glass-bead retroreflective material (“reflex patches”), were attached over the joints of the assistant actor ... the actor is now flooded by light from one or two searchlights ... The result is an extremely high

brightness contrast between the reflex patches and the background (and consequently a large difference in signal amplitude)” (Johansson, 1973, p. 202). This was then recorded on video to be shown to viewers. However, regardless of which method used, the reaction was always the same.

“This motion pattern has been shown in many class demonstrations as well as under more strict experimental conditions. It always evokes the same spontaneous response after the first one or two steps: this is a walking human being! This perceptual effect has been observed without exception...It might be added that when the motion is stopped, the set of elements is never interpreted as representing a human body.”

(Johansson, 1973, p.203)

Even when the number of points was reduced down to 10, simple and seemingly random points on a screen, viewers consistently picked up that the motion was of a person, *as long as motion was occurring*. Viewing the stills appeared to present only an abstract view of dots, it was the movement that brought understanding and recognition. These experiments were expanded on by the work of James Cutting and Lynn Kozlowski, who used similar techniques to see if the gait of a person might be recognizable by their own friends. While results showed that friends could not invariably recognize specific people, the fact that the minimalist dots they were viewing were *of people* was never in dispute (1977, p.355). It is curious how this early work foreshadows motion capture, and in my own research, viewing the raw points of motion capture data playing on a screen, has the same effect of recognition as soon as movement occurs.

A similar effect was found during my own research for motion captured point footage. These stills taken from my own tests, show the motion capture footage of dots that have been placed upon my own face in order to capture my facial movements as I speak.

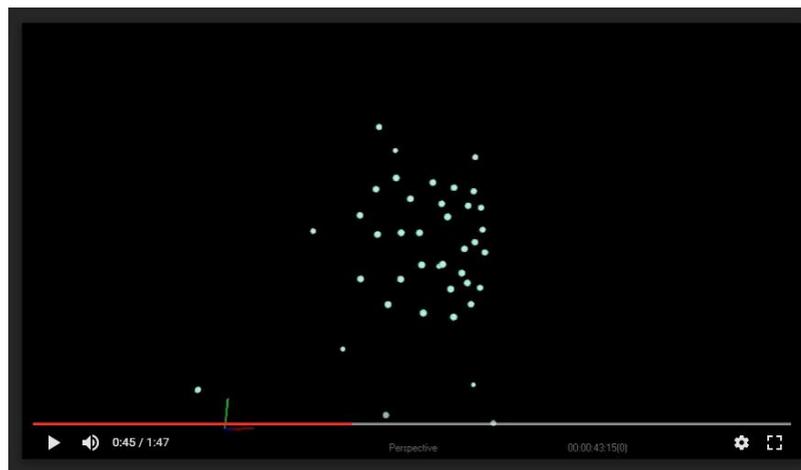
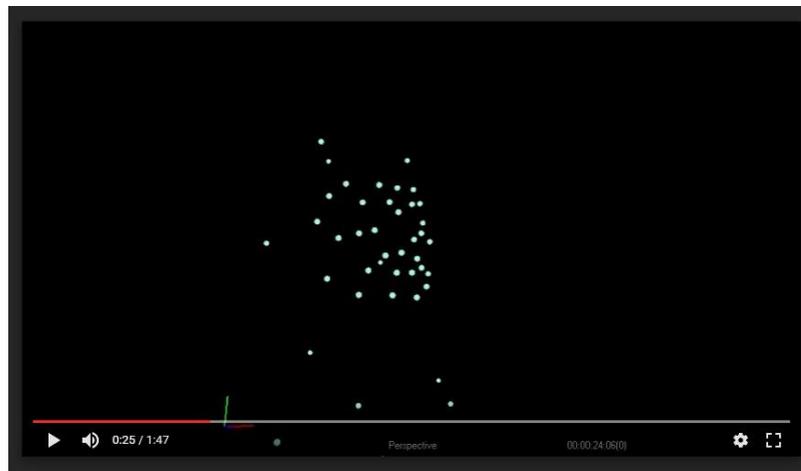
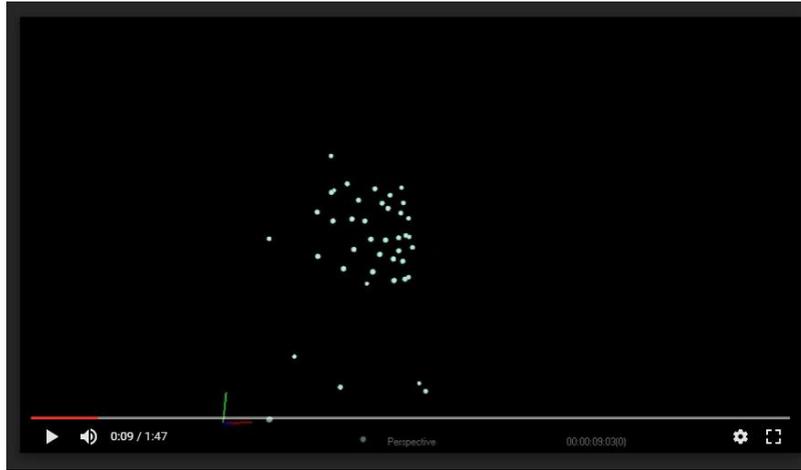


Fig 2.3: Stills from my facial motion capture test

However, it is difficult to see exactly what the dots represent, but when the footage is played, after a few seconds, the movement of the dots starts to make sense as a speaking face, in much

the same manner as Johansson's original experiment became recognizable after a few steps. The motion of these motion captured dots can be viewed at the web address below.

https://drive.google.com/file/d/0B4In3Q7aRQ_nelBDc0pCSml6bmc/edit?usp=sharing

Psychologists such as Heider and Simmel (1967) have even used animated footage as a method for articulating and conducting experiments on motion. In this case, how the motion of simple triangles and dots can appear to have agency and personality, simply from the way they move and (appear to) interact; with viewers often constructing elaborate narratives based on these simplest of designs and their movements. I will expand on their work in further detail specifically within the context of my own research in chapter 3.

2.3.3 Gesture, facial expression and emotion

As early as the 19th century, Guillaume Duchenne was using electrical probes (at the time, considered the latest available scientific technology) to stimulate the muscles of the face, photographing the results. He believed that facial expressions were indicative of a man's soul, and published his theories in 1862. Duchenne was the first to draw attention to the difference between a real smile and a faked smile.

"It is true that some persons, especially actors, have the power of simulating passions marvelously with the face and lips. By creating an imaginary situation they are able by means of this special aptitude to call up artificial emotions. Nevertheless I can show that there are certain passions which it is not given to man to simulate, and that the attentive observer is always able, for example, to detect and confound a deceitful smile."

(Duchenne, 1883, p.449)

The real smile activates the eye muscles as well as the mouth, and the term "Duchenne Smile" is now part of the lexicon of psychology to describe a genuine smile. It was the extraordinary photographs of these experiments that inspired Charles Darwin, who used the images to conduct his own qualitative experiments, showing Duchenne's photos to

“above twenty educated persons of various ages and both sexes, asking them, in each case, by what emotion or feeling the old man was supposed to be agitated; and I recorded their answers in the words in which they used”

(Darwin, 1873, p.14)

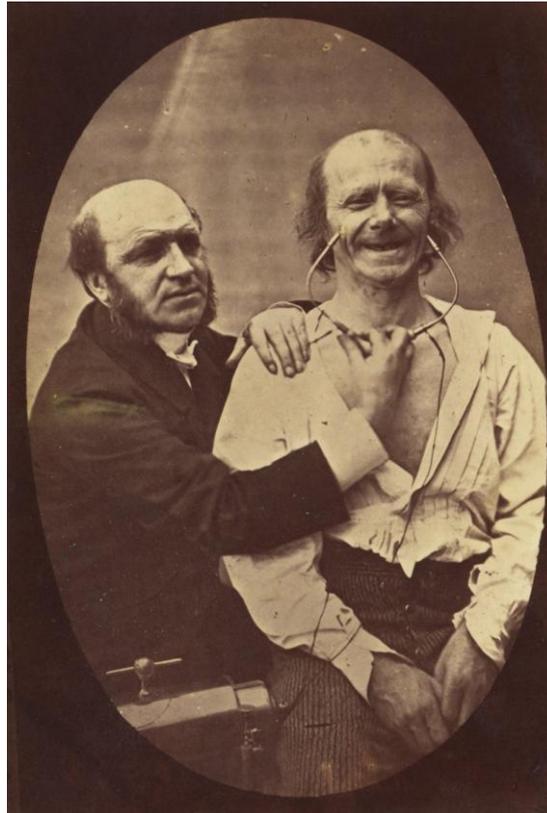


Fig 2.4: Duchenne and one of his subjects

Duchenne and Darwin raised questions as to how much of expression is innate or learned, but regarding the question, “can expressions be innate?” it is interesting to see the work of Eibl-Eibesfeldt (1973) who filmed deaf and blind children. Though these children could never have seen expressions, nor had then described, certain base expressions such as smiling, crying-distress and laughing were instantly recognizable on these children and appeared to be innate. Likewise Paul Ekman went to great lengths to find tribes in Papua New Guinea who had not been contaminated by media or prolonged contact with outsiders to test this hypothesis of innate or learned expressions, and along with Wallace Friesen posited that the base emotions of

anger, disgust, fear, happiness, sadness and surprise are universal across all human cultures. It is from these base emotions that other emotions are blended and expressed (such as blending fear and surprise to express fearful surprise (Ekman and Friesen, 1971, 2009; Russell and Fernández-Dols, 1997). This ties in with the work of animators (and cartoonists) who by the nature of their work may be called upon to express these base emotions (and the various blends of these emotions) though as animators, they may have received little formal training in deciphering expressions with the view to rendering them in a manner that can be clearly understood to anyone viewing their animations.

In the case of symbolic gestures, (discussed within the context of animation and comics in Part I) it seems clear that many symbolic gestures must be learned, often within a cultural framing before they can be understood by the viewer. Within the field of psychology, the term *emblem* is used to define a symbolic gesture (Mehrabian, 1981; Ekman and Friesen, 2009). Mehrabian defines five categories of implicit behavior that are generally in use within the psychological discipline.

1. Emblem: A symbolic gesture, often culturally linked, that can be easily understood, such as a wave of goodbye, a handshake or a shake of a fist.
2. Illustrator: Gestures that accentuate and punctuate speech, such as head nodding for emphasis, pointing “look at that girl’s hat!” (accompanied with a point or eyeflash to indicate direction).
3. Affect Display: The expression of an emotion, such as happiness, sadness, and blends of the primary effects (the base emotions of anger, disgust, fear, happiness, sadness and surprise). A blend might be a combination of anger and disgust, or being both surprised and happy at the same time.
4. Regulators: Subtle motions such as eye-contact (or lack of) nods or other indications that we all use in conversation (often without realising) to indicate turn taking within a conversation, or to encourage a speaker to continue or wrap up.
5. Adaptor: A motion connected to a basic bodily need, scratching an itch, stretching a stiff back or adjusting to a more comfortable stance.

(Mehrabian, 1981, p.4)

Already, using these definitions, the range and stimulus behind a character's movement that an animator might have to consider expands, but there are further definitions to consider. Ekman and Friesen point out that in everyday conversation and society interaction, it is not always acceptable to show certain emotions, especially negative emotions. Men are generally not allowed to cry in public (with the possible exception of when at a football match), and it is generally not considered acceptable to show rage or anger when speaking to your boss. Ekman and Friesen define these restraints as display rules (2009). *Cultural display rules* are learned within a specific culture. Ekman and Erica Rosenberg give the example of studying the faces of American and Japanese students. Both groups were shown the same video footage chosen to induce negative emotions such as disgust and anger. Both groups freely exhibited these negative emotions on their faces when they thought they were viewing the footage alone and unobserved, but when a figure of authority was introduced into the room, cultural display rules induced the Japanese students (far more than the American students) to mask their emotions, even smiling (2005). Ekman also defines *personal display rules*, which are restraints particular to an individual, often learned in childhood, or even as idiosyncratic expressions learned from the family unit. This brings us to the next set of categories, as defined by Ekman and Friesen (2009, p.140).

1. *Qualifying*: Such as smiling to take the sting out of a negative discourse. Deliberately smiling while angry can mean that you are not so very angry, whereas a smile blended into an angry expression would indicate someone enjoying their anger and would not be a qualifier. Qualifiers are usually deliberate and easy to decipher as a message.
2. *Simulating (falsifying)*: Deliberately putting on an expression to indicate an emotion, such as feigning sadness, when you have no particular care at all. Simulating occurs when no underlying emotion is acting on a person.
3. *Neutralising*: The opposite of simulating, in this case an emotion, usually a powerful one, is being felt but the person feels compelled to hide this emotion by attempting to show no emotion, like a poker face.

4. *Deintensifying*: Similar to neutralizing but not as extreme. For example, an athlete will want to show joy at winning a gold medal, but might modulate their expression so as not to be thought of as gloating over a rival.

5. *Masking*: Hiding an emotion by enacting an emotion over the top of it. Thus one might put on a show of delight on being given a revolting gift that is actually filling you with disgust (a particularly ugly jumper!)

(Ekman and Friesen, 2009, p.140)

By now, the repertoire of nonverbal indicators that an animator (in particular, a special effects animator animating a synthespian) has vastly increased, but there is one further consideration, that of the *micro expression* (Ekman, 2012). With all these display rules and variations on hiding or transmuting emotions, it seems natural that it can sometimes be difficult for an individual to always hide their true feelings. Sometimes the underlying emotion will leak out by blending into the feigned expression, a smile that is tinged with rage, a neutral expression that cannot quite conceal fear. Micro expressions are another form of emotional leakage, but far harder to detect as they tend to last less than one-fifth of a second (Ekman, 2012). Ekman and Friesen developed the Facial Action Coding System (FACS) as a method of quantifying emotions, and through the extremely detailed way in which FACS analyses video footage of expression, micro expressions are easier to detect. More detail on this subject will be discussed in chapter 4.

2.3.4 Conclusion

The discipline of psychology has thus proved to be a rich resource for my own research as animation theorist and practitioner.

The research on micro expressions in particular, throws up some intriguing and potentially disturbing connotations to animators (which I go into in greater detail in chapter 4) but in brief:

1. If micro expressions genuinely influence a viewer, then shouldn't animators, in particular, special effects animators striving for convincing realism, be animating micro expressions

into their work in order to fully express the range of expressions that might be expected from a real actor or filmed documentary footage?

2. If micro expressions genuinely influence a viewer, then “accidental” frames of incorrect expression that an animator might be adding unwittingly to their animations (perhaps through fatigue or inexperience) could be leading a viewer to read a character in ways that the animator or director had not intended.

It should be stressed that as I am not a qualified or trained psychologist, and thus my research approach remains limited within the remit of an animator approaching psychological research in the hope of adapting it to their own use, generally within a more *qualitative* rather than quantitative approach. The research I have reviewed at times challenges my understanding of NVC as an animator, but also at times reinforces my experience, and in general, opens up new avenues of thought which I believe are to the enrichment of any animator interested in animating the intricacies of OEB.

2.4 Part IV: Connected subjects beyond the scope of this research

While photorealism is a popular topic particularly within the academic side of the subject of computer generated graphics, it is not an avenue appropriate for my current research. Examples of academic discourse in photorealism include using colour and other colour correction software methods to calculate and render (still) images more photorealistic (Shim et al, 2016) as well as the use of pixel correction and warping software to realistic (still) images (Ganin et al., 2016) and the pitfalls of how a real architectural building can differ from its computer generated, albeit highly photorealistic visualization (Sommerlad, 2016, p.91). Such discussions of heightening photorealism in still images and in the rendering of architectural environments are beyond the remit of this research.

While the look of an animation, the style of rendering, and the design of the presentation does have an impact, it is not the main drive of this thesis. My artifact made no attempt to achieve the technical considerations of photorealism, such as precision of colours, pixels, shine and gloss of skin, fine hairs and pores, realistic lighting and generally using methods and details

to render the animated characters and environments real looking, instead, I opted for more stylized or overtly cartoony characters.

2.4.1 Realism

Defining realism in film studies and film-making is a contentious issue. Bazin describes it as “a total and complete representation of reality” (1967, p.20). To define the term loosely, it might be described as a quality of truth and believability in a film, through its narrative, scenes and characters, the verisimilitude of the film. A part of achieving this quality is linked to how well the characters move, the quality of their emotional behaviour, or indeed, how *convincing* their motion (Thomas and Johnston, 1981). However, this area of film studies is too vast to encompass adequately within the confines of this research, and generally spans a much broader definition than body language and facial expression, and to a certain extent, a great part of realism in film is linked to the advancement of technology. Manovich describes the history of realism in cinema as an ever growing march of technological additions, “Each new technological development... points to the viewers just how ‘un-realistic’ the previous image was and also reminds them that the present image, even though more realistic, will be superseded in future” (1997, p.7).

A second definition of *realism* as understood by animation practitioners (in particular, 3D animation practitioners, and touched upon by Manovich through the advancement of technology), is the striving to render animation effects to be indistinguishable from live action, or indeed, to create visual effects that cannot possibly be real but appear to be so. The perfect skin on a synthespian, hair that moves in accordance with gravity and physics, complex facial expressions on a photorealistic character that appear to have been acted by a flesh and blood character. The difficulties inherent in rendering human synthespians indistinguishable from real actors has been discussed, in particular, within films such as *Beowulf* (2009), or as discussed by Butler and Joschko (2007), highlighting the disparity between animated films that try to be realistic, such as *Final Fantasy: The Spirits Within* (2001) and animated films that side-step uncanny issues through stylized design such as *The Incredibles* (2004).

Darley describes realism within computer animation, referring to the 3D animated films of Pixar,

“The computer generated animation of Pixar furthers this approach, taking it to new levels of sophistication. Nowhere is this more apparent than in the degree of surface accuracy and the greatly enhanced illusion of three-dimensional space and solidity produced in their films by the computer animation itself”

(Darley, 2002, p.84)

He uses the term “simulation” in that the realism is derived not from body language or attempts to capture nuances of emotional behavior, but rather, it lies in “the extraordinary detail of lighting, colour and texture – akin to cinematography, yet different somehow, because it is just too *pristine*” (2002, p.85). Darley also discusses “Super Realism” (a mode of painting drawn from the United States in the 1960’s) describing it as involving

“the meticulous copying of a photograph... The painting process produces an intensification or exaggeration, and thereby a kind of *foregrounding* or display, of the mimetic/analogical character of the model – the photographic medium. Moreover, and just as significant, Super Realist painting involves artifice – in this case simulation through copying – of a second order”

(Darley, 2006, p.86).

However, it is important to stress that realism in this context is focused upon simulation, “A technical problem – the concrete possibility of achieving ‘photography’ by digital means – begins to take over” (Darley, 2002, p.88).

Thus while I have touched on these issues in my literature review, I need to be clear that the context of my research does not (at this time) encompass beyond OEB into the realm of computer generated photorealism, with its emphasis upon using software to render such details as light and texture upon an object. Instead I will be focusing *not* on photorealism, visual effects or how realistic or naturalistic a character *looks*, but how convincingly it *moves*, a third approach to realism as recounted by Thomas and Johnston (1981). This does not fit within the usual definition of realism in academic literature, especially within the discussion of stills and

the realism of live actors within a narrative and context. Within the animation context specifically being explored within my research, this approach would be better described as rendering a character more *convincing* and how this movement might be analyzed. A potato man might move convincingly, without having to visually and *realistically* resemble a human, and without actually acting a role within the context of a larger film or interacting with others in a narrative. Thus the full scope of *realism* within its academic or technical definition, is too large to be undertaken adequately within this research, and as such may have to be revisited in further research at a later date.

2.4.2 Puppetry

Within animation literature, the word *puppetry* takes on a more involved meaning. Brian Sibley describes the medium used by Aardman Studios as working with *articulated puppets*, and goes on to describe various works of Jan Švankmajer, *Faust* (1994), the Brothers Quay, *Street of Crocodiles* (1986) and Jiří Trnka, *The Hand* (1965) in regard to their use of constructed puppets used to create their animated films (Lord and Sibley, 2004). Paul Ward and Suzanne Buchan discuss the haptic experience of *puppet animation* in that this approach exists within two dimensions; that of on screen, but also in tangible space that can be physically touched (Ward, 2005; Buchan, 2006). In this, much of the literature is more involved with the definition of animated puppetry as stop motion, with its tactile qualities or the themes and hidden allegories of the animators' narrative. Since my research is on OEB rather than the techniques of the medium or the narrative of animated film, and that my own experience of animation as a practitioner is very limited within the field of the technicalities of stop motion, I have generally not drawn such discussions into my literary review. This large and extensive field extends beyond the scope of my current research, and thus a more in-depth study of puppetry in its original definition will have to be considered within the context of further research.

2.4.3 Other methods of conveying implicit communication in film

There are, of course, many other methods of conveying elements of implicit communication within a film or animation. These include the use of sound, editing and context (montage). One famous example of this is the Kuleshov Effect, wherein the filmmaker Lev Kuleshov conducted a

series of editing experiments in the 1910's and 1920's. The most famous of these experiments was the montage of the face of actor Mozhukin, cut with images of a coffin, a bowl of soup and a child playing. Though the image of Mozhukin's face was identical in each case, anecdotally, the audience were reported to have read different emotions in the face of Mozhukin, even praising his exemplary acting skills. Since then, various attempts have been made to recreate the experiment in a more rigorous fashion, such as the use of brain scans to highlight similarities of recognized emotion (Mobbs et al., 2006), which appeared find a connection between context and perceived emotion, but in the case of Prince and Hensley's attempt to recreate the original experiment, "For the majority in each condition, moreover, the editing made no apparent difference. In their eyes, the actor's face remained emotionless" (Prince and Hensley, 1992, p.68).

While this contradiction in results is interesting, and does hinge on the same facial expression maintained throughout, the experiments seem to be more about the use of montage and editing techniques, and how these may (or may not) influence the viewer. While an aspect of viewer response to my artifact is likely connected in part to the editing of that artifact, the main drive of my research focuses in on OEB, specifically emotional behaviour expressed through animation (which generally implies at least some limited movement). For now, this is an avenue of research (along with the specific use of music to influence emotion) which must remain beyond the scope of this research.

2.4.4 Laban theory and Laban movement analysis (LMA)

The use of Laban Theory is a topic frequently raised by questioners when I present my work at conferences and in the general discussion of my research. In response to these questions, I present a short response.

Hooks touches on Laban Theory in his book, *Acting for Animators* (Hooks, 2003) and Wells observes that "Different theories of dance may be applied to the animated form," and that Laban's theories can be "used to provide an initial vocabulary to tell a tale not available in words" (1998, p.121).

Leslie Bishko also introduces Laban Movement Analysis (LMA) as a potentially useful methodology for animation theorists, defining it as "a conceptual framework through which we

can observe, describe and interpret the intentionality of movement. It possesses one key attribute that the Animation Principles are without – the link between how people move and what their movement communicates to others” (2007, p.27).

Laban (1879 – 1958) was a dance artist interested in the theory of motion. He devised a method of recording and noting dance steps and motions themselves. Gestures, which might not necessarily be nonverbal or symbolic, (these might include such movements as are used within dance; for example, to connect the dancer in a visually pleasing way from one significant pose to the next, or in the enactment of entirely abstract dance). Thus basic shorthand is invaluable for choreographers in recording dance and motion sequences. “Laban looked upon movement as a two way language process through which the human body could communicate by giving and receiving messages. He believed an understanding of this neglected language would lead to better means of understanding people” (Newlove, 1993, p.11).

The notation focuses on using symbols to indicate direction (forward to back, left to right, high to low) weight and flow, (light to strong and free to bound), and space (flexible to direct) and time (sustained to sudden). Included in this are various “efforts” – press, flick, wring, dab, thrust, float, slash and glide. Any expression, such as “no” can be augmented by an effort, such as “no” accompanied by a wringing motion, or “no” accompanied by a dabbing motion. In this way, a sequence of dance steps and (theoretically) an animation might be transposed into a series of notations.

Laban notation might be used as a method of transposing a dance sequence onto paper, perhaps with the aim to isolate the frequency and/or pattern of various efforts within a choreographed scene. However, after investigating Laban Theory and notation, the difficulty for my own research is that Labanotation describes direction of movement, and effort of movement. It does not adequately distinguish emotion or OEB. Is a character *dabbing* tears from his eyes with his hands in sorrow or *dabbing* a puddle with his toes in childish delight? Is a character *pressing* on an object in fury, or *pressing* on an object through fatigue? Would noting the *direction* of a slumped figure (left, right, up, down, forward, back) add more to the discourse of OEB than trying to observe the *emotion* (anger, fatigue, sadness) driving the slumping, which in theory could run in any direction for any emotion. As such, Laban Theory does not appear to

be an appropriate method to pursue within the context of my own research at this time, however, it might prove valuable in future research within a slightly differing context.

2.5 Literature review conclusion

Throughout this chapter I have attempted to draw upon a wide range of literature. In part I, I explored some of the discussions made by practitioners around the subject of OEB, and how this has laid a certain base context to the artifact as a whole. In part II, I explored the more academic literature surrounding my field of research, with some of the fundamental and important literature informing the research as it sits within a more academic framework. In part III, I delved into psychological research, exploring themes and terms that might inform my work, and have directly informed the work of other academics connected to my field such as Tinwell (2014) and Sloan (2011).

This review of literature formed the basis for me to:

1. Design and implement my artifact. (Documentary premise, cut through with animation.)
2. Design characters within the artifact. (Avoidance of the uncanny valley, trying to use practitioner techniques to render expressive characters.)
3. Self reflection of the process and construction of the artifact, (The choice to explore that footage through various approaches, motion captured computer generated animation, rotoscoping and finally freeform hand drawn animation.)

In this way I hoped to test out the approaches detailed in this review, and to set them against each other for analysis and comparison.

Much of the literature in this chapter is revisited and expanded upon in the following chapters, in reference to where it informs the artifact and research more directly, and has proved invaluable in the construction of the artifact and research as a whole.

3: An introduction to the basis behind the artifact and a discussion of the first iteration of live action footage re-envisaged through Motion-captured animation

3.1 Introduction

Following Andrews (2003) inverted pyramid approach, my main research question asked.

In a comparison of 3 approaches to animation style, taken from live action footage of subtle, non-acted, non-exaggerated happy and sad emotion, which (if any) might best explore understanding and perception of animated emotional behavior for the animation practitioner?

Layered in tandem to this question, three contributory questions were asked in order to explore through practice, avenues that could tease out answers, or, perhaps, establish further questions to be explored in sequence. Within this chapter I explore the first part of this iterative process, beginning with motion capture techniques built upon a documentary style live action base. As a springboard to the exploration, I began by asking my first contributory question.

How might an exploration of motion capture animation of the body of a non-human avatar inform the reflection of a practitioner?

From this initial grounding, the *exploration through practice* of creating and using motion captured footage, my approach to this section of the artifact evolved and is detailed in this chapter.

3.2 Understanding and perception of animated emotional behaviour

“the fleeting nature of some expressions, (the changes of the features being often extremely slight); our sympathy being easily aroused when we behold any strong emotion, and our attention thus distracted; our imagination deceiving us, from knowing in a vague manner what to expect ... from these causes combined, the observation of expression is by no means

easy ... Hence it is difficult to determine, with certainty, what are the movements and features of the body, which commonly characterize certain states of the mind.”

(Darwin, 1873, p.17)

How might an animator distil and study emotion? Could animation itself be a means to unlock meaning that previous experiments have not been able to access? We try to understand OEB in our everyday lives, not always successfully. This research analyses the same moment and emotion in time across multiple animation solutions, questioning what MacGillivray (2007, p.6) calls “life quality” (a term I will discuss later in this chapter) across motion capture and into hand drawn animation.

The study of body language and facial expression has long fascinated us, and as Darwin observed, the difficulty of pairing an expression to an emotion or state of mind is fraught with difficulty. We have learned to, or innately associate certain expressions with, certain states of mind, almost like a code; a smile means happiness, a frown is anger, and animators have expanded upon this, building up a repertoire of symbolic facial and body gestures to act out what drives their characters, but perhaps sometimes at the expense of unconscious and more subtle real play of emotions to which we are exposed every day (Buchanan, 2007, p.75). As animators, we can learn a set of postures and expressions, almost by rote, piecing together an emotional scene with our alphabet of symbols almost as if spelling out a word. However, the difficulty, for better or worse, is that the viewer of an animation is perceiving emotion through the filter of the animator’s symbolic vocabulary with the result that the animator (whether consciously or unconsciously, or through struggling to complete work to deadlines) can end up playing up or playing down emotions, adding or omitting information.

With at least one notable exception of Young (2017) it remains unusual for animators, practitioners in the art of animating, to have the time in between their intensive work to delve into the theory and scientific research behind what might count for expression, and yet, with a marked push for realism, (as defined within the context of 3D animation and gaming, as discussed in Chapter 2) an interdisciplinary approach may be called for (Power, 2008, p.26).

Within my own experience, I often struggled to articulate a character convincingly. Frequently working under tight deadlines or within heavy constraints or playable cycles that

could be passed through a games engine, my own frustration at the often wooden movements of games characters was palpable, yet games animators rarely receive much coaching in animation and considerably less in the nuances of gesture. In particular, I was fascinated by the less obvious methods of expressing an emotion or state of mind, something which as a games animator, we rarely had the opportunity to address. Ask an animation student to indicate that their character is cold, and they might animate that character shivering, or even draw icicles hanging off their nose, but what do people normally do when they are cold? They rarely shiver, instead, they might pull their clothes round themselves, hunch their shoulders. Resorting to the symbol of coldness (teeth chattering, shivering) might not always be the appropriate approach (Hooks, 2003, p.4).

However, further investigation into the psychology behind gesture and expression threw up more questions than it answered. Mehrabian's research provides a favorite (mis)quotation in populist pseudo-scientific communication workshops "that 93% of human communication is nonverbal, with 38% being tone of voice, 55% body language and only 7% your actual words" (*Busting the Mehrabian Myth*, 2009). In Mehrabian's original context of inconsistent and contradictory messages, this breakdown makes sense. We have all heard people say one thing whilst from their tone of voice or posture, they clearly mean the opposite (Mehrabian, 1981, p. 76), but these percentages do not hold true for everyday communication, otherwise there would be no need to learn foreign languages or sign language. Clearly, we need words to make ourselves understood, (including gestural languages such as BSL and ASL, specifically evolved to bridge this gap in meaning when hearing the spoken word is not an option) and we attempt to interpret OEB as a bonus meaning to our communications, sometimes to read contradictory messages, but also to reinforce a message. However, the confusion deepens, with most of us, as observers, making interpretations of the facial expression and gestures of others based upon the context of the situation or even projecting our own emotions onto the other person, thus subconsciously misinterpreting meaning based on our own hopes, fears or desires. For example, thinking that you have upset a friend or colleague, when their distant OEB might be deriving from them struggling with internal aches and pains, and nothing to do with anything that you might have said. "As observers, we consider the available information and form a hypothesis ... sometimes, we accurately detect the emotion of another, and, sometimes, we project an emotion

onto the face of another. But in most cases we are between these extremes, making a reasonable guess” (Russell, 1997, p.316).

These subtleties can be at work in even the simplest of animations. Psychology professors Fritz Heider and Mary-Ann Simmel showed three groups of observers (female undergraduates in groups of 34, 36 and 44 respectively) a simple animation, and asked them to describe what they saw. Only one of the observers described the movements almost entirely in geometric terms, the rest resorted to describing the movements in terms of a narrative, assigning purpose and intention to these highly minimal moving shapes (Heider and Simmel, 1944, p.246). The animation itself is relatively basic, involving dots and triangles moving around a box, using cardboard cut-outs animated using cut-out stop-motion techniques. The dots and triangles simply move, they do not change shape, gesture, speak or otherwise exhibit any form of animated personality beyond following a path of movement. Yet they seem to have purpose and appear to be acting out a narrative (Heider, 1967).

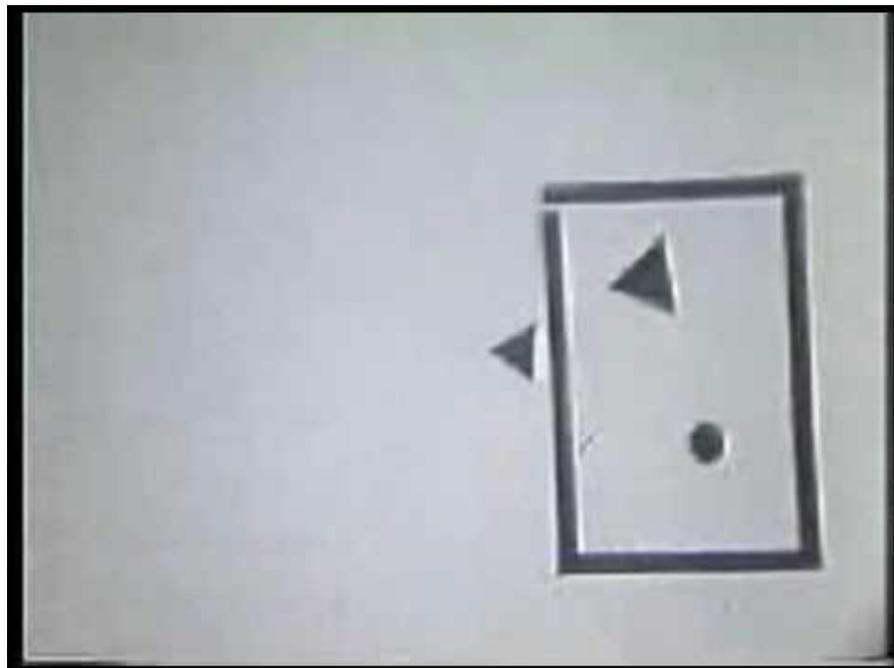


Fig 3.1: Still from the Heider Simmel Animation⁶

⁶ Heider and Simmel (1944) animation. (1944). [animation] Directed by Heider, F. and Simmel, M. [online] Available at: <https://www.youtube.com/watch?v=VTNmLt7QX8E> [Accessed 3 Mar. 2017].

I posted this animation on my personal blog, and as might be expected, the classic “love story” interpretation was construed by two of the commenters,⁷ where the circle and triangle are interpreted as a couple being bullied by the big triangle...

Commenter K: *“The little triangle is Popeye, the circle is Olive Oyl and the big triangle in the Flatland house is Bluto.”*

However, one commenter came up with an interpretation I had never read of in relation to this animation, with the big triangle (almost always interpreted as the villain of the piece) being seen as the victim.

Commenter P: *“The little triangle and circle are bullies. They come to Big Triangle’s house and torment him until he comes outside, then little triangle distracts him while circle breaks in to the house to steal shit. Big triangle catches circle in the house, and tries to trap him, but little circle comes back and they escape, then they lock Big Triangle in the house, and stand outside gloating. He gets so mad at them he smashes up his own house in an impotent rage. Oh my God, I’m so obviously from Liverpool.”*

While in some ways the comments are quite funny, this does demonstrate the problem faced by animators trying to express emotion, in that while we may try our best to understand gesture in order to express it, we might still be at the mercy of the interpretation of the viewer, based on their own context and background.

It should also be stressed that there is no right or wrong way to view this animation. It has been used in studies to detect differences in perception in adults with autism and aspergers, with the findings that a more descriptive interpretation is favoured by adults on the spectrum of autism (Castelli, Frith et al, 2002, p.1848). Autism is currently beyond the scope of this research, and placing this within the context of my own research I would prefer to simply state that interpretation is dependent on the individual, does not have to be neurotypical, and can range

⁷ Commenters, were advised that their comments might be published, and could be withdrawn should this be a problem for them.

from a florid narrative to a detailed geometric description, all of which reactions are valid for the purposes of my own research. As an animator, one hopes that a viewer will interpret one's work more or less as it was intended, (unless ambiguity was the aim) but experience reminds you that individual interpretations are inevitable and often interesting or unexpected, something which I review in Chapter 6, where I analyze individual responses to my own artifact.

3.3 Journeying towards the initial design of the artifact

In writing on her own research into facial displays Chovil noted that much psychological research in the subject revolved around stills, photos of expressions, shown to people in a lab, rather than observed in the field in motion (Chovil, 1997). My research could provide an opportunity to approach the subject of non-verbal communication and emotional behavior with an (art-based) experiment that focuses on movement and not stills, on real emotions and not manufactured ones. As I discussed in my introductory chapter, animation could be one (out of many) ways of expressing, exploring and disseminating research (Eisner, 1998, p.7). Furthermore, I was struck by MacGillivray's description of an animation experiment conducted by one of her students, Grant Garvin.

“Garvin drew a stick figure over some live footage of a man lifting and throwing a heavy weight to simulate motion capture. He then overworked the footage using animation principles such as Squash and Stretch and Follow Through.

Garvin made a series of these simple, quick-sketched animations of stickmen performing various tasks and without exception the animated version looks more 'real' than the motion capture: There is a better sense of weight and movement, and both animators and non-animators alike agree that the second version has a better 'Life Quality' than the one merely drawn over live footage.”

(MacGillivray, 2007, p.6)

This particular experiment struck a chord with me, as a 3D animator who had myself struggled to create characters containing a measure of this impression of Gillivray's notion of “Life Quality” (2007, p.6), often overworking motion capture footage with many hours of

overlaid hand animation and tweaking in the hopes of capturing a better feel in the character and its movement, with varying levels (or lack of) success. Geller (2008, p. 12) and Pollick (2009, p.71), comment on the shortcomings of motion captured animation (its lack of life quality) citing the examples of motion captured films including *Beowulf* (2007) and *Polar Express* (2004). They point out that these films, by virtue of the high reliance on motion capture footage can trigger disquiet in their viewers, who perceive motion captured characters moving on screen with an uncanny and undead quality reminiscent of Mori's (1970) discussion on the Uncanny Valley effect (as discussed in chapter 2.2.2). Originally written in regard to the creation of automation, Mori's paper has since been extrapolated into motion captured 3D animation. While motion capture technology has undoubtedly improved since 2007, with James Cameron's highly successful film *Avatar* (2009) managing to skirt around the Uncanny Valley. Though in regards to *Avatar*, a measure of this might be due to a combination of non-human characters and animators "overworking" the motion capture data by adjusting and adding animated flourishes and tweaks, much as Garvin "overworked" his stick figures based on live action footage, (by adding animation conventions such as anticipation, which does not necessarily exist in pure motion captured footage). There remains scope for developing Garvin's experiment further and in greater detail in regards to my own research into OEB within animation.

Thus having worked myself on motion captured footage in the games industry, often with considerable frustration and with a need to overwork the footage myself, I found myself questioning the nature of real and animated, the difference between straight motion capture, straight rotoscoping or when live action or motion captured footage is overworked by animators. In establishing the purpose of my artifact, I resolved to research through practice the advantages and limitations between motion capture, rotoscope and freeform animation, as a means to investigate OEB, comparing the different approaches and their impact on viewers, and beginning with motion-capture as the first stage of the artifact.

3.4 An in-depth practical-based research project

I resolved to use documentary style footage as a base for my artifact. Inspired in particular by Bob Sabiston's talking-head documentary interview based films, *Project Incognito* (1997)

Roadhead (1998) and *Snack and Drink* (1999). I wanted to make an in-depth study of two opposing emotions, *happy* and *sad*. The important thing was that these should be real, not acted emotions. The base, live action footage needed to be of a person experiencing genuine happiness, and genuine distress, not acting these emotions, or even method acting into them, actually feeling them. In this manner, unexpected (but nevertheless genuine) non-verbal gestures might be observed, and for such an approach, an informal interview style format seemed ideal. Furthermore, it was important that the emotions were real, which raised questions as to the ethics of deliberately inducing a subject to be actually distressed in order to film them. For this reason, I decided to film myself, and thus not only start with a filmed informal interview, but render the entire artifact and reflection into a personal exploratory piece, exploring and documenting not just animation and gesture but also through these mediums, analyzing potentially difficult personal subjects. The camera within documentary is often a medium for revealing what might otherwise be hidden, or even, helping to induce the interviewee into revealing the hidden, “a psychoanalytic stimulant” (Renov, 2004, p.127).

It should be stressed, that the artifact as a whole is not intended as a piece of documentary animation as such. The bones upon which the layers of animation were to be applied were based upon a documentary root, a means to an end of capturing non-acted footage, through a simple interview situation. Honess Roe suggests that animated documentary should fulfill three criteria.

- (i) has been recorded or created frame by frame;
- (ii) is about *the* world rather than *a* world wholly imagined by its creator; and
- (iii) has been presented as a documentary by its producers and/or received as a documentary by audiences, festivals or critics.

(Honess Roe, 2013, p.4)

Honess Roe stresses that the third point “is significant as it helps differentiate two aesthetically similar films that may have been motivated by different intentions by their respective producers, or received in different ways by audiences” (2013, p.4). This is particularly valid in the case of my own artifact. The concepts of documentary animation

provided an inspiration and a basis upon which I could draw and build up my work, but the final artifact was not intended as a documentary, nor presented as such. It was motivated by a different intention, albeit inspired by documentary animation as a concept.

3.5 Stage 1: Creating the core

The three animated documentary functions described by Honess Roe (2011), *mimetic substitution, non-mimetic substitution and evocation* (described in detail in chapter 2.2.1) could be considered as having significance for the journey of my artifact, with the literal, overtly self-figurative first stage of live action filmed footage capturing an aspect of the mimetic, the second, motion-captured stage of footage (outlined in this chapter) having a semi-mimetic aspect, followed by a non-mimetic substitution stage of rotocopy (outlined in chapter 4) and finally, an evocation aspect, defined in the more freeform and abstracted animation outlined in chapter 5. In summary, it might be said that this artifact was grounded in a large part as a self-figurative piece, beginning in a literal and obvious way, (mimetic) with the final artifact evolving into something more abstract and symbolic (evocative).

The experiment began with myself being filmed and simultaneously motion captured while talking about two subjects, the first topic designed to inspire happy OEB, and the second topic to inspire sad OEB. The aim was to document more closely the subtleties of OEB across these two diverse emotive states. While I might feel these emotions, enough that I might be able to animate this monologue, the filming and motion capturing of the footage would allow me to see and more deeply analyse (though animation) the OEB being expressed.



Fig 3.2: Still from the first part of live action footage, “happy” part of the interview



Fig 3.3: Still from the second part of the live action footage, “sad” part of the interview

As well as being motion-captured, I was also filmed by two cameras, one filming the full body and the other set up to film the face in close up. Initial tests were also run to try and motion capture facial expression. While the data capture points for the face are fairly unobtrusive and quickly forgotten once you start to speak, the data captured was too garbled to use so the final take was done without facial capture points. For this reason, this chapter will focus upon the motion-captured footage of the full-body only.

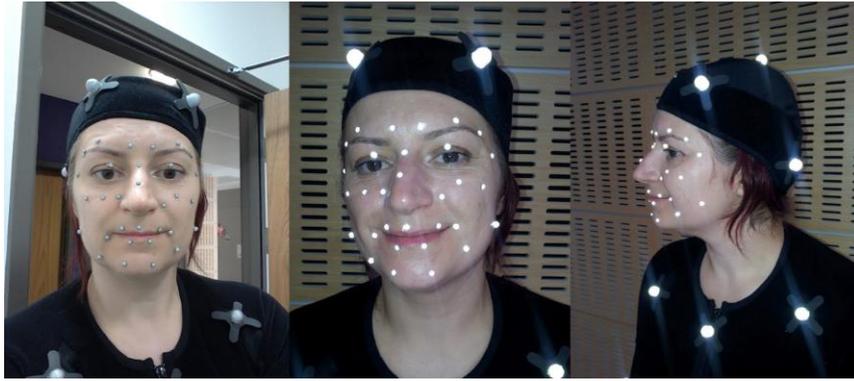


Fig 3.4: Myself wearing the data capture points for facial motion capture

3.6 Stage 2: Motion-capture

This was the first step away from the “purity” of the mimetic live action footage, while still adhering extremely closely to the actual movements as they occurred, yet brought into an animation context. I refer to this as *Semi-mimetic* as the animation is closely linked to the live action footage through the direct transliteration of the movements of the real body captured via the motion capture technology, but is not required to substitute for missing live action footage.





Fig 3.5: Stills from the motion capture footage, animated and rendered using Maya software

My initial idea for the character design for the 3D motion captured part of the artifact was to have a non-human 3D mesh.⁸ I specifically wanted to draw the viewer (and myself) away from making assumptions from or becoming distracted by a semi-realistic human mesh. However, there would be difficulties inherent in the overall approach. Much of the emotion of the piece would be heard in the voiceover. Honess Roe notes that the “non-conventional relationship between image and reality in animated documentary also places greater emphasis on the soundtrack” (2013, p.2). She points out that “The pairing of typical documentary sound, such as didactic voice-of-God narration or recordings of interviews, and animated images makes for an interesting combination that questions the way meaning is conveyed in animated documentary” (2013, p.2). The “voice of the interviewee takes on additional significance when their face and body remains hidden” (2013, p.79) forcing the viewer to pick up more cues from emotion within the voice with the resulting animation encouraging “questions regarding the status of the interviewee and of the relationship between reality and what is seen on screen” (2013, p.79). This could be problematic in the context of my piece. However, it should be stressed that the animated approach of much of the artifact would not be divorcing body and face from the voiceover.⁹ In the case of the use of motion capture, the OEB would be unchanged, digitally linked to the movements of the speaker, though the skin and build of the character might differ from the original speaker. Likewise, the rotoscoped sections would attempt to follow closely to the facial expressions of the speaker, heightening and emphasizing the motions rather than

⁸ See fig 3.10 for an illustration of what a 3D mesh looks like.

⁹ Refer to chapter 6.5 for further discussion of the role of the voice in regard to the concept of the *acousmètre* (Chion, 1999) and how de-acousmatization occurs within my artifact.

reimagining them. Chapters 6 and 7 will discuss the reaction of the practitioner researcher and a small test group of viewers to the more abstracted freeform animation part of the artifact, where the animation deliberately steps away from close “copying” of the original motions and body and facial movements of the speaker. Within this chapter, it is important to acknowledge the role that the voice plays in the perception of the motion captured animation. Honess Roe describes the powerful and important role that animation plays, how it has “long been used in non-fictional contexts to illustrate, clarify and emphasise” (2013, p.1) and it is this aspect of the role of animation that I will be focusing on through this practice as research journey. However, a more full analysis of the role of the voice (specifically) remains beyond the scope of this chapter, which focuses more upon the preliminary work of creating the first iteration of the artifact. A further discussion of the role of voice within animation, as connected to the context of the artifact as a whole can be found in chapter 6.5.

Thus, by its very nature, the motion capture data transposed into a computer generated character would be focusing on the movements of the body specifically, not facial movements, and any attempt to realize a realistic 3D human character would inevitably risk falling into the Uncanny Valley (Mori 1970) as the face would be mask-like and immobile (though the head might well move). Tinwell and Grimshaw ran experiments comparing user reactions to three types of character: realistic, stylized and extremely simplistic, with participants asked to rate on a scale of 1 to 10 of satisfaction of these characters. They concluded,

“For a user to find a video game character satisfactory within the context of a game it is not necessary for the character to have a photo-realistic human-like appearance. A character should evoke a greater sense of familiarity as opposed to eeriness unless they are intended to evoke fear such as a zombie for the horror game genre.”

(Tinwell and Grimshaw, 2009a, p.631)

Conversely, she found that over simplistic characters, such as a chatbot, were rated more unsatisfactory, or even irritating or confusing (2009), thus while my character was not intended

as an interactive or game avatar, a happy medium of stylized but not too simplistic design was required.

There would be a risk that I and my viewers would become too distracted by the mask-like, static face to the detriment of observing the body movements, and so it would be better to move down Mori's continuum into the realm of anthropomorphic or stylized characters, so my initial thought was to use a crocodile or lizard character design; reptiles having a solid skull and jaw that would not be expected or capable of facial expression, but would emphasize head movements and tilts with a long snout. It was important to avoid (if at all possible) any viewer unease derived from a character attempting to be too human in looks. Tinwell and Grimshaw note that cartoon characters, by virtue of making no attempt to "fool" the viewer into thinking they are human, are able to sidestep this *cognitive dissonance* to a certain extent (2009a).

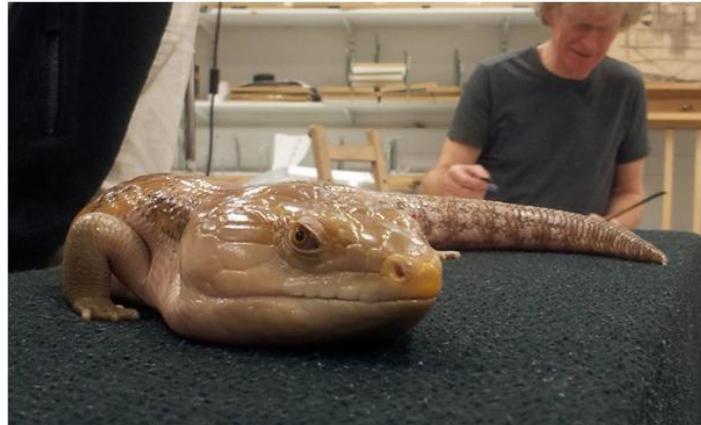


Fig 3.6: Blue-tongued skink¹⁰ (author's own photography)



Fig 3.7: Sketch study of an Argentinian Tegu (author's own artwork)

¹⁰ Animals supplied by Michael's Mobile Menagerie (Michaelsmobilemenagerie.co.uk, 2017).

I chose a T-Rex style character because the old-fashioned upright pose of the early reconstructions of these creatures would allow me to distort the character into a human-like posture in order to fit exactly with the motion captured data (modern paleontology tends to reconstruct T-Rex dinosaurs with their bodies projected forwards). It was important that the character be stylized and non-human enough to be released from the sort of highly realistic rendering that I would not have access to for this project, but also to not in any way distort the purity of the motion captured footage, for example, no bones from the motion-captured footage could be distorted, shortened or lengthened to fit the character design (such as the short arms of a genuine T-Rex creature). Rather the character had to be *distorted to fit my own proportions* so that the proportions and data of the motion captured footage remained entirely untouched and “pure” for example, at points in the footage where I reach up and touch my own face, a motion impossible for a stubby-armed realistically proportioned T-rex to achieve.¹¹



Fig 3.8: Sketch study of T-Rex character next to a photograph taken from the motion capture studio session

However, for obvious reasons the original bone structure as imported from the motion capture software did not involve tail bones (since I do not have a tail) so these had to be added. I

¹¹ It should be noted, that “bones” generated for the purposes of articulating a computer generated avatar are not necessarily exactly anatomically correct, a fossilized skeleton of a T-Rex might contain over 20 short tail bones, whereas a computer generated rig might only use 3 or 4 much longer bones to adequately simulate motion. (For more details on how the rig in this particular case was constructed, please refer to Appendix C.)

also added a jaw bone and finger bones¹² to the bones existing within the motion-captured data. In the event, due to deadline constraints, the finger bones were not hand animated, perhaps to the detriment of the completed animation.¹³

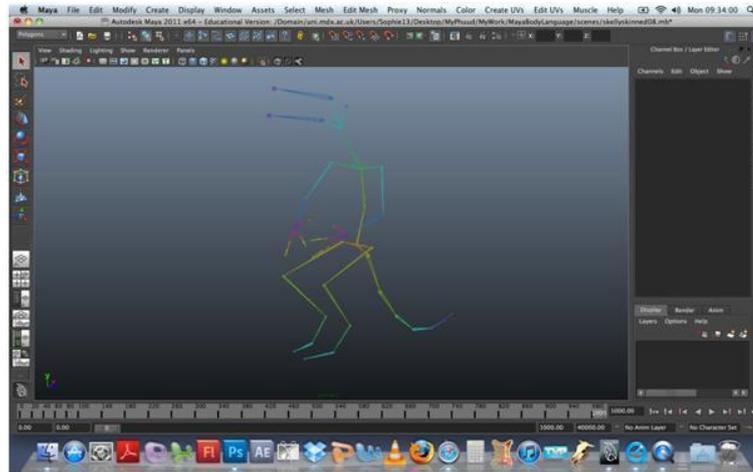


Fig 3.9: Raw motion captured data imported into Maya, with added tail, finger and jaw-bones

While I was deliberately aiming for a stylized, non-human character in order to prevent distraction from the fundamental movements and postures, I felt it was important that the character have some sort of visual personality and be engaging. Hence applying a texture, and hand animating the jaw and eyelids.¹⁴ Without the mouth moving with the speech the character felt too distracting and odd. Even simple open and closed mouth movements could help to make the character more believable as actually talking, in the manner of a sock puppet.

¹² “Parenting” is a term used in computer animation to indicate attaching one object, the “child” to the “parent.” Wherever the parent goes, the child follows, but if the child runs off, the parent does not follow. (At least, not in the context of computer animation!) Thus in computer animation terms, to (computer) animate a character picking up a cup, you attach the cup as “child” to the hand of the character, thus this hand becomes “parent” to the cup. Wherever the hand goes, the cup follows – attached to the hand. Let go, and the cup falls – but the hand remains.

¹³ Attaching these extra bones to the rig after the data had been captured (such as tail, fingers and jaw) proved to be easy enough, but they would contain no animation. However, as these were extremities, it was hoped that adding these extra bones would not impact the core motion captured movement, which would remain untouched. These new bones would follow where the existing, motion captured bones took them, through being parented to the motion-captured parts of the skeleton. However, they would have benefited from being hand animated, to look less stiff and more natural.

¹⁴ The new tail and jaw bones could be animated by hand, (for example to have the mouth open and close with the speech) without disrupting the motion captured animation on the existing bones.

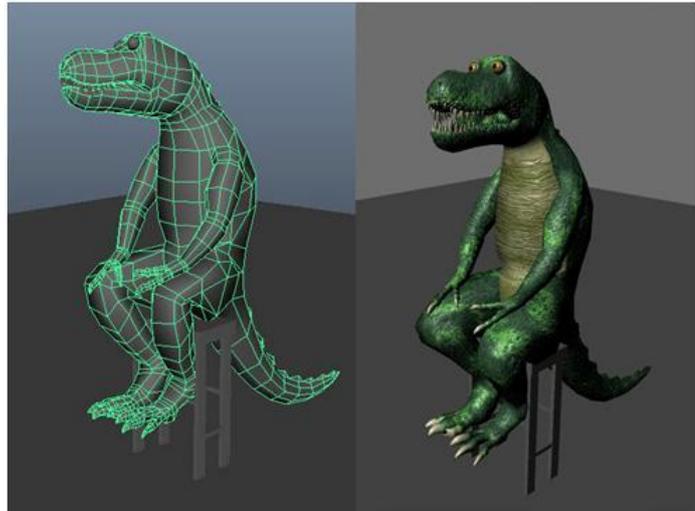


Fig 3.10: Wireframe mesh and textured version of the dinosaur character

3.8 Initial viewer reactions

Test video of textured dinosaur: Introduction, (with sound.)

https://docs.google.com/open?id=0B4In3Q7aRQ_nUndqZFVBaExBQ00

On showing this piece to J and R, two professional animators who both animate and direct their own shorts in the British animation industry, the first thing they picked up on was the *lack of movement*. In animation, one is always encouraged to emphasize the emotion with more exaggerated or expressive movements. (As discussed in chapter 2.1.2.) As one director explained, animated characters tend to be simplistic and lacking in the full range of expression of a human, so the acting has to be emphasized to compensate. It was suggested that I should have hired actors to do this piece, in particular, actors who specialize in motion capture who (so they told me) will emphasize and over-act movements, *in a way that would not be expected of live action actors*. Or to put it another way, deliberately tailoring an acting style to be appropriate to a specific subject or audience, in this case, animation.

This ties in with the discussions raised by Kennedy, who is himself also an animator and educator (2017), but who draws into this practitioner-researcher mix his experience as an actor, noting that shortfalls in the acting within animation are often overlooked or “attributed to limitations of the animated medium itself, or worse, on the assumption that animation is an

impoverished medium that doesn't require resolved or meaningful acting" (2015a, p.941). He points out that good animation reference, ideally drawn from actors is key, for while an animator must spend many hours to construct a sequence that in real time might be over in seconds, it follows that the reference material should strive to capture the authenticity of the moment, to be "*genuine and emotionally-authentic*" (2015a, p942). Kennedy recommends that rather than heaping all responsibility onto animators to reconstruct emotional behavior, animation companies should consider hiring trained actors to provide quality reference (2015b). He notes too, that acting for motion capture throws up particular concerns, such as actors inexperienced with wearing motion capture suits can end up adjusting their acting to compensate for the difficulties of wearing a suit, such as, tracking markers protruding and clashing between actors, or being accidentally dislodged, broken or stuck to the opposing actor or actors generally being distracted by the technology (2015a). He recommends giving time for actors to become accustomed to their suits before the motion capture footage is taken, and this is something that I experienced myself, in that wearing the suit was disconcerting and that a measure of lead-in time to grow used to the effect was beneficial, though in my case I did not need to worry about interaction or body contact with other actors, nor as Kennedy points out, that motion capture acting is captured in the round, and not played to a specific camera. In my case, I was seated, and talking to someone. It might be argued that the full potential of using motion capture footage would be wasted, as I would be constrained to my seat, and there is also the point that, counter to the recommendations of Kennedy, I was not an actor.

"when the reference demands an emotionally-driven performance, most animators lack acting prowess and instead rely on obvious or clichéd acting choices that lack believable emotional depth. Without a strong foundation to work from, the final animation inherits superficial acting from the video reference. While superficial acting may suffice for some caricatured performances, a greater degree of emotionally-driven animation is available to animators who are willing to create the quality of reference required to achieve it."

(Kennedy 2013, p.12)

Clearly, simply animating my artifact “out of my head” would not do, nor could I act or pretend or act myself into a situation. Thus, I had used myself for the motion capture footage as I had wanted (as far as possible) to draw upon real experiences of my own to express real (not-exaggerated) body movements, as the differences between “real” and “animated” motion is something I particularly wanted to investigate along with the possibilities of integrating more subtle and less semaphored emotion within an animation language. That my body movements might be awkward, restricted or unpolished compared to an actor, was not necessarily a bad thing, as I would be authentically awkward, restricted and unpolished. Kennedy points out that “no one method for creating animation reference will suit all animation styles or audiences. The animator must determine what the needs of the animation are and which reference style will best serve them” (2013, p.15) and that trying to think out a performance can lead to spontaneous and automatic reactions being lost, reactions and nuances that we might not be consciously aware of. For Kennedy, a way to find those details is to use trained actors who can get into the emotion and thus provide authentic reference. This measure of authenticity was also of importance to me, and thus my attempt to film myself feeling authentic emotion as a basis for my animation reference draws parallels with Kennedy’s recommendations, though my aim was to try (as much as possible) to be myself in order to capture genuine emotional behavior, and specifically not to act or be an actor.

Yet as I had made an artistic choice to depict myself as a stylized, rather than a fully realistic character, the expectation was that my acting should have been more exaggerated, a type of deliberately super-emphasized acting specifically for motion capture. These comments threw up intriguing questions. By combining a stylized design with realistic movements, would I be introducing confusion into my audience? By imposing motion capture onto stylized characters and thus losing gestural and facial information that live-action footage might have captured, would I risk thwarting expectations in the viewer? The implication was that the viewer expects an animated character to behave in a more exaggerated way, and when if they do not act as expected, the viewer might find themselves disappointed or cheated.

As J and R work with me and know me quite well, they commented that my body movements were more restrained than they might have expected of me, since they associate me with using more hand gestures when I am talking. It is possible that as this was the introduction, I might

have been acting in a more restrained manner as I slowly became accustomed to the odd situation I was in (sitting on a stool in a studio, wearing a cat suit covered in shiny balls). Indeed, on further viewing of the live action footage, I do appear to relax more and become more myself, with more expansive gestures, though as with any laboratory experiment, full natural reactions might not always be achievable. In this case, my decision to use myself as symbolic lab-rat was that I would have access to my own emotional state on this experiment, and while self-confusion and self-misinterpretation is always a danger, after completing the filming I immediately sat down and wrote out my thoughts in a self-reflection of the process I had just endured, (the full report can be found Appendix A) but in summary:

1. The situation was initially a little self-conscious, in that I had to wear odd clothes and was nervous at the prospect of revealing distressed emotions in front of people I did not know well.
2. However, the technicians and assistants retreated behind a sound-proof booth. I was unable to see them, and knowing that they could not hear me and were busy with the dry, technical aspects of the experiment was reassuring. In fact, I quickly forgot all about them.
3. My interviewer is someone I know well, and who has an easy-going manner. I am used to talking to him conversationally, thus it seemed easier to slip into a more conversational mode, particularly during the “*happy*” interlude.
4. I was aware of having some restraint while talking during the “*sad*” interlude, though this would be normal behaviour for me in general, as I am very uncomfortable showing extreme emotions (such as tears) in front of people.
5. While the situation was unnatural and strange, I was able to absorb myself in my subject, and I felt that I spoke reasonably freely and honestly. The footage gained seemed a good starting point for the full piece. Even the fact that the distressed points were “restrained” was interesting for its own sake, particularly as the experiment as a whole was all about subtle emotional cues.

I posted up my preliminary animated piece on my private blog, without any explanation as to what I was intending or expecting, only that the piece was a motion captured version of

myself. Respondents were informed that their comments might be later published as part of my research work, and given the opportunity as such to withdraw comments at any time. At this early stage, I simply wanted gut reactions from viewers. Viewers would be able to leave comments for me, but these comments were screened and viewable only to the commenter and myself, to prevent any group-think reactions or commentators reacting or being influenced by other viewer's opinions.

Eleven viewers left comments. This group contained people of both genders, four of whom know me, two of whom I have met only once or twice, two I have not physically seen for years and three who have never met me and only know me through my blog, they are all technically "friends" in that they are allowed access to my private blog and presumably like me enough to read it. So it might be expected that they might be more complementary, with those who dislike the piece perhaps preferring not to comment. (Full comments can be found in appendix D.1.)

As a preliminary, quick reaction feedback the replies were still interesting, particularly through their diversity and sometimes contradictory feedback. Some liked the jaw and thought it worked convincingly, others thought the jaw didn't work, likewise the tail.

Commenter J: *"I think it's the subtle mismatches between the monstrous dinosaur and the very human gestures – it creates a chimera-esque frission, particularly around the arm gestures and shoulders."*

Small movements become more fascinating, such as when the dinosaur settles herself down onto the stool before speaking, a natural and realistic movement that would have drawn no comment from live action footage, and yet, as an animated character, suddenly becomes heightened and more noticeable, just as Ruddell (2012) had observed in the case of *Waking Life* and *Scanner Darkly* (2001, 2006), and even provoking wonder and surprise.

3.9 Conclusion

The practice of animating my live action footage into a motion captured avatar, followed by preliminary viewing of the footage by viewers did appear to have some significance in addressing the contributory question posed for this iteration of the artifact.

How might an exploration of motion capture animation of the body of a non-human avatar inform the reflection of a practitioner?

In self-reflection of the creation of the piece in itself, I found myself swamped by the struggle to control the technology, fixing jittering noise from the motion captured data, and the intense and time consuming work of hand animating the mouth movement. Only when the motion captured animation was completed, was I able to see the human motion played out in the dinosaur and see the “*chimea-esque frisson*” of my own body movements played out.

The motion captured footage marked only the first iteration of the artifact, and threw up some intriguing feedback from viewers. In particular, the marked reaction of viewers to seemingly insignificant movements (such as a dinosaur settling onto a stool) is an interesting reaction. As discussed above, for some animators there is an expectation that motion capture footage should be exaggerated, perhaps to compensate for the lack of “life quality” that MacGillivray (2007) highlighted in her student’s experimental animations. Yet this is in contrast to Serkis’ assertion (discussed in chapter 2.1.2) that the motion capture actor should not be fearful of limiting motion, and being more subtle in acting (2003). My colleagues J and R are animators from the more traditional background of stylized 2D characters, whereas Serkis plays roles involving 3D generated characters that interact with live action filmed actors. Neither approach is incorrect, but appropriate to the genre in play. In the case of my own research, this specific iteration of the work involved a 3D generated character, stylized in design, but following as closely as possible real and subtle movements of the human body in happiness and distress. It’s possible that this halfway house approach could have resulted in some disjunction in the viewers, throwing seemingly insignificant (but nevertheless natural) movements such as settling onto a chair into sharp relief. Would this reaction be repeated in viewers of the

completed artifact, when set against the other examples of animation such as the rotoscopy, and freeform parts of the artifact?

In light of this heightening of small motions, I return to Ruddell's observations (discussed in Chapter 2.2.3) of rotoscopy as a method to coax viewers into seeing "both under and between" ordinary motions (2012, p.10), a side effect that appeared to have been brought into play when the motion captured 3D dinosaur avatar was seen to move in isolation from the rest of the completed artifact. As such, the next chapter will discuss the second iteration of the artifact, the rotoscoping of the live action, with the comparison of the two approaches and how the audiences reacted to the artifact as a whole being expounded upon in chapter 6.

4 Intimate scrutiny: Using rotoscoping to unravel the auteur-animator beneath the theory

4.1 Introduction

Within this chapter, I continue on my journey of comparing three approaches to animation style, moving on to the use of rotoscope, I began by asking my second contributory question.

How might an exploration of rotoscoped animation of the face of a human character inform the reflection of a practitioner?

From this initial grounding, the *exploration though practice* of creating and using rotoscoped footage, my approach to this section of the artifact evolved and is detailed in this chapter.

Through steps such as these we can understand how it is, that as soon as some melancholy thought passes through the brain, there occurs a just perceptible drawing down of the corners of the mouth, or a slight raising up of the inner ends of the eyebrows, or both movements combined, and immediately afterwards a slight suffusion of tears.

(Darwin, 1873, p.197)

Exactly how much and how deeply or indeed how to express emotion remains a difficulty for the animator, who must somehow draw upon an innate understanding of how OEB works in order to express it artistically, and in a way that can be recognizable to the viewer. While actors are able to tap into expression and gesture through, for example, the Stanislavsky technique of drawing on previously experienced emotions and letting them bleed naturally into the face and posture of the body (Benedetti, 2005), an animator has to register within themselves and then consciously construct such emotions (Buchanan, 2007), either by physically drawing them, or otherwise rendering them on a computer.

However, I wished to investigate the subtleties of real and genuinely felt emotion, drawn out from within myself a practitioner-researcher, aiming to explore the practical difficulties in

animating nuanced emotional behaviour without resorting to established symbols. Here I will be focusing on OEB with regard to facial expression and the personal exploration of two specific emotions - happiness and sadness - via the medium of rotoscopy.

4.2 Emotion and facial expression within psychology research

As previously noted in chapter 2.3.3, psychology researchers commonly name six to seven basic emotions which can be seen expressed on the face: happiness, surprise, fear, anger, disgust, sadness and contempt. Other emotions are considered to be blends derived from mixing the features of these primaries (Russell and Fernández-Dols 1997, Ekman and Friesen 2009). These base expressions of emotion are considered to be universal, cross-cultural expressions. Expressions can be spontaneous, genuine and truthful indications of an underlying emotion, but they can also be voluntary, put on, and not necessarily with deliberate intent to deceive or lie. We are culturally conditioned to school our emotions in order to interact within our cultural social groups, to follow specific “display rules” (Ekman and Friesen 2009), a term I have previously described in my literature review. All babies cry when hurt, but little boys are encouraged to stifle tears, masking or inhibiting a tearful expression, a cultural display rule that stretches into adulthood. Ekman goes into further detail, describing “personal display rules” (see Chapter 2.3.3) which are generally taught within the family unit and may be idiosyncratic to a particular upbringing. Approaching this from the point of view of an animator, this opens up interesting points with regard to the specific task of this thesis. It may not be enough to simply study facial expressions in order to express genuine emotion upon an animated character. To obtain a deeper level, the animator may need to consider the display rules of their character, their culture, their upbringing, and since a classic exercise is for the animator to use a mirror to study and replicate their own features, she needs to be aware of her own display rules, both cultural and personal. The point about display rules is that as they are learned at such an early age, from being immersed into a culture or upbringing. They are automatically and unconsciously made, an animator may not be aware they are expressing them when they use their own face for reference, or fail to add them into an animation through focusing on the base, unmasked and uninhibited emotion.

However, even within display rules, true emotions can leak out in the form of micro expressions (defined in chapter 3.3.2). While facial expressions can last for several seconds (very long lasting expressions tend to be more voluntary,) micro expressions can be extremely fleeting, a quarter of a second to flash across a face or even less. Thus when you feel angry, you might be also aware (due to display rules) that showing your anger is inappropriate. You might try and hide your anger, clamping down on the expression into a more neutral pose, or switching to a different expression (masking). In that small moment between feeling emotion and realizing you cannot show it, you may have flashed a micro expression of that emotion (Ekman and Friesen 2009). Again, this has interesting implications for an animator. Should micro expressions be worked into animations? And if they were, being so short lived and easily missed by a viewer, would there be any point to adding them in? What proportion of viewers would pick up on an animated micro expression, and how might that change and split the perception of viewers between those sensing (albeit unconsciously) an emotion that other viewers would miss? Are micro expressions too slight and swift to be adequately motion captured? Conversely, could sloppy animation that drops incongruous expressions between frames be influencing the viewer of the animation in ways the animator had not intended? Such questions are beyond the scope of this research, but I have taken this possibility into account within my own work. Specifically, in the rotoscoping of my own face (described below) where I took care to follow the lines and expressions of my face as closely as possible, (in effect, drawing 12 faces per second) being aware that any sloppy rendering of even a single frame might distort the viewers comprehension by inserting a fake micro expression. Further research (at a later date) might be to deliberately insert hand drawn micro expressions to test the perception of viewers. This is an interesting avenue which will have to wait.

4.3 How to approach the analysis of facial expressions

Early research into facial expressions involved taking photographs of subjects in emotional situations (seeing the heads being twisted off rats among other things) followed by the photographs being shown to observers for interpretation (Landis, 1924, 1929). Taking into account the way that emotions can change and play across the face, blending and changing swiftly, not to mention micro expressions, the use of still imagery could only show a partial and

incomplete snapshot of what was occurring. Later research made use of video footage, showing video clips of various emotion-inducing footage, while also filming the subjects as they watched this footage. To minimize any possibility of playing up to being filmed, subjects would be filmed secretly, and only informed of this filming after the event, at which point they were given the option to withdraw consent and have the footage destroyed (Rosenberg and Ekman 2005). Studying the footage required a feasible methodology, for which Ekman and Friesen's Facial Action Coding System (FACS) was developed (Ekman and Friesen 1978).

“FACS is based on the anatomy of the human face, and codes expressions in terms of component movements called ‘action units’ (AUs). Ekman and Friesen defined 46 AUs to describe each independent movement of the face. FACS measures all visible facial muscle movements, including head and eye movements, and not just those presumed to be related to emotion. When learning FACS, a coder is trained to identify the characteristic pattern of bulges, wrinkles, and movements for each facial AU.”

(Bartlett et al. 2005, p.393)

While FACS is certainly an exhaustive (in more ways than one) way of analyzing facial data, and the process is time consuming. Video footage must be analyzed by people who have undertaken about 100 hours of training in the FACS coding process, and who have furthermore been tested for reliability. One minute of video can take more than two hours to analyze, and furthermore, to be rigorous, at least two trained FACS coders should comb over the same footage in order to compare results. Efforts have been made to computerize this process, however Ekman's website still recommends human training in order to get the best results. While undeniably a useful quantitative tool, and possibly one I could learn much from, I felt that my own research might benefit from exploring a more arts-based, (though in some ways no less arduous) qualitative approach as a way to answer one of my own research questions, on how animation practice might unlock further insights, possibly even as a methodology in its own right.

4.4 Self-documentary and rotoscoping as an analytical and self-reflective tool

As an animator and a practitioner, I hoped to find a way to dig deeper, to unravel more subtle gestures, and perhaps see further into contradictory or hidden expressions. Taking live action documentary footage, and re-envisioning it through the medium of animation could be considered a way of removing the footage from its original context and meaning, perhaps on the surface watering it down, but also potentially raising to the surface details that were hitherto unseen, in an approach to observing gesture uniquely accessible through animation. Applying the technique of rotoscoping in particular has an unusual effect, as observed by Ruddell.

“In such films as *Waking Life* and *A Scanner Darkly* where, as we will see, the visuals are disrupted and ‘heightened’, gestures become markedly more noticeable and skewed. Through overlaying the actors gestures with animation, movement in the films is energized and literally marked out.”

(Ruddell, 2012, p.9)

In these films, Ruddell notes how gesture and expression can become distorted through the Rotoshop process.¹⁵ Saviston developed and refined this software in the course of making his own films such as *Roadhead* (1998). This technique has the potential to open up new, albeit potentially strange and stylized visions and interpretations of gesture and facial expressions, drawn heavily (and often quite literally over) live action documentary footage. When Beckman questions Kota Ezawa on his animated documentary, *The Simpson Verdict* (2002), he responds on the paradox of stylizing characters over footage, in effect both disembodimenting the characters from their original live footage but at the same time “distilling information” to the point where it becomes “more vibrant and more visceral” (Beckman, 2011, p.267).

This can engender an intensity and idiosyncratic vision, accessible through animation as a method of analyzing and interpreting (through a highly visual medium) gesture and expression. The work of Bob Sabiston provided me with inspiration, notably, his “talking heads” film *Roadhead* (1998), where he interviewed various people from Austin, Texas. An early example of

¹⁵ Rotoshop being a graphics editing program developed by Bob Saviston based on a method of interpolated rotoscoping.

Sabiston's Rotoshop software, the animation bears the touch of the many animators who worked over each interview, influencing and "tainting" the live action footage (through the interpretation of each animator) while at the same time inextricably linked to it. Or as described by Honess Roe, the resulting images were "doubly indexed, pointing to the presence of the interviewee in front of the camera, and the presence of the artist in the process of translating the video language to animation" (2012, p.11).

At a basic level, rotoscoping involves tracing over live action, however, the level of stylization and abstraction can vary according to the artist involved. By rotoscoping from my own film footage, I hoped to stylize and hone down the expressions and emotions, while still keeping closely to the actual movements of my original performance. It is in some ways a halfway house between motion capture and free-form animation, a "non-mimetic substitution" artistically preplacing real-footage with animation, while trying to stay "true" to the original filmed footage (Honess Roe, 2011, p.225).

By applying rotoscoping techniques to my own footage, I would be combing over that footage frame by frame, much as FACS trained technicians must comb over footage frame by frame. I have no FACS training, though I do have some experience in drawing and animating. There are however, problems inherent in creating the live action filmed footage in the first place. In situations such as this it is always going to be difficult to engineer a setup where the subject can feel as natural as possible. Such difficulties, or contamination, have been raised as issues for consideration in facial study research (Ekman, Friesen and Simons, 2005), where it is also an issue that display rules may come into play, in that a person may temper or mask their emotions (especially negative emotions) when in the presence of others. In chapter 3.8 I list some of the problems inherent in my own filmed footage: self-consciousness, the strangeness of the situation, and how I addressed them. However, OEB that showed these traits, as well as my own display rules would be no less interesting or useful to the piece as a whole.



Fig 4.1: In the studio just before filming the live footage

The motion capture data was imported into Maya software to provide the animation for my 3D avatar (see chapter 3) and was not suitable for informing the rotoscoped section of the artifact. Instead, the filmed footage of the camera set up to film my face was watched and reviewed, in order to select two clips; one from the happy part of the interview and one from the sad part. The happiness clip was of 1 minute and 20 seconds in duration, while the sadness clip came to 1 minute and 30 seconds duration. These clips were selected as good examples of the emotions involved and which would read well when viewed within their short durations. While one minute of video footage can take around 2 hours for FACS trained coders to analyze, I can rotoscope, roughly 200 - 250 frames in “seconds”¹⁶ per day. This works out to about 16 seconds to 20 seconds length (if I work through the evening) per day or roughly a week (working intensively) for each animation.

I imported the live action footage into Flash and hand drew every other frame using a wacom pen. It should be stressed that rotoscoping is not as “easy” an option as it might appear to the layman. It is not simply an exercise in “tracing” out the film footage. You find yourself making judgment calls on which lines to trace, and in what style. Each frame needs to be visually appraised, and sketched. The personality of the artist and their own stylistic approach and way of seeing and interpreting the visuals before them is difficult to avoid. (See chapter 2.2.3.)

¹⁶ Here the term “seconds” is used in the *animation definition*, not the measure of time, meaning that I draw *every other frame*, or every *second* frame.

As such, as I worked I felt that it would be very difficult not to inject my own style into the piece, though I tried as much as my artistic skill could manage to stay close to the expressions portrayed in each frame. However, even that is a stylistic choice (or restriction born of skill level.) My own background is in 3D computer animation rather than traditional 2D techniques, but I also have a remoter background in comic-book illustration, where the thickness of a brushstroke is used for emphasis (the thicker the line, the more emphasis you are trying to make on a part of an image.) I was unprepared by quite how much I found myself studying each frame of my face, trying to capture the expressions as accurately (albeit stylistically) as possible. I found myself trying to use the thickness of line as much as possible as a medium for bringing out some elements while softening others.

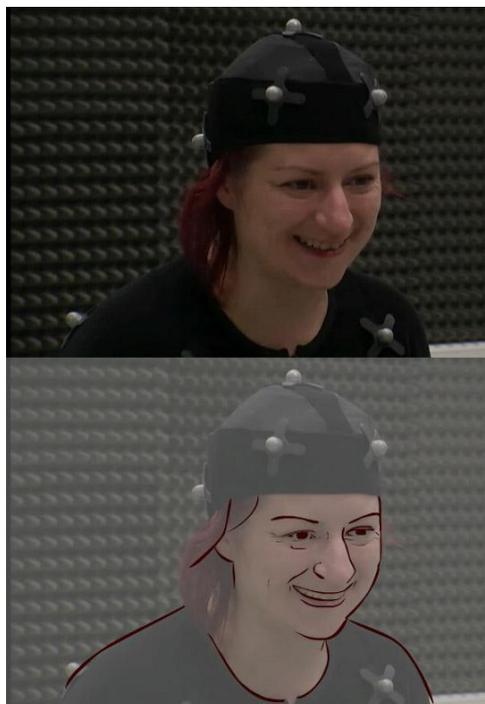


Fig 4.2: Example showing live action still with its corresponding rotoscoped still, "Happy" clip

Another effect was that as I worked, I subconsciously pulled my face into the same shape and emotion I was seeing on screen. Partly this is a reflex action not uncommon with animators and illustrators to help them express the emotion they are trying to recreate artistically, but it could also be partly a mirroring effect, where two people in conversation will mirror their expressions to help establish rapport (Moore, Gorodnitsky and Pineda, 2012, p.309). While working on the “*happy*” sequence, I felt upbeat and found myself repeatedly mimicking the happy expressions I was seeing. However, when I worked on the “*sad*” and “*distressed*” sequence, I found myself pulling the same unhappy faces, and found myself absorbing some of the unhappy mood I had felt on the initial filming. Since this sequence took many days to complete, this made for an uncomfortable few days. Often, the act of having to study my own face, particularly in the sequences where I was fighting back tears, would make me mimic that face and I would start to feel tearful in response. It is unclear if part of this effect was due to having to see my own face on screen, but it was noticeable that seeing the unhappy expressions did remind me of the circumstances involved and lowered my mood considerably. However, the act of mimicking an expression, as closely as possible, might also have a side effect of inducing an emotional response to match that expression.

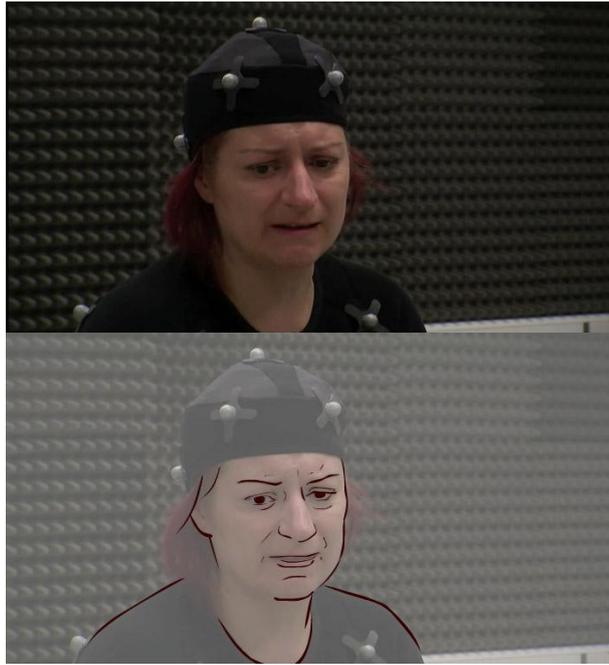


Fig 4.3: Example showing live action still with its corresponding rotoscoped still, “Sad” clip

4.5 On viewing the completed rotoscoped animations

I reviewed the animations, and as with previous comments provided for the motion captured footage I also put them on my blog for a quick, initial reaction.¹⁷ Fourteen people responded and left comments, though two of the commenters could not get the animations to work on their computer and responded to let me know there was a viewing problem. (Full comments can be read in appendix D.2.)

For myself, I noticed two “errors” or possible problems. The first being that in rotoscoping the first sequence I appear to not move my mouth very much at all. This may be the way I am, in that I do speak with a very closed mouth style, but the rotoscoping over-emphasized this. In the

¹⁷ Commenters, as before, were advised that their comments might be published, and could be withdrawn, and also as before, comments were screened.

second piece, I made a point of tracing the mouth slightly more generously, and this appeared to have a better result, three commenters complained that the “lip-synch was off” for the first animation, but fine for the second (though one of the three added that this seemed to be an artifact of the rotoscoping rather than actually being out of synch.)

The second “error” is one that I noticed acutely while rotoscoping the individual frames but could not see on the animations. While drawing and viewing the footage as stills, I could often make out a crookedness, especially in the mouth area. This is a remnant of facial palsy that I had in 2005. The left side of my face became completely paralyzed. After some months treatment the paralysis wore off, though not completely. This is generally not noticeable when my face is mobile (for instance when talking to someone) and I am assured that it is not visible to onlookers. However, it is noticeable on certain photographs, and was noticeable when working on the footage as stills. Since this is a personal reflection of an individual (warts and all) I do not see this as a problem, but it bears mentioning, as permanent facial features should be measured and noted in case of any distortion to the data (Hager and Ekman, 2005, p.42). The crookedness is not noticeable in the animations, but could be mis-read as a micro-expression, for instance, were the footage to be run through FACS testing, as crookedness of expression can be interpreted as an indicator of deceit (whereas in this case, it was a residue of paralysis.)

All the commenters could clearly distinguish the two emotions, though as Ekman points out, the auditory signals are very powerful in influencing a viewer. He names three sources of information, the actual words, the tone of voice, and the rapidity of the speech (Ekman and Friesen, 2009), all of which were clear markers in both pieces. Interestingly, two commenters watched the animations without sound first. Of these two, one thought that the “*happy*” animation was “sad and serious” for the first 48 seconds, before realizing it was a happy scene. The other detected no such emotion of sadness and seriousness in the “*happy*” sequence, though the head motions of the “*happy*” animation made them feel seasick.

Two of the commenters watched without sound after seeing the animations with sound, and found it hard to note any difference in the level of emotion seen.

Two commenters found the second “*sad*” animation “difficult to watch” due to the level of sadness portrayed, though these two both know me personally and would not expect to see such emotion from me normally.

4.6 Conclusion

“Rotoshop films are not merely a computer-generated product, they not only bear the trace of the original filmed material, but also the imprint of the animator’s hand. These films, then, are doubly indexed, pointing to the presence of the interviewee in front of the camera, and the presence of the artist in the process of translating the video language to animation. This indexicality, however, as with all indexical signs, emphasizes the absence of the original.”

(Honesty Roe, 2012, p.35)

By having the interviewee as animator, I hoped to explore deeper links between the artist and the subject, and the depth of the emotion within. Most rotoscoped films, for example, Sabiston’s *Roadhead* film (1998), (technically rotoshopped rather than rotoscoped though the underlying principle is the same) involve a separate interviewee (or actor, for non-documentary style animations) to animator. The animator, or several animators, are given footage upon which they imprint their own artistic take. The results, in *Roadhead* in particular, are quite fascinating and varied, with the animator presumably reacting partly from their own interpretation of the footage they are seeing and hearing, and partly from their own style and artistic approach. However, they do not speak to the interviewee, they do not discuss with them their inner thoughts. Rather, they interpret from the footage, at a distance. Honesty Roe mentions the double-edged sword of any animated documentary and of (in this case) rotoscoping in particular. In documentary, we judge not just from the spoken testimony, but the tone of voice and the visuals of the speaker, the tilt in their bodies, the expressions on their faces. While rotoscoping can highlight and intensify lines and gestures, often uncannily, it can omit, distort or misdirect a viewer, masking it. Ehrlich elaborates on the masking nature of animated documentaries; that the stylization of animation can conceal as well as expose, casting new perspectives as well as distancing them (Ehrlich, 2011, p.5). Wells notes that animated documentary has a place as a different medium that helps “draw the viewers’ attention to

significant, and sometimes unnoticed aspects of the character” (1998, P 28). While Ward points to animation as an “intensified route” to understanding, though the subjective eye of the animator (2005, p.91).

In the creation of these rotoscoped sequences, on a personal level as a practitioner, I did feel that I was being trained (through the repetitive nature of tracing out approximately twelve images for every second of footage) to pick up on key lines and distinctions of expressions. Such things as the crinkling at the corner of the eyes, and between the eyes, such as I had not really paid much attention to before, now became greatly heightened. By drawing these lines, I was bringing them into focus, certainly for myself and possibly for viewers. In the final presentation of the finished artifact, it was the rotoscoped sections that appeared to make people concentrate and notice emotion (see chapter 6 for the full results of the final artifact viewing). It might be interesting to see how a FACS coding might interpret the footage, being a more scientific, quantitative approach, whereas the method of analyzing footage frame by frame with rotoscoping and the interpretation of an animator’s art would hint at a specifically artistic, qualitative approach.

It is this exposure that fascinates me, likewise the possibility of loss of information, and how this might affect the viewer. By making myself the subject, in effect, I become the primary viewer, closely interconnected to the subject matter of the footage as well as seeing it through strange and distorted renditions: a motion-captured 3D avatar, as well as stylized rotoscoping. It is perhaps no coincidence that I deliberately chose to analyze a memory that would cause me some distress. I am not by nature a person given to exposing difficult emotions such as sadness and distress to other people, and yet exorcising these difficult emotions through animation seems more palatable, more easily opened up to scrutiny, and potentially a way of exploring and coming to terms with difficult concepts, and of self-reflecting through the act of animating. My particular approach works on two levels.

1. That using animation to re-interpret live action footage both in this iteration of the artifact through rotoscoping, but also through 3D motion captured avatars (as discussed in chapter 3) can be a method by which viewers are drawn to look upon the footage in a new light,

transposed through the interpretation of the animator. Seeing details that would be previously overlooked (the dinosaur settling into the chair, or the particular crinkles around the eyes heightened during rotoscoping by the linework of the animator).

2. That for the animator herself, the act of animating can be illuminating, by forcing them to study facial expressions closely while rotoscoping, not just by drawing expressions, but by physically mirroring the expression of their subject as they work, and that this potency can be compounded if they are using themselves as a subject, as an autoethnographic and self-reflective study.

On a personal level, and in particular reference to my research question of *how might an exploration of rotoscoped animation of the face of a human character inform the reflection of a practitioner*, I noted that the prolonged act of rotoscoping, and in particular, a measure of rotoscoping that deliberately focused on attempting to preserve as closely as possible, every line and nuance of facial expression, appeared to have helped me perceive small expressions in a manner I had been oblivious to before.

This experience proved to be of practical use when I was caring for my father in his final week of terminal illness. When he no longer could speak or open his eyes, it was these fine lines around and between the eyes that became of great importance. My summer of spending eight hours a day, seven days per week trying to notice and draw these fine lines in rotoscope took on a real life significance, helping me to discern them and interpret my father's emotions, in particular, pain and anxiety. Rotoscoping my own facial expressions helped me concentrate on picking up small cues of the face (in order to draw them), a repetitive process that helped drill this observation into reading small cues from my father's facial expressions. To a lesser extent (but also noticeable at the time), I felt I was more aware of body posture and tension. My father became too ill to sit up and was prone in bed, but the smaller postures were noticeable, and an ability to notice these postures may have come from the many hours and indeed days I had spent combing over the limited body posture of my motion capture avatar. These tiny cues were imperceptible to my mother, though she had lived with my father for 50 years, (I had left home 25 years previously) which lead me to wonder if my perception of these cues was based on my studies rather than simple familiarity.

This in turn lead me to wonder if the act of rotoscoping, when applied in a particularly narrow context of studying subtle nuanced expressions (as opposed to exaggerated and clearly defined emotional behavior) might have a positive impact on other animators, helping them to heighten their awareness and observational skills in small nuanced expressions. In chapter 6, I discuss how I tested this possibility.

5 Evocative Emotion: The use of free-form animation to express emotion

5.1 Introduction

Within this chapter, I continue on my exploration of comparing three approaches to animation style, moving on to the use of hand drawn, “freeform” animation, I began by asking my third contributory question.

How might an exploration of hand drawn animation of a simplified cartoon character inform the reflection of a practitioner?

In the previous two chapters, the choice and rendering of the animation adhered strictly to the filmed footage. The movements, gestures, and in the case of the rotoscoping, even the slightest muscle twitches were reproduced as faithfully as possible to the original footage in order to highlight the OEB. However, this chapter departs from such close rendering to the original filmed footage. The intention of this chapter is to compare different approaches in animation with a view to:

1. Take what the practitioner-researcher has learned about OEB from the previous two iterations and explore how these iterations inform the freeform depictions.
2. Explore how the contrast in approach can highlight the advantages and shortcomings of the previous two approaches.

In chapter 2, I reviewed literature of animation practitioners, and how they have grappled with the use of exaggeration and symbolism (Thomas and Johnson, 1981; Williams, 2001), and how animators strive to render “bigger and bolder” than real life (Lord and Sibley, 2004). The animator creates a world, replete with its own inherent logic and language. In this phase of the artifact I wished to test and apply what I had observed into a more conventional animated setting, how OEB might be integrated into a broader animated world, with its metaphors and transformations. OEB cannot stand in isolation, and this final animated iteration needed to be

explored to shed light on how a practitioner-researcher might apply in particular, the more subtle nuances previously observed.

As I depart from the stricter observation of emotional behaviour and into a world where the inner, unseen workings of the animator are allowed to be expressed, so too do I enter into an aspect of autoethnography, and this chapter discusses this exploration and how it might weave back into the body of this research as a whole.

5.2 Exploring 2D ground as a 3D practitioner-researcher

Inasmuch as my artifact is based on a self-reflective performance piece, narrating to an audience a specific, albeit disjointed story, it could be described as falling partly within the remit of a narrative researcher. Chase describes narrative researchers as people that,

“develop meaning out of, and some sense of order in, the material they studied; they develop their own voice(s) as they construct others’ voices and realities; they narrate ‘results’ in ways that are both enabled and constrained by the social resources and circumstances embedded in their disciplines, cultures and historical moments; and they write or perform their work for particular audiences.”

(Chase, 2005, p. 657)

However, the words spoken within my artifact, and the narrative they imply, are themselves secondary to the purpose of the artifact. Strictly speaking, the complete artifact is not intended as a performance piece. Rather, the spoken and filmed component form the basis up on which the rest of the artifact is constructed, the filmed bones upon which the animated flesh is applied. Initially, the motion captured footage was overlaid onto the filmed footage base. Then in the second phase, shorter elements were selected for rotoscoping. In the final phase discussed here, I enter new ground, the final leg of my journey. Leaving behind the familiar crutch of 3D animation, via the exploration of 2D drawn rotoscoping, I try to turn my hand to fully freeform animation. The spoken words are now used to literally draw out my feelings and emotion, the tension between the familiar and perhaps stiffer 3D animation, constrained to the recorded motion of its recorded data, now set free and unfettered by computer generated strictures. This

is not to say that the tone of voice throughout the artifact is not an important part of the piece, but at all times, the visuals focus on a figure, a de-acousmatized subject that draws the viewer to focus on the visuals while the voice becomes de-mystified (Chion, 1999). For a full discussion of how the role of the voice in my artifact was displaced by its focus on a fully embodied figure refer to chapter 6.5.)

This part of the artifact, unlike the motion captured or rotoscoped sections, touches briefly into an autoethnographical exploration. This had not been the original intention of the research, which had begun more as a comparison of different animated approaches, but more of an unexpected by-product that emerged during the act of animating this section only. Andrews' (2003) inverted pyramid of exploratory research comes into play, with the meaning of the artifact teased out within the process of the work, or to recap from Young's interview description (described in chapter 1.6) "the making is incredibly important."

Referring to Young's own research and her use of animation as an exploratory tool, in her screening and presentation at the 2nd Animated Documentary Symposium at the Royal College of Art (2017) she describes autoethnographical animation as "animation that is ethnographic study of one's own personal experiences" and that animated autoethnography can be used to explore trauma related emotions whilst avoiding indexical representations of the trauma itself ... [which can be] vicariously traumatising for other people or retraumatizing for trauma survivors" (2017). My own free-form animation touches upon trauma within the second "sad" sequence, and touches too upon an element of autoethnographical reflection, which had not been intended in the initial design of the piece, but rather, emerged spontaneously during the course of the making of the animation. Within this aspect of the artifact, I was free to depart from the exacting requirements of motion capture or the careful study of facial lines within the rotoscoping, and to take a more evocative animated approach. Since hand drawn 2D animation is a practice I have little experience with, the potential results and value of this final approach were more opaque to me, and as such, needed to be addressed through practice as an important final step of comparison of the approaches.

Evocative animation, is defined by Honness Roe (2011) as using animation in a freer, more abstract way to express concepts and emotions that might be otherwise difficult to express purely through live action, to avoid indexical representations. Thus the third iteration of my

artifact was designed to be hand-drawn (on computer, using TV paint, using a stylus pen) and to be more purely an evocative piece and a culmination of what had been learned and observed in the previous iterations. The intention was to allow the work to deviate from the original footage, with animated flights of fantasy illustrating scenes from my trip to India, or my internal turmoil on seeing my father in hospital after his operation. To evoke the feel of the emotion within the piece rather than interpret it literally.

Hosea touches on the need to bring practice-based research into animation theory, and argues that the act of hand drawing animation is in itself a form of performance, performed over time and interconnected to the passage of time as the animator strives to turn static art into moving images played across time.

“The hand of the animator creates the animator herself. I am animator and animated; subject and object; drawing myself through the act of drawing and animating myself through the act of animation... Character animators perform by proxy through their work to represent fictional beings in space and time, but drawing itself is an activity that takes place in space over time. In the act of drawing, the gestures and actions of the artist are recorded by the residue of media that is left behind. Animation of all kinds can be seen as a record of a performance, which the animator has created, and as a performative act.”

(Hosea, 2010, p.365)

This was the final “animated” stage of my artifact (not including the final editing, which in itself is a complicated art form that can, of course, influence a viewer) and as such the aim was to “hand-animate” a section of the recorded interview, to depart from the animation-crunching aspect of motion captured footage or carefully traced rotoscoping, into something closer to my own *performative act*, and here I summarize and clarify particular aspects of the animated practice journey I took that were of particular relevance in informing my approach to the practical element of animating this final iteration.

1. Transposing the motion captured data into a dinosaur synthespian (computer-generated actor or avatar) required me to study the entire interview through the lens of untouched motion captured data. This was undoubtedly a strange thing to view of oneself, and this

revisualising did bring to my notice my own repetitious idioms, such as the way I would punctuate my dialogue regularly with the words “I have to say.”

2. The rotoscoped animation required time-consuming and intimate study of my own face and its expressions, frame by frame. As I worked, I found that the number of drawings I needed to draw were dependant on how slowly my expressions changed. Thus for the “*Sad*” rotoscoped section far fewer drawings per second were required. I became hyperaware of my pausing and slowing down. This was an interesting point that I resolved to work into my freeform animation, with an emphasis on stillness (fewer drawn frames) to slow down the sad freeform animation in the hope that stillness could be interpreted with sadness.

It was important to me that the freeform stage of the animation should be created (or performed) last, having built upon previous observations and animation “making” to step away from the filmed footage, and animate to the spoken pseudo-narrative in a free and fluid way based upon what I had absorbed in the many hours spent analysing and animating the previous iterations. In this, I hoped to (literally) draw animations that would be far more self-reflective than the two previous iterations. Indeed, as Hosea states of her own work, to be both animator and animated.

I had used Flash software to draw out (through a stylus) the rotoscoped sections, in which I was able to make some use of line thickness as I have discussed in the previous chapter (a technique not generally associated with Flash-based animations.) However, I wished to experiment with a different artistic approach for my final animation, and chose to use TV Paint software (a software designed for 2D animators hoping for a more painterly effect) to “hand draw” my freeform animation in a softer, less rigid manner.

The intention was to be more fluid than the usual animations I have created throughout my time in the games industry, hence the deliberate labelling of this stage of my artifact as “freeform animation.” As a games animator, the form of animation rendering that I was used to, (and perhaps felt most at ease with through practice) was invariably 3D, structured, often rigorously set into cycles of movement.

By contrast, for this piece I wanted to be freed from the restrictions of cycling, to draw out from my own intuition, to feel and experience the emotions more visually and viscerally. Torre

describes how an animator might lose themselves in the act of animating; “A more philosophical look at animation processes can therefore be a useful way to describe animation, and in doing so, animation becomes less about the end product, and more about the process of its becoming” (2014, p.50). In this section of the animation I was not aiming for a philosophical approach in the sense of words and discussion, of symbolic words, but rather a philosophical approach in the manner of “symbolic data.” Here was a chance for me to express my emotions not by writing or speaking, but through visuals, colours, shapes and motion. By which definition I return to Haseman’s three research categories: Quantitative (symbolic numbers) Qualitative (symbolic words) and Performative (symbolic data) (2007, p.150).

Thus this part of the artifact was intended to be very much an exploration via symbolic data, performance (in animated form) and the “process of becoming” as the animation was drawn from my (albeit electronic) pen, desperate to show visually with moving drawings rather than to tell with words, speech or writing, the heart of the evocative.



Fig 5.1: still from the “Happy” freeform section of the artifact

Through this, my personal experience of the subject, as well as my own interpretation as animator, I might be, in effect, creating a double mirror effect. The subject mirrored within my personal experience (reflected upon through the act of creating this documentary interview, describing in words my experience) and then articulated through animation to be reflected upon again, described in moving drawings. I wanted to know where this would lead me in terms of my exploration of OEB. Added to which, I specifically wanted to illustrate my thoughts, emotions and experiences flowing from scene to scene, experience to experience, in a

metamorphic transformation that animation (with its ability to express art and motion across time) might be considered to be particularly adept at expressing (Wells, 1998).

Here too was an opportunity to play with gesture and meaning, and how that might play out within the context of my own experience, interlinked as that might be within my own background, culture and learned experiences. This would be more of an artistically created piece (hand drawn, and as such, infused unavoidably with my personal drawing style), albeit based on the study and cycle of dissecting live action footage of genuine emotion. It would fall on me, as animator, to express myself more vividly than in the previous iterations of the artifact. Mohamed and Nor (2015, p.105) describe gesture (within the context of puppet animation) as being significant only “as long as there is another person who can see and understand our body movement,” and conversely, understand the cultural influence and context behind it. By animating in this more creative manner, from my own head, these final pieces would be an internal exploration as well as an experience more loaded with symbolism and abstract concepts.

5.3 A sari for a dinosaur (happy freeform animation)

This animation can be viewed here. <https://vimeo.com/136857197>

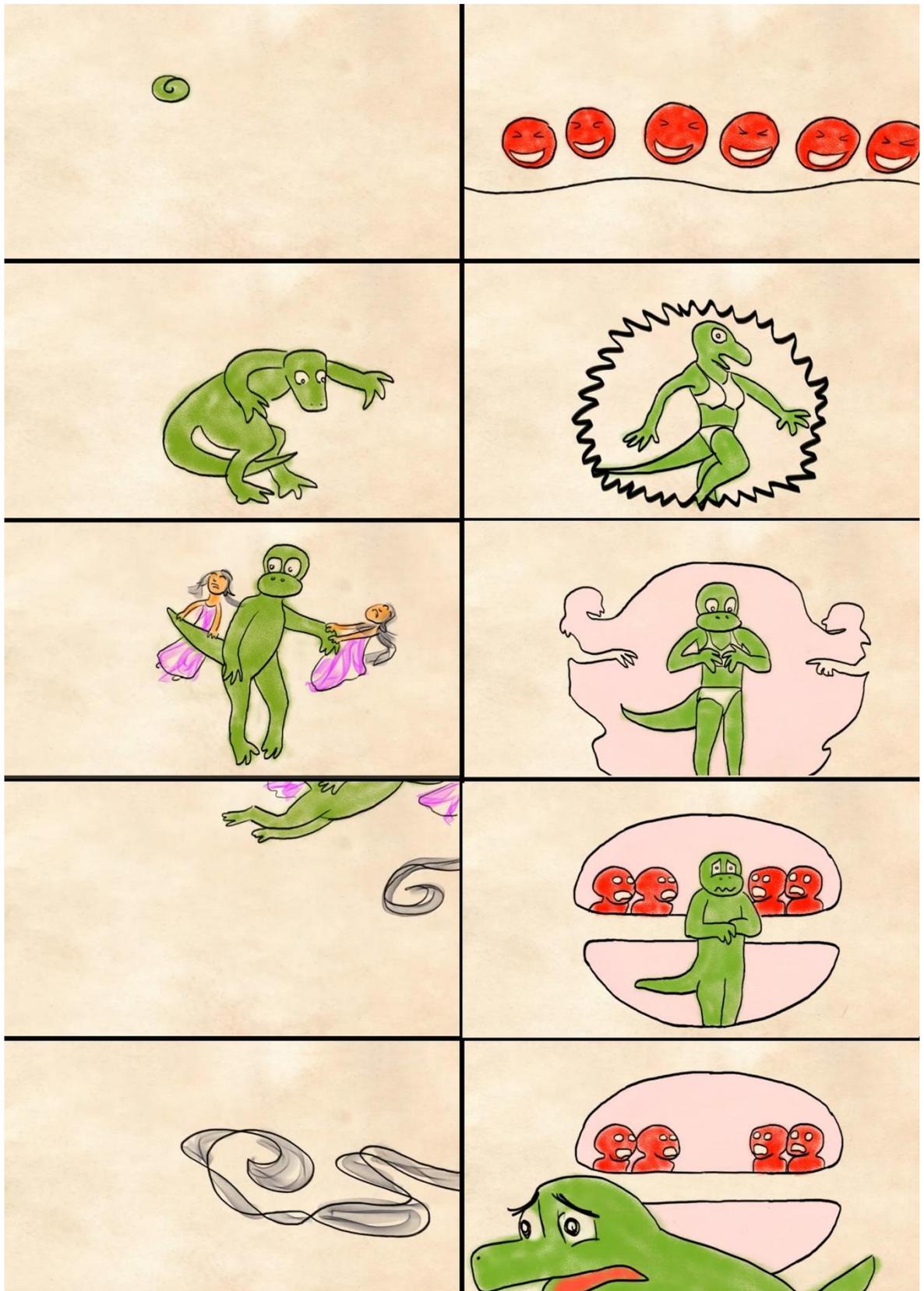


Fig 5.2: Stills from the Sari scene, view downwards in columns

I wished to re-visit the 3D dinosaur avatar in 2D form, as in many respects this character fitted the feeling I had had while in India and buying a sari, in that I was a large, lumbering, mildly monstrous, oddly coloured, slightly hilarious creature reliant on local friends to help me. While this was a happy memory, much of that derived from the amusement to be gained from *dressing up a dinosaur in a sari*, an inherently amusing and slightly ridiculous concept. My local friends are rendered most “realistically” as humans, with flowing hair and fully clothed. It is I who is out of place, naked and alien and it is for the dinosaur to be pulled around, led about, and gently (but agreeably) bossed around by the human characters.

The shop keepers, by their intimidating nature, are rendered in red, and in quantity, though they are still more human in shape than the dinosaur herself (fig 5.3).

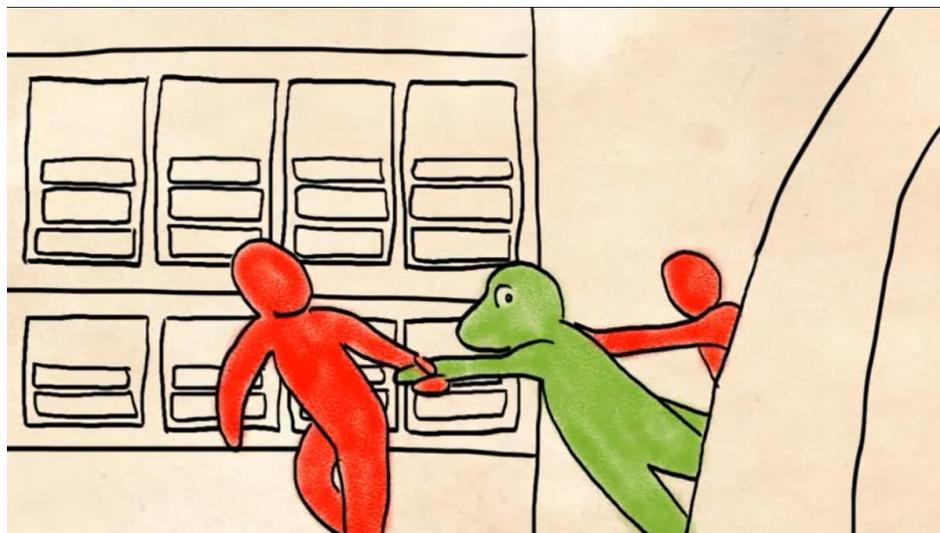


Fig 5.3: In the second sari shop

The animation begins reasonably literally, with the images following the words. Characters and objects appear and disappear with the narrative, and the pace is fast and constantly moving, to mimic the fast and constantly moving way I would be recounting this anecdote.

However, I wished to push the abstraction further, in order to tap into the root emotions. Fig 5.4 shows the dinosaur tossed around, small and seemingly helpless in the face of the correct procedure to buy saris, like a leaf thrown around by the wind.

In the final scene, the dinosaur, after a failed attempt to assert herself, allows herself to be literally taken in hand by the experts, and discovers that they had the right of it all along (fig 5.5). Success! A beautiful sari is found and purchased and everyone is amused and delighted.

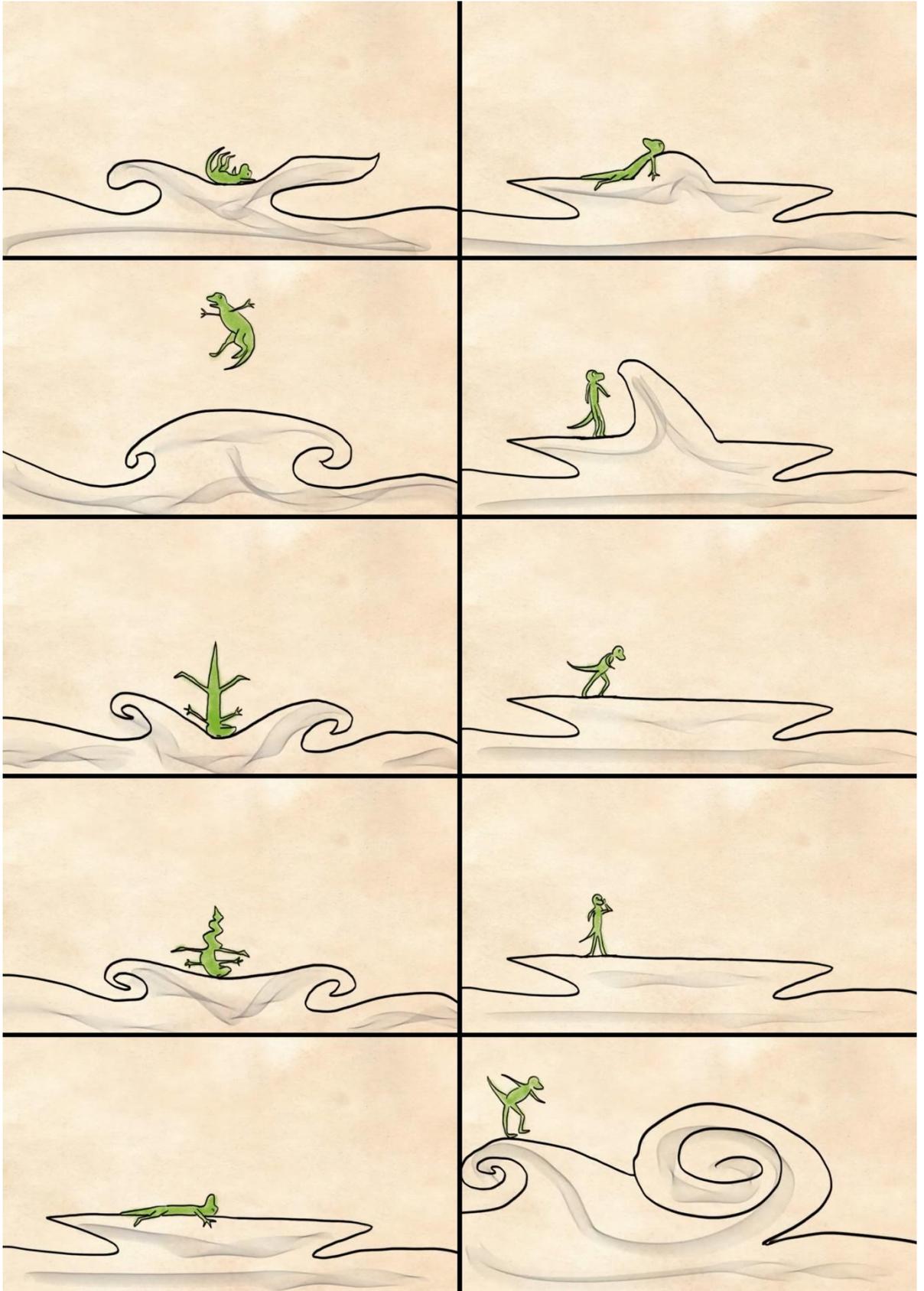


Fig 5.4: Stills from the Sari scene, view downwards in columns

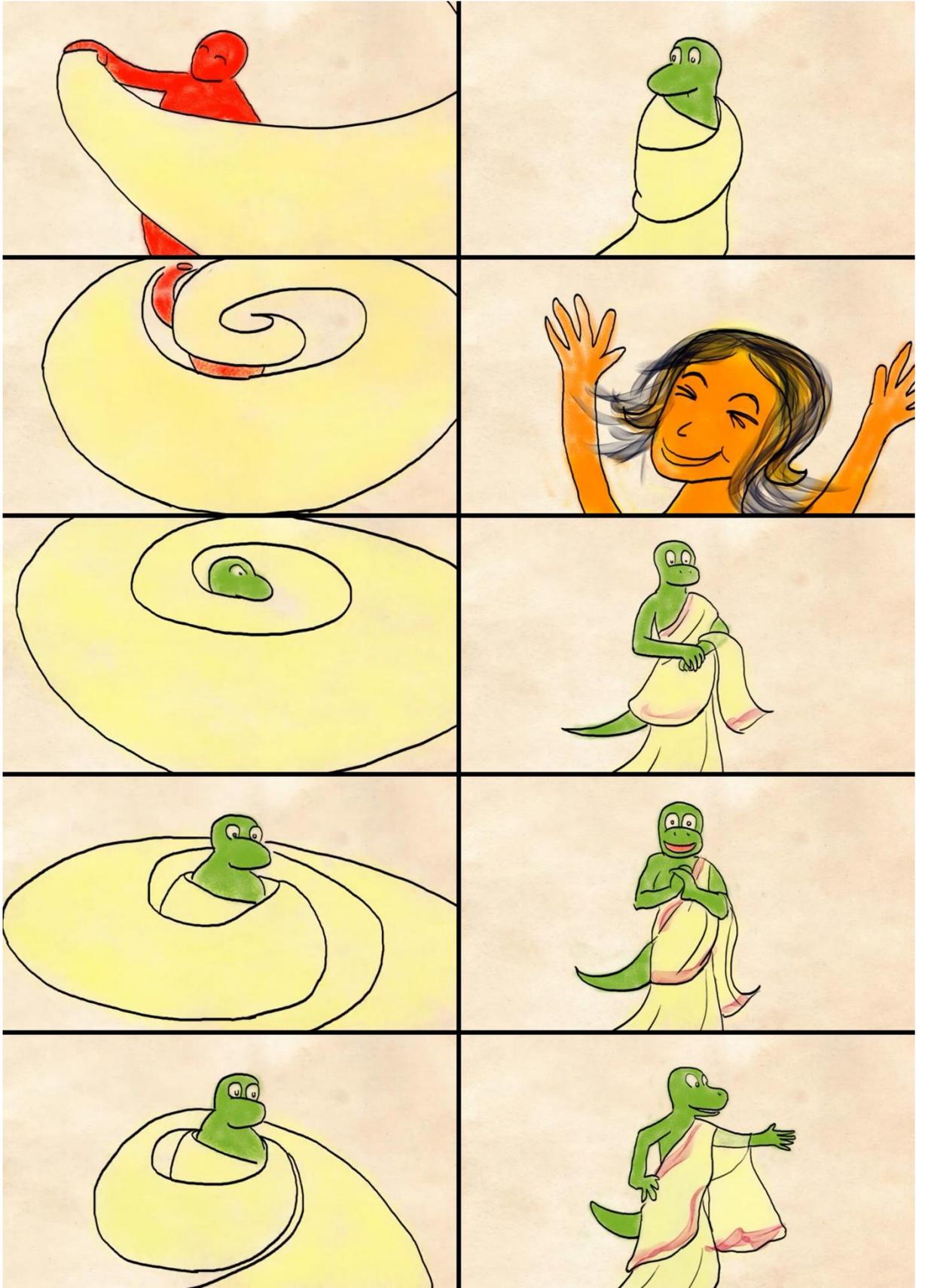


Fig 5.5: Stills from the Sari scene, view downwards in columns

5.4 I had to tell people (sad freeform animation)

This animation can be viewed here... <https://vimeo.com/136914770>

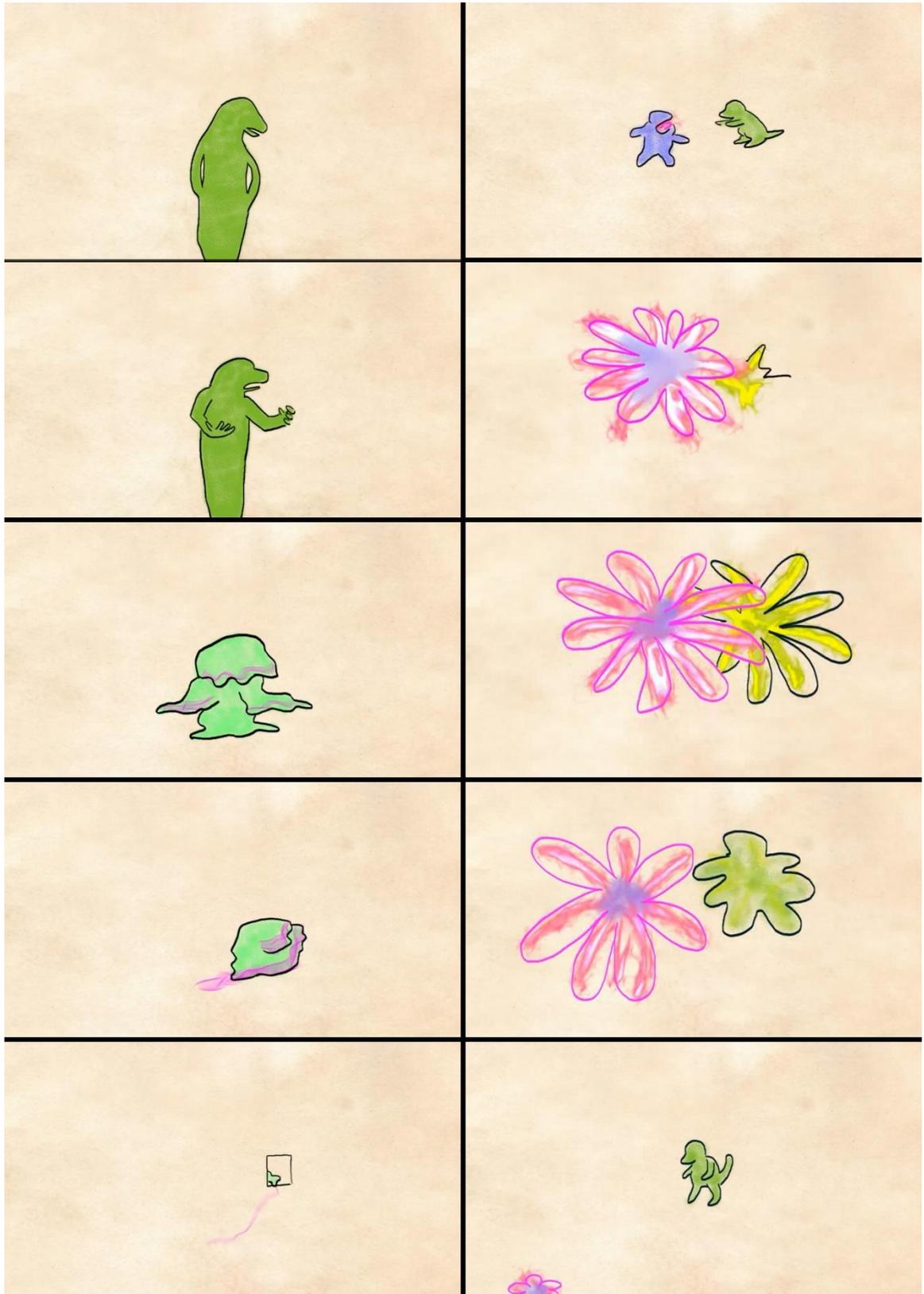


Fig 5.6: Stills from the Sad freeform scene, view downwards in columns

While the first freeform animation followed more of the expected conventions of a cartoon (jolly, jokes and visual gags, upbeat and in some ways, without surprises) with the second freeform animation I wished to depart from the expected conventions. While the character and art style remained the same, the subject matter was serious and needed a different approach. Thus I began with the same character but deliberately featureless in that she has no eyes and becomes more of a silhouette. By choosing to render the character in this way, I hoped to force the viewer to look at the body posture of the character as a whole.

The next step was to dissolve the character entirely, to indicate a dissolution of the emotions. The time I am describing was for me a difficult time where I was desperately struggling to contain my grief and distress. While I strove to contain my emotions, feeling uncomfortable through my own display rules at expressing emotion and distress in public, I felt (at that time) as though this distress was so strong it had to be leaking, and dissolving out into full view of others in spite of my efforts. Thus, I draw myself as a blob, and as this blob moves, it leaves a slug-like trail of pain, emotions I am striving to contain but feel sure must be oozing out shamefully (fig 5.6). Here, in a sense, the drawings can convey for me more clearly my state of mind at the time than my words can express, and this act of drawing (animating) the expression of my feelings at the time did feel quite cathartic. This was an opportunity for me to express, in symbolic and abstract visuals that which was difficult (if not impossible) too painful or (through perceived cultural display rules) inappropriate to articulate in words.

When the dinosaur tries to comfort a distressed student, the student breaks into an abstract, quivering and luridly coloured form, in an attempt to illustrate the potent distress within, distress which the dinosaur mirrors herself with her own abstract form. This is in some ways to indicate solidarity, in that while the character is distressed, others too may be struggling with their own stresses and grief (fig 5.6).

Coalescing back into a form, to indicate that the character has recovered some control, the character is now small, surrounded by space within the frame. This to indicate the helplessness of the character. While still a dinosaur, the large, lumbering character design has been replaced by a small, hunched, figure. The viewer is being encouraged to forget that the character is an amusing dinosaur and that it is instead more of a cipher that can absorb the identity of the viewer or any identity of a friend or acquaintance in distress. Colour bleeds out and the

character becomes numb and grey (Fig 5.7). Movement is very limited. In contrast to the frantic, increasing motion and energy of the previous animation, there is prolonged stillness, deliberately held almost to the point to make the viewer uncomfortable. This discomfort might be triggered from the expectation of a viewer that a cartoon (jolly, full of motion) should not become still, but also from the possible hinting of the stillness of a real person in distress and trying to hide their emotion or in the grip of depression. The NHS describes one of the physical symptoms of clinical depression as “moving or speaking more slowly than usual” (Nhs.uk, 2016) and it was this stillness that I had observed both within my own OEB as a motion captured avatar, but also in my rotoscoped facial expressions.

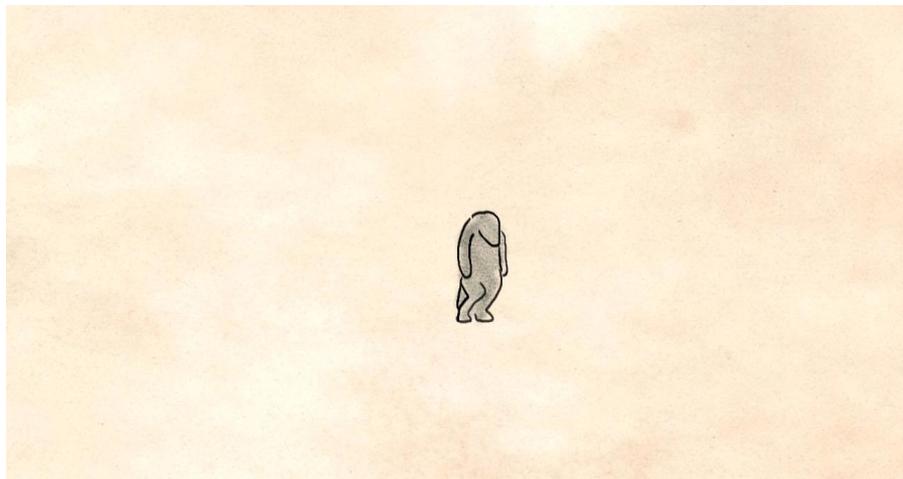


Fig 5.7: Still from “sad” freeform segment

Symbolic tears are used to transition between dinosaur and father, who is rendered in hunched, human form, again with limited movement and energy from the pain and medication related to just having experienced a major operation. Here I felt it was important to render the father as human, not a dinosaur, to draw the viewer back into realising that this was a real account of a real person, not a fantastical or amusing character as might be construed from a dinosaur character. Also, I felt it was important to render the father somewhat colourless and faceless, so that he might be more easily interpreted as an “everyman” or everyone’s father (mother, sibling or friend). Thus a viewer having experienced a similar situation as myself, might see the abstracted rendering of the father character and image their own father or relative into the character.

The final scene sees the trappings of dinosaur bleeding out. All colour drains away, and the shape of the character is deliberately softened into that of a neutral, genderless human being (fig 5.8).

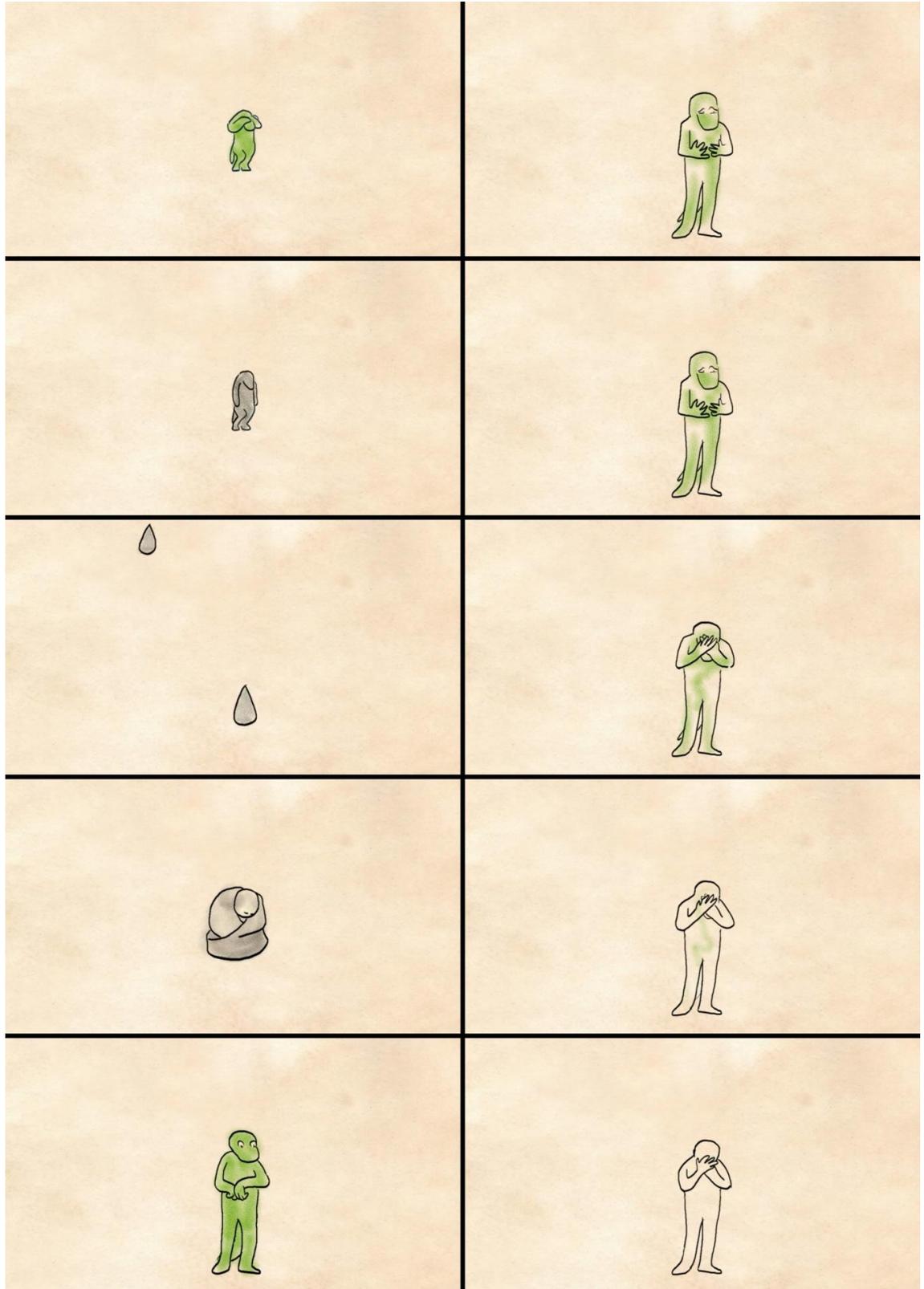


Fig 5.8: Stills from the Sad freeform scene, view downwards in columns

5.5 Conclusion

For this aspect of the artifact, it was less important for me to capture the OEB being expressed in the live action footage (I had in some ways, covered an aspect of this within the motion captured and rotoscoped segments). Rather, this was an opportunity to visually communicate some of the internal feelings I had, feelings and emotions that I might otherwise have felt awkward in articulating verbally, particularly in the “*sad*” segment. To articulate internalised emotion that was not being expressed in the OEB of the filmed footage. In some ways, the laborious but still emotionally intense act of rotoscoping, the rigour required to comb over motion capture data frame by frame had helped me become aware (through repetition) of an awareness of small movements and expressions which would inform my approach to the freeform piece. (Refer to chapter 6.4, production study for further testing of this potential implication.) I was now free to indicate the subtleties of motion and emotion in figures that now had the liberty to dissolve their outlines and tap into abstract expression and symbolism. Wells notes that animation can be a revelatory tool “used to reveal conditions or principles which are hidden or beyond the comprehension of the viewer” (1998, p.122). I will now summarize aspects I had learned and researched which were brought into this final piece.

1. *Emotional Behaviour*: Within the first, happy section, I tend to revert to more established animation techniques in rendering the posture and face of the dinosaur, in that the motions are exaggerated (flinging arms up into the air, pointing and staring obviously) the facial expressions large (huge grins, rumpled brows of embarrassment.) In some ways, I was happy to do this as my own OEB when happy is more ebullient, so the cartoony exaggeration seemed appropriate. By contrast, I tried to deliberately restrain motion for the sad section, to pull it back to a more serious feel, and to mirror my own restrained motions when in distress. The dinosaur hunches, she slumps, but there are no floods of tears or wracking sobs.

2. *Cultural Display Rules*: These I felt to be very important to express. In the happy segment, Cultural display rules are deliberately side-stepped: the human girls openly laugh at the dinosaur, the shop keepers push and pull her around, such actions as the original protagonists would never have dreamed of doing to me as a human as such behaviour would

have been considered extremely rude. However, as a cartoon dinosaur, the real amusement (or frustration) at her antics is allowed to show though without censure. The ridiculousness and non-humanness of the dinosaur allows the cultural display rules to be dropped to reveal the emotions lively and unfettered, an aspect of the exuberance of the happy section.

Likewise, in the sad segment, the chaotic distress of the student and teacher are shown in the form of wildly flickering flower-like blooms coming from the mouths of the characters, again, a loud and overtly obvious display that would be unthinkable within the normal dynamic of student and teacher conversing. The brightly coloured blooms show the turmoil inside, in a manner that can be accepted as a cartoon, but might be over the top in live action. When the dinosaur is rendered in a form that is close to human (arms, legs, the face rounding and becoming more human shaped) the awareness I have of my own restraint of expressing distress manifest into the animation. The character becomes still, neutralising its emotions through stillness. It wears a blank mask (a literal masking of emotions.) The dinosaur, wanting to help the sick father but unable to do so, must clutch her hands together, wanting to reach out but unable to do so, and instead, holding her own hands in check.

While the use of motifs and abstract shapes becomes in a sense a form of qualifying,¹⁸ in that the “sting” of the raw emotions is shown abstractly to be less painful for myself (as the animator and subject) to express, there is a quality here that I cannot quite fit into the categories defined by Ekman and Friesen (2009) (as described in chapter 2.3.3) for in this case, the animation is used as a method of expressing inner turmoil through abstract visuals. The OEB of the filmed footage is inadequate to the task of fully expressing the inner pain of the subject, yet the subject (the animator) is uncomfortable in animating exaggerated emotional behaviour, resorting instead to using abstracted visuals, the use of *animation* as a method of qualifying, rather than depicting the qualified expression itself.

When rendering myself as an abstract blob, at one point booming with chaotic pain in flower shaped colours, in the next moment trailing “pain” like a slug, before morphing into a teardrop,

¹⁸ Qualifying: Such as smiling to take the sting out of a negative discourse. Deliberately smiling while angry can mean that you are not so very angry, whereas a smile blended into an angry expression would indicate someone enjoying their anger and would not be a qualifier. Qualifiers are usually deliberate and easy to decipher as a message. (Ekman and Friesen, 2009)

here I am deliberately trying to show emotions that my display rules prevent me from articulating. However, I am not qualifying to pretend I am not as upset as I actually am. Quite the reverse, I am struggling to use the medium of animation to reveal the fullness of my raw emotion. These are perhaps, emblems¹⁹ and illustrators²⁰ (Mehrabian, 1981; Knapp and Hall, 2007; Buck, 1987), the full list of these terms can be found in chapter 2.3.3.

And yet (to me) none of these psychological terms seem fully to define what I was trying to express through animation, which I feel has allowed me in the freeform animation section especially, an opportunity to express myself in ways that I could not manage in word, text, or even in my own body language.

To return to my original complimentary research question, *How might an exploration of hand drawn animation of a simplified cartoon character inform the reflection of a practitioner?* The freeform animation did appear to unlock some intriguing insights that might be of use to other practitioners, particularly those who come from a 3D background with little experience of 2D.

1. I found the act of freeform animation deeply liberating as a method of expressing hidden emotions, or even taboo concepts. Within the happy freeform scene, the motif of the dinosaur is used to express my feelings of being a lumbering but gently amusing freak in a different culture. There is even a breaking of taboos as the other characters laugh or push the dinosaur around, behaving in a way that would be considered impolite with a real person, but acceptable as humour within an animation featuring a dinosaur. Within the sad freeform scene, I was able to use abstraction even further, with the dissolving of silhouettes, removing the usual communicators of emotion (no mouth to smile or frown, or even eyes) the use of wild colours or the leeching out of all colour. This allowed me to bypass cultural display rules by showing distress in abstract and symbolic forms.

¹⁹ Emblem: A symbolic gesture, often culturally linked, that can be easily understood, such as a wave of goodbye, a handshake or a shake of a fist. (Mehrabian 1981; Knapp, Hall 2007; Buck 1987)

²⁰ Illustrator: Gestures that accentuate and punctuate speech, such as head nodding for emphasis, pointing "look at that girl's hat!" (accompanied with a point or eyeflash to indicate direction). (Mehrabian 1981; Knapp, Hall 2007; Buck 1987)

2. This iteration of the artifact allowed me to use visual imagery as a tool to communicate and frame information in a fresh way (Leavy, 2015) a visualization strategy (Sullivan, 2005) by which I could tease out otherwise hidden emotion. Animation differs from still images and sculptures in that the motion and imagery over time can be used specifically as a method of communication. In *Happy*, the very ground the character is standing upon bulges and morphs, flinging the character up into the air, tossing her onto her head, and giving the impression of the helplessness and out of control inner feelings within the character.

In summary, based upon this reflection, I would suggest that experimentation with more abstracted and free 2D animation might have value for other 3D animators, particularly those whose practice tends to focus on replicating realistic motions and situations. While such a revelation might come as no surprise to 2D animators, a greater articulation of this concept backed up with the findings here might prove to be more persuasive to 3D animators wary of experimenting (however briefly) with concepts of freeform 2D animation. In this chapter and with this phase of the artifact I have departed from the previous focus of replicating OEB fairly precisely. The Freeform section was more internalised, self-reflective, and aimed at drawing out inner themes and expressing them in ways that were too awkward to express in words. It had to be the third piece to the puzzle, accessible only after I had explored the first two approaches. On completing these two previous phases, I was better placed to see where they might be found wanting. Chapters 2 and 3 capture OEB fairly precisely, through the use of motion-captured data and rotoscoping. These approaches help the viewer and the animator to see the existing OEB with fresh eyes, through the lens of these techniques, but they do not provide the extra information that is not being depicted overtly within the OEB of the footage, that of the internal working of the mind, the extra dimension afforded to the animator to layer more meaning and internal context into the piece. To show that which was previously entirely internalised and hidden.

Within this final iteration, by its very nature different and more abstracted than the previously animated examples, I was stumbling into an autoethnographic approach as I explored my distress at witnessing my father's illness, something I had not expected or anticipated. Young observes that "animated autoethnography is an effective methodology for working with trauma because it allows for the avoidance of explicit indexical representation whilst promoting an exploration of trauma related emotions through a language that can be

visceral, symbolic, poetic and truthful” (2017). This summation rings true to my own experience of animating this final iteration, which became very much a cathartic release for me, allowing me to self-reflect through symbolic data, in visuals, motion and colour. At the same time, feedback from viewers who had experienced similar situations, or were considering the possibility of being in a similar situation one day, were able, though the use of the more abstracted approach to as Young puts it “bear witness to trauma.”

“I felt the saddest during the hand drawn animation about how sad he looked. It reminded me of my own experiences in hospitals with my grandmothers”

“the section about her father looking hunched and grey was particularly well portrayed and hit home quite hard.”

“I don’t know if the special presentation made it more palatable”

“an experience we all have to face and which hurts”

(Viewer feedback)

This use of animation to “to revisit and reinterpret the past and reconnect it with the present” (Young, 2017) had a powerful effect on my own experience, with hints of touching some of my viewers who had experienced similar situations. Likewise, I was able to use animation in a different way to the more literal translations achieved within the motion captured and rotoscoped sections, turning it into “the very method which defines or illustrates particular kinds of experience which do not find adequate expression in other forms” (Wells, 1998, p122). That is, for the sad freeform animated section in particular, I found myself reaching for more abstract methods to illustrate the internal turmoil within me, the use of colours and abstracted shapes, fibrillating coloured explosions, silhouettes and bulging, sentient ground. Such became a method of communication in motion that (for me) could not adequately be expressed to the same level in any other format. As Wells puts it, “It is often the case that difficult concepts or unusual codes of existence can *only* be expressed through the vocabulary available to the animator because they are in many senses inarticulable in words but intrinsically communicated through the visual and pictorial” (1998,

p.122). Speaking as a 3D animator whose experience of animating in a more fluid, and abstracted manner is new and in some ways, a novel experience for me, I would like to add to this point based on my own experience of creating the freeform sections. Not only was I able to use motion, colour and pictorial shapes to express difficult concepts, I was able to surmount the inherent awkwardness and reticence I felt to expressing these concepts, and use the animation to “explicitly represent and interpret the thoughts of their subjects” (Ward, 2005, p.89) or in this case, the thoughts of myself as subject. To verbally admit to weakness, or distress, would engender feelings of guilt and shame within me. My narrative stumbles to articulate these feelings, but the animation allowed me to push further, to articulate in a manner that sidestepped shame and became instead cathartic, the ability to explore trauma in a non-objective way, through expressivity and metaphor and to (hopefully) open up a window for others to “inhabit someone else’s specific position and experience of the world” (Honesty Roe, 2013, p.107). though the evocative power of animation.

To return to my contributory question “*How might an exploration of hand drawn animation of a simplified cartoon character inform the reflection of a practitioner?*” I would say that this part of the artifact helped me to express concepts and feelings through animation, that were otherwise very difficult to comfortably or explicitly express in words, not just to myself, but for the observation of others.

Where this research takes on a fresh look at this known concept, is in the fact that the freeform investigation was conducted *after* the more stoic replicative interpretations of OEB investigated in the two previous phases. This allowed the practitioner-researcher to identify where motion-capture and rotoscoping were strong, (in replicating but also re-representing OEB) but also where these techniques were lacking, in tapping into the mind unseen that was not, necessarily, being expressed within the OEB. Or where communication was being lost or overly distorted. By directly comparing freeform animation investigation to these previous investigations, this research aims to more clearly delineate the differences and value of these diverse approaches, with the hope of constructing a clearer roadmap of how a variety of approaches can help practitioners and academics target the rendering of OEB. In particular, to those 3D animators who have lost or bypassed 2D techniques through being absorbed into the heavily 3D dominated commercial animation world of gaming. Drawing from the investigation

of this iteration, I would suggest that a 3D animator might not necessarily need to become proficient in 2D, but that a targeted explorative experience of 2D as a method to express both OEB and internal emotion would prove of value in understanding and expressing OEB in animation practice, even to use that knowledge and observation to feed into established techniques of exaggeration and symbolism, adding more depth and nuance into their work, and in particular, drawing in that 2D experience into 3D application.

6: Animation perception, animation production

6.1 Introduction

The journey of this thesis has been something of a personal one, but there are inherent difficulties on producing a work that remains too personal and inward looking, thus I drew inspiration from Robin Sloan's doctoral research.

Sloan's work focuses upon the study of "emotion expression choreographies" wherein he describes his work as "an interdisciplinary research project which would draw upon the knowledge of animation practice and emotional psychology. The aim of the project was to jointly investigate the artistic generation and observer perception of emotional expression animation to determine whether the nuances of emotional facial expression could be artistically choreographed to enhance audience interpretation" (2010, p.1). In his research, Sloan created computer generated animated human faces "of six emotions (happiness, sadness, anger, fear, disgust, and surprise) at three levels of emotional intensity (low, moderate, and high). Animations lasted between two and twenty seconds, and consisted of an onset, peak expression, and offset" (2009, p.63). These computer generated animations were shown to observers to see if they could recognise the emotions displayed, and, as the research progressed, to see if observers could perceive levels of "authenticity" of the computer generated facial expressions.

Like Sloan, my own research involved the creation of animations and the central role of myself as "practitioner-researcher" in constructing research through animation practice, and as this research hinges on the creation of animations, it would not be easy to replicate exactly. Sloan focused on animating facial expressions using a 3D human facial rig. The expressions were drawn from observation and psychological research into the facial depiction of specific emotions. My own research interlinks with Sloan's but approaches from a different direction. Where Sloan has approached facial expression by animating specific human emotions onto a CG facial rig, emotions that are meant to be clear and unambiguous, and presented in short bursts, I have followed a more organic and unstructured study of more restrained and subtle packages of emotion, involving the direct observation and dissection through animation of a sequence of live action footage. While the direction of the approaches differs, both approaches use

animation and the observation and reflection of the animator practitioner. Sloan points out a difficulty within his approach that stands equally for my own research and perhaps for any practitioner-researcher trying to use animation as a research and reflective tool.

“Ultimately this research was limited by its focus on artistic method and the interpretation of a single practitioner”

(Sloan, 2011, p.277)

Sloan approaches this difficulty by subjecting his work to “two qualitative studies; one of animation production, and one of animation perception.” In this he describes testing his work by “relating [it] to the intersubjective interpretation of a group of student animation practitioners” and then by “relating [it] to the intersubjective interpretation of animation audiences” (2011, p.278). He begins by analysing his “own experience of producing and observing choreographed emotional expressions” (2011, p.278) before augmenting this with two further qualitative studies.

Chapters 3 to 5 contain my own experience analysis, presented alongside each iteration of the artifact (and augmented with a measure of feedback from viewers and peers.) In this chapter I detail the exploration of my own versions of a dual qualitative study of animation perception and animation production.

6.2 Part 1: Animation Perception Study

Sloan’s second qualitative approach involved a study of audience perception of his animated work, in the hope that the findings would substantiate, support and elaborate the findings of his own practitioner-researcher observations (2011). For this he arranged screenings of his work followed by feedback obtained from five focus groups with a total of 26 participants, drawn from psychology and visual arts students from the University of Abertay, as well as a general group of participants found via Twitter and Facebook, aiming for “a snapshot of possible audience interpretations of animation” (2011, p.318).

This approach ties in with Haseman’s post performance reception study method (2007), derived from feedback processes obtained from an audience. Methods of obtaining feedback might include focus groups, individual interviews and online-based feedback.

Like Sloan, I wished to draw my audience from a range of experience. However, I wished to avoid using students from my own university and instead try and gain a wider and more randomised range of observers. Likewise, I hoped to obtain a “snapshot” of audience interpretation. Thus I chose not to use focus groups and instead presented the work online with an open-ended questionnaire designed to allow participants to volunteer potentially unexpected feedback. This questionnaire returned feedback from 35 participants across a variety of backgrounds.

6.2.1 Setting up the online questionnaire

After completing all three stages of the animation and editing them together into a single artifact, I put together a feedback form using SurveyMonkey (SurveyMonkey.com, 1999) a fairly well known survey and data collecting website which allows untrained individuals (such as myself) to design and publish a reasonably robust questionnaire able to run on most platforms and devices.

I hoped to get not just those “savvy” with animation and visual arts, as might be expected from running tests within my University, but accessing a wider range of ages and backgrounds via Social Network groups and snowballing from individuals who were able to pass the link across their own friends circle. (For further discussion of the advantages and disadvantages of using online feedback, refer to appendix E.)

Questions were limited to a maximum of ten (one of which was a standard age/gender question) laid out simply and clearly across three pages. The majority of the questions were open ended, requiring the responder to voice their own opinions. This was due to the qualitative nature of the research which relied on the emotional (or lack of) reactions and interpretations of the viewers. Open ended questions can be useful for providing unexpected answers, but would need to be analysed by hand to see if there were any recurring themes or unexpected reactions.

Due to the text based nature of the questionnaire, it was assumed that it would be unlikely that responders would wish to respond more than once, though there was no way of checking as the questionnaire was set up to be completely anonymous. There was also no restriction on how many times a respondent might want to view the artifact before completing the form.

The questionnaire was initially tested with a small sample of test respondents whose data was not included in the final research, but whose feedback and response was used to adjust any problems or errors in the questionnaire before launch.

After testing and correcting, the questionnaire was given a “Soft Launch” using Livejournal (Livejournal.com, 2015), an online social networking site on the 20th December 2015, so that initial patterns and data response could be checked. Soft launch data was included in the final research, but any errors or corrections that might have been overlooked by the testers could not be corrected. Full launch was initiated on the 3rd of January 2016 on Facebook (Facebook, 2017), following a small prelaunch announcement to encourage response rate.

The aim in seeking and processing these responses, was to pick up on threads and insights for my research, but also to correct any confusion or errors with each feedback iteration before the final launch, and finally in the hope that the collected and processed data might be used to frame approaches for further research.

6.2.2 How the artifact was presented

Once the artifact had been completed, with all its iterations of live action footage, motion captured 3D Animation, 2D rotoscoped animation and traditional style 2D hand drawn animation integrated into one film, it was made available to be viewed online.

Members of the public were invited to view it via social media networks including facebook groups, blog groups and journals. Viewers were encouraged to share the link onto their own groups and networks.

On viewing, viewers were given the option to fill in an anonymous, online questionnaire. (See appendix F.) Though the questionnaire consisted of only 10 questions, 8 of the 10 questions were open ended, requiring text entry responses. The aim was to allow respondents to speak freely without constraining them to a pre-selected set of responses, to avoid leading or influencing respondents. This choice had been born from previous online response testing I had conducted (see chapters 3 and 4, for previous informal feedbacks and the appendix D for the full responses) where clips from the artifact had been shown with no question prompting, which had resulted in unexpected and spontaneous reactions. (Something I hoped to find again.) Thus the final questionnaire was deliberately designed to foster this spontaneity.

6.2.3 Advantages, difficulties and concerns of the presentation method

Whilst the open-ended and anonymous nature of the questions did give the respondents the freedom to reply as they wished and potentially volunteer new and unexpected reactions, the disadvantages were that replying required a measure of time, confidence and commitment on the part of the respondent. As a result, a smaller number of respondents was expected, and their answers had to be processed and analysed on a response by response basis, with the emphasis on qualitative analysis.

While the overall recorded reaction was of interest, it is likely that those who found the artifact boring or uninteresting might have left part way through the animation, and not filled in the survey. Vimeo documented 142 plays while the survey recorded only 35 responses. Even assuming that some viewers may have viewed more than once, it would seem that a large but otherwise unknown quantity viewed without participating in feedback. Reasons might include: lack of time, lack of convenient hardware to fill in the survey (respondents replying via their mobile phones might struggle to type out complicated responses), finding the survey too confusing, intimidating or demanding, or disinterest in the piece as a whole.

For a detailed overview of the data obtained from the feedback questionnaire, please refer to Appendix F.2 for a full copy of the responses and 8.5.3 for the analysis of the results.

6.3 Discussion: Common threads that emerged

Generally, the hand animated dinosaur was more popular and “easier” for viewers to understand. The Sari scene in particular, was presented in more of a traditional “expected” manner, with jokes, colour and a narrative, and an amusing (non-serious) character. “Cute” whimsical” “pretty” “evocative” “flamboyant” “enjoyable” “expressive” “imaginative” “hilarious” were terms given in the feedback and all terms one might expect (or at least hope for) from a more traditional and entertaining animation.

The expression of OEB was also made more obvious through the use of exaggerated body language (the dinosaur’s eyes bulging in shock, her mouth falling open) the stripping away of information and leaving only the core, (such as the shivering father) and symbols (tear drops, the ground rising up to interact and “speak” with the dinosaur) - all of which are classic

animation techniques that a viewer will have experienced and seen in mainstream animation shown on television or film.

Generally the motion captured sections were the most unpopular, with respondents complaining of the stiffness and restricted movement of the 3D dinosaur and its lack of facial expression. Some respondents found the motion captured dinosaur more engaging when it was moving more expansively, possibly because the wilder movements were more distracting, or that the restrained, lack of movement (from the grieving scenes) only heightened the artificial, uncanny aspect of the character, even though in the case of the restricted movement and stiffness, the dinosaur was behaving in line with the real human motions of the interviewee. The choice of a split screen of live action and motion capture proved too distracting for some viewers. As discussed by MacGillivray (2007) it became clear that the pure transition of motion capture data to the character, though accurate, lacked the “life quality” of motion captured data that is tweaked and supplemented by the hand of the animator (for example, adding anticipation and exaggeration on top of the base motion captured movements). Viewers perceive exaggeration as more convincing (Johnson and Thomas, 1981). To be convincing, actors must exaggerate to be believable, and 3D avatars may require tweaking from animators to refine the motions further, tweaking which, in this instance, had deliberately *not* been applied (Serkis, 2003).

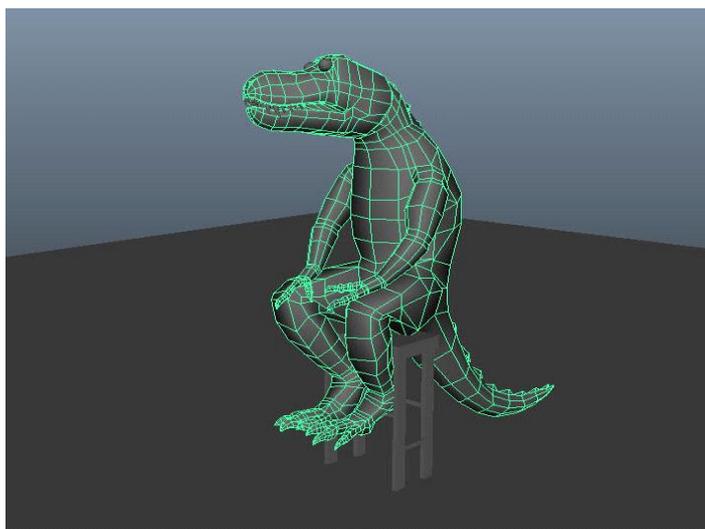


Fig 6.1: Wireframe of the 3D computer generated dinosaur

More of a surprise was the reaction to the rotoscoped animation. The hand drawn animations appeared to provide one extreme, that of emotion purely generated and expressed through the eye of the animator, *evocation*, evoking concepts difficult to visualise or express with live action (Honesty Roe, 2011). While the motion capture was the other extreme of *mimetic substitution*, aiming to be as realistic (reproducing the body movements exactly) as technology allows (Honesty Roe, 2011). The rotoscoping seemed to be the halfway point of, as Honesty Roe describes it, *non-mimetic substitution*, the use of real footage stylised (2011). As previously discussed in chapter 4, Honesty Roe has written about how this approach can work well in documentary animation and my hope was to explore this from the direction of articulating and comprehending OEB in animation. In this, the style of the rotoscoping, following closely the real life facial expressions whilst simultaneously heightening and crystallising them, appeared to work well in commanding the attention of the viewers, provoking interest and focus (as opposed to simple amusement from the hand drawn *Sari for a dinosaur* scenes.)



Fig 6.2: Composite frame showing the rotoscoped lines over the live action footage

Reasons for this are many and may be guessed at. It might be that this sort of animation is less common to what viewers are used to, and thus becomes interesting through novelty. The stripped down nature of the linework combined with the voiceover left viewers with no alternative but to focus and see the expressions. Such experimental animation has been approached before with Sabiston's work (1998).

It seemed noticeable too that the majority of respondents preferred to focus their attention on facial expressions rather than body motions. The stripped down rotoscopes could still be

considered successful and understandable in spite of having no body, (and missing the top of their heads) while the 3D animation, having body motion but no facial expression came across as hard to understand or uncanny (Mori, 1970). I had hoped to use the motion capture animation as a way to get viewers to focus more on the body than the face, but while some respondents were fascinated by the body motion, most were distracted and disconcerted by the limited facial expressions of the CG dinosaur.

For the most part, the sadness and distress of the situation stood out for people, seven respondents found the expression of sadness and distress (and subject matter) upsetting or “difficult to watch,” without connecting the upset to any specific rendering of the animation. In some part, this might be due to the tone of voice as much as the visuals of the sad scenes. Eight respondents were not upset, though three acknowledged the execution was moving or heartfelt. Two respondents (of thirty-five) felt that the subject matter and the voice were most effective, in one case “I started to ignore the images and concentrate on the spoken word” so it is possible those respondents who could not articulate an animation style that stood out for them were more struck by the tone of voice, and in one case, appeared to try and block out the visuals in order to concentrate more fully on the voice (this is discussed further in 6.5). However, a majority were able to point to a specific animated section that stood out for them. In this, the abstract quality of the hand drawn “*sad*” animation helped articulate emotion, possibly by elaborating on the vocal narrative, whereas the rotoscoping had a more direct connection to the facial expressions, with the line-work helping to draw attention to the expressions on the interviewee.

Reaction to the mo-cap was split, with some finding the change in body posture from happy to sad interesting but all finding the limited facial animation on the 3D avatar lacking in expressing the depth of sadness being vocally expressed.

For four respondents, a more holistic, thought provoking mood was generated from seeing the variety of emotion displayed in animated form. Quoting from the feedback “it opened my thoughts to maybe having to experience something similar one day” and “it has made me think how complex and fast changing our emotional expression is” and “it made me think about talking about difficult subjects, and how well animation can help not only conveying the emotion, but make it a bit easier in some ways.”

6.3.1 Motion-capture

While on the one hand, the mix of different animations was interesting and thought provoking to most of the respondents, from the point of view of using different styles of animation to help viewers interpret the subtleties of OEB; mixing the styles was also counter-productive in the case of the motion capture, serving only to heighten the dissatisfaction of viewers with the motion capture as they compared it with the rotoscoping and the hand animation in particular. As Peter Lord and Brian Sibley describe in their animations for Aardman, “Real movement, the sort of thing you would see if you analyzed film of a live actor, always looks weak and bland when it is closely imitated in an animated version” (Lord and Sibley, 2004, p.134). This reaction, of perceived weakness appears to have been borne out within the motion captured sections, though less so with the rotoscoped sections. In spite of the rotoscoping conforming closely to the live action footage, the heightening and accentuating of the facial expressions proved to be relatively absorbing or interesting to viewers, a novel way of seeing facial expression. It might be that the less exaggerated forms of expression achieved by directly rendering the expressions might fit more closely with a ‘naturalistic’ aesthetic of representation that the rotoscoping entailed, with the face legible in terms of the ‘cinematic’ codes and expectations of talking-head documentary films. Subtle nuances are far more alien to the way in which viewers are expecting to engage with cute 3D animated animals, or rather less cute 3D generated T-Rex synthespians.



Fig 6.3: Still of the motion captured, 3D dinosaur avatar

This contrasts with the more positive reactions from early tests of the motion capture that were shown informally to viewers, where only a short motion captured segment was shown in isolation. Tinwell et al., note that the level of uncanniness perceived by viewers is influenced by the emotion being displayed, for example, “With regards to sadness, despite the fact that removing upper facial animation in the virtual character led to lower familiarity and human-likeness ratings, participants rated both fully and partially animated virtual characters expressing sadness as comparatively less uncanny than when exhibiting any other emotion” (2011a, p.747). Tinwell et al attribute this to a natural tendency of viewers to anthropomorphize cartoon characters. Tinwell et al were working with human and realistic characters, whereas my computer generated character was deliberately stylized and delivered pre-anthropomorphized. However, it may be that the choice of the expression of sadness could be considered less of a difficulty for a CG character than other emotions. Likewise, Tinwell et al found that happiness, in particular a lack of upper face movement, was less of a trigger for uncanniness for viewers, provided the mouth was smiling (2011a). Ultimately, it is difficult to compare the results of the two approaches as Tinwell et al’s, research measured the reaction of human faces, comparing live action actors with a computer generated faces. With my artifact, though it swaps out between live action footage, the comparison is with a stylized, anthropomorphized character. However, it appeared that viewers were more accepting of the

motion captured scenes when they saw them in isolation, in particular finding the body movements more absorbing. As soon as the motion captured scenes were placed next to live action footage, it became harder for viewers not to make direct comparisons and thus find the computer-generated footage lacking. The body movements became overlooked and the lack of facial animation became more of an issue.

In light of these results, and to encourage the viewer to look at subtle body movements, rather than facial expressions, further research should explore:

1. Short (30 second only) clips of a motion captured avatar, without other forms of animation or live action footage to distract the viewer.
2. A redesign of the character. While non-human and stylized, the 3D avatar was still too realistic and her lack of facial expression dropped her into the uncanny valley. I would suggest a design of a softer, fluffier character such as a soft toy or sock puppet transposed into motion captured movement, where viewers are not expecting or looking for realistic facial expression.
3. Motion capturing facial expression. However, this is a more complex approach requiring more complex software, and might prove to be still very difficult to capture the full range of human expression successfully without hand tweaking the motion on top of the motion capture. The problem would remain that viewers would look to the face before studying the body.

6.3.2 Rotoscoping

As the rotoscoped sequences appeared to work quite well in getting viewers to focus and observe facial expression, further work might involve:

- 1 Short rotoscoped clips of real (not acted expressions.)
2. Rotoscope played without voiceover as well as with voiceover, to see how much (if any of a different reaction this prompts, and if it encourages viewers to look more closely) an option might be to start without sound then blend in sound, to see if the viewers interpretation of the emotion conveyed matches up.

3. Cut with live action footage. For example, beginning with a live action close up, blending to a rotoscoped version and then blending back to a live action close up. This to see if the blending helps viewers continue to focus on the live action face to trace the details previously highlighted by the rotoscoped lines.

A difficulty of the rotoscoped experiment is that it does require the time and skill of a trained artist to interpret and hand animate the emotions by picking them out from each frame. The success of the animation, as a medium to highlight the communication of a subject is dependent on how good the animator might be at interpreting and then expressing emotion, and there is the danger that the animator might be adding to, subtracting from or distorting the data of the facial expressions. For an example of the variation you might expect from such an exercise, see Sabiston's film *Roadhead* (1998) for an excellent example of a wide range of animators' approaches to the same documentary live action footage. How much this might be considered a problem might be dependent on the subject matter of the animation. A more light-hearted or abstract narrative might benefit the viewer reinterpreting away from the original aim of the piece. However, in the case of a more serious animated documentary illustrating sensitive themes, confusing, reinterpreting or muddying the message could be problematic.

6.3.3 Hand-drawn animation

Part of the aim of this research was self-reflection, refining of skills and the journey taken by the researcher themselves, as animator, researcher and auteur, and as a possible methodology for unlocking insights. While the hand drawn elements were entertaining and clearly understandable for the majority of the viewers who responded, they did not appear to trigger fresh insights into the viewers' eye to being more finely attuned to picking up on cues of OEB beyond what the researcher/animator had deliberately drawn and constructed.

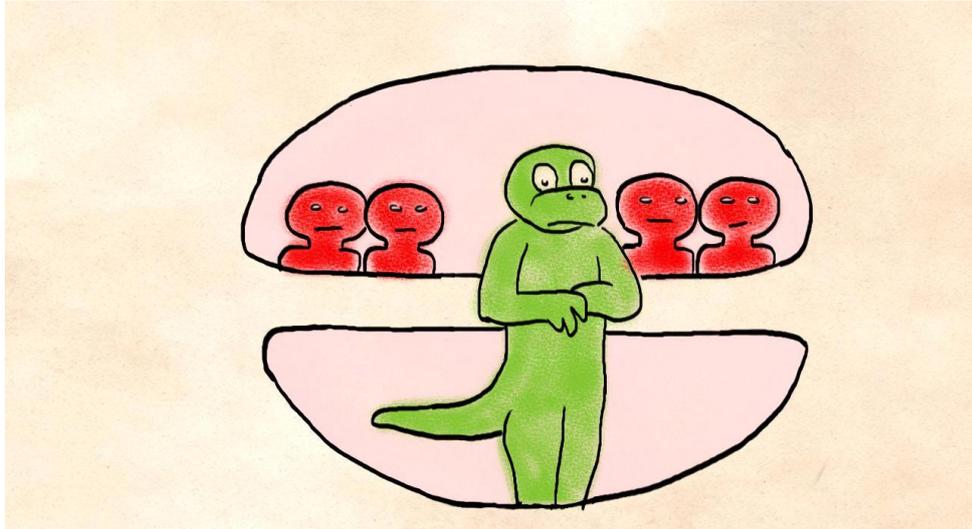


Fig 6.4: Still from the "sari" hand drawn segment

On reflection I felt that the hand drawn element was more successful on a personal level to me, as a continuation of my efforts to study and observe non-verbal communication. I began by studying and observing body motion through working with the motion captured animation, then moved onto studying and observing facial expression by drawing via rotoscoping. The culmination of this study was the expression of body and facial communication via hand drawn animation. In hindsight, this part of the artifact was an opportunity for me to digest the subtle movements and OEB cues I had observed from my studies through motion capture and rotoscoping, and reprocess and represent them within my freeform animation. The journey proved valuable on a personal level, with the result that I was better able to express difficult concepts within my freeform animation and use it as a method of self-reflection, but also, to articulate via the animation such inner emotions that were not being shown by the filmed OEB. (For example, the use of flickering, garish abstract colours to indicate emotional distress, the blurring of outlines of the character, rendering them smaller and more vulnerable, see chapter 5 for further discussion.) For viewers though, the indication was that the freeform animation departed from the aim to highlight and accentuate the ability to perceive cues related to interpreting OEB, but became more of an entertaining experience, with abstraction and symbolism used to communicate subtleties. The freeform animation proved potent as a method specific to the medium of animation to communicate my personal inner emotions, and provided fresh insights as a self-reflective methodological approach, but proved somewhat unsuccessful

as a medium to unlock perception in the viewer of subtle OEB cues, but conversely successful in communicating to the viewer via the use of abstract and symbolic cues. In this way, the freeform animation provided an added dimension unique to the medium of animation itself, an ability to show, thought visuals such as colour, line, abstraction and symbols, an inner world and emotion that the more strictured motion captured and rotoscoped sections (which followed closely to the filmed footage of OEB) were failing to convey. The aim of the artifact was less about delivering a finished artwork for public consumption but more about the value of the critical reflection through exploration through practice. This final, freeform stage of animation tested the play between subtle and more restricted animation rendering (the closely controlled motion-capture and rotoscoping sections) against more a more semiotised or exaggerated performative animation. The more positive engagement from the audience offers some evidence of the value of the process I have undertaken of using iterative animation as a reflective tool.

6.3.4 Conclusion to the animation perception study

There is an inherent difficulty in using animation as a tool of study, in this case, a method to find out about how people respond to, read, or make sense of different means of corporeal expression. It is very difficult to extricate aesthetic concerns and reactions from an animated piece. The expectation is often that an animation has been made to entertain, even when used in a documentary sense dealing with serious and real issues such as *Wonderland: The Trouble with Love and Sex* (2011), previously discussed in chapter 2.2.1. It is a tension that as the animator and director of this artifact, I could not relinquish. I wanted my artifact to be entertaining, and this is most visible (and clearly effective) in the “happy” freeform section of the piece, where the looser style and departure from rigorously rendering the body and facial motions to follow the live action was relaxed and an element of narrative was allowed into the piece. The artifact is admittedly (by animation standards) long at 10 minutes duration. It was also designed with a specific purpose whose main drive was *not* to entertain or produce a narrative. However, I did not wish for viewers to become bored and disengaged and fail to watch the entire piece, as happened with one viewer who was very scathing (and rude) in their feedback and whose language might well have been moderated had they continue to watch to the serious section of the artifact. I cannot know how many other viewers had similar reactions of boredom and

switched off part way through the piece, never leaving feedback, and the animator in me does still wish I could have married more entertainment with purpose to the piece, through greater skill in design, cutting and quality of animation.

The choice of questions is also problematic, in that many of the questions revolved around asking respondents how they “liked” or “disliked” a section or the piece as a whole, potentially drawing the viewers away from the piece as an academic tool and further into the realm of how the piece entertained. This was a problem, but it was also a deliberate choice, reasoning that as an ice-breaking technique, people are much more comfortable talking about what they liked and didn’t like than being asked to make erudite statements that they might feel judged upon. The questions were designed to be disarming, to enable the qualitative data to flow and be induced from viewers in a way that did not seem too contrived. By keeping the questions fairly loose, it would appear that expansive responses were induced from viewers, with the result that interesting, unprompted and qualitative data was obtained.

The imperfections unavoidably embedded within this piece, both within the artifact and the design and presentation of the artifact itself, coupled with the data obtained from the viewer feedback, have allowed me to start building a structure upon which to carry this research forward onto the next stage. Some approaches proved more successful than others in provoking the viewer to focus and observe minute gestures. The rotoscoping in particular worked well for directing viewers to notice details such as crinkling of eyes, though even aspects of the motion captured animation, suitably adjusted in light of the feedback received, could be used to help people notice otherwise overlooked motions. The hand drawn sections, while entertaining and evocative, did not seem to help viewers pick up on real gestures, though through their use of symbols, abstracted gestural movement and colour, these sections worked well in expressing the story and emotion of the animator behind the artifact. In chapter 7 I expand upon the contribution to knowledge gleaned from the research so far, but also suggest methods and strategies learnt from this stage to progress to further proposed research.

However, in short, the initial positive findings taken from presenting the motion-captured sections in isolation were turned on their head, and returned to back up previous assertions made by other researchers and animators that taking real movements in their purity (in this case, untouched motion capture data), without any adjustment from the artist’s hand can result

in a poorer experience. The motion captured sections measured up badly in comparison to the other animated sections, and in particular when placed in such close proximity to live action footage. On the basis of both the viewers' response, and my own artistic reflection, it seems hard to deny that the animated dinosaur was the weakest character in rendered approach, lacking in empathy and character appeal when placed next to the other animations. Partly this might be that 2D animation might be more forgiving than 3D, where audiences expect a more polished and realistic approach. Perhaps with access to a team of highly skilled 3D animators a more appealing motion-captured character might have been achieved, but this was not possible within the limited resources available to one practitioner researcher. However, the problem would still have remained that (in this case) the aim of the piece was to use the motion capture data directly into the character without any tweaking or emphasis from the animator's hand. The oddness of the initial findings contradicted the final findings (which fit with the consensus) and further research and experiments are suggested in chapter 6.3.1 so that this anomaly might be explored further.

By contrast, and perhaps surprisingly, the rotoscoped sections, while remaining close to the original filmed footage, *did* appear to encourage viewers to look more closely at the facial expressions of the character, and appeared to induce more interest in the subtlety of the facial expressions. While this might in some measure be due to the novelty of seeing closely traced facial rotoscoping, this too bears further exploration (ideas for which are discussed in chapter 6.3.2).

The freeform animation worked well as a medium for the practitioner researcher to express their innermost emotions, and tended to be considered the most entertaining part of the artifact (see chapter 6.3.3).

However, it was from feedback gleaned from the animation perception study, and born from the experience and evocative reflection of this journey of three animated stages (with the fourth stage the perception study) that a rudimentary conclusion could be formed which required a fifth stage to be added to the research.

That of the three forms explored, the rotoscope approach had the greatest impact on the practitioner to absorb and render emotional expression. Would this finding have value beyond the practitioner researcher to other animators at an exploratory stage in their practice?

This conclusion led to an animation production study being conducted, discussed below.

6.4 Part 2: Animation Production Study

In journeying through each contributory research question via an animated iteration, followed by the results from the perception study, a new conclusion based on the findings in progress was made.

That of the three forms explored, the rotoscope approach had the greatest impact on both the practitioner and (to a lesser extent) viewers to absorb and render emotional expression. Would this finding have value beyond the practitioner researcher to other animators at an exploratory stage in their practice?

Sloan describes how he wished to “engage a cohort of student animators with the concept of emotional expression choreography, task them with producing their own animations, and determine whether the subjective interpretations of the practitioner-researcher...could be reconciled with the interpretations of fellow animators” (2011, p.283). To achieve this, he devised a series of lectures to introduce the students to his work, and from these participating students, 7 produced animations. Data was collected via diaries and interviews.

I resolved to run a similar system with 1st year students in order to explore my findings. However, as discussed in chapter 1, I had raised questions as to the trajectory of the 3D animation course upon which I was teaching, since the course’s inception in 2009, as various 3D softwares have become more and more accessible, a gradual evolution has occurred on the course of removing 2D training and projects, with the result that in 2017 almost all 2D projects had been removed and first year students were now working exclusively in 3D. This had been driven in part by the demands of the industry into which our students desired to go, but in the light of my own journey within my research, it seemed an opportunity to see how

predominantly 3D-aligned students would react and potentially benefit from a short but intensive injection of 2D practical work, based upon my own experience of specifically rotoscoping one's own facial expressions as a 3D aligned animator. Like myself, these students had never done any rotoscoping before, nor were they likely to be asked to do any again during their studies. What, if anything, would be the benefit of weaving such a project into an otherwise 3D focused course?

6.4.1 Structure and rationale of the project

First year students were chosen to participate, as being students who had not previously been required to animate in 2D before. The project was designed to be intensive but otherwise short. Rather than spending many weeks on rotoscoping, the project was designed instead to span across one week only, with the emphasis on exploration, reflection and experience, rather than a fully functioning discreet animation.

The project was not intended as a means to turn 3D student animators into 2D student animators, but to encourage observation and understanding of OEB, understanding of which could be fed into the students' next project – the 3D animation of a speaking character. Likewise the emphasis was not to *act out* a scene, but to try to capture real emotion, (or lack of it). The students were encouraged to record themselves talking as naturally as possible about a subject that would inspire strong emotion. That subject could be as deep as a bereavement or as trivial as a favorite computer game or anything in between. They were told to ask a friend to record them simply with a mobile phone, to try and capture the sort of dynamic one might have when chatting to a friend, rather than acting to an audience.

The project began on a Wednesday, with a short presentation showing examples of natural (non-acted) rotoscoped pieces, this included the researcher's own work and a screening of Sabiston's *Roadhead* (1998). The students were asked to prepare a recording of themselves in preparation of an intensive "Games Studio Day" on the Friday. Students were asked to record their own faces, in the hope that the intensive act of rotoscoping might prove more intimate and illuminating, with the possibility of the students being surprised at their own idiosyncrasies of movement, or discovering new qualities about themselves.

The “Games Studio Day” was presented and designed to mimic the sort of working environment the student might expect from an average games company close to deadline, based on the researcher’s own experience of working in games companies. (A copy of the brief given to the students can be found in appendix G.1.)

On the day itself, despite the difficulties of working on a new skill of rotoscoping, and the high levels of concentration and commitment required, the students seemed to enjoy their day, and expressed enthusiasm for the project, even though as 3D animation students it was out of their expected comfort zone. The weekend was given as optional extra time for students to polish or put any final touches on their work. By Monday, all the rotoscoped pieces had to be finished and uploaded onto the students’ individual blogs. The students were also asked to write a short self-reflective piece or feedback to be added to their blog where they could express their reactions to the project, and insights (if any) they might have gained.

The project ended on Monday afternoon with a roundtable discussion of the project where the students could discuss their experience, reflect on what they had observed about themselves through their work, and share reflections with each other as well as with the researcher. The students were informed that this would be recorded on audio only, and transcribed, and that their work (images taken from their animations) and feedback might end up within the researcher’s thesis. It was made clear that students could withdraw their work and feedback from this at any time.

Around 20 students participated in the Games Studio Day, of which 13 posted their work onto their blogs. A further 2 participated on the day, and created work, as well as contributing to the roundtable discussion, but while these 2 students were content to be quoted from the discussion, they did not submit their rotoscoped pieces to their blogs for further evaluation.

Sloan describes how with his own student-run tests, the exploratory nature of the research could not generate “exact predictions” rather that it was hoped that a level of reflective practice would be engaged in the students, both during and after the project, to reveal “artistic interpretations” and “detailed insights”, with the findings going some way towards building and substantiating the reflections of the practitioner-researcher (2011, p.284). Sloan’s approach and requirements meshed well with my own aims, to reveal insights and interpretations and to build connections between my own experience and that of novice animation practitioners, with

the added aspect that I wished to test the validity of this project as a potential training and self-reflection aid to be used on further students as a part of their 3D animation training. To clarify, it was as important for the students themselves to self-reflect upon what they had done, and what they had observed about themselves, as well as the act of rotoscoping itself. By asking the students to participate in a roundtable discussion, as well as write down their thoughts, emphasis was placed on the self-reflection being more important than a completed, finished piece. This exercise was not meant to be a piece of portfolio work, or of any presumed professional standard, but an opportunity for the students to observe and reflect upon their own OEB.

Full blog feedback can be found in appendix G.2 and a transcript of the recorded verbal student feedback can be found in the appendix G.3. An edited version is submitted here with examples taken from the students' reflective blogs and the roundtable feedback session.

Written Blog reflection Student B

"It was fascinating to discover how easily exposed my emotions were, and how as I was saying something, my facial expressions were saying something else. I'm not sure how obvious this can be from the animation I made. I could clearly notice it in the video, but I was not able reproduce it as it was in real life."

Written Blog reflection Student C

"I do feel like I've learnt a lot from working on the project, slight facial movements can express a lot of emotions. I found that even if the image wasn't a significant change within the frame there was a slight change either in the eyes or area around the lips and this helped me study the changes of emotion within the video. I do believe I have gained a lot of insight into emotions now relating to facial expressions and I think it will help me animate expressions and subtle emotion for the future to come. I also found most of the subtle expression came from the lips and eyes as well as some exaggerated body movements. For me personally I did spot that I tend to use one side of my face to speak more so then the other."



Fig 6.5: Student work

Written Blog reflection Student E

“I found this project was unlike any I had done before. Technically speaking it was rather simple, and not too difficult, just time consuming and we had to do it whilst a number of other projects were on the go. However, what I found particularly difficult was how personal this project was. Having to talk to peers about something rather emotional in order to get an emotional reaction out of ourselves made me feel fairly uncomfortable. Besides this though it was rather helpful in teaching me how the face moves when we speak. I can’t deny how useful it was, even though it was rather awkward.”



Fig 6.6: Student work

Spoken Transcript Student 1

“It’s interesting, but it was tedious as well, seeing same the frames over and over again. But most importantly it made me really understand the in between of each frame, made me understand the how of the image.

I discovered my... there’s no symmetry, like in humans, I didn’t know and it’s kind of weird, I’m not disabled or anything like that... I noticed a lot about myself.

I can get a lot done with my eyes and my mouth alone, and then, still tell what I am actually going through.

It is a bit creepy, I felt actually exposed, that what comes out of me was like ‘woah’ there was a lot I discovered about myself, like when, when I’m nervous I don’t keep eye contact.”

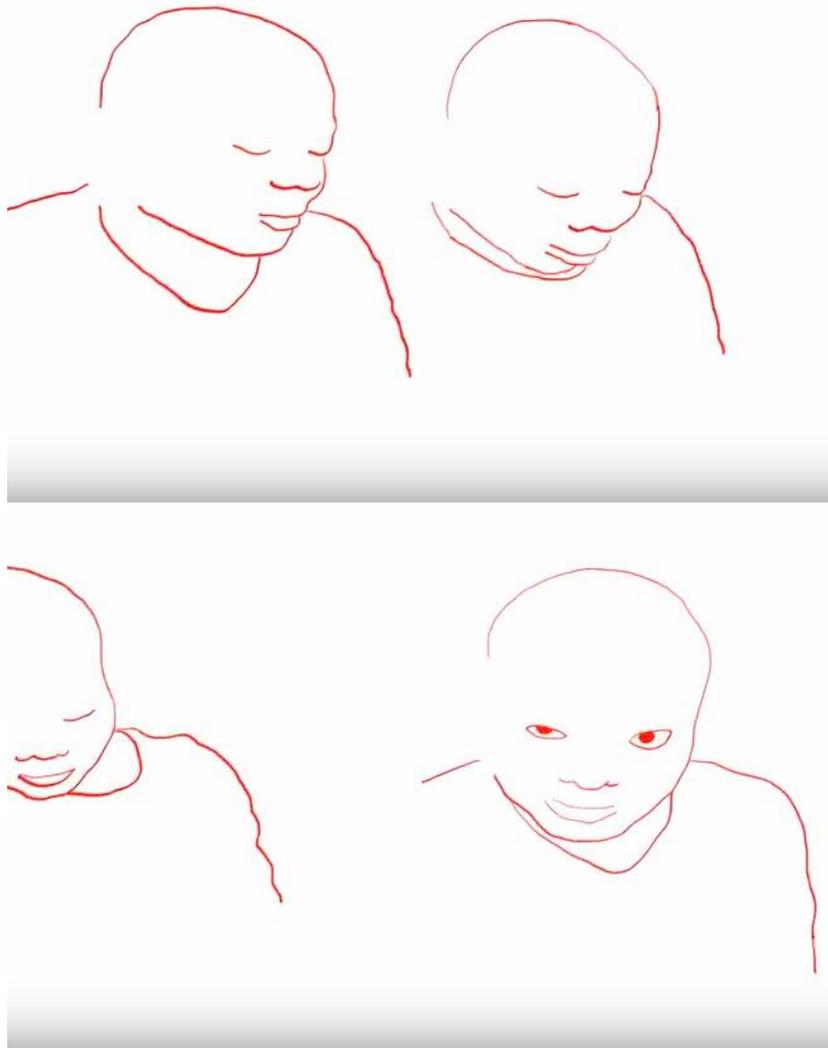


Fig 6.7: Student work

Spoken Transcript Student 2

“You start to see your imperfections, more so than if you doing normal viewing, I noticed that I speak, more using one side of my face than the other, exaggerating my words, and that’s what I saw. Like, every frame you are looking, but each frame is slightly different than the last, it may not be a major thing, it could like be – your eyes, they either like, squint a bit more, the lips are like woah, there’s always a slight difference.”

Spoken Transcript Student 5

"I went like this [rolls head] I literally just tilt my whole head back, I don't just look up, I tilt my whole body up... so actually... that was annoying, because I had to make sure that the rotation, was accurate, yeah, and pushing my head like this"

"but did you know that you do that?"

"No!"

"and what did you feel about noticing it?"

"Like it was, one of my friends came round and he was like, I've noticed you do that a lot and I'm like, what? What? Do I rotate my head?"



Fig 6.8: Student work

Spoken Transcript Student 10

“All I wanted to say was basically when I was doing the rotoscoping is that, you do notice lots more, like kind of subtle movements that you, that you always knew but you never really noted, just like I’ve always sort of known, that I always look to the left when I’m trying to think of something and I never really noticed that until I started doing the rotoscoping. It’s interesting.”

6.4.2 Conclusion to animation practice study

Overall, the students appeared to enjoy the session, though some noted in the recorded transcript that “if you try to do this rotoscoping thing, you’re going to appreciate 3d!” but in general this act of rotoscoping their own faces did seem to help highlight details hitherto unnoticed, to “start to see your imperfections, more so than if you doing normal viewing” and to properly acknowledge and notice movements that the students knew on one level that they did (such as rolling the head) or looking to the left, the “kind of subtle movements that you, that you always knew but you never really noted.” The lack of symmetry was discussed, and how such details might be incorporated into future 3D work, such as in this case, (fig 6.9 below) the right eye opening slightly quicker than the left eye in the third frame. All details that would not normally have been noticed from observing video reference played at normal speed.



Fig 6.9: Student work

Students talked of feeling exposed, awkward, or even surprised by what they saw in the act of rotoscoping.

I began the chapter on exploring my research through rotoscopy by asking the contributory question

How might an exploration of rotoscoped animation of the face of a human character inform the reflection of a practitioner?

Though my own self-reflection of the act of rotoscoping my own face, I felt that I had unlocked a deeper level of concentration in noticing and interpreting the smaller, and generally less obvious nuances of facial expression. In this, the rotoscoped part of my exploration seemed to stand out as more tangibly productive than the motion capture and free-form journey I undertook, with a larger positive reflective learning return to the physical effort of animating.

By reproducing this section of my research with a group of student practitioners, I hoped to see parallels in their reactions, and from feedback from the students it did seem to indicate that the act of rotoscoping seemed to promote an awareness of their own expressions, and to stimulate self-reflection on a deeper and sometimes unexpected level, which in turn helped to frame an answer to contributory research question 2, with the students finding similar insights in the act of rotoscoping to myself, even with a project pitched across a much shorter time scale.

This seems to indicate that such projects, driven across a short but intensive few days can have value to 3D animation practitioners in particular, though it should be stressed that this conclusion is drawn from the personal experience of the practitioner-researcher themselves and a small cohort of student practitioners. The initial findings appear positive, but would benefit from further studies and testing.

However, in conclusion, this practice study reiterated the findings of the practitioner-researcher, with the student animators expressing similar conclusions as to the merit of intensive rotoscoped exploration as a method to hone the perception of a predominantly 3D animation practitioner.

The act of "doing" of rotoscoping animation of subtle, not exaggerated observed emotional behaviour appeared to have a further benefit of helping the practitioner-researcher perceive small and otherwise unlooked for details, and that testing this finding by repeating the

experiment with student animation practitioners appeared to reiterate this finding with a measure of a consensus of opinion.

It is somewhat difficult to distinguish how much an animator would benefit between the act of observing rotoscoped subtle OEB and the act of animating through rotoscopy subtle OEB. Yet it would appear from these two studies that both seeing and doing have a part to play, with doing being the more powerful of the two. While it is important to point out that the numbers of participants within both studies are quite small, and that exact replication of the results would be difficult to achieve due to the individual nature of both the perception participants and the practice participants, the full process does appear to support and contextualise the finding that observation and participation of animations of subtle OEB, in particular, the medium of rotoscopy, can be of use and value to animation practitioners wishing to hone their perceptive skills and potentially to non-animators wishing to observe emotional behaviour more closely. This forms the basis of further research to expand and test this hypothesis further, in order to potentially create a guide or a workshop that could be of practical use to animators and observers interested in perceiving subtle OEB and applying that understanding, particularly to animators, animation theorists and practitioner-researchers.

6.5 Final summation, problems and thoughts on the artifact as a whole

In chapters 3, 4 and 5 I have described the personal reflection of the practitioner-researcher as she explores the filmed footage of a narrow band of filmed footage of her own expressions of happiness and sadness. In these chapters I have described the process, reflection, and (in some cases) a measure of audience feedback for *each segment of the artifact* presented in the order of the creation of each animated section, beginning with a motion captured, 3D animated section, followed by a rotoscoped section, followed by a freeform animated section. In this chapter I presented feedback taken from an audience watching the artifact cut together as a whole. From this I was able to draw an iterative conclusion that I wished to test through a rotoscopy project with new student practitioners. These two studies are not presented as the solution to the research as a whole, rather, they are a part of the iterative process of exploration and investigation of Haseman's cycle, his post performance study method (2007) whereby the

research is drawn out beyond the practitioner-researcher as an individual, in order to gain insights as to how the research might contribute to a wider audience. In this case, how the studies might provide contributions to the academic field of animation as well as animation practitioners and 3D animation practitioners in particular.

However, there is one thread that needs to be tied up. The journey so far has progressed in sections, stage by stage, each stage leading to the approach an application of the next, in a cycle reminiscent of Haseman's methodology. What of the artifact as a whole? How does it tie in with other works that have been discussed and theorised? In chapter 4 I discussed Sabiston's *Roadhead* (1998) animation and how it and the discussion around Sabiston's work had inspired me. Later, I chose to screen *Roadhead* to the students participating in the rotoscoping project. Sabiston's piece, and my own, used the same base concept, that of filming a live, talking person and rotoscoping over the footage, focusing on the face. My artifact reached out to explore and compare motion capture and freeform animation. In a sense, the piece was exploratory rather than narrative, with a heavy emphasis on, as Young described to me during her interview, "*the importance of the making.*" However, emotion can be heard in the voice, and it is important to review this observation further. As such I looked to insights that might be gained from Dennis Tupicoff's *His Mother's Voice* (1997) a film which also uses rotoscoped animation over emotional voiceover.

Tupicoff took an interview of Kathy Easedale, which had been originally broadcast in 1995 on Australia's ABC Radio. In this interview, Kathy describes the night her son was shot, of rushing to the scene, not knowing if he was alive or dead. Kathy's recorded account is animated twice in rotoscope, the first depicts her rushing back to the scene of the shooting. We look through Kathy's eyes, we see her only as a reflection in her car's rear view mirror, we see what she sees as she arrives, as she quizzes the young man who had been with her son. The feeling is of immediacy, as if we are living the scene as it happens, in the present moment. Then Tupicoff repeats the soundtrack, but this time, we see Katy being interviewed, we briefly see the interviewer, before the camera roams away to wander around the house, lingering on ordinary objects that now somehow take on a special significance, "the animation encourages us to imagine what these objects and this room conjure for the bereaved mother." (Nichols, 1997, p.111) Now we are reviewing the event described by Kathy as something that occurred in the

past, and we are encouraged to be contemplative as the camera tears away from the rotoscoped animation of Kathy (as if we can no longer bear to look at her, at her pain) and lingers over these personal objects.

Everything within the film was rotoscoped from filmed reconstructions. Actors were used to convey the events, and the brief interview scene of Kathy herself was rotoscoped from an actress. For the majority of the film, we do not see (rotoscoped) Kathy. Instead, the rotoscoped camera pans across objects, a phone, a mug. We see a young man, a car, a dog, the garden or the rooms of Kathy's house. The objects in Kathy's house take on a poignant significance, the use of rotoscoping gives an air of tracing from the reality, of being directly linked to the original footage, here the guitar of her son, abandoned. Yet Tupicoff never met Kathy, nor visited her home. Did her son even own a guitar? Does it matter? As Nichols points out, the effect and the use of the repeated voiceover and wandering camera create "an extraordinarily powerful piece of filmmaking" (2017). We are drawn in.

Honess Roe describes how the piece was rotoscoped from reconstructions and actors, the imagery conjured from Tupicoff's imagination "The grief-filled voice is more than the body seen on screen, while what is seen on screen is Tupicoff's interpretation of the radio interview. The soundtrack of the world of Kathy's personal experience, the animation is a reconstruction of the world, twice interpreted by Tupicoff" (2013, p.105), yet no less powerful for it. Indeed, the deliberate absence of the speaker heightens the emotion heard within the voice itself. Honess Roe describes the "voices of absent, soon-to-be or nearly present bodies" (2013, p.101), as playing a powerful role in increasing the impact of the piece, for at all times Kathy the person hovers within this shadow rendering, and we the viewers, unable to see Kathy for much of the film, initially see only a tantalizing glimpse of her, a pair of eyes seen in the rear view mirror of a car. We assume (logically) that these eyes belong to Kathy as she is speaking. Yet she remains mysterious, deliberately veiled. Dolar recounts how if we wish to "localize it, [the voice] to establish a safety distance from it, we need to use the visible as a reference" (2006, p.78).

When we are denied visuals of the speaker in person, their floating voice becomes more arresting, more powerful. Chion names this effect as the *acousmatic presence*, "When the acousmatic presence is a voice, and especially when this voice has not been visualized – that is, when we cannot yet connect it to a face – we get a special being, a kind of talking and acting

shadow to which we attach the name *acousmêtre*. A person you talk to on the phone, whom you've never seen, is an *acousmêtre*" (1999, p.21). For much of the film, Kathy is an *acousmêtre*, and this helps to heighten the power in her voice, denied a visual face to hang our expectations on, we are instead drawn to listen more closely to the voice and the emotion within it, undistracted by visuals. "Everything hangs on whether or not the *acousmêtre* has been seen. In the case where it remains not-yet-seen, even an insignificant acousmatic voice becomes invested with magic powers as soon as it is involved, however slightly, in the image" (Chion, 1999, p.23). Chion even goes on to say that provided the face is only seen in partially, "as long as the spectator's eye has not "verified" the co-incidence of the voice with the mouth a verification which needs only to be approximate), de-acousmatization is incomplete, and the voice retains an aura of invulnerability and magical power" (1999, p.28). This holds profound significance in *His Mother's Voice*, as up until the big reveal, the point where we see (actor) Kathy rotoscoped and talking, and finally get to put a face to the voice, the voice has taken on an extra power. Even after the secret has been revealed, the camera shows Kathy only briefly before being drawn away. Perhaps some of the magic of the pure *acousmêtre* has been lost, yet still, we are drawn to think beyond Kathy's face as the camera takes us through her (reconstructed and imagined) house.

This stands in direct contrast to the approach I took with my artifact. While the core is identical – animation set to a vocal recording, including elements of rotoscoping – the drive and layout comes from a different angle. From the very beginning within my artifact, the viewer sees the speaker, in live action footage. There is never any mystery, at no point does the viewer have to imagine or wonder what the speaker looks like. There is no *acousmêtre*. Indeed, in a reversal of the approach to *His Mother's Voice*, the viewer is *never allowed to escape from the character speaking*. There are a few brief moments within the freeform animation where the animation departs from the figure, but never for very long. The viewer is pinned back, and while the rendering of the character changes, now a computer generated dinosaur, now a direct facial rotoscope of the speaker's face, now a hand drawn dinosaur, the artifact is cut back again and again to the live action footage, as if to really enforce the grounding of the voice to a person, with no real scope for the viewers mind to wander and make its own reconstructions. This was entirely deliberate, for while *His Mother's Voice* powerfully depicts the pain in Kathy's voice,

drawing the viewer, the *listener*, into feeling empathy with Kathy, the purpose of my artifact was more stoic. In my artifact the viewer is not expected or required to feel sympathy for the character, the spoken words are secondary to the motion (or lack of it). The speaker could be talking about any subject, feeling any emotion, or no emotion at all. Dolar states that, "The visible can establish the distance, the nature, the source of the voice, and thus neutralize it" (2006, p.79), while Chion describes that the act of showing the speaker reduces the power of the acousmètre, the power of its voice, it is de-acousmatized. "*Embodying the voice* is a sort of symbolic act, dooming the acousmètre to the fate of ordinary mortals. De-acousmatization roots the acousmètre to a place and says, 'here is your body, you'll be there, and not elsewhere'" (1999, p.28), indeed, this synchronous sound (seeing the source of the sound immediately) causes the imagery to attain a level of dominance over the vocals and sound.

"It is the image that governs the triage, not the nature of the recorded elements themselves. The proof is that so-called synchronous sounds are most often forgotten as such, being 'wallowed up' by the fiction. The meanings and effects generated by synch sounds are usually chalked up to the image alone or the film overall. Only the creators of a film's sound – recordist, sound effects person, mixer, director – know that if you alter or remove these sounds, *the image is no longer the same*. On the other hand, the sounds from the proscenium, at a remove from the visual field, more easily gain the spotlight, for they are perceived in their singularity and isolation. This is why people have written much more about film music and voiceover commentary than about so-called synchronous sounds, most often neglected unjustly for being "redundant".

(Chion, 1999, p.3)

Which, in the case of my artifact, is not necessarily a bad thing. The voice still retains a measure of power, and while the live action recoding provides the bones upon which the flesh of the animation was built, the speech and vocals were not the main driver of the artifact, which was the study of the motion itself, limited and possibly in banal emotional depiction. Viewers in the perception study complained of the deadness of the computer generated dinosaur's eyes, the loss of facial animation of this element distracting them from the content, and focusing their attention, or of the restriction of movement of having the character sitting on a chair. One

viewer commented on the “excitement of the speakers voice” as standing out, while another, while watching the “*sad*” part of the artifact, wrote that “I started to ignore the images and concentrate on the spoken word” which gives an impression that to connect more deeply with the voice the viewer would be forced to deliberately turn away from the visuals. However, for most of the respondents, comments revolved more on visual details, the flailing arms of the CG dinosaur, its lack of facial expression, the details of the rotoscopy or the fun and colours of the freeform animation.

In one final aside, on viewing *His Mother’s Voice* for the first time, I was struck by how cool and seemingly indifferent rotoscoped Kathy seemed to be *visually*. Her voice was wrung with emotion and grief, her throat constricted with it, and yet – none of this appeared visually upon her face. No crinkling (however slight) between the eyes. No tightening of the mouth to hold back the tears, no movement of the hands to the face to mask and hide. Her voice did not seem to match her face and body. I was disconcerted, it didn’t look right. For a mother to be talking about losing her son, her voice rent with grief, yet her face oddly matter-of-fact, seemed very odd to me. I felt a pang of anxiety, because this seemed to contradict the findings I had made in rotoscoping my own face in grief, and in discussion with the students on observing their own faces in emotion in the production study. It is only after viewing the animation, that I discovered that rotoscoped Kathy is played by an actor, and perhaps it is difficult for an actor to truly immerse and reproduce the anguish of the real experience of a mother losing her son in such horrific circumstances. Tupicoff’s decision to keep the camera off “actor” Kathy as much as possible might appear to be of more importance than might be originally surmised or taken (almost literally) at *face value*.

The importance of the spoken aspect cannot be denied. One viewer did comment that “the story and the emotion completely overrides the animation style” but overall the viewers appeared to be hooked more on the visuals than the voice itself, as reflected in the comments. This does seem to reinforce how much the power and direction of an animation drawn from a vocal recording can be pushed in one direction or the opposite direction by the choices made by the practitioner. In *His Mother’s Voice*, the vocal element is rendered more emotionally affecting and powerful by the use of an acousmètre to drive the viewer to ponder and listen more closely to the voice, whereas the choice to render the character synchronous to the sound virtually for

the entire artifact might be supposed to trigger more of a pondering of visual details, and an absorption with the more technical depiction of movement rather than the inciting of emotional empathy in the viewer. As such, it suggests that further research could be grown out of this artifact, based on the feedback reactions of the viewer, to perhaps explore a comparison of voice or lack of voice teamed with body language, perhaps focusing on the use of rotoscoping as the most fruitful method in comparison to the other animated approaches of motion capture and freeform animation.

Further concluding remarks on the research as a whole, including both the perception and production study, are made in chapter 7.

7 Conclusion: Learning to see, making to understand

7.1 Personal reflection, the practitioner-researcher

My original aim had been to study OEB through the use of animation and to use my research as a new contribution to knowledge for practitioners and theorists in filmic animation and games animation. So much animation is about being explicit in rendering OEB (see chapter 2.1.1), as the animator is often using simplistic or stylized characters that may not have the full gamut of expression one might expect from a human actor unconsciously utilizing an interplay of up to forty-three facial muscles. In part, as an animator myself, I can appreciate this choice to stylize and exaggerate as deriving in some part from the restriction of time, design and deadlines. While stylized or simply designed characters, without using overt expressiveness, might struggle to express very subtle nuances of facial expression (lacking as they do the detailed musculature of a human to express subtle emotive states) an animated story might be better told with time expended on the narrative, motion and gesture of a simple character, with full use of clearly readable exaggerated gestures, rather than struggling to create a complex, hyper-real design at the expense of the intended story or message.

However, as also explored in my literature review, with the rise of motion capture and special effects CGI, there is the potential to create avatars resembling real humans more closely, and these might be expected to move and behave more like real actors without needing to press the point with pantomime and exaggeration. Since the human face expresses itself with a myriad of different muscles working in unison, CG characters can struggle to reproduce this, at least not without resorting to a detailed knowledge of both expression and the interplay of complex facial anatomy. Hooks (2003) believes that micro-expressions [expressions held on the face across the space of less than a second] and greater subtlety will be demanded by audiences as the level of photo-realism increases, forcing animators to express these intricacies. Even though the audiences themselves might be unable to explain the theory behind expression, we are all nevertheless attuned to expression with our daily interactions with others. In special effects, it is often the exaggerated characters (both visually in their inhuman design and in their motions) such as Serkis' Gollum from *Lord of the Rings: The Two Towers* (2002) that are the most convincing to the viewer. Should mo-cap actors exaggerate their postures, to counteract

any limitations of the final avatar their motions might inhabit? Not all animated characters are as extreme as Gollum, and exaggeration may not be appropriate.

Mihailova (2016) points out that the role of animators within the collaboration of motion capture and film is often deliberately played down, with much of the credit of the animated avatar passing directly to the human actor, the “animated performer” and little recognition given to the teams of animators and riggers working to breathe life into the character, “agency and ownership of the digital character are presented as belonging solely to the actor, while animators’ work is seen as supplementary” (Mihailova, 2016, p.44). To return to the example of Gollum, forty animators used the live action footage of Serkis as reference, injecting their own spirit into the animation and not simply copying (Serkis, 2003). We have not yet reached the stage where the hand of the animator can be completely replaced by technology. Indeed, Tinwell, Grimshaw and Williams posit the theory of the “Uncanny Wall” arguing that no matter how sophisticated technology might become, viewers’ familiarity to technological trickery raises discernment, thus that CG characters can never perfectly pass as human (2011b). Such might be interpreted as comforting to the animator, for if the uncanny wall presents an insurmountable barrier, the services of the animator will always be needed to add that extra dimension, that extra nudge of anticipation or exaggeration, of nuance direct from the artist’s hand to sneak past this wall. Thus animators, theorists and practitioner-researchers can still benefit from any research that might give them insights into tapping into nuances of OEB, insights which this thesis contributes to.

Thus, with the rise in more complex technology, a closer facsimile of human expression and OEB cannot be far off, but real people tend not to act like cartoon characters when they are sad or in pain, and a study of OEB is a desirable addition to the animators toolbox. In chapters 4 and 6, rotoscoping proved to be a valuable method for reflecting and interpreting OEB, a method via animation through which cultural, gendered, familial and location restraints became clearer for both viewer and practitioner to see. Ekman and Rosenberg (2005) defined these restraints as “display rules” with cultural display rules specific to culture and personal display rules specific to families and often learned as a child. Tears do not fly out of people’s faces in waterfall streams as a cartoon character might react. Crying might be socially acceptable at a funeral or birth, but most people might feel constrained from crying in the workplace, or on the bus.

(Ekman and Friesen, 2009) They might even (depending on circumstance) feel compelled to restrain expressions of joy. Ekman and Friesen classed this within the definition of “deintensifying” where the joyous reaction of a person winning might be toned down to avoid accusations of “gloating.” This differs from “neutralising” where a person tries to hide an emotion (such as not crying at work). Further definitions include “qualifying,” a deliberate expression put on to soften the underlying emotion; “simulating” (deliberate feigning of emotion where no underlying emotion is present); and “masking,” trying to hide an emotion by casting another over the top of it, such as pretending to be delighted with a gift you actually really hate. (Ekman and Friesen, 2009). Academics such as Tinwell (2014) and Sloan (2011) have turned to Ekman and al for insights to inform their work in studying facial expression within the context of 3D animation, and I have drawn this research into my literature review and application and scrutiny of my own artifact, particularly within the context of the freeform and rotoscoped sections of my work.



Fig 7.1: Live action still with corresponding rotoscoped still

I found the creation and scrutiny of the artifact, the act of animating and viewing my work, informed by literature review, to be very successful as a method of scrutinizing my own OEB. On viewing the artifact closely, I can spot various expressions falling within the remit of the qualifiers defined by Ekman and Friesen above, for example, while talking of my father's illness, it becomes clear I am on the brink of tears, though I am struggling not to release the emotion fully, deintensifying rather than fully neutralising. Laughing while clearly upset, qualifying, masking. To laugh while describing something serious or otherwise upsetting might seem illogical or odd, but taken as a qualifying measure, it makes more sense. I was uncomfortable about showing my distress in front of people, and uncomfortable about causing others to feel upset on seeing me upset, hence laughing to appear to soften the impact, entirely for the benefit of observers. I would not laugh if I was alone feeling the same distress, with no one observing, when alone, the distracting effect of laughing is neither needed nor wanted.

In this way, on a personal and self-reflective level, this intimate dissection of my own facial expressions and emotions was illuminating, and coupled with time spent rotoscoping sections of the live action, I was forced (through the act of rotoscoping) to focus and concentrate on my facial expressions frame by frame. In some ways this process is not dissimilar to the freeze-frame intensive study that FACS (Facial Action Coding System, a method developed by Ekman and Friesen to study expression closely) researchers must apply when viewing video footage. As FACS researchers freeze-frame their way through footage, they are more likely to pick up on possible micro-expressions, and "emotional leakage" of true expression, swiftly hidden and frequently lasting less than a fifth of a second (Ekman, 2012). My approach, using animation as a tool of study, had an effect not dissimilar. For every second of footage I viewed, I was drawing twelve to five frames. A micro-expression, in animation terms, might account for around five frames, the equivalent of one or two drawings. This span would be long enough to be picked up and sketched out while rotoscoping live action footage. In my own case, I found no examples of micro-expressions, possibly because I was in a self-chosen situation where I wanted to express myself freely, and knew what to expect from the interview, (no unexpected surprise questions).

However, the process of rotoscoping was certainly intensive enough to train me into becoming more aware of expressions, and further rotoscoped footage of other volunteers in future research might reveal micro-expressions at a later date with different subjects.

Furthermore, an understanding of these qualifiers defined by Ekman and Friesen, gained from literature review, allowed me to see (through rotoscopy) these expressions on my own face, to recognise them, and then to apply that recognition into my freeform animation. Here, the freeform allowed me to recognise how I had tried to hide or deintensify my feelings on my face while speaking, and to by-pass my feelings of awkwardness through the use of animation, symbols, colour and abstraction, to say in visuals that which I could neither express in words nor freely show upon my face.

The motion capture stage, too, had a powerful effect, in that I spent weeks combing over my own body gestures and postures, staring hard at them, scrolling back and forth, re-envisioning them into a computer generated avatar. This process, a close study of natural and less exaggerated OEB, followed by the rotoscoping stage, as study of natural, (and often culturally conditioned to be restrained) facial expressions provide the foundation for my hand drawn evocative animations, helping me to refine my understanding of emotional behaviour in order to express it in animation, but also helped to make me more hyper-aware of my own OEB.

7.2 Discussion

It should be pointed out that this research is highly qualitative, personal and self-reflective, and as such, exactly replicating this work would be difficult, as much of it is drawn from the practitioner-researcher's own experience of animating a specific personal experience within their own personal animation style. As such, an adaptation of Haseman's post performance reception study method (2007) was applied in the form of an animation perception study and animation production study. These studies were used to gain feedback from beyond the personal perspective of the practitioner-researcher and to test initial conclusions. However, it should be noted that feedback would have been dependant on the viewers available to this study, their personal reactions, and to the personal reactions of fledgling animators who participated in the production study. The work as a whole could benefit from casting a larger net across a larger pool of viewers and participants within both these studies. However, within the limitations of this research, some conclusions could be surmised, upon which further study, research and testing could be based.

My work runs more as an exploratory journey, investigating first via motion-captured footage, through rotoscoping and finally through and exploration of free-form animation. I asked the initial question:

In a comparison of 3 approaches to animation style, taken from live action footage of subtle, non-acted, non-exaggerated happy and sad emotion, which (if any) might best explore understanding and perception of animated emotional behaviour for the animation practitioner?

In order to explore this question, I embarked on three iterations of the artifact, each with a contributory question.

How might an exploration of motion capture animation of the body of a non-human avatar inform the reflection of a practitioner?

This question was explored through the use of motion capture. While there was no facial animation as such, due to the limitations of the software at the time, with regards to the motion of the body I tried as much as possible to leave the motion captured data untouched and unadjusted, with only the avatar itself constructed to resemble a non-human character in the hopes of drawing viewers into looking more closely at the movements of the character. Initial results seemed hopeful, as when the motion-captured footage was viewed in isolation, viewers did indeed seem to become more absorbed in the more insignificant movements, such as the dinosaur settling herself onto her stool, a small movement that would not have been remarked upon in live-action footage. At this stage of the artifact, the research seemed to contradict previous observations that creative imitation would be more effective than strict replication (Sloan et al, 2009), that life quality would be lost (MacGillivray, 2007) or that it would be harder for the viewer to become emotionally involved with a character (Thomas and Johnson, 1981; Lord and Sibley, 2004). This was very unexpected, and seemingly at odds with the prevailing discourse. Was there indeed more to be revealed for a practitioner to study direct motion-capture more closely? At this stage in the research, the answer to the contributory question

appeared in a more positive light to the problem of direct transposition of motion capture data into animation. An answer that could be considered somewhat unpopular with animation practitioners as it might be construed as taking away the importance of personal animation skills and resorting to sterile computer transposition. Yet, based on these preliminary findings, there might be scope to express a case for direct study of motion-captured footage to be used as a method for animators to better observe nuanced OEB and non-exaggerated movement as part of an arsenal of techniques.

How might an exploration of rotoscoped animation of the face of a human character inform the reflection of a practitioner?

In the second iteration of the artifact, I explored rotoscoping to study the facial expressions of the live action footage. While this was an exploration of a different technique, it was also the second half of a missing element. Limitations of the technology available to me at the time had prevented me from motion capturing facial expressions directly. Using rotoscoping might be considered as a more low-tech solution to studying and transposing facial expression that had been previously overlooked in the first iteration of the artifact.

This part of the exploration appeared to tally more closely to the established research looking into rotoscoped animation, in particular, Honness Roe's observations of rotoscoping as bearing the imprint of the animator's hand (Honness Roe, 2012), but also of revealing and simultaneously concealing gestures, energising and highlighting them (Ruddell, 2012).

Regarding informing the personal reflection of the practitioner, the act of rotoscoping did appear to heighten my own perception of the nuances of subtle facial movements, and enable me to view footage in a new light, with heightened perception as the act of rotoscoping forced me to trace out expressions frame by frame. There were also what appeared to be parallels with the FACS coding system, where trained practitioners examine live action footage hunting for subtle indications of facial expression and emotion, including micro-expressions. I would suggest, that the act of rotoscoping from footage of human faces is not dissimilar to FACS study. The difference being that animators work through footage frame by frame, deliberately trying to

capture through artistry and line, the facial expression of that frame. It is hard to go through this process without becoming (almost painfully) aware of every subtle shift in the face.

As has been previously discussed in chapters 1, 4 and 6, I approached rotoscoping from the direction of a 3D animator, having had little or no previous experience in 2D animation and certainly no previous experience in rotoscoping anything, let alone human faces. From my own personal experience of rotoscoping, combined with the results of the perception study, it became clear that a further production study involving rotoscoping should be implemented, and this is discussed further in chapter 6.4. It was from this production study I was able to extend my findings from the personal out to a larger community of animators to show how the practice of rotoscoping, applied and directed as a means of reflection and study of OEB can be a powerful pedagogic tool for animators to gain understanding through creativity and reflections. An understanding which can then be applied into their future, (non-rotocoped) animations (such as 3D animation).

How might an exploration of hand drawn animation of a simplified cartoon character inform the reflection of a practitioner?

In the third animation iteration, the exploratory squaring of the circle involved a more organic, entirely 2D approach to transposing the filmed footage. This stage differed from the previous two animated explorations in that no direct transposition occurred, instead, this was an opportunity to express concepts and feelings through the animation itself, using colour and line, motifs and a greater level of abstraction. This section was grown out of the previous studies of motion capture and rotoscoping, in a sense to form the final part of the practitioner-researchers journey. It was an opportunity to integrate what I had learned of OEB into a broader language typical of animation, with the world it creates. This was less about direct imitation of OEB, but a method to test through practice that which I had learned in the two previous iterations, transposing them into a world of visual metaphor, metamorphosis, exaggeration, fantasy and symbolism, but all tempered by what I had previously absorbed. More internalized and self-reflective, this part of the artifact did not appear to help viewers gain insight into interpreting real OEB but it did help to open a window on the internal thoughts and

feelings of the animator that were not being expressed by the previous footage of OEB, and how to express the shortcomings of OEB, where it failed to communicate the internal and hidden emotions, in a manner that viewers could understand more clearly. The freeform animation was able to reveal more of the emotion concealed within the head of the practitioner-researcher rather than heard in their voice or seen in their movements, (or as filmed in live action or transposed through motion capture and rotoscoping). Of all the three iterations, this was the most internalised of the approaches, and worked well as an instrument of self-reflection and expression of difficult or hard to express concepts. Of the three approaches, this appeared to have the most powerful effect for the practitioner-researcher to express themselves, both to themselves and to an audience, but the least effect to touch or help others interpret OEB.

However, I would say that this application of animation, heightened by the contrast to the two previous iterations is a powerful research tool of self-reflection. A tool that animators and practitioner-researchers can draw upon to explore their own inner world and emotions. Susan Young's current research explores way in which animation can be used to explore her own personal trauma. Her animated approach is less figurative and more abstracted, focusing more on revealing her inner world. My research augments Young's work by approaching in a differing manner, though an intense focus upon the figure, and blending OEB with what might be called *unobserved emotional behaviour* to fully express the inner and outer emotion of the practitioner-researcher.

Though as discussed in chapter 7.1, the input of the literature review, coupled with its application through the preceding iterations, helped to define and provide insight into the creation of the freeform work, and such a path of exploration might prove beneficial to other animators wishing to express through their work, though exploring and combining both *observed* emotional behaviour with *unobserved* (locked inside the mind of the animator) emotional behaviour.

As a final stage, the three iterations were cut together with the live action footage into one artifact. This was intended to return from the piecemeal approach of each contributory question to the original main research question, which revolved around a comparison of different animated approaches, in itself answered and investigated by the contributory questions.

7.3 Contributions

This research contributes to both a practice and to an academic field. Animation practice is subjected to ever changing technologies and outlets for animators to pursue their craft continue to grow, from film to advertising to games to virtual and augmented reality. With these technology shifts, animators are learning their craft in different ways, from the traditional 2D slanted degrees, to more 3D focused training courses and self-training utilizing online resources. In my literature review, I touched upon the imperatives that these new technologies are putting onto animators, with the rise of synthesians, motion capture actors and desire for life-like, or at least convincing, movement. It is into this body of literature and practice that my research contributes to, on how OEB can be studied and then integrated into animation. Of course, the integration of OEB into animation practice and theory is not new, and there is already a pre-existing discourse on exaggeration and nuance to which my research contributes.

My research gives new contributions through evidence of ways of understanding further possibilities for animators. It is intended as an addition, and augmentation to the toolbox of literature and practice already available to practitioners. In addition, this research runs in parallel to, and augments with work from other academic researchers within this field, Tinwell (2014), and Tinwell et al's discussion of the uncanny within 3D facial animation (2009, 2011), and the practitioner-researcher approaches of Kennedy (2013, 2015, 2017), Sloan (2011), Sloan et al (2009, 2010) and Young (2011, 2017). Within this field of the practitioner-researcher in particular, there is a debate on the communicativeness of the emotional expression and ways in which the animator and the researcher might approach this debate.

Young weaves abstracted animation and visuals to explore her own past trauma, and stressed to me in her interview how, within the context of her own research "the making is incredibly important." Sloan animated 3D heads, striving to animate from his own "creative imitation" rather than replicating directly from life (Sloan et al, 2009, p.1). Sloan talks of the importance of animation practice as a research tool within the context of his own research. "Investigation into traditional animation production and audience perception of emotional expression 'choreography' could lead to advanced training guides for character animation, and also lay the ground work for believable real-time animation of interactive characters"(Sloan et

al, 2009, p.675). Kennedy draws upon his experience as an animator and actor to explore methods in which to bring greater clarity to animation through the use of actor reference.

My research differs by exploring OEB through the practice and comparison of three different, but iterative, animation approaches, comparing and using both 3D and 2D. Thus my work augments and contributes this existing debate and field, via its differing method. It explores the method of 3D animation, while also drawing back to the use of 2D. My work seeks to show the value of both these animated forms, and perhaps, contains a thread of love for both of these approaches.

1. Contribution to practitioner-researcher methodologies.

This research has extended the Haseman's cycle into the new area of animating OEB by comparing three approaches to self-figurative animation. This was further extended by applying the findings to a post performance reception study to extend the contribution beyond the personal reflection of the practitioner-researcher.

This thesis has revolved around method, practice and approach, augmented with literature review and study. It contributes to the debate of the practitioner-researcher's approach to research by illustrating an example of how animators might use animation as a method in which to enter into a more academic debate and contribute to academic research via their practice. Sloan defines himself as a practitioner-researcher within his doctoral thesis (2011) and I have taken up this definition for my own work. I would suggest that Sloan's approach (and his adaptation of Haseman's cycle methodology to his animation) within his thesis falls more within the *effective* approach, whereas my approach encompasses the adaptation of Haseman's cycle into a more *evocative* animated approach. In chapter 1, I described how Kennedy calls upon practitioners, especially those with academic ties, to demystify the process of animation and to "elucidate their creative processes" (2017, p.308) and I would add to this call and take it further, by offering my method as (one of many) approaches to encourage more practitioners to make the leap into academic practice and further the cause of the practitioner-researcher as a valid method of approaching research.

This journey method of research, spanning a research question punctuated by contributory questions explored through practice in order to draw out conclusions, is proposed as a template

for other animation practitioners wishing to make the jump from *animation practice* to *research through animation practice*. While this method of research questions is not novel and was proposed by Andrews (2003), the application of iterative *animations* to explore these questions adds to a small but hopefully growing pot of practitioner-researchers breaking new ground into animation practice as research (such as Susan Young's thesis in progress). My research was unique in comparing three disparate animation methods in order to iteratively explore one research question, and could be added to this small pot as an example of *a process through animation practice in order to generate conclusions* that other animators might be interested to explore.

2. Contribution to the discourse around the use of motion capture within animation and OEB.

This research revealed unexpected results that contradict established thought in animation. My study showed that when the motion captured footage was presented *in isolation*, it actually induced a *greater* awareness of OEB (see chapter 3).

However, when the motion capture was presented next to the live action footage and other methods of animating, there was a return to the consensus held within animation discourse (Bode, 2006; Geller, 2008; Pollick, 2009). It has been asserted that that motion capture animation requires the hand of the animator to add "life quality" (MacGillivray, 2007) and should be tweaked by an animator's eye to render it less stale and more authentic (see chapters 2.1.1 and 3.3), yet the results from viewers seeing the motion capture segments *in isolation* seemed to contradict this (see Chapter 3.8).

This is a contentious claim and feedback from the artifact as a whole did actually confirm the established view. Thus I have cautiously suggested that further testing is needed and outlined strategies for approaching this in chapter 6.3.1, in order that this anomaly might be resolved and clarified.

3. Contribution to the discourse around the use of rotoscoping, specifically in regard to OEB.

It was found that, of the three forms explored, the rotoscope approach had the greatest impact on the practitioner to absorb and render OEB, and could be used as a tool for self-reflection.

This finding was initially made through my own experience of animating OEB closely through rotoscopy. I noticed small details of OEB that would otherwise have been overlooked, and found that the act of rotoscopy helped form a basis upon which self-reflection could be structured, with the observations of OEB then taken into my following work (the freeform animation). In order to see if this finding was meaningful beyond my own personal experience, a production study was conducted and it was found that this heightened perception was also observed among the participating student animators. By emphasising the use of rotoscopy not just as an animation tool, but as a tool for self-reflection, the students were able to reflect and record details and oddities of their own OEB, to discuss and reflect on details of their fellow students observed OEB and to record and process these details as of interest to be brought into their future work.

It was found that rotoscopy had the most powerful effect at tuning the practitioner researcher to OEB when the rotoscopy was focused upon an individual who was not specifically acting, and when the rotoscopy was presented and applied *as a tool for self-reflection*. This was corroborated by the fascination in the facial rotoscopy expressed by the viewers in the animation perception study, and in the self-reflection of the animation students participating in the production study.

This result was unexpected, for as discussed in chapter 2 and 3, straight rotoscoping of actors without the injection of the artist's hand can result in a loss of life quality (Thomas and Johnson, 1981, MacGillivray, 2007). Cullane feels that "nothing could be gained by painfully rotoscoping some actors to attempt to simulate live action" (Culhane, 1988, p.44). I posit that in fact, something very valuable *can* be gained by rotoscoping directly from people. The crucial point being the *application of rotoscopy* within the repertoire of the animator wishing to explore subtle nuances of OEB. Straight copying of actors is not what this research is suggesting. Critically, this research focuses on the value of self-figurative, not acted, footage, with the emphasis on animators *using the act of rotoscopy as a training method to observe and learn subtleties, coupled with the act of rotoscoping as a self-reflective tool*. This training can then be taken into their animation as an augmentation of their observation, and not as a direct port from filmed acted footage into a finished animation.

This research suggests that animators can use rotoscoping as a training method to observe and learn subtleties of OEB. It further suggests that in regards to self-figurative animation, rotoscoping can be used as a self-reflective tool, from which animators can use the insights gained as an augmentation of their observation, and not as a direct port from filmed acted footage into a finished animation. Rotocoping from OEB can provide a window onto subtle nuances that might be lacking in acted footage, such as personal quirks, asymmetry, and unconscious movements and masking of emotions. When combined with reflection on the part of the animator, rotoscoping is a potent tool for helping animators become aware of OEB, an awareness that they can then take into their further (not necessarily rotoscoped) animations.

As a 3D animator myself, rotoscoping had never been a practice I had any great keenness to pursue, on the one hand it is perceived as an “easy option” to trace from live action footage. The reality, as experienced by many of my own students who hoped that rotoscoping would provide them with an easy option, only to discover that this discipline is intensive, hard work and far from easy. As such, it is not the obvious or popular choice to deliberately weave into a specifically 3D animation course without reasons that can be clearly explained and justified. However, with the clarification that comes from these findings, a manual outlining an efficient approach could be compiled, in order to benefit other practitioner-researchers interested in OEB.

Discussions with other academics who observed the production study project have already resulted in plans to repeat this study with next year’s first year students, as a tool of study and self-reflection of OEB. The emphasis being that the students are not required to learn how to become great rotoscopers, but rather that the insights they gain on their own OEB and the discussions with their fellow students on their OEB, visualised and reflected upon through act of rotoscoping, and recorded as self reflection into their personal blogs can be ported into their 3D animation work. From this further workshops might be refined, to be taken out to games companies as a method of refining perception, reflecting and finally, application of OEB into a games industry context.

Tinwell writes that animators are often loathe to include flaws and imperfections into their characters, particularly such characters as the animators wish to be perceived as beautiful,

“facial cues such as bulges and crow’s feet wrinkles may be regarded as unattractive, unnecessary flaws rather than important and crucial signals. The designer may be reluctant to include such details in case they represent a more ugly appearance and imperfections in her flawless skin. A designer may even intentionally erase these less attractive wrinkles and folds in the skin to retain that character’s perfect appearance.”

(Tinwell, 2014, p.95)

This can have the unintended effect of rendering the character less appealing to viewers, almost like an application of animated botox. Yet participants in the production study gained a heightened awareness of their own idiosyncrasies and flaws, and with that, became more open to adding such quirks into their future animations. Quirks they would not have added before due to an unawareness of their existence.

While informally, this might have been deduced by professional animators who have experience of rotoscoping facial expressions from documentary-style footage, it is from the act of comparison, reflection and testing within this thesis that has enabled me to ground this claim into a more concrete assertion, which in itself could be disseminated to animation practitioners, and to animation students studying within the field of 3D animation in particular.

Thus this manual could be refined and collated for dissemination to other practitioners, both inexperienced and experienced. To be able to polish and hone perception of subtle nuances of facial expression and body posture in animators, with the aim that this perception can be woven into animation production, opens up interesting avenues for further research, detailed below.

7.4 Future Work

In this chapter I have mentioned the shortcomings of this research in that it could benefit from further testing and refinement. Further research could entail:

A re-working of the motion captured footage.

In chapter 6 and 7 I discussed a reworking of the motion captured section to flush out the contradictions raised from the initial feedback of the motion capture in isolation to the final feedback of the motion capture when viewed cut together with live action. Could motion

capture still be used as a method of highlighting nuances of body language as was hinted by the results of the initial studies? To test this, the reworked piece might involve.

1. Showing the motion capture footage in isolation in short clips (without placing it next to live action footage or other forms of animation.)
2. A redesign of the character, perhaps making it more stylized or even cropping the camera to hide the face, thus forcing the viewer to rely only on the body motions while not being distracted by seeing any kind of realistic character.
3. A reworking of the audio, perhaps to make the character mute, again to force the viewer to study the body motion, almost in the exact opposite approach of Tupicoff's *His Mother's Voice* (1997) where the animation pulls away from figurative rotoscoping, forcing the viewer to concentrate on the voice. In this case, speech would be removed or limited, the head cropped and the viewer forced to glean all information about the character from the unadulterated motion-captured footage.

Further refining of the rotoscoping "manual" and future workshops

Following on from the interesting consequences of "forcing" 3D animators to study the face closely, further studies could be made across larger cohorts of participants of animators recording footage of their own faces expressing real (not acted) emotions and rotoscoping onto them. This experiment could be expanded to include non-animators; artists and illustrators, with a view to obtaining feedback as to if they have found the exercise to have heightened their awareness of their perception of subtle nuances, irregularities or idiosyncrasies of emotional behaviour and facial expression. The results could be disseminated in the form of a manual of instruction, or short workshops that could be held within training courses or taken out to industry.

Further production studies, to construct a second manual and future workshops

Though an exploration of the qualifiers defined by Ekman and Friesen (2009) I was able to apply an understanding of these qualifiers as they were expressed and heightened through rotoscoping of (non-acted) facial expressions and then take the understanding and recognition of

these terms (in the context of animating) into my freeform animation. There I found that the act of freeform animation (following closely from the rotoscope study) allowed me to express beyond the qualifiers that can be read upon the face, and into using animation and visuals to express inner emotion and turmoil, but also, inner humour and confusion. Young (2017) describes how she uses her research to “explore trauma related emotions whilst avoiding indexical representations of the trauma itself” (2017) and my findings connect in some ways to the discussion she is bringing to this field of animation. To extend this beyond the personal into a contribution to knowledge and practice, I propose that more of a dialogue between these psychology terms and the teaching of OEB to animators should be pursued, via a second production study on the theme of these qualifiers in the context of animation, and how animation can in itself become a qualifier in its own right, through the act of expressing inner emotional feelings through symbols, colour and abstraction. Animation can take invisible emotions and turned them into OEB, a visible animation qualifier. Not just as a means of exposing and exploring trauma, but other hidden emotions too. Drawing from the examples found in this freeform part of the artifact, and recognising and reflecting on further examples drawn from other animators, (such as Young) including potential collaborations, a manual and connecting workshop could be constructed, to disseminate a closer understanding and application of these qualifiers and the extension of OEB that animation can offer, to animators and practitioner-researchers.

Taking the research to unexpected avenues

In chapter 4.6, I described how the act of rotoscoping seemed to help me become more aware of smaller facial expressions, which proved a boon in caring for my terminally ill father. Feedback drawn from the animation perception study also seemed to hint that the rotoscoped sections did seem to encourage viewers to look more closely at facial expressions and to notice details accentuated by the linework of the animation. Could this side effect be intensified and put to a useful purpose? Further exploration of this might involve:

1. The creation of more (short) rotoscoped clips, detailing real (not acted) emotions, across a range of different persons, genders and ages, in particular such emotions that might induce

the filmed persons to restrict or hide their emotions, such as, for example, being sad but not wanting to show weakness through crying. Awkwardness, embarrassment and stilted behaviour might also be explored, as a foil to the more overt and explicit animated emotions that viewers are more frequently exposed to in classic animations (such as animations from big animation companies such as Disney and Pixar).

2. Playing the rotoscoped footage without the voiceover, or blending the voice in and out of the clips.

3. Blending the live action footage into and out of the rotoscoped footage to see if this helps viewers retain an awareness of the nuances highlighted by the rotoscopy.

If such further research proved successful in helping viewers pick up on small details, the most successful clips might be added to websites or training modules for carers wanting to pick up more closely on the needs of patients who might otherwise have difficulty expressing themselves. Such clips would be cheap to disseminate (for example, via websites and social media) and very quick, (30 seconds or so) in the hope of adding thoughtful use in a cheap and swift manner to those needing to pick up on restricted body language. Those who might otherwise be short of time to learn such skills due the constraints of their caring duties.

In conclusion, this research has used the act and exploration of animating, combined with the comparison of different approaches to explore if the practitioner-researcher could use animation as a method for refining observation of restricted and less obvious OEB. Through the animation perception and animation practice studies, attempts were made to see if this personal exploration might have value beyond the practitioner-researcher as an individual to disseminate use to a wider group including viewers and other animators, theorists and practitioner-researchers. This journey is iterative and ongoing, and further research is required to refine the preliminary conclusions discussed throughout this thesis. However, interesting and sometimes unexpected results emerged organically from this process, and I look forward to building on this initial foundation.

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Appendices

A: Description and reflection of the initial motion capture session

Written on the 3rd July 2012, immediately after the filming and motion capture had been completed. The aim was to do a “prompted” interview of myself touching on a “happy” subject, and a “sad” subject in order to capture body movement, however subtle. I already knew roughly what subjects I wished to talk about, but in the morning I prepared a list of prompts.

Happy	Sad
1) Travelling	1) Diagnosis
2) Heat	2) Secret
3) Breakfasts	3) Tubes
4) Sari	4) Hand
5) Ganesh	5) Update

This list was to be given to Dr Magnus Moar (my supervisor) as prompts in case I paused or stumbled. I particularly wanted Magnus to prompt me as he has an easy going manner that puts people at their ease. He is easy to talk to, and the sad prompts in particular, could trigger distress in me that I might not be comfortable discussing with others. The idea was that this capture should be as close as possible to a normal conversation, rather than an interview or performance as such.

As it happened, one of my students was attending, (he wanted to learn how to use the mo-cap equipment for projects of his own, but also to act as technical help for the project) and at first I explained to him that I might have to send him away during the sad prompts as I was uncomfortable with a student seeing me upset. As it happened, the layout of the mo-cap studio involved the computer hardware located in a soundproof booth. While those in the booth had a limited view into the studio, and would see me upset, they would be unable to actually hear what was being said, and I found that I was comfortable for the student to remain in the booth working the software, but unable to hear me talking about potentially confidential or sensitive subjects.

The list - expanded and in greater detail

I kept the prompts cryptic, so that the focus would be on me to talk about them, rather than the subject (or punchline) inadvertently being given away by the prompter. However, these were keywords to me, each on a subject or anecdote I could talk upon.

Feelings

Before coming to work, I put makeup on. I never bother with makeup at work, and this was such an unusual behaviour for me it drew comment from my student. However, I don't consider myself very photogenic, the motion capture suit is less than flattering and I'm going to have to look at this footage for some time! I might as well try and minimize any potential embarrassment.

As already mentioned, I was at first uneasy at my student attending the "sad" sections, though the sound proofed booth was an acceptable compromise for me. In fact, this worked out well, as my student manned the software from the booth, while the technician was checking the cameras.

I had to dress in the suit, with the reflectors properly placed, and the film cameras set up and tested. Two cameras were used, one a full body shot and another a close up shot of my face. I had originally thought that I would be seated on a stool, possibly standing up on occasion, but decided against standing up as I would fall out of the view of the close up camera. (In the event, I was too busy talking and didn't want to stand anyway.) Calibration was made - I stood in a T-pose, then moved head, arms, legs, body, to allow the computer to "set" the positions of the reflectors.

Set up took a long time, and I was surprised that as we came closer to actual filming that it was almost 11am. It was a totally unnatural situation, I was in a weird suit, looking slightly ridiculous, sitting in a bleak room, trying to talk about subjects in order to artificially induce mood and from that mood, body language appropriate to the mood.

For filming, I began with a T-stance (this will make things easier for me when I later come to map a character to the generated bones.) Then from T-Stance I sat down on the stool ready to begin. There was a preliminary section where I introduced myself; who I was, what I was doing and why. This was to get comfortable with talking in this strange situation, under both live

action and mo-cap cameras. Magnus positioned himself in front of me so I would have a focus and a person to address my speech to. He sat in a chair, in order to foster the conversational tone we were hoping for. At first I did feel unnatural during the introduction, but when I began to talk about travelling, my usual enthusiasm for the subject returned and I felt I was talking and moving honestly, though occasionally the inner me would wonder if I was moving enough, but such moments were brushed aside, and are not uncommon for me when I am talking normally anyway, as I frequently will have brief moments of self-awareness of my own posture when talking to people even when not being filmed. (Body language, even my own postures, are of interest to me.)

As we started to move onto the sad section of the talk, I did start to feel uncomfortable, naturally I think, as I was talking about difficult subjects. I think I am a usually quite animated person when talking about subjects I feel passionate about. I am aware that I do lean forward and gesture with my hands, possibly more than the average person. Part of this experiment is for me to see for myself if my self-perception (viewed internally) matches my recorded persona - being able to step out of myself via the motion capture data and view my gestures more critically, from the outside. By contrast, I feel that when I am upset I try to hide my feelings and damp down expressions of distress, particularly those expressions traditionally associated with women (such as weeping). I am deeply uncomfortable at being seen to weep in front of people, particularly in a work context.

As a consequence, when I become upset, I generally start to try my best hide my distress. To cry in front of someone I would really have to be in an extreme situation, perhaps after prolonged and extreme stress.

Talking about my dad's illness is a subject that I find very upsetting and I have often felt very close to losing control of my distress. I have not yet broken down completely in front of anyone, but it is a subject that does take me to that edge. As I started to talk more on the subject, I began to feel that inner conflict - I was aware that I had to pause on occasion (inwardly trying to regain control? Conceal emotion?) I was aware that my voice became ragged at one point, and I raised my hand to my face. There were some subjects I was unwilling to talk about, I did not want to voice them or think them through.

It was a relief to talk of my father in the context of after his most recent operation, having seen him just a few days earlier and been most relieved at how well he looked and how well he was doing after such invasive surgery. I am very proud of him.

Afterwards, I felt that my eyes were moist, and that I hoped the cameras and recordings had gone to plan as I really didn't want to have to go through that a second time. The technician told me he had left the room when I became upset, (perhaps he felt uncomfortable, or wanted to spare my feelings or both) though I had not noticed him leave, or even noticed him manning the cameras. He did tell me that watching the footage on the motion captured screen had been interesting. Although they could not hear what was being said, and I was sat on a stool making minimal movements, the change in topic was noticeable from the way my posture had become stiller and more subdued, with hand movements to the face.

We stopped for lunch, a welcome respite and distraction to get out of the building, compose myself further and return to "normal."

The second task, was to try facial capture. A barrage of extra motion capture cameras were set up, and I had reflectors attached to my face.

Calibration involved face pulling into the cameras, and then we filmed a second (slightly shorter?) version of the prompts above. There was some variation on what I talked about. At first, I found the reflectors slightly uncomfortable, as if they restricted my facial movements, however, as before, I seemed to get used to the situation and was able to talk as before, with similar results. I got upset, though felt that I did not get as upset as the first time. Possibly from familiarity? Fatigue?

Afterwards, I really wanted to get the reflectors off my face and they were starting to itch and irritate me. The suit too was starting to aggravate, and I felt slightly hotter than I was comfortable with. The data had not captured as cleanly as we had hoped, and was proving too complex to process. As it was bonus material, I asked for a render of the reflectors taken from the software. (A small video.) This allowed the viewer to see the head and mouth movements, as captured.

https://docs.google.com/file/d/0B4In3Q7aRQ_nelBDc0pCSml6bmc/edit

B: Character Design: Initial T-Rex Character Concepts

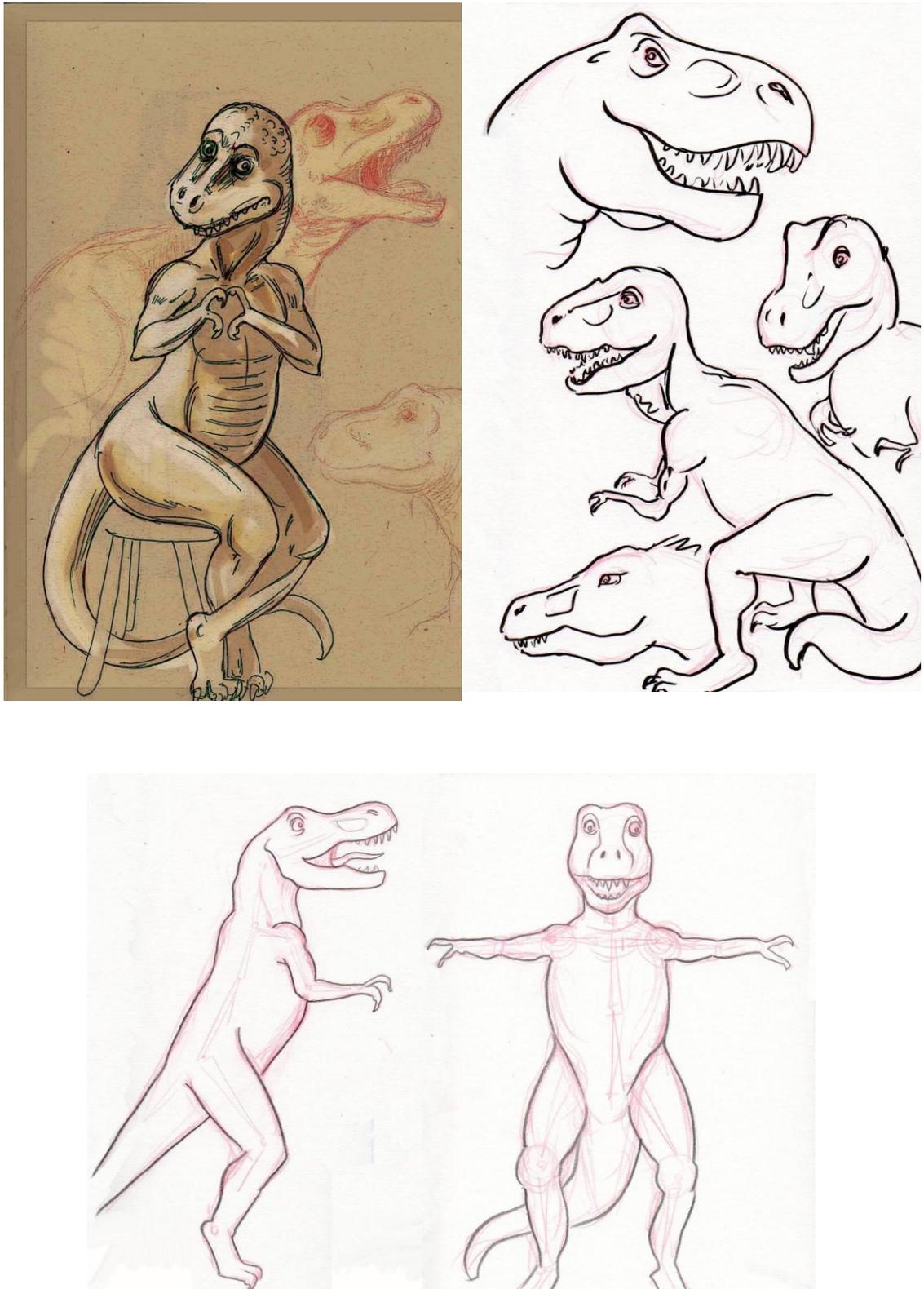


Fig 8.1: T-Stance Sketches, rough templates for constructing a mesh for the motion captured data

C: Maya Constuction: *Technicalities of constructing the 3D avatar*

Character Mesh in Maya

Using the hand drawn templates (above) as visual guides. I constructed a T-Rex inspired dinosaur in Maya. I kept the number of polygons quite low to make it easier for skinning (attaching the mesh to the bones) and also to allow the animation to run smoothly on my computer. As the main emphasis of the project was the motion and body language, I considered it reasonable to keep the mesh simple.

The mesh was placed around the existing bones (imported from Blade, the motion capture software) and adjusted to fit the same proportions. Thus the T-Rex has human length arms and an upright, human posture. The bones of the neck however, were lengthened from the original human dimensions. As the neck bone is at the top of the bone hierarchy, I compromised that lengthening this bone would not damage the body language itself, though it may impact on the later “hands touching face” animation. This will need to be assessed and reviewed later - when I get to that part of the animation involving hand to head touching.

The completed mesh (in Maya) looks like this...

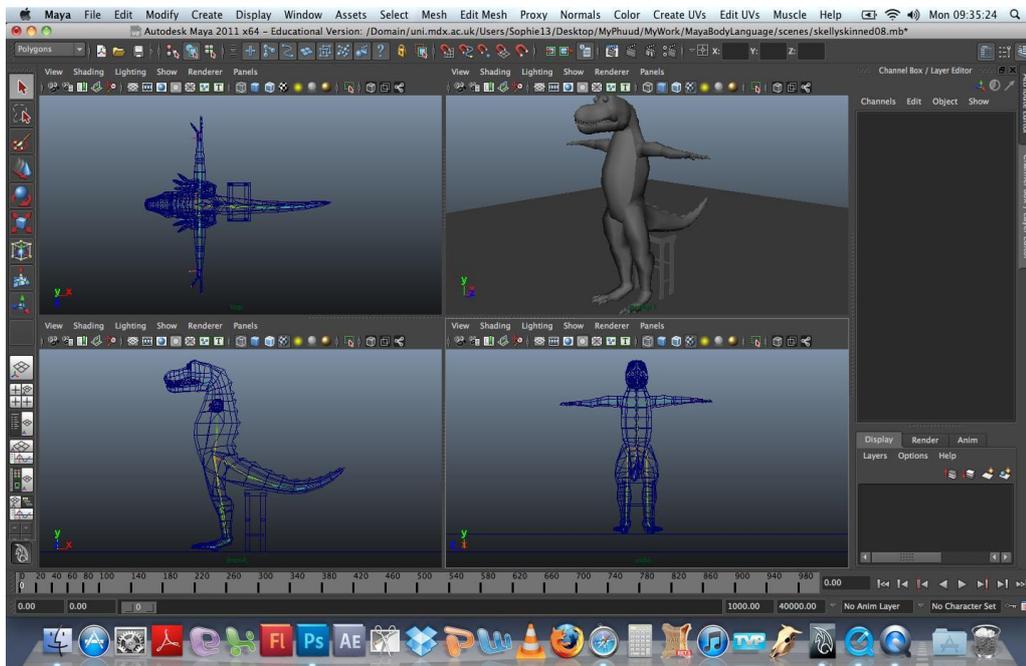


Fig 8.2: Construction of the 3D character

Tail bones, finger bones and a jaw bone were not present in the original skeleton and were added manually. While I did experiment with facial sensors for a second take, the data received from the facial sensors was too noisy to be used.

At first I tried adjusting the existing bones in the T-stance at the beginning of the animation (straightening out the slightly crooked legs and arms, adjusting the tilt of the spine) but this ended up distorting the movement, so that when the dinosaur sat down, her legs and arms crossed over and were in the wrong positions. I returned to the original bone structure, and apart from slightly lengthening the neck (as described above) kept the proportions and positionings untouched, instead, massaging the dinosaur mesh to fit the human bone proportions. It was important to keep this part of the animation untouched, or risk losing precise movements. However, I think I was able to make a reasonable compromise with the final mesh as attached to the bones. The tail in particular, had to be hefted up to allow the dinosaur to sit on the stool, but this did not impact on the motion captured animation, being an extra, added extremity.

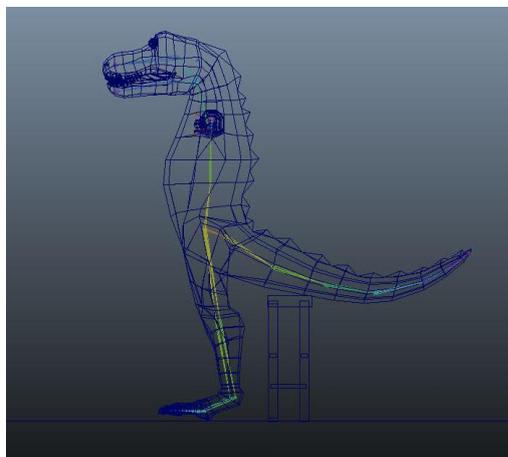


Fig 8.3: Side view of the mesh and posture of the dinosaur, attached to the bones

Some time was spent tweaking the vertices, so that the weighting of each vertex corresponded to the most appropriate bone. (So that the mesh or skin would move or pull in a way appropriate and expected of a real animals skin overlaid over bone.)

A simple stool was constructed and added to the scene for the dinosaur to sit on. It was not an exact replica of the original stool, but its proportions and dimensions are in line with the original, allowing the dinosaur to take a seat in a visually appropriate way.

Below, a link to a test run of the mesh attached to the animation.

https://docs.google.com/open?id=0B4In3Q7aRQ_nbTdqOHE1RURfdE0

There is some jitter on the legs as the dinosaur sits down, presumably from some sort of noise disruption from the original captured data. The rest of the movement seems fairly clean, and as I am only really interested in the body language when sat down, I have chosen to leave this untouched. As a rule, I aim to leave all of the motion captured movements untouched (apart from sporadic glitches where the entire body flips upside down, these will be removed) as it is important to see the captured movements untouched by extra hand animation.

On viewing the initial animation, while the body movements appear to have captured well and are interesting, the lack of jaw movement (considering that this is a spoken piece) looked odd, and seemed quite dull for the viewer. It also seemed appropriate to texture the dinosaur to give it some sort of personality. I also animated a few blinks here and there, but due to time restraints, no finger movements, eye movements or tail movements (beyond the character settling its tail to sit down.) I would like to add tail, eye and finger movements, but this may have to be reviewed as an option if I have sufficient time.

Texturing, animating (mouth/eyelids) rendering and exporting the clip in Aftereffects took at least a day to achieve. (At least 8 hours work.) Much of this time was taken up wrangling software and problem-solving...

1) The option to render out as a mov directly from Maya did not appear to be saving onto my computer, so I had to render out the animation as a sequence of jpegs, import these with the sound into Aftereffects, (having first cropped the sound in Sound Booth so I could fit it to the motion,) then export it all as a mov from Aftereffects.

2) The texture initially was moving and flowing over the dinosaur's body, something which was only noticeable after the animation had been exported through Aftereffects. I was using

a 3D generated texture in Maya, and had to search help forums on the internet to find a way of fixing the texture to the mesh.

About 1000 frames of the piece were hand animated - lip-synch and eye blinks. The total piece is about 33450 frames (23 minutes) long, and while I should be speeding up with the lip synching now most of the preliminary setup has been done, that is a lot of lip synching to do (if I am able to do 3000 frames per day, that would still be 12 days work, assuming I am allowed to work on the piece uninterrupted by work commitments) so I may have to cherry-pick sections to animate, editing down the piece due to lack of time, but also, to make a more punchy, interesting final artifact.

D: Informal feedback comment reactions

A short test of the motion captured animation and the rotoscoped animations were posted to my blog in July 2012 and August 2013 respectively. Informal comment reactions are transposed below.

D.1: Informal feedback comments from viewers seeing the initial motion captured animation clip

Comments ran from the 18th to the 19th July 2012

Commenter 1

That's....pretty cool actually (although you can kind of tell about the jaw).

T rexes are always cool.

Commenter 2

Dino-you is weirdly entrancing

I think it's the subtle mismatches between the monstrous dinosaur and the very human gestures -- it creates a chimera-esque frisson, particularly around the arm gestures and shoulders.

Commenter 3

The jaw movements look very good indeed, and the little bit at the start where you settled into the chair really helped make the dino "you". Very good stuff :)

Thought of wonder, is there somewhere/something you could do to link some part of you to the tail so it moves a little bit rather than sticks out static all the time; maybe even just random wagging or something? :)

Commenter 4

I like your choice of avatar! Anyhoo, I personally would have liked to have seen a tighter angle on the facial features/eyes etc and maybe some camera movement. Otherwise, nicely done.

Commenter 5

I thought you'd been a tad quiet recently! It looks good, although took a wee while to get used to your voice coming out of the animation.

The set up put me in mind of the Aardman 'Creature Comforts' short films, which I hope you'll take as a compliment. :-)

Commenter 6

I love it! The nuances of real motion + voice represented in this fictional form is quite captivating.

Commenter 7

If you want feedback, overall, it's very good - especially the upper body and hand gestures synced with the voice.

The only thing I didn't like was that I thought the alligator / dragon face is slightly problematic, if you're going to drive the lower jaw from the raw mocap data from a human face.

I think it looks a tiny bit puppet-like, with the head immobile and the lower jaw doing all the work. For me, it didn't really sync very well with the voice...

I think a solution would be to scale down the vertical movement of the jawbones, so the mouth doesn't open as much?

Alternatively, shortening the snout would also improve things?

Just my 2p, I'm sure you've already spotted all that and loads more. Good luck with the rest of it!

Commenter 8

excellent - good blink at the right moment

It is subtle, as you say, & it's how important the subtle is that comes out in this - the smallest leg or arm movements, the angle of the head on shoulders, all works with the words to convey a much greater feeling than the words alone would've.

Commenter 9

Wow. That's really interesting! Particularly love how you've extended the body language to the tail - it looks natural and obvious :-)

Commenter 10

That's very cool. I'd never imagined you as a dragon/dinosaur!

How did you add the tail? Unless that's on the motion capture suit too! Presumably to animate that you'd need to do that specially, rather than using the mo-cap data. Perhaps the tip should move a little, as a cat tail does?

Commenter 11

I'm not sure my feedback is very informative but I just wanted to say oooo! at this, basically. Things I specifically noticed making it feel real and characteristic were i) hand gestures as you talk ii) tipping your head side to side (is it *your* head? the dinosaur's head? I don't know) when talking, particularly one way standing for 'on the one hand', the other for 'on the other hand', or that's how it seemed to me and iii) movements after having climbed onto the stool, the little shuffly settling ones - although something in the way things stretch makes it look like the dinosaur is wearing dinosaur trousers rather than possessed of solid legs.

D.2: Informal feedback comments from viewers seeing both rotoscoped animations

Comments ran from the 7th to the 8th August 2013

Commenter 1

They didn't make *me* feel anything, but I could tell that the person in the first one was being vivacious and telling a story that was ridiculous, and in the second one the person was worried and sad. Am I made of stone?

Commenter 2

Mood 1 - laughter, slight grimace, really expressive eyes - widening & eyebrows raising.

Mood 2 - sadness, worry. Sounded tearful & looked like wiping tears away at one point but

obviously couldn't see the tears. Made my stomach tighten with sympathy.

Hope that's helpful.

Commenter 3

Nice. Mood one seemed slightly, very slightly, out of synch, I think.

2 was quite moving. I think both clips captured the moods well, and I liked the economy of line. You done good, IMO, for what it's worth.

Commenter 4

I was wondering how much of the differences in mood (first one you were clearly amused and so was I but the second one was obviously more serious and quite emotional - I found the first part of the second one quite difficult) were down to the tone of voice and content so I had a look with the sound off as well, it's a bit subjective but I reckon you could get a lot of cues from the visuals alone even with the fairly minimal face, so to speak. Certainly the facial expressions say a lot but also in the first half of the second animation you're using your hands a lot more, I think, and then at the end when the mood changes to something more optimistic you use your hands rather less.

Might be worth doing some with no sound to see how much people pick up on visual cues if your research takes you that way? As it was I had the sound on first so it's hard to tell if I was genuinely picking up on visuals or reading in something I knew was already there.

Also, on a different topic not 100% sure about the lip syncing in the first one.

Is that the kind of thing you're after?

Commenter 5

My ancient computer won't let me watch the animations, I'm so sorry!

I might be able to watch them on Monday, if that is not too late?

Commenter 6

Not sure what you're after. The mood differences are very apparent. If the soundtrack were removed, I think they would be apparent too - I've watched without audio, but I did it after watching with audio. If you showed them without audio and asked 'is the person relating a

happy story or are they relating something they are unhappy about', people would be able to tell, but then there are obvious clues to the latter like wiping tears away, hand to face, as well as more subtle clues like eyebrow shapes, head position.

The first, the right eyebrow goes up when you are quoting someone else.

The whole head movement back and forth is greater in the first one, more 'animated'. The second one the head stays within a smaller volume of space, is subdued, not entirely but mostly and on average.

They both show the emotions very clearly.

Commenter 7

Think they're both great. Second one was proper sad, too.

Commenter 8

These remind me of the changes in you from the quieter (yet engaging person) I used to know (loosed from the national suburbs), to the full-on Londoner of monologues, addressing larger groups. The animaton technique really shows up how the body covers different areas of space. By the lack of background, it seems as if there's more there? Probably because of the way this was made. These clips led to strong mood responses in me, just like being in the room with you.

Commenter 9

you can really see the difference, i was surprise as it looks so minimal (even with missing the top of your head :)

it is so you on both.

i found the first one lots easier to watch as second one feel more like i walk into a private session or recording

Commenter 10

Clip one - honesty and humour. The animation really nailed the emotions emanating from the audio. The little eye scrunches and body movement once again underpinned this. (I hope this helps!)

Commenter 11

They both looked like a black mood to me - they just displayed black with no soundtrack. Please tell me you didn't colour in 2000 frames matt black and that there is some technical fault!

Commenter 12

Mood 1 : My first reaction is that there's something wrong with the dubbing or lipsynch, but I quickly realised that this is in the nature of the rotoscoping. To start with, the extreme motions of your lips (the plosive consonants when talking normally, for example) are not that well captured by a standard video camera, because their immensely short lifetime makes them unlikely to appear in a standard frame.

Then the rotoscoping itself kinda smoothes this out, so that when talking normally I have great difficulty meshing the audio with the video - it doesn't look like the animated you is actually speaking.

Whenever you go to extremes - laughing, moving your head or eyes, it sort of 'snaps back' into being obviously you and obviously you speaking.

It gives me a new perspective in how and why early animators (dealing with 24fps and no rotoscoping) ended up with their exaggerated bend-n-stretch stuff

Mood 2: Enormously more successful and emotional - possibly due to the source material? In particular the motions of the lips and eyes really conveyed a kind of sadness. I found the hand distracting though - brilliantly done, but it kinda reminded me of the single white glove trope.

I am now wondering if the fact that your face and body was moving much more throughout this video meant that the small facial features actually came through better

Commenter 13

For some reason I missed your comment about sound, so first watched them without putting my headphones on - interestingly, up until the "hmm, you like spicy food" line in the first one I hadn't identified it as 'happy', the face looks very sad and serious till then. It's obviously not sad once paired with the audio.

I really like the style the face is drawn in, and find it very lifelike and convincing as a means of expression emotions given how few lines really make it up. Watching it does feel the same, to me, as watching footage of someone talking. By contrast, the right hand seen in the 'sad' animation seems almost cartoony and like it doesn't quite belong. As a minor thing, I do find the way some of the line-ends "flicker" (like the line of the hair over the right ear, and the bottoms of the shoulders) quite distracting, and I end up watching them instead of the face sometimes.

I'm not sure how these animations were produced - you mentioned on another post having done 2000 drawings, I'm guessing that those might be relevant? I'm just curious, because from the style of animation I'd assume (based on *no* knowledge of current animation technology) that this had been auto-generated from a film.

Commenter 14

FWIW, with the sound down, I felt seasick from the image-person's rocking back and forth. It seemed to me from facial expression alone that the person was talking about a story which gave her pleasure and interest to recount. Mood 2 seemed clearly a sad, subdued, tale; the speaker was less active and wiped away tears. There was moderation and resolution of her feelings in her face.

I then listened with the sound on. I didn't have different reactions, although I enjoyed the vowel sounds and linguistic aspects of the woman's voice, which was very warm. She seems like a good storyteller; but I was still seasick in Mood 1 even with the sound turned on, so I wonder how much physical context conditions our perception of body language as a part of vocal expression.

E: Online feedback methodology

Obtaining volunteers to view an artifact was always going to be problematic. A live screening using focus groups was considered, but this would entail gathering a large enough group of volunteers willing to participate and fill out a paper questionnaire. A screening cinema would have to be hired, paper and email invitations sent out, incentives such as drinks and nibbles, and ultimately, no guarantee that all invitees would take the time and travel expense to come to a screening (presumably in London) let alone complete a full questionnaire.

There was also the issue that while I could probably gather together a group of volunteers, the majority of them would be drawn from my students, friends, colleagues, ex-colleagues and other students from the faculty. A group that, while not all animators or aspiring animators, were predominantly visual people with a natural interest in observing and interpreting art-based data. This could have skewed the results into a critique from specialists, thus I preferred to draw from a wider range of viewers.

Another problem with focus groups is that while a group dynamic can be invaluable for stimulating otherwise reticent participants to speak, or providing a framework of articulation on an otherwise vague subject, individual interpretations can be swamped or suppressed by a dominant “group-think” (Fontana, Frey 2005). Likewise, it can be awkward for individuals, whether in groups or interviewed alone, to respond truthfully without fear of appearing rude, out of place or foolish. For this reason, I chose online feedback methods as an approach that could encourage confidentiality and anonymity, allowing viewers to express themselves entirely anonymously, freely, and without fear of censure, something more difficult to achieve with focus groups and interviews, and to access (as much as possible) “the ordinary man/woman on the street” or in this case, “the ordinary man/woman online,” who did not necessarily have any training or experience in interpreting and reflecting upon animations.

As the artifact was an animation/film of just over ten minutes, it was suitable for uploading for viewing online. I chose Vimeo (Vimeo.com, 2017) for being a website aimed at showcasing short films and animations from professional film-makers, animators and related students, but viewable by anyone for free, at reasonable quality and at a time convenient to them, (provided they possessed the link to the animation and suitable technology to view footage.) Vimeo based films can be viewed on desktop computers, laptops, tablets and mobile phones, so access is

reasonably wide to anyone with a base level of confidence in using technology. From the Vimeo link, another link and request was made to coax the viewer to complete a feedback form online. In order to reach out to potential volunteers, there was potential to request viewers and participants online, via Facebook, Livejournal and Twitter. To increase exposure beyond my own personal networks, I accessed various groups and individuals with large friends-lists and net footprints, to request that my work be positively referred onwards through these groups and individuals, a technique known as "Snowball Sampling." (Sue, Ritter 2012, p.45)

Finally, some sort of incentive needed to be offered. Considering the subject of the artifact, I proposed donating ten pounds to the St Christopher's Hospice (St Christopher's, 2017) palliative care for the dying, up to a maximum donation value of five hundred pounds. This would allow participants to feel they are doing something positive but possibly time consuming not just for my research as a favour, but in a tangible way that will contribute directly to people in need

While telephone and email surveys have existed for some time, literature on using online surveys via social media is more limited due to the fast pace of technology overtaking the time taken for publication, however, Sue and Ritter (2012) discuss the methodology of using online surveys in their book *Conducting Online Surveys*. Below are presented the advantages and disadvantages they highlight from using this method.

E1: Advantages to using Online feedback

1. Fast and cheap, can be more effective than traditional feedback collection.
2. Respondents are generally more at ease to answer honestly when not confronted by an interviewer (be it in person or by phone.)
3. Webpage based questionnaires can be entirely anonymous, encouraging honest response and participation.
4. Respondents can complete the questionnaire at their own pace and in a time and place convenient to them.
5. Accessible to a wide range of people across great distances.
6. Technology becoming increasingly more convenient and available through the increase in the use and popularity of mobile phones and tablets.

7. Easy to respond, with a certain level of familiarity to the concept.
8. Some evidence that open ended questions answered on line can elicit longer and more honest replies than open ended questions asked via traditional survey methods.

(Sue, Ritter 2012, p.17)

E2: Disadvantages to using Online feedback

1. May not be always appropriate to the situation.
2. Creating the survey form requires some technical knowledge.
3. Anonymous option can be vulnerable to some respondents attempting to distort the data by responding several times.
4. Only available to those who have access to technology and the confidence to use it. New technology adopters tend to be under 65, college educated, and have higher than average incomes.
5. Computer illiteracy and some physical disabilities can exclude people from participating.
6. Response levels can be low, and responders can be subjected to survey-fatigue.
7. Social network anonymous surveying requires people to opt in voluntarily. The voices and opinions of those not opting in are not heard and the data sample is restricted.
8. Information about respondents can be limited if entirely anonymous.

(Sue, Ritter 2012, p.18)

To some extent, many of the problems listed above, (such as an inadequate or incomprehensive sample of the population) can be as much an issue in more traditional methods of gathering feedback. Face to face feedback methods have the advantage of being tailored to include all individuals regardless of computer literacy or social media footprint (providing they show up.) On the other hand, this is a qualitative research questionnaire and the danger of individuals not wishing to lose face by being seen to have less knowledge or less to say, being biased or feeling intimidated by the interviewer or feeling compelled to distort responses to please the interviewer are lessened when the responder is replying to an impersonal computer screen.

I included a question asking for an indication of age-range, and by targeting certain groups within Facebook I anticipated getting respondents of a higher age bracket than might be expected, though with few over the age of 55.

F: Results from the Perception Study

F.1: Screenshot of the online Questionnaire

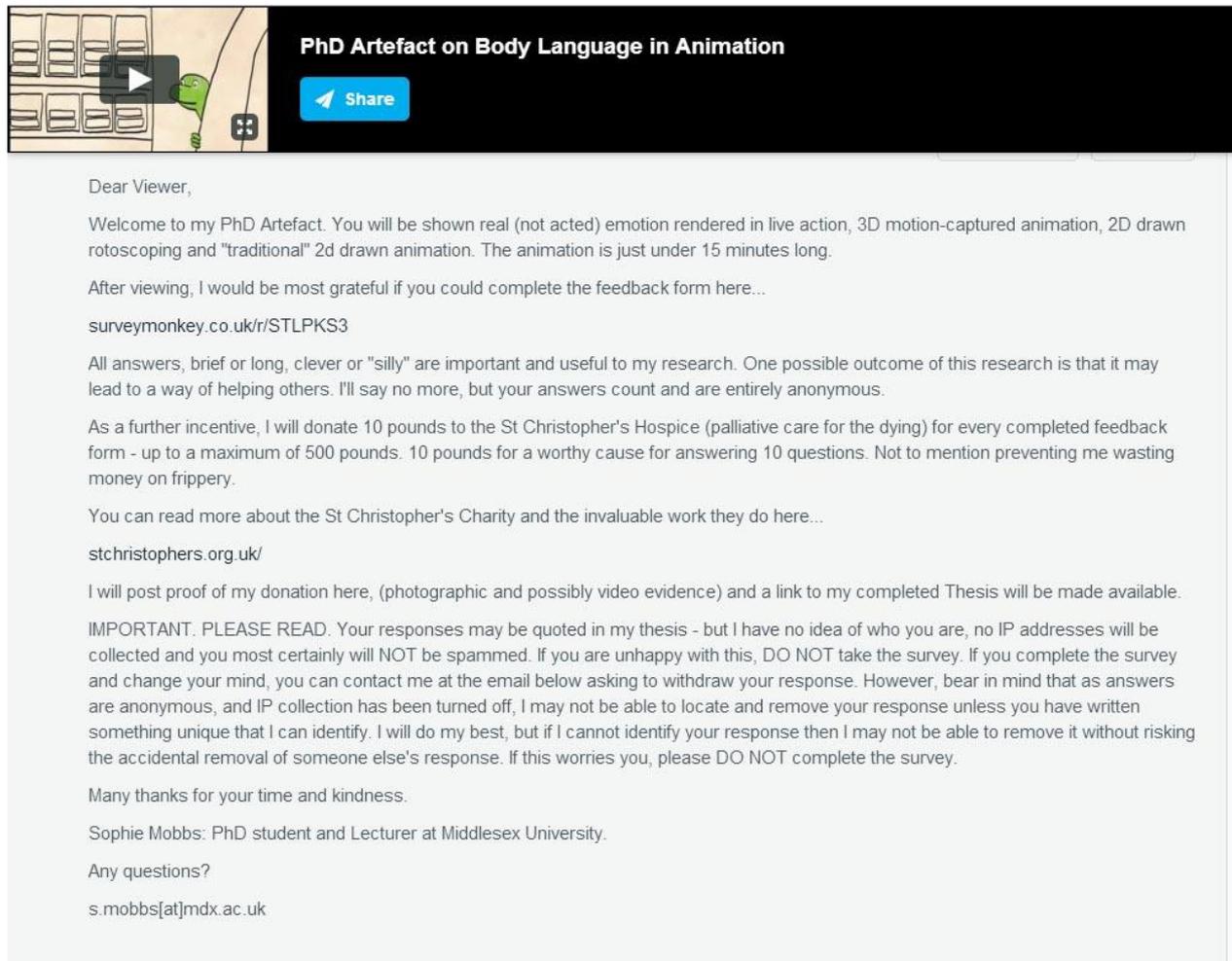
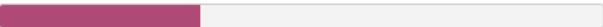


Fig 8.4: Screenshot of the questionnaire

Animation Communication

1 / 3  33%

Welcome to my survey, all feedback and opinions are gratefully received. Write as much or as little as you wish.

Try your best to answer all questions, even if you feel you have nothing "exciting" or "new" to add.

For every completed questionnaire, I will donate 10 pounds to St Christopher's Hospice (palliative care for the dying) up to a maximum of 500 pounds. The amount raised will be published on my Vimeo site.

This questionnaire is anonymous. No personal details will be taken, nor will you be contacted, spammed or placed on any mailing lists.

However, since this is anonymous, should you wish to withdraw feedback after completing the questionnaire you will have to contact me to request withdrawal of your comments, giving some indication to me of which questionnaire is yours, which could be problematic if your feedback has no unique comments.

If this is a problem for you, please do not participate!

1. What was your reaction to the animation overall?

- Very Interesting
- Interesting
- Neutral
- Not Interesting
- Boring

2. Were there any scenes you liked? Why?

3. Where there any scenes you disliked? Why?

4. Considering Mood 1, what details or impressions stand out for you?

5. Considering Mood 2: What details or impressions stand out for you?

Next

Fig 8.5: Screenshot of the questionnaire

The screenshot shows a questionnaire interface. At the top, there is a dark purple header with the text "Animation Communication" on the left and "Exit this survey" on the right. Below the header is a progress bar showing "2 / 3" and "67%". The main content area contains four questions, each followed by a text input field:

- 6. What, if anything, did you find confusing about the animation?
- 7. What, if anything, did you find uplifting about the animation?
- 8. What, if anything, did you find upsetting about the animation?
- 9. Is there anything not covered in this questionnaire you'd like to add?

At the bottom of the form, there are two buttons: "Prev" (disabled) and "Next" (active).

Animation Communication

3 / 3  100%

Thank you for completing my survey. Your time and feedback is most welcome and will contribute to my PhD.

Should you wish to know the results of this research, a link to read the published thesis will be placed on my Vimeo site.

10. Please indicate your gender and age group.

- Under 11
- 11 to 19
- 20 to 29
- 30 to 39
- 40 to 49
- 50 to 59
- 60 and over

Gender?

Prev

Done

Fig 8.6: Screenshot of the questionnaire

F.2: Questionnaire responses

#1  **COMPLETE**

Collector: Web Link 1 (Web Link)
Started: Sunday, December 20, 2015 1:24:02 PM
Last Modified: Sunday, December 20, 2015 1:36:22 PM
Time Spent: 00:12:20

Edit Delete Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The dragon (crocodile?) with the sari men, and their reaction when she ran away.

Q3: Where there any scenes you disliked? Why?

Not really disliked, but the 3D dragon (crocodile?) animation was a lot harder to follow than the line drawings. Partly the dark animal against a dark background, but it was also quite a solid form, so some of the nuances of your body language got lost (particularly facial expressions, since it didn't have lips).

Q4: Considering Mood 1, what details or impressions stand out for you?

Such happy memories, and the excitement still seems to be with you.

Q5: Considering Mood 2: What details or impressions stand out for you?

In the 2D dragon/crocodile, the change from bright green and bouncy to colourless or grey, and a lot less animated / exuberant. The difference really stood out. Is the D drawn rotoscoping the bits where you had line drawings of your face? They really stood out as being very emotional.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing.

Q7: What, if anything, did you find uplifting about the animation?

The clear joy you had felt (and felt again, on remembering) your experiences in India.

Q8: What, if anything, did you find upsetting about the animation?

The descriptions of your Dad's illness, particularly having lost a parent to cancer myself.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Normal sized Windows laptop.

I was surprised (or maybe I'm just unobservant) at how similar your body language looked between the 2 sections (you in the suit), and how the main differences seemed to be in your facial expressions. The dragon/crocodile bits really got the emotions across, despite being the least realistic., but the 3D didn't really work for me - I kept finding myself watching you next to it instead & following the spots on your suit.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Female

#2

**COMPLETE**

Collector: Web Link 1 (Web Link)

Started: Monday, December 21, 2015 7:32:00 AM

Last Modified: Monday, December 21, 2015 7:54:24 AM

Time Spent: 00:22:24

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PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

I liked the simple line drawing animations - it was easier to maintain eye contact with the speaker which seemed very important, as if I needed to relax into the dialogue (well, I know it's a monologue really, but there's a sort of empathy discussion that goes on between the viewer and the speaker). Subject-wise, the sari shopping is just hilarious, although I felt cheated that we didn't get to see a picture of the amazing sari (in the animation - I've seen it RL!)

Q3: Where there any scenes you disliked? Why?

The dual screen CG Dino and actor in rotosuit was quite demanding, viewer-wise; it was interesting to see the process but I kept losing the thread of the conversation. I remember a little pop of relief when instead we focussed in on C Dino's face. Subject-wise, the section where you were talking about your Dad concealing the extent of his cancer - that's a hard emotion to see (harder to feel I'm sure).

Q4: Considering Mood 1, what details or impressions stand out for you?

The girls looking after you and checking you weren't lost (very bouncy animation, very bouncy hair) when out sari shopping. Bouncy Dino tripping over and yelling for yelp in a UK changing room! Subtleties of expression picked out by the line-art filling in emotional depth, rather than referencing it or signalling it.

Q5: Considering Mood 2: What details or impressions stand out for you?

The collapse into an abstract shape, the colour draining out, the shrinking and sudden explosions of emotion. The line-drawing sequence which captured that very distinctive evasive motion (the head goes up, down, looks sideways, the face slides away from the viewer) that is so absolutely characteristic of grief. CG Dino's sad, sad stare.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

There wasn't any direction for the viewer, so it was a bit difficult at the outset to know what we were supposed to be doing. So initially, I didn't really see what I should be doing? But then I clocked onto the idea of treating it like an emotional patternbook, and then I could relax enough to hear the story and see what was going on, and feel for Toon & CGI Dino

Q7: What, if anything, did you find uplifting about the animation?

The simple line drawings were both relaxing and uplifting because they seemed to cut right down to what was needed to be done here - just very straightforwardly emotive; and also Toon Dino in the sari. That's a very uplifting image.

Q8: What, if anything, did you find upsetting about the animation?

It's upsetting to watch people talk about grief. But it seemed paradoxically more upsetting when CG Dino was talking about the sad things, because she seemed to not have enough to successfully communicate (for example, her little arms couldn't reach up so her hand could cover her mouth at the point where yours did, and that seemed weirdly awful and upsetting).

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Antique Dell Laptop which for once behaved all the way through the vid. Reasonable sized screen (I watched full screen).

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Female

#3



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, December 21, 2015 9:27:41 AM
Last Modified: Monday, December 21, 2015 9:49:24 AM
Time Spent: 00:21:42

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Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

The sari for a dinosaur sequence. The drawing style seemed so imaginative

Q3: Where there any scenes you disliked? Why?

Disliked is putting it far too strongly but the motion capture sections did not convey emotion anywhere near as well. should be left in for comparison though. In part this seems to be because that motion capture restricts your movement a little to the chair but a far larger effect is the loss of facial emotion without the replacement that the drawings provided

Q4: Considering Mood 1, what details or impressions stand out for you?

How much better drawing can illustrate mood than motion capture can.

Q5: Considering Mood 2: What details or impressions stand out for you?

That the story and emotion completely overrides the animation style

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing was too confusing. The shift from motion capture to feature extraction to drawing was unexpected but only for a few seconds.

Q7: What, if anything, did you find uplifting about the animation?

All of it. It was a very powerful piece taken as a whole

Q8: What, if anything, did you find upsetting about the animation?

Obviously the story about your father. Hard to hear for those of us who have followed the livejournal over the last couple of months but I don't know how it would affect those who know it only from the video.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

I viewed this on a PC monitor.
It felt intensely personal. As a PHD project illustrating how the different styles of animation illustrate the story in different ways it seemed normal but as such a powerful and intensely personal story very unexpected. I work in a university physics department and PHDs are not like this. This is in no sense a suggestion to change or rethink in any way

PAGE 3

Q10: Please indicate your gender and age group.

50 to 59

Gender?

Male

#4



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, December 21, 2015 7:38:43 PM
Last Modified: Monday, December 21, 2015 7:50:08 PM
Time Spent: 00:11:25

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PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

I liked the Sari trying on scene with the hand drawn dinosaur. It seemed really expressive and teh flow of the animation seemed to work really well with the story.

Q3: Where there any scenes you disliked? Why?

Not exactly disliked, but the rotoscoped part on teh trip to India didn't seem to work for me. I'm not sure if it's because I don't click with rotoscoping, but it seemed almost the opposite of the answer to 2 - I couldn't really read the facial expressions at all well.

Q4: Considering Mood 1, what details or impressions stand out for you?

The girls helping in particular, carrying you along.

Q5: Considering Mood 2: What details or impressions stand out for you?

Actually the rotoscoping really worked on this one. It was at a point where you almost broke down, but I htink it was mor ethan that - maybe that style of line drawing works for that mood.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

I found the 3D animated dinosaur the most confusing. I think it is to do with the jaw movement which is not human like at all. Really expressive body movement and hten a jaw moving like a crocodile's. A bit jarring.

Q7: What, if anything, did you find uplifting about the animation?

Again, the traditional 2D animation with the sari seemed joyous. The way the animation seemed to move between scenes and the way objects seemd to come to life (in a good way).

Q8: What, if anything, did you find upsetting about the animation?

I didn't find anything upsetting as such. I think the rotoscope part of mood 2 was very moving as was the 2D animated part.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

I think the questions re mood 1 and mood 2 could be a little clearer - I initially thought mood 1 referred to the answer to Q2 and mood 2 referred to the answer to Q3, until I did a double take.
Viewed on a pretty decent 21" computer screen.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

M

#5



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Tuesday, December 22, 2015 12:49:13 PM

Last Modified: Tuesday, December 22, 2015 1:08:13 PM

Time Spent: 00:18:59

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Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The Sari buying scene. I enjoyed the amused self deprecation of the embarrassment of going into the shop - I found the 2D animation to be the most expressive

Q3: Where there any scenes you disliked? Why?

The rota scoped scenes of your face. They looked too old to be the face of the person in the motion capture suit and I found that distracting.

Q4: Considering Mood 1, what details or impressions stand out for you?

The movement queues were larger, but less well defined so they worked better in the 3d section than mood 2.

Q5: Considering Mood 2: What details or impressions stand out for you?

The lack if movement in the fingers. The 'real' film showed a lot more hand and finger usage than came through on the animation.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

It all seemed to make sense.

Q7: What, if anything, did you find uplifting about the animation?

Obviously, the first half was far more uplifting than the second.

Q8: What, if anything, did you find upsetting about the animation?

The 2d section where he came home 'grey and hunched over' was the saddest part.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Desktop PC (viewed full screen).

PAGE 3

Q10: Please indicate your gender and age group.

60 and over

Gender?

Male

#6



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Tuesday, December 22, 2015 9:19:28 PM

Last Modified: Tuesday, December 22, 2015 9:22:23 PM

Time Spent: 00:02:54

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

the sari buying one

Q3: Where there any scenes you disliked? Why?

no

Q4: Considering Mood 1, what details or impressions stand out for you?

Respondent skipped this question

Q5: Considering Mood 2: What details or impressions stand out for you?

Respondent skipped this question

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Slightly confused by the switch from CGI to drawn animation

Q7: What, if anything, did you find uplifting about the animation?

The warm little stories about her father

Q8: What, if anything, did you find upsetting about the animation?

Nothing - it was heartfelt.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

iMac

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

Female

#7



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Thursday, December 24, 2015 4:20:42 PM

Last Modified: Thursday, December 24, 2015 4:26:58 PM

Time Spent: 00:06:16

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The sari shop - came to life with the animation - a story you could really imagine. And when she got sad about her dad - I could empathise

Q3: Where there any scenes you disliked? Why?

no

Q4: Considering Mood 1, what details or impressions stand out for you?

The excitement of getting to know a new place and being excited about the differences between there and home

Q5: Considering Mood 2: What details or impressions stand out for you?

The worry about a loved one and the relief when he seems to be doing well

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

nothing

Q7: What, if anything, did you find uplifting about the animation?

The animation with the dinosaur/crocodile in the sari shop really brought it to life.

Q8: What, if anything, did you find upsetting about the animation?

nothing

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

I watched on a PC. I enjoyed the 3d animation of the crocodile/dinosaur but also the more abstract cartoon version. I liked that more than the line drawing of the face.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

female

#8



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, December 24, 2015 4:40:11 PM
Last Modified: Thursday, December 24, 2015 5:12:59 PM
Time Spent: 00:32:48

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The auto-pencil drawings were so gorgeously soft
The girls helping choose a Sari

Q3: Where there any scenes you disliked? Why?

The 'flowers' in the hand drawn animations didn't really work for me. The 3d animation's head was all wrong - too high and the eyes were utterly dead

Q4: Considering Mood 1, what details or impressions stand out for you?

The head on the 3d lizard was too high, which meant it didn't feel right. The technology is very cool. The lady was very expressive, considering the suit and camera setup she was chatting in. The soft lines on the auto-pencil line animation were great and seemed to really convey the emotion - especially the eyes, which were SO missing in the 3d version

Q5: Considering Mood 2: What details or impressions stand out for you?

The 3d lizard started to annoy me, and it didn't seem to slump like her voice and the emotion signalled it should. The true animation captured this well, but the auto-pencil sketch was again the best

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

The tilt of the head on the 3d animation

Q7: What, if anything, did you find uplifting about the animation?

The connection through the emotion of it, particularly the auto-pencil and one or two points on the hand-drawn animation that captured the moment well

Q8: What, if anything, did you find upsetting about the animation?

Nope. The auto-pencil of the cancer section nearly got there, but not quite

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Vista PC running the video under Chrome from vimeo (approx 1/4screen on a large monitor) from a link from Facebook.

PAGE 3

Q10: Please indicate your gender and age group.

50 to 59

Gender?

Male

#9



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, December 24, 2015 5:21:52 PM
Last Modified: Thursday, December 24, 2015 5:38:41 PM
Time Spent: 00:16:49

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The sari scene is great, a really interesting and unusual story, very well told.

Q3: Where there any scenes you disliked? Why?

It's really hard to watch the section about your father. Both because you are suffering and because it brings to mind other people with illness and death in the family.

Q4: Considering Mood 1, what details or impressions stand out for you?

I found that the hand-drawn part of the sari story was more effective for me than the 3D. I think partly because the images are more varied. The speaker being seated on the chair is perhaps reminiscent of Ronnie Corbett telling his long dull stories - without more action it's hard to keep concentrating on the visuals. The body language was probably slightly less effective because the speaker was seated and therefore had limited movement. It was a bit odd watching the two together (live and 3D animation) and perhaps that was one reason I especially missed seeing facial expressions in the dinosaur. The story really involved all these other people and things like the saris being drawn out of the boxes which were great to see in the hand-drawn part.

In the hand-drawn section, there was much more movement and the body language of all participants came across more effectively for me. I think because there were big movements and facial expressions. It made me laugh in a number of places. The conceit of the speaker as a dinosaur worked better for me when hand drawn, perhaps because it's a little more abstract and because the hand-drawn lines are more expressive. And with the other people there for contrast, the idea of the speaker as an alien creature came across well.

With the hand-drawing, you have the artist constructing the gestures and images, choosing them for effect.

Q5: Considering Mood 2: What details or impressions stand out for you?

The section about your father was really tough to watch. The hand-drawn facial animation was beautiful, partly because the expressions were so well captured but also because of the quality of the lines themselves - that magic of line art. Again the sections of hand-drawn animation were very effective in conveying mood.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

No, I don't think anything was confusing, except as previously mentioned perhaps the conjunction of the live and 3D animations with facial expressions on one but not the other.

Q7: What, if anything, did you find uplifting about the animation?

The joy of the sari expedition and the pleasure you took in the trip, especially showing the hotel staff how much you enjoyed the food!

Q8: What, if anything, did you find upsetting about the animation?

The obvious - a father sick, suffering, likely to die.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Chrome browser on desktop PC.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Female

#10



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Saturday, December 26, 2015 6:18:12 PM
Last Modified: Saturday, December 26, 2015 6:36:01 PM
Time Spent: 00:17:48

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The scenes describing the sari purchase, and describing seeing your dad "hunched and grey"; I loved the creativeness of the drawing, the way the human figures dissolved into shapes representing their own emotions.

Q3: Where there any scenes you disliked? Why?

I found the rotoscoped scenes (I think - the line-y version of your face) odd as I found it difficult to place the face in a context (e.g. when you were looking down and to the side, there was no drawing of the side of the head) which meant I slightly lost track of what I was looking at.

Q4: Considering Mood 1, what details or impressions stand out for you?

(Mood 1 means talking enthusiastically about India?)

The lizard-guy on his stool seemed much less joyous than his human counterpart - although his body language mimicked it quite closely, a lot of the excitement you express is in your face and his face isn't very expressive. The contrast of his strangely immobile face with the excitement in the voice was a little offputting.

The story of the sari shopping is my most vivid memory, because the animation seemed to capture the emotions from the story much better.

Q5: Considering Mood 2: What details or impressions stand out for you?

(Mood 2 means talking about your father?)

Again, lizard stool guy didn't seem nearly as upset or involved as the voice implied he should be. Although his shoulders drooped, neither his hands nor his face conveyed very much to me (compared to your hands/face).

The most vivid memory if the dejected, grey bundle of sick father, shaking with cold as the voice describes how he looks. Although it's not a word-by-word depiction of the description, the overall mood conveyed is very much in tune.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

The way the rotoscoped (line-drawn) face shifts out of the frame made me wonder if I was viewing it wrongly and should have full-screened it (or similar).

When watching scenes where you can see both the human speaker and the lizard-on-a-stool, I was slightly confused about which one I was supposed to be watching (I mostly went for the lizard).

Q7: What, if anything, did you find uplifting about the animation?

The hand-drawn animation shifts from one thing to another so quickly, it gives a great sense of "anything is possible! anything might happen next!" The other two, even just moments later, seem duller because what is going to happen next is that the lizard/line-y face is going to carry on telling its story. Although it is the same story, the excitement was lost once we shifted from the hand-drawn sections.

Q8: What, if anything, did you find upsetting about the animation?

Showing the lizard and the speaker next to each other for most of the "difficult" bits, then cutting to either just the lizard or just the line-y face at particularly upsetting bits seemed to underscore that this was too upsetting to show the "real" footage.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

laptop (4k screen)
(quiet environment, audio through headphones)

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

female

#11



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 03, 2016 11:27:51 AM
Last Modified: Sunday, January 03, 2016 11:45:49 AM
Time Spent: 00:17:57

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

Sari shopping - it brought the story to life and I liked the way the scenes swirled seamlessly from one to another. I also liked watching the CGI Dinosaur. Eyes were a bit scary. Thyroid problem?.

Q3: Where there any scenes you disliked? Why?

Nothing to dislike. The cancer story was sad.

Q4: Considering Mood 1, what details or impressions stand out for you?

Unsure of the question. If this refers to the up-beat first half, the colourful animation that accompanied the Sari story, which brought it to life

Q5: Considering Mood 2: What details or impressions stand out for you?

Again, unsure of 1 and 2, but if this is the second, sad half... The grey, hunched over figure and tear / rain drops. Expressed it well. Very, very sad.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing. Unless I've missed something!

Q7: What, if anything, did you find uplifting about the animation?

The Sari story. Also the way your Dad was determined to walk up and down several flights of stairs after the operation.

Q8: What, if anything, did you find upsetting about the animation?

The grey, hunched figure.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

No.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Male

#12



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 03, 2016 11:44:57 AM
Last Modified: Sunday, January 03, 2016 11:53:51 AM
Time Spent: 00:08:54

Edit Delete Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I particularly liked the animation depicting strong emotional parts involving the hand animations of the dinosaur.

Q3: Where there any scenes you disliked? Why?

I think overall they were all very engaging and it was lovely to move in and out of styles. They were all executed very well!

Q4: Considering Mood 1, what details or impressions stand out for you?

The reaction to seeing your father ill, the reaction to shopping for a sari, and the bit about the women helping you (falling down and the floor gently bumping you back up), very simple yet conveyed very deep feelings.

Q5: Considering Mood 2: What details or impressions stand out for you?

I had no negative reaction to this piece.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing, it was very clear. The motion tracked animation was very well done, and the only thing I'd say is there seemed to be a bit of a lag in synch between the footage of you and the motion tracked dinosaur but otherwise very well done!

Q7: What, if anything, did you find uplifting about the animation?

I think the main thing about this is it conveyed emotional highs and lows very well. The motion tracked parts seemed more technical and the hand animations were for me the parts that really conveyed the most emotion.

Q8: What, if anything, did you find upsetting about the animation?

The animation was not upsetting but the storytelling was very moving in its honesty.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Viewed on desktop system/monitors.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Female

#13



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 03, 2016 11:57:41 AM
Last Modified: Sunday, January 03, 2016 12:01:42 PM
Time Spent: 00:04:00

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

The facial line drawings - very expressive

Q3: Where there any scenes you disliked? Why?

The Alligator scenes - the body language was good but the absence of facial changes made interpretation a bit difficult

Q4: Considering Mood 1, what details or impressions stand out for you?

Without facial expressions the moves have to be a lot more exaggerated. The line drawings convey so much more

Q5: Considering Mood 2: What details or impressions stand out for you?

?

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing

Q7: What, if anything, did you find uplifting about the animation?

The line drawings

Q8: What, if anything, did you find upsetting about the animation?

As above - the emotion was obvious

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

PC.

PAGE 3

Q10: Please indicate your gender and age group.

50 to 59

Gender?

female

#14



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 03, 2016 11:53:27 AM
Last Modified: Sunday, January 03, 2016 12:07:37 PM
Time Spent: 00:14:10

Edit Delete Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I liked the way the animation changed when describing your mood when you knew you had to tell your students what you were going through.

Q3: Where there any scenes you disliked? Why?

The description of finding out your dad was going to die was harrowing but more on a personal level rather than that of an objective viewer.

Q4: Considering Mood 1, what details or impressions stand out for you?

The description of going shopping in Gujarat was great. The animated way in which you told the story and the way the dinosaur was using his arms and smiling was interesting.

Q5: Considering Mood 2: What details or impressions stand out for you?

The way the mood changes on the dinosaur and stood out for me.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

I found it straight forward.

Q7: What, if anything, did you find uplifting about the animation?

I found the resilience the animation displayed and it's ability to laugh despite the circumstances uplifting.

Q8: What, if anything, did you find upsetting about the animation?

I didn't find anything upsetting about the animation.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Phone

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

Female

#15



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 03, 2016 12:19:46 PM
Last Modified: Sunday, January 03, 2016 12:27:31 PM
Time Spent: 00:07:44

Edit Delete Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

I liked the more abstract ones which drew out the scenes being described. They conveyed more richness of emotion and were also quite whimsical.

Q3: Where there any scenes you disliked? Why?

The "lizard on the barstool" scenes. I felt the animation was stiff and did not convey the emotions of the speaker sufficiently, especially in the eyes and shoulders.

Q4: Considering Mood 1, what details or impressions stand out for you?

The excitement in the speaker's voice, the cheerfulness in describing some of the things that happened.

Q5: Considering Mood 2: What details or impressions stand out for you?

How the abstract animation brought out even more of the details of what the speaker was describing.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

The "lizard on the barstool" animation was quite stiff and I often had to look back to the actual speaker because what she was saying and how the lizard looked and moved didn't quite synch with me.

Q7: What, if anything, did you find uplifting about the animation?

The part where she was selecting a sari was very cheerful and the way it was portrayed was interesting and made me smile. It added more life to an already lively description.

Q8: What, if anything, did you find upsetting about the animation?

Nothing.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Used a laptop. The "real life" animation was also interesting, quite reminiscent of the old Disney animation style. Unfortunately that kept distracting me because I kept thinking of Disney cartoon rather than concentrating on what the speaker was saying.

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

Female

#16



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 03, 2016 12:44:47 PM
Last Modified: Sunday, January 03, 2016 12:52:47 PM
Time Spent: 00:08:00

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

I preferred the line animation using the reptile figure - expressive-especially the shrinking in size to affect emotion

Q3: Where there any scenes you disliked? Why?

I was drawn to watching the real person speak rather than the cgi style character, but I didn't dislike anything.

Q4: Considering Mood 1, what details or impressions stand out for you?

I liked the depiction of the men being intimidating and the abstract links between scenes. Links are important.

Q5: Considering Mood 2: What details or impressions stand out for you?

The simple line animation of the narrators face was effective.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing, but I'm used to watching animations.

Q7: What, if anything, did you find uplifting about the animation?

There was a fellow feeling about the emotions, an identification with the feelings.

Q8: What, if anything, did you find upsetting about the animation?

I felt great empathy with the narrator when she talks of a an e prurience that we all have to face and which hurts.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

I liked the humour in the sari story very much. Iphone6

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Female

#17



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 03, 2016 1:57:28 PM
Last Modified: Sunday, January 03, 2016 2:16:37 PM
Time Spent: 00:19:08

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I liked the 2D Drawn face, when you were talking about your father, it gave the animation more character and someone I could relate to.

Q3: Where there any scenes you disliked? Why?

Not particularly, I did feel like I wanted to give the first animation a big hug, felt sorry for him/her because of the hunched shoulders when you were talking about your father.

Q4: Considering Mood 1, what details or impressions stand out for you?

The wailing of the arms and the head when you laughed and got excited.

Q5: Considering Mood 2: What details or impressions stand out for you?

overall body language had changed and the way you sat, hunching of the shoulders and generally, more softer with the movements from the head and the arms.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

2D drawn of the dinosaur/dragon was not hard to follow, just had a better connection to when you see the character talking and more human like body language

Q7: What, if anything, did you find uplifting about the animation?

When you were talking about your holiday plans, the overall head and arm movements. Laughter is the best medicine.

Q8: What, if anything, did you find upsetting about the animation?

when you were talking about your father and the characters facial expressions to the way they sat, even to drawn ones the colours how they changed, its not a bad thing I just felt sorry for the characters.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

I was using my iphone at first, but I found it hard to read my replies so I then went on to use my laptop.
(how did the body language it make you feel emotionally)

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

Female

#18



INCOMPLETE

Collector: Web Link 1 (Web Link)

Started: Monday, January 04, 2016 11:23:52 AM

Last Modified: Monday, January 04, 2016 11:29:54 AM

Time Spent: 00:06:01

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

Facial close ups, body bending, arms. Why? - looks amazingly realistic

Q3: Where there any scenes you disliked? Why?

Some motions were repetitive

Q4: Considering Mood 1, what details or impressions stand out for you?

Laughter

Q5: Considering Mood 2: What details or impressions stand out for you?

Respondent skipped this question

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Respondent skipped this question

Q7: What, if anything, did you find uplifting about the animation?

Respondent skipped this question

Q8: What, if anything, did you find upsetting about the animation?

Respondent skipped this question

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Respondent skipped this question

PAGE 3

Q10: Please indicate your gender and age group.

Respondent skipped this question

#19



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, January 04, 2016 2:30:12 PM
Last Modified: Monday, January 04, 2016 2:33:14 PM
Time Spent: 00:03:01

Edit Delete Export

PAGE 1

Q1: What was your reaction to the animation overall?

Not Interesting

Q2: Were there any scenes you liked? Why?

No. Lost interest

Q3: Where there any scenes you disliked? Why?

Story was dull and telling of it too. Sorry. Animation was fine. But you need better subject matter

Q4: Considering Mood 1, what details or impressions stand out for you?

X

Q5: Considering Mood 2: What details or impressions stand out for you?

X

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Switched off quickly

Q7: What, if anything, did you find uplifting about the animation?

Again...

Q8: What, if anything, did you find upsetting about the animation?

Again...

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Phone

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

M

#20



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Monday, January 04, 2016 5:00:58 PM

Last Modified: Monday, January 04, 2016 5:07:46 PM

Time Spent: 00:06:48

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The Sari shopping tale was illustrated in a very 'cute' way and was a delight. I also appreciated the anguish in the eye of the line drawing work when talking about your Father's illness.

Q3: Where there any scenes you disliked? Why?

No

Q4: Considering Mood 1, what details or impressions stand out for you?

See answer Q2

Q5: Considering Mood 2: What details or impressions stand out for you?

See answer Q2

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing was confusing

Q7: What, if anything, did you find uplifting about the animation?

The variety was good and choice of a T-Rex was fun

Q8: What, if anything, did you find upsetting about the animation?

Not so much upsetting - more moving which was the point so this was well executed.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Think Pad laptop

PAGE 3

Q10: Please indicate your gender and age group.

50 to 59

Gender?

Female

#21



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Monday, January 04, 2016 11:47:50 AM

Last Modified: Monday, January 04, 2016 6:50:41 PM

Time Spent: 07:02:50

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Neutral

Q2: Were there any scenes you liked? Why?

middle hand drawn

Q3: Where there any scenes you disliked? Why?

none

Q4: Considering Mood 1, what details or impressions stand out for you?

upbeat

Q5: Considering Mood 2: What details or impressions stand out for you?

sadness

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

what is was supposed to be

Q7: What, if anything, did you find uplifting about the animation?

n/a

Q8: What, if anything, did you find upsetting about the animation?

the head movement

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

no - laptop

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

male

#22



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Tuesday, January 05, 2016 1:00:50 AM

Last Modified: Tuesday, January 05, 2016 1:02:01 AM

Time Spent: 00:01:11

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I general very good

Q3: Where there any scenes you disliked? Why?

No

Q4: Considering Mood 1, what details or impressions stand out for you?

Respondent skipped this question

Q5: Considering Mood 2: What details or impressions stand out for you?

Respondent skipped this question

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Respondent skipped this question

Q7: What, if anything, did you find uplifting about the animation?

Respondent skipped this question

Q8: What, if anything, did you find upsetting about the animation?

Respondent skipped this question

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Respondent skipped this question

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

Male

#23



INCOMPLETE

Collector: Web Link 1 (Web Link)

Started: Wednesday, January 06, 2016 9:24:49 AM

Last Modified: Wednesday, January 06, 2016 9:27:15 AM

Time Spent: 00:02:25

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

Respondent skipped this question

Q3: Where there any scenes you disliked? Why?

Respondent skipped this question

Q4: Considering Mood 1, what details or impressions stand out for you?

Respondent skipped this question

Q5: Considering Mood 2: What details or impressions stand out for you?

Respondent skipped this question

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Respondent skipped this question

Q7: What, if anything, did you find uplifting about the animation?

Respondent skipped this question

Q8: What, if anything, did you find upsetting about the animation?

Respondent skipped this question

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Respondent skipped this question

PAGE 3

Q10: Please indicate your gender and age group.

Respondent skipped this question

#24



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, January 10, 2016 7:29:56 PM
Last Modified: Sunday, January 10, 2016 8:14:07 PM
Time Spent: 00:44:11

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Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I found the multiplicity of them useful as I felt they allowed me to experience a spectrum of perspectives. The close-up of the dragon avatar was particularly fascinating for the high quality of animation and the different mode of expression crossing new ground, as was the interviewee in portrait which resembled a webcam conversation, but because I was only a listening participant and the element of preparation, got my full attention. I also liked the minimalism of the animated interviewee head; effective and bolstered as part of the whole. I found the full-animated cartoons less so, though definitely enjoyable esp the part with the sari. I certainly think they could expand with more complex metaphors/analogies but here, they were sufficient for narratives.

Q3: Where there any scenes you disliked? Why?

I didn't dislike any but I found Mood 2 upsetting to watch in a good way. The split screen, animation/interviewee seemed at times too broad on the animation's side, brining in the empty green background on the left. So I just set my monitor at an angle.

Q4: Considering Mood 1, what details or impressions stand out for you?

The wonder of the speaker, clearly besotted by the experience and guiding us to that place/feeling, through learning about temperature and culture. The character of the dragon relaying this and the attention to teeth movements and hands, with and independent of the speaker. I felt caught in the rush of it, involved.

Q5: Considering Mood 2: What details or impressions stand out for you?

I was impressed with the discussion of a personal. I thought the speaker was particularly open and brave in talking about the depth of the emotions and actions. I felt a greater connection for listening and it opened my thoughts to maybe having to experience something similar one day, and maybe having to prepare, summon up greater strength, educate myself more thoroughly. I felt I learned from this, socially and, professionally, in terms of the carer aspect of my own identity. I did not feel the CGI aspects jarring here, they seemed perfectly...understandable? As if they were just a part of the interviewee's identity. The animations cued during difficult responses helped to buffer some of my own sadness. I found this Mood to galvanise my empathy. It created a broad picture of the interviewee. The interviewer was similarly good, framing with just the right degree of support and careful response. The final anecdote about the hospital stairs was amusing and confirmed to me the methods of relaying these narratives could be very useful.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

At times I felt lost grasping the intensity or enormity of the medical procedure. But that isn't what you asked. Maybe the use of the animation leant that upon me, which isn't a bad thing.

Q7: What, if anything, did you find uplifting about the animation?

I felt enthusiastic about the quality of it, and that it was being used to convey grounded experiences of the everyday. I felt excited to be a part of the experience, if only as a listener. The multiplicity gave me optimism of its use as an education tool. The simplest combinations made me think just how valuable this could be in everyday communication, as virtual or visual-aided.

Q8: What, if anything, did you find upsetting about the animation?

I want to say nothing. I don't know if the special presentation made it more palatable, but I don't want to think about that as it detracts from the conveyance..

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

No. That's it. Thank you for making this. I viewed it on a standard size laptop.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Male

#25



COMPLETE

Edit Delete Export

Collector: Web Link 1 (Web Link)
Started: Wednesday, January 13, 2016 6:38:21 PM
Last Modified: Wednesday, January 13, 2016 6:59:33 PM
Time Spent: 00:21:11

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I liked the sari-buying scene, with the hand-drawn dinosaur, the flamboyant movements and swirling images of the floral pattern went very well with the description of the experience.

Q3: Where there any scenes you disliked? Why?

No dislike as such, I just realised the limitations of computer animation when conveying emotions, it looked stiff, no matter which emotion was being depicted.
The technical limitations of the computer-animated dinosaur are shown as the "real person" puts her hand under her chin in a "thinking" posture, and the hand of the dinosaur just disappears behind his head.

Q4: Considering Mood 1, what details or impressions stand out for you?

I was impressed by how much our perception of feelings and facial impressions is defined by the eyes in close-up.

The realistically-animated dinosaur blinks even less than the actor Christopher Walken, and his slightly protruding eyes and incongruous blinking made him look scared and upset, even when he was talking about pleasant experiences.

The line-drawn face conveys emotions much easier, via the wrinkles around the eyes, and surprisingly, the reflection effect in the eyes, but the smiling mouth is much more difficult to express.

The line-drawn dinosaur's emotions are easier to read than the ones of the computer-animated dinosaur, as there is so much more movement and body language happening.

Q5: Considering Mood 2: What details or impressions stand out for you?

The body language of the computer-animated dinosaur is most difficult to understand, again, the limitations of a figure which is sitting down and has no major body movements besides the hands and the eyes blinking and the mouth opening and closing.

The conveying of sadness by the line-drawn person is mainly based on looking downwards, not so much on the movements of the mouth.

The line-drawn dinosaur is easiest to understand, the lack of eyes in the sad scenes and his stiff, hunched posture contribute to conveying the emotions.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

No confusions from the plot, it was easy to follow, just, again, the stiffness of the computer-animated dinosaur.

Q7: What, if anything, did you find uplifting about the animation?

I loved the hand-drawn dinosaur, the sari-shopping scene as well as the sad hospital scene, it came across as very exuberant and emotional, also a special mention of the "dissolving into teardrops" scene, which I found very beautiful, and well done.

Q8: What, if anything, did you find upsetting about the animation?

Nothing upsetting per se.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Nothing extra.

Viewed on laptop computer, widescreen.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Female

#26



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Wednesday, March 02, 2016 5:47:05 PM

Last Modified: Wednesday, March 02, 2016 5:49:41 PM

Time Spent: 00:02:36

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The sari shop scene, it was really visual and flowed well

Q3: Where there any scenes you disliked? Why?

The lips of the initial crocodile animation didn't move so it felt less real than the drawn one

Q4: Considering Mood 1, what details or impressions stand out for you?

flow, excitement, wanting to tell a great story

Q5: Considering Mood 2: What details or impressions stand out for you?

slightly uncomfortable, more withdrawn

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing

Q7: What, if anything, did you find uplifting about the animation?

The tale of India

Q8: What, if anything, did you find upsetting about the animation?

The emotions around the surgery

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Laptop

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

female

#27



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Wednesday, March 02, 2016 6:13:03 PM

Last Modified: Wednesday, March 02, 2016 6:19:54 PM

Time Spent: 00:06:50

Edit

Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I liked the sari shop scene! It was very evocative and I liked how the images brought the anecdote to life.

Q3: Where there any scenes you disliked? Why?

I wasn't a huge fan of the motion capture. When it was show side by side with live action I preferred to focus on the latter.

Q4: Considering Mood 1, what details or impressions stand out for you?

I found the images more important.

Q5: Considering Mood 2: What details or impressions stand out for you?

I started to ignore the images and concentrate on the spoken word.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing really

Q7: What, if anything, did you find uplifting about the animation?

The descriptions of India

Q8: What, if anything, did you find upsetting about the animation?

Nothing

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

I really liked the 2d rotoscoping. I viewed the animation on a laptop.

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

female

#28



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, March 03, 2016 11:02:06 AM
Last Modified: Thursday, March 03, 2016 11:11:54 AM
Time Spent: 00:09:48

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PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The animation of the woman's face as she talking about her dad's recent surgery because you can really see the emotion on the individuals face. The animation about buying a sari was also very cute

Q3: Where there any scenes you disliked? Why?

No, thought it was all very interesting

Q4: Considering Mood 1, what details or impressions stand out for you?

The animation of buying a sari because it was amusing, fun and colourful.

Q5: Considering Mood 2: What details or impressions stand out for you?

The animation of the face and really being able to see the emotion there and how she was struggling to come to terms with the recent surgery

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Not much, small details, the rendering of the dinosaurs mouth when it was talking was a bit strange just because it moved up and down without any more detailed movement.

Q7: What, if anything, did you find uplifting about the animation?

Fun to see the different styles of animation used well together to emphasise different parts of the stories and to focus on expressions or whole body language

Q8: What, if anything, did you find upsetting about the animation?

How detailed the animation was when it was of the woman's face and how clearly you could see how hard some details were to talk about

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Personal computer (laptop)

PAGE 3

Q10: Please indicate your gender and age group.

20 to 29

Gender?

Female

#29



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Saturday, March 05, 2016 3:20:16 PM
Last Modified: Saturday, March 05, 2016 4:49:09 PM
Time Spent: 01:28:52

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PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The 'line drawn' Sophie.

Q3: Where there any scenes you disliked? Why?

The motion-captured 'dinosaur Sophie'. It had good arm and back motion, just like a person, however the face was much less animated.

Q4: Considering Mood 1, what details or impressions stand out for you?

The 'line drawn' Sophie conveyed a lot of feeling to me; I believe I picked up subtleties in communication around the eyes and cheeks, despite it being such a simple type of image.

Q5: Considering Mood 2: What details or impressions stand out for you?

The arms and torso conveyed a lot of emotion to me, but it was slightly jarring how the face conveyed less information in comparison. The eyes of the dinosaur blinked in only one way, and the lips didn't move in a convincing manner. It felt less like there was a real human being with a real life story behind it.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

The animation about the purchase of the sari was confusing until I became used to the abstract style it was being presented in.

Q7: What, if anything, did you find uplifting about the animation?

The tale of the sari, with a successful purchase, was uplifting.

Q8: What, if anything, did you find upsetting about the animation?

I related to the line drawn character when she conveyed her upsetting tale about surgery. I feel the emotion was conveyed far more directly than in the abstract animation or the motion-captured animation.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Viewed on a PC.

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Male

#30



COMPLETE

Collector: Web Link 1 (Web Link)

Started: Monday, March 07, 2016 3:14:30 PM

Last Modified: Monday, March 07, 2016 3:30:32 PM

Time Spent: 00:16:01

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PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

I particularly liked the section about choosing a sari and the final section about her father climbing the stairs

Q3: Where there any scenes you disliked? Why?

There was nothing I disliked, but the section about her father's surgery was hard to listen to because of the emotion involved

Q4: Considering Mood 1, what details or impressions stand out for you?

The vivacity of the interviewee, she obviously has a great enjoyment of life

Q5: Considering Mood 2: What details or impressions stand out for you?

A deep love for her father and the horror of what he is having to go through

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

I found the 3D dinosaur a little hard because it was difficult to read emotion from it. There was emotion in the voice but I found that it didn't translate into the animation.

Q7: What, if anything, did you find uplifting about the animation?

I loved the hand drawn dinosaur in the sari section. The animation really portrayed the delight that was evident in the voice.

Q8: What, if anything, did you find upsetting about the animation?

The rotoscoped section and hand drawn section when she was talking about her father's cancer were quite upsetting, the animation portrayed the emotion extremely well, the section about her father looking hunched and grey was particularly well portrayed and hit home quite hard.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Viewed on a PC with headphones.

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

Female

#31



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, March 14, 2016 1:43:51 PM
Last Modified: Monday, March 14, 2016 1:53:14 PM
Time Spent: 00:09:22

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Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

I loved the sari animation. I just thought it was so pretty and captured the emotions of the situation.

Q3: Where there any scenes you disliked? Why?

I didn't necessarily dislike anything, but I did wish that I could see more facial details with the mocap scenes. I felt like I was missing a bit of the emotion with such little movement.

Q4: Considering Mood 1, what details or impressions stand out for you?

The sari scene stood out the most.

Q5: Considering Mood 2: What details or impressions stand out for you?

The gray, hunched over sadness part stood out the most. Made me a bit teary.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Nothing seemed confusing to me.

Q7: What, if anything, did you find uplifting about the animation?

I just really loved the whimsy of the hand-drawn animation. That was very uplifting to me.

Q8: What, if anything, did you find upsetting about the animation?

Again, I felt the saddest during the hand drawn animation about how sad he looked. It reminded me of my own experiences in hospitals with my grandmothers, and just how bleak hospitals can be.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Having worked with mocap, but not traditional animation, it really struck me how much more emotion was conveyed through hand animation. It really took me by surprise! I found the rotoscoping more compelling as well. I viewed it on my desktop PC.

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

female

#32



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, March 15, 2016 7:45:03 AM
Last Modified: Tuesday, March 15, 2016 7:57:27 AM
Time Spent: 00:12:23

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PAGE 1

Q1: What was your reaction to the animation overall?

Very Interesting

Q2: Were there any scenes you liked? Why?

I loved the sari shopping episode, I felt the animation portrayed the emotion well. I was also fascinated by the motion capture as the body language gave depth to the narration

Q3: Where there any scenes you disliked? Why?

There were scenes that made me sad, but that was the emotion coming over, I didn't dislike them

Q4: Considering Mood 1, what details or impressions stand out for you?

The joy that you were expressing was really shown I feel in the body language in the motion capture and the traditional animation

Q5: Considering Mood 2: What details or impressions stand out for you?

This made me think about talking about difficult subjects, and how well animation can help not only conveying the emotion, but make it a bit easier to cope with in some ways

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Respondent skipped this question.

Q7: What, if anything, did you find uplifting about the animation?

The pure joy in the the first part, it was infectious, you could hear it in your voice, and see it, particularly for me in the motion captured body language and in the traditional animation

Q8: What, if anything, did you find upsetting about the animation?

Again, the emotion was conveyed so well that you couldn't help but empathise in the second part, and again I feel this was best conveyed in the motion capture and traditional animation

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Laptop

PAGE 3

Q10: Please indicate your gender and age group.

30 to 39

Gender?

Female

#33



INCOMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, March 15, 2016 1:53:25 PM
Last Modified: Tuesday, March 15, 2016 1:57:48 PM
Time Spent: 00:04:22

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Delete

Export

PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

i like the hand drawn animated scene best

Q3: Where there any scenes you disliked? Why?

I did not like the drawn face much/

Q4: Considering Mood 1, what details or impressions stand out for you?

i dont understand what is mood1 ?

Q5: Considering Mood 2: What details or impressions stand out for you?

i dont understand what is mood 2 ?

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

Respondent skipped this question

Q7: What, if anything, did you find uplifting about the animation?

Respondent skipped this question

Q8: What, if anything, did you find upsetting about the animation?

Respondent skipped this question

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

Respondent skipped this question

PAGE 3

Q10: Please indicate your gender and age group.

Respondent skipped this question

#34



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, March 18, 2016 9:26:43 AM
Last Modified: Friday, March 18, 2016 9:45:33 AM
Time Spent: 00:18:49

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PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

I generally liked the "lizard"/you scenes, looking where I felt your animation told your mood.

Q3: Where there any scenes you disliked? Why?

Not really disliked, but I felt sometimes the animated shapes were hard to read.

Q4: Considering Mood 1, what details or impressions stand out for you?

Sorry, unclear what was mood 1 or 2.

Generally there was a lot of mood change, very quickly, even when looking a second time at you talking about your father's illness.

Q5: Considering Mood 2: What details or impressions stand out for you?

As above. It has made me think how complex and fast changing our emotional expression is. Eg, you talking about Sari search. Lots going on in a simple experience.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

The coloured shapes representing action and changes of emotion? Sometimes they moved and change too quickly for me to really register what you were wanting them to express.

Q7: What, if anything, did you find uplifting about the animation?

Some brief but clear moments of support from others depicted.

Q8: What, if anything, did you find upsetting about the animation?

Not upsetting but strong feelings of distress shown, but I did not feel myself empathising with the animation, more I feel with your words and verbal expression. (though I have just watched part5 of the BBC4 Brain series, the one on empathy etc. Real video shots were quite distressing compared to re enactment etc)

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

MacBookAir

PAGE 3

Q10: Please indicate your gender and age group.

60 and over

Gender? female

#35



COMPLETE

Collector: Web Link 1 (Web Link)
Started: Sunday, March 20, 2016 10:39:43 AM
Last Modified: Sunday, March 20, 2016 11:02:03 AM
Time Spent: 00:22:20

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PAGE 1

Q1: What was your reaction to the animation overall?

Interesting

Q2: Were there any scenes you liked? Why?

The traditional animation sections around the sari purchase - the colour and animation 'synced' well with the narration, also they were a happy story. I also liked the sections of animation of the face (rotoscoped?) - something about the cleanness of the image while still getting some nuance of expression really suited the subject matter. Similarly the traditional section in the second half with the 'dino' going grey or losing colour was an excellent piece of communication.

Q3: Where there any scenes you disliked? Why?

I found it difficult to 'connect' with the motion capture sections - the lack of nuance in hand or facial expression, meant I was always looking over to the inset to interpret what I had just seen.

Q4: Considering Mood 1, what details or impressions stand out for you?

the section on buying a sari stands out, both for the vividness of the animation, and the upbeat tone. I think this was also one of the few places where the 3d capture bit 'worked' for me - where slumping and sitting up to discuss the heat - maybe it was that I needed 'bigger' cues for that style to work for me?

Q5: Considering Mood 2: What details or impressions stand out for you?

the traditional animation around not wanting to see the dad in hospital was very strong, though slightly jarring with what felt like a long section with no movement (probably as much my expectation of narrative animation as the animation itself). Again the line drawing facial sections were very strong - especially the section where wiping at eyes.

PAGE 2

Q6: What, if anything, did you find confusing about the animation?

the sections of the motion capture - especially where both the 'input' and the 'output' are side by side - difficult to know what I was 'supposed' to be watching

Q7: What, if anything, did you find uplifting about the animation?

in Mood 1, the swirls of colour and vividness of the traditional animation. In mood 2, the late section where positivity about the dad's resilience shone through the various media

Q8: What, if anything, did you find upsetting about the animation?

simply put, watching someone be upset - through a lens of animation or otherwise - is upsetting, so much of Mood2 was upsetting.

Q9: Is there anything not covered in this questionnaire you'd like to add? Also, please state the device you used to view the artefact (tablet, phone, etc.)

watched fullscreen Vimeo on a PC

PAGE 3

Q10: Please indicate your gender and age group.

40 to 49

Gender?

Male

F.3: Feedback analysis

Recorded views on Vimeo at the time of closing the survey:	142
Recorded survey feedbacks, at the time of closing the survey:	35
Number of complete surveys:	32
Number of incomplete surveys:	03

Incomplete surveys have not been processed as the responses are too minimal to use, however, it should be noted that 3 of 35 of the respondents failed to complete. Reasons might be: lack of time, losing interest, problems with filling in the responses (using a phone,) finding the questionnaire confusing or intimidating or too demanding.

Question 1 and Question 10 being the most closed ended of the questions. All other questions required descriptive text input.

The charts below were generated using simple and free online software:

<https://nces.ed.gov/nceskids/createagraph/>

Question 1: What was the reaction to the animation overall?

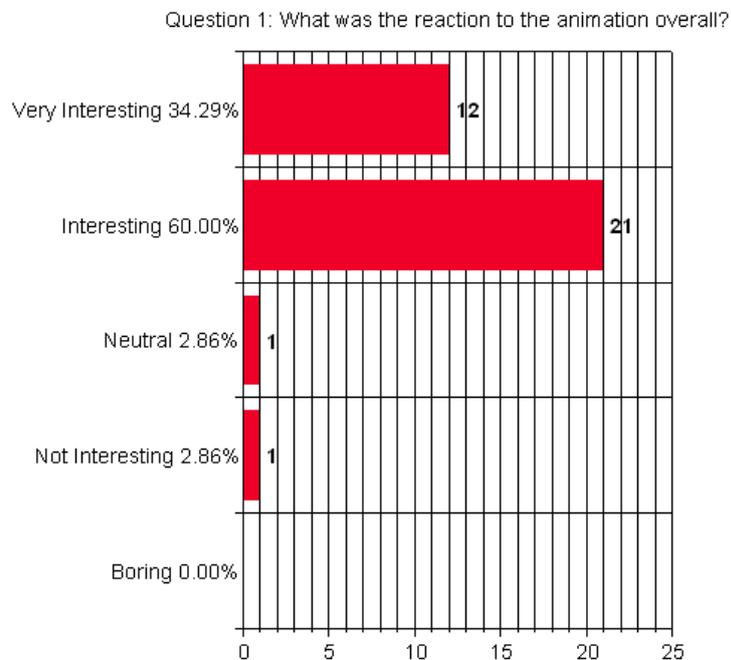


Fig 8.7 Graph analysis

Question 10: Please indicate your gender and age group.



Fig 8.8 Graph analysis

A higher age group clustered around 30 – 49 indicates the higher age group of the corner of the social media used. This included particular social groups within the social media that in general appear to be populated by an older demographic.

Gender was left as an open box to account for any individuals who might not identify within the definition of male/female. (Transpersons, individuals who prefer not to define in a binary manner.) Thus respondents were free to define themselves in the manner within which they found themselves comfortable.

32 responded to the gender box.

11 identified as male.

21 identified as female.

Question 2: Were there any scenes you liked? Why?

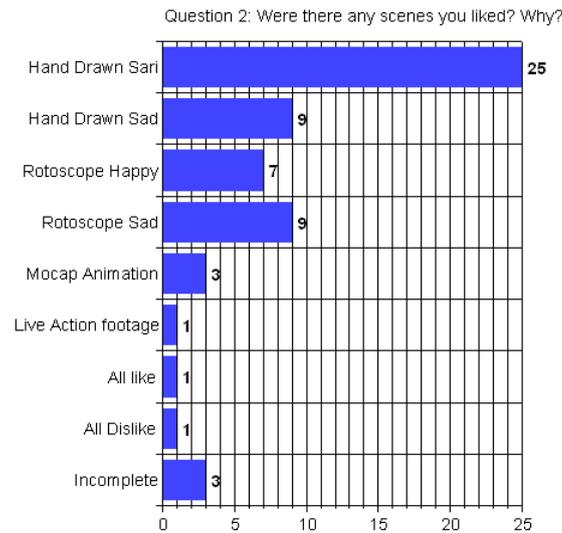


Fig 8.9 Graph analysis

In general, the hand drawn “sari” scene came out as most popular, though this might have been expected considering it is almost a stand alone animation with a narrative and humour and perhaps presented in more traditionally expected style for animation. “Cute” whimsical” “pretty” “evocative” “flamboyant” “enjoyable” “expressive” “imaginative” “hilarious” all terms one might expect for a more traditional and entertaining animation.

The more abstract elements of expression seemed to provoke empathy and interest in the case of the “sad” hand drawn piece eg “ the 'dino' going grey or losing colour was an excellent piece of communication.”

Second came the rotoscope animations, (both happy and sad) in this, respondents appeared to express reactions more of interest and focus in regard to the line drawn facial expressions, (as opposed to the amusement of the hand drawn sari scenes.)

One person specifically commented on the variety of the animations. “I found the multiplicity of them useful as I felt they allowed me to experience a spectrum of perspectives.”

Question 3: Were there any scenes you disliked? Why?

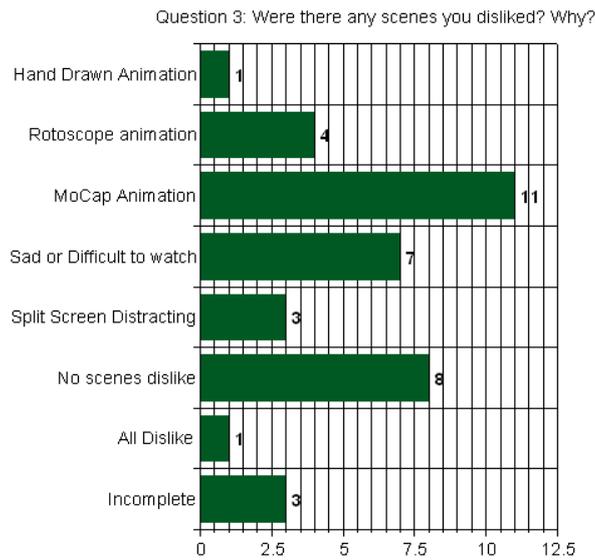


Fig 8.10 Graph analysis

Here the motion capture was the most “disliked” of the scenes, reasons tended to focus on the lack of facial expression of the dinosaur head, the “dead eyes” lack of lip or hand motion. The split screen was a distraction to many, and the temptation was to focus on the live action rather than the CGI in reaction to the stiffness and lack of facial expression in the motion captured avatar.

Some respondents struggled with the rotoscoping (the incompleteness of the lie drawings creating a feeling of “oddness”)

Eight respondents found nothing in particular to dislike, while 7 found the expression of sadness and distress (and subject matter) upsetting or “difficult to watch”, without connecting the upset to any specific rendering of the animation. In some part, this might be due to the tone of voice as much as the visuals of the sad scenes.

Question 4: Considering Mood 1, what details or impressions stand out for you?

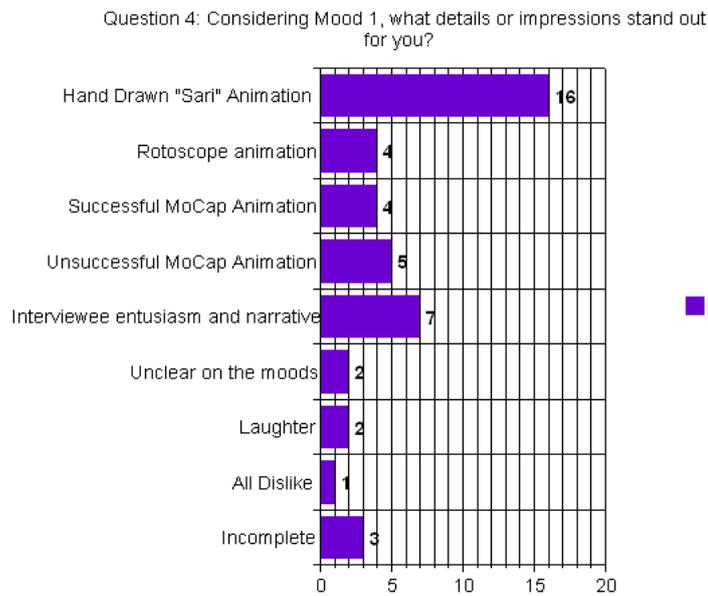


Fig 8.11 Graph analysis

Again, the sari scene came out as popular and engaging, but respondents did volunteer reasons why this was the case. The lack of facial expression in the CGI dinosaur seemed to disable it, whereas the exaggerated body language and symbolism of the hand drawn animation helped express emotion directly.

A few commenters found the motion capture to make more sense when the dinosaur made more expansive body motions. (eg “the wailing of the arms and the head when you laughed and got excited.”)

Separate from this, the rotoscope is mentioned as a way to make the viewer focus and “notice” facial expressions more, in particular, comments referring to the eyes, and details highlighted in the eyes and around them via the rotocoped lines.

The enthusiasm and excitement of the interviewee was also commented upon, though this was tinged with comments on tone of voice and facial expression as viewed in the live action footage.

Some people had difficulty answering the question, unsure what was meant by “mood 1” while vagueness was intentional to prevent the viewers being lead into answers, future questionnaires and presentations need to be more explicit.

Question 5: Considering Mood 2, what details or impressions stand out for you?

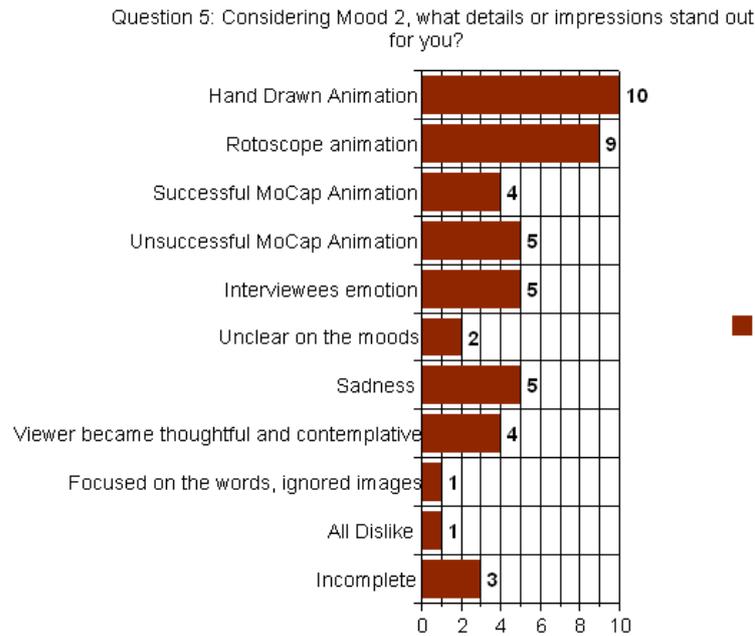


Fig 8.12 Graph analysis

For the most part, the sadness and distress of the situation stood out for people. Two respondents felt that the subject matter and the voice were most effective, in once case “I started to ignore the images and concentrate on the spoken word” so it is possible those respondents who could not articulate an animation style that stood out for them were more struck by the tone of voice. However, a majority were able to point to a specific animated section that stood out for them.

In this, the abstract quality of the hand drawn “sad” animation helped articulate emotion, possibly by elaborating on the vocal narrative, whereas the rotoscoping had a more direct connection to the facial expressions, with the line-work helping to draw attention to the expressions on the interviewee.

Reaction to the mo-cap was split, with some finding the change in body posture from happy to sad interesting but all finding the lack of facial animation on the 3D avatar lacking in expressing the depth of sadness being vocally expressed.

For 4 respondents, a more holistic, thought provoking mood was generated from seeing the variety of emotion displayed in animated form, “it opened my thoughts to maybe having to experience something similar one day” “it has made me think how complex and fast changing

our emotional expression is” it made me think about talking about difficult subjects, and how well animation can help not only conveying the emotion, but make it a bit easier in some ways.”

Some people had difficulty answering the question, unsure what was meant by “mood 2” while vagueness was intentional to prevent the viewers being lead into answers, future questionnaires and presentations need to be more explicit.

Question 6: What, if anything, did you find confusing about the animation?

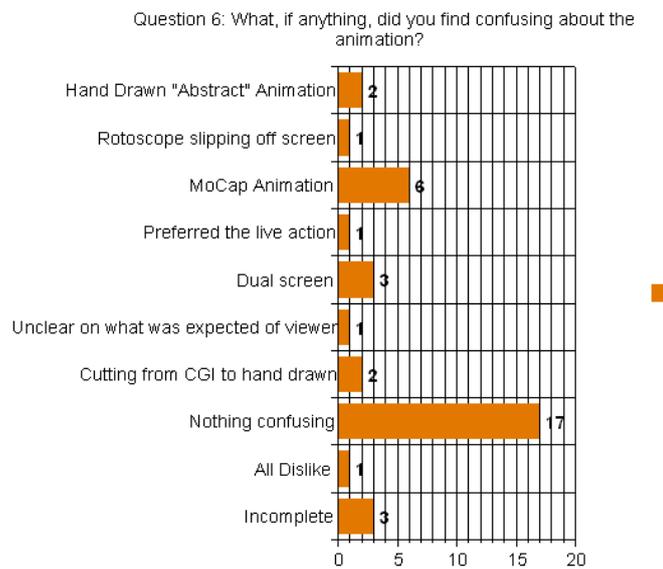


Fig 8.13 Graph analysis

Over half the respondents noted nothing confusing, after which the stiffness of the motion captured avatar and the lack of facial expression was “jarring” or hard to connect the emotion in the voice with the minimal movement of the motion captured avatar.

The split-screen between motion captured avatar and live action had some views torn between which screen to focus on.

Otherwise a few respondents found the cutting between different approaches unexpected, or were unsure of what was expected of them in watching the piece.

Question 7: What, if anything, did you find uplifting about the animation?

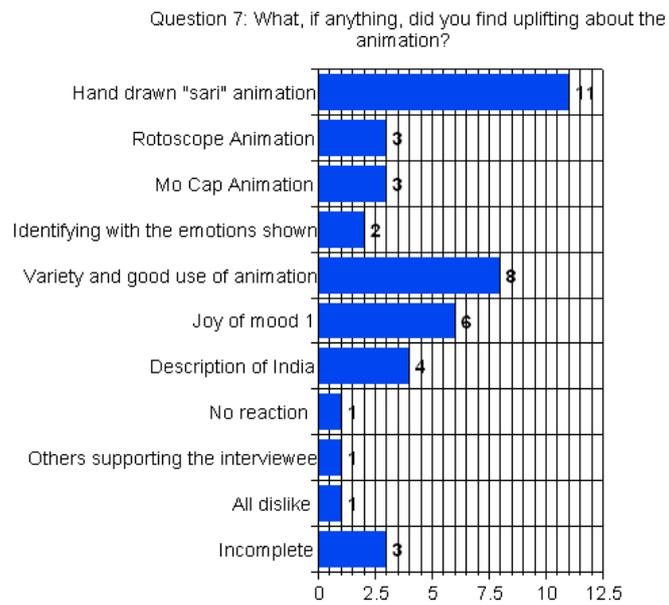


Fig 8.14 Graph analysis

Unsurprisingly, the hand drawn animation of the dinosaur buying a sari was popular, along with the general exuberance of describing the visit to India as a whole. The variety of the animation providing interest and different approaches and helped carry the mood along. The exuberance in the voice and descriptions.

One respondent mentioned the “teardrop scene” as beautiful (in spite of being sad.)

Question 8: What, if anything, did you find upsetting about the animation?

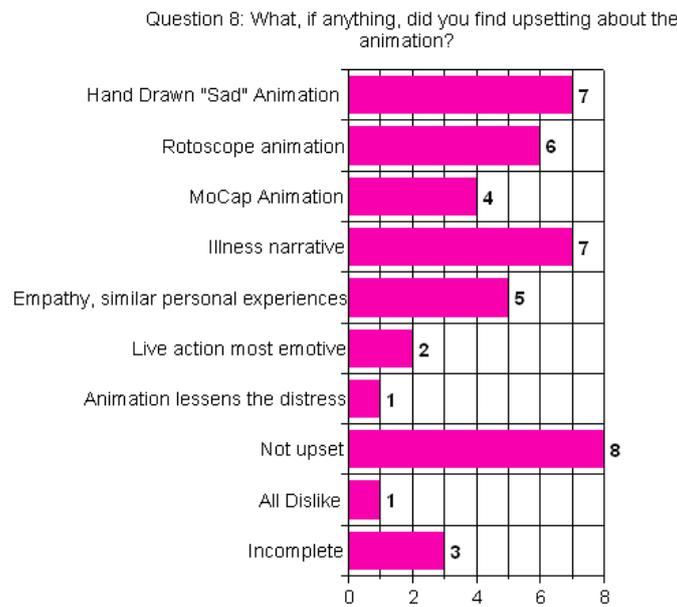


Fig 8.15 Graph analysis

Again, unsurprisingly, the descriptions of illness and distress. For some viewers, this touched on personal experiences. Others found the distress in the voice to be poignant.

In contrast to question 7, the effectiveness in touching the viewers through the animation was more evenly spread between the different methods, with even the motion capture being cited. “paradoxically more upsetting when CG Dino was talking about the sad things, because she seemed to not have enough to successfully communicate (for example, her little arms couldn’t reach up so her hand could cover her mouth at the point where yours did, and that seemed weirdly awful and upsetting).”

One respondent felt the animation might have lessened the impact though there was a hint of uncertainty in the response “I want to say nothing. I don’t know if the special presentation made it more palatable, but I don’t want to think about that as it detracts from the conveyance.” Eight respondents were not upset, though 3 acknowledged the execution was moving or heartfelt.

Two respondents were drawn more to the live action, via the facial expression and verbal tone of voice.

Question 9a: Please state the device you used to view the artefact (tablet, phone, etc.)

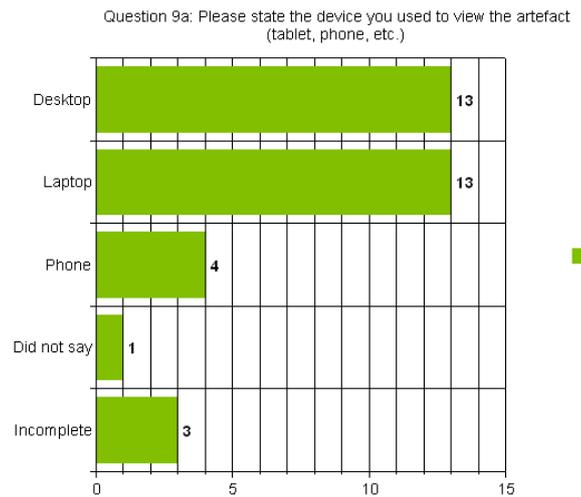


Fig 8.16 Graph analysis

As expected, the phone respondents wrote briefer replies, one switched from phone to laptop as they found it hard to read their replies on their phone. The one respondent who hated the whole thing and lost interest used a phone, however, it is hard to know if other phone viewers also lost interest and gave up on the feedback due to the difficulties in making wordy replies on a phone.

This method of feedbacking may well lend itself more to viewers able to respond on larger devices.

Question 9b: Is there anything not covered in this questionnaire you'd like to add?

Only 8 respondents had anything further to add. Four reiterated the parts they had particularly enjoyed, one requested that what was meant by the moods 1 and 2 be made clearer. Some more unusual reactions below...

“Having worked with mocap, but not traditional animation, it really struck me how much more emotion was conveyed through hand animation. It really took me by surprise! I found the rotoscoping more compelling as well.”

“The 'real life' animation was also interesting, quite reminiscent of the old Disney animation style. Unfortunately that kept distracting me because I kept thinking of Disney cartoon rather than concentrating on what the speaker was saying.”

“It felt intensely personal. As a PHD project illustrating how the different styles of animation illustrate the story in different ways it seemed normal but as such a powerful and intensely personal story very unexpected. I work in a university physics department and PHDs are not like this. This is in no sense a suggestion to change or rethink in any way”

“I was surprised (or maybe I'm just unobservant) at how similar your body language looked between the 2 sections (you in the suit), and how the main differences seemed to be in your facial expressions. The dragon/crocodile bits really got the emotions across, despite being the least realistic., but the 3D didn't really work for me - I kept finding myself watching you next to it instead & following the spots on your suit.”

G: Production Study

Brief and feedbacks from the production study.

G.1: Copy of the brief given to the participants

Studio Day – In depth analysis of Facial Expressions

This intensive day will be a chance for you to really study and observe genuine facial expressions under pressure. It will be quite tiring, but the more you put in on the day, the more you will pick up to apply to your 3D and future work. Rotoscoping is harder than it looks, but it is very good for focusing your mind onto really seeing what you are working on. Every weird crinkle of the eye, every tightening of the lips, every twitch, every flicker.

The focus of this exercise is on AUTHENTIC and potentially SUBTLE emotion. You will find plenty of books and tutorials for exaggerated animation, but very little on how to reel it back and give a more realistic look. A perception and ability to render more subtle body language will give you a head start in CG and VFX work, and this project is designed to help you build up this difficult skill.

This is also an exercise that has been requested by Games Companies. While you are presenting as 3D artists, a measure of 2D skills and the ability to scratch out work over the top of live action or 3D generated animation will give your CV an edge.

DO NOT stress about your artwork. Fast and furious, rough and sketchy, minimalist, whatever it takes. The idea is to LOOK at the expressions, and try and render them quickly and efficiently.

10.30am 21st February 2018 – Presentation and introduction.

There will be a short presentation to introduce you to the piece, with examples given to help inspire you.

HOMEWORK.

Record your own face on your phone, talking about something that makes you happy, sad, angry or disgusted or even afraid. Ideally, talk to someone – as if it was a conversation. Let them make the recording while you concentrate on your subject.

Talk about something that genuinely makes you feel your chosen emotion. This isn't about acting or exaggerating, talk normally, this project will be about seeing the hidden signs. For example, most of us – when talking about something that genuinely makes us sad in front of other people, will try and hide our feelings. We mask, we hold back, we displace. The sort of uncontrolled sobbing with fountains of water shooting from the eyes might be an animation trope but is rarely seen in real life.

Be yourself.

Review your recordings – is there a 20-30 second chunk that looks especially interesting to work on? Isolate the chunk you want to work on for Friday.

10.30am 23rd February 2018 – Studio Day.

Spend the day in the studio over-working a small segment of your filmed face.

This segment should be between 20 – 30 seconds long.

Animate on twos, 12 sketches per second. You are aiming for around 250 drawings, made over the course of the day.

HOMEWORK

You will have the weekend to make any final finishing touches.

Make a blog post of your animation this will be part of your project research work and must include...

- Your animation.
- A couple of stills you are particularly pleased with.
- A small reflective written piece detailing your thoughts on the exercise. 200 - 500 words.

I will be coming in week beginning 26th February to do a break out mini-crit, the emphasis will be on discussing your work in a group rather than a formal crit as such.

IMPORTANT!

You are trying to draw 250 drawings in one day, so try and strip out any unnecessary details. Be rough and ready! Be fast and sketchy!

It's ok if your drawings are really scratchy and basic, this isn't about being a superb artist, it is about trying to "see" what your face is actually doing.

It's ok if your drawings change over time, for example, becoming less detailed and more efficient, stylized or rough as you go along.

It's ok to be stylised, (or realistic) but try not to be so stylized that you are losing what your face is actually doing. Bart Simpson is fine, so long as every twitch of his eyes match the twitch of your own eyes. Remember the Roadhead film, and the variety of approaches.

Ideally you want the full face, but if you're finding yourself pressed for time, drop more details, lose the hair, the face, maybe work on a single eye if necessary, or just the mouth. You can jump from feature to feature depending on which is currently the most expressive.

Take breaks to rest and recharge, but not so many as to not get the work done. Ideally, you should break and rest (perhaps with a coffee) in the atrium, but in the studio, you will work fastest if you are concentrating and not chatting, and not distracting or pestering other people trying to work.

Games Industry studios are remarkably quiet! People get their heads down and work, often wearing headphones, we're always on deadlines. (Sometimes people will wear headphones without actually playing any music - it's a code to say to others - "DO NOT DISTURB ME!")

There will be break out moments where people lark about, chat, and recharge their batteries, but if you do this too much within the work area you will not last your probationary period and will become very unpopular. This is a studio day, so we're going to treat it very much as a games studio environment. Arrive on time, get a solid chunk of work done, this piece is something that you can put into your portfolio and CV and will give you insight into your major project.

G.2: Student Blog Feedback

13 students posted their rotoscoped animations to their blogs, of which 5 included written feedback.

Student A:

The technique of rotoscoping is a very useful style of animation, as in referencing. There are a lot of details of line movement one can discover from the use of rotoscoping. After recording myself with a camera. I had to trace over each frame in order to recreate a realistic motion of myself. This helped me understand the in between frames and the timing which enables me to realistically get every motion right. Also, I was able to maintain the proportion and the volume of my character.

Student B:

This was an interesting project to do, and it was quite fun as well, because it offered me the opportunity understand what micro expressions are and how they work. It was fascinating to discover how easily exposed my emotions were, and how as I was saying something, my facial expressions were saying something else. I'm not sure how obvious this can be from the animation I made. I could clearly notice it in the video, but I was not able reproduce it as it was in real life. Maybe with enough practice and time I will get better at it.

I obviously tried to make it longer than 20 seconds, but after an inconvenient event in the DMW1 classroom when my computer crashed, I lost 7 hours worth of work which I had to redo at home.

I believe this project made me understand better how intense the workflow would be working in a game industry company.

Student C:

After trying the Rotoscope work out I can safely say that I found the work to be relaxing and quite engaging. I do feel like I've learnt a lot from working on the project, slight facial movements can express a lot of emotions I found that even if the image wasn't a significant change within the frame there was a slight change either in the eyes or area around the lips

this helped me study the changes of emotion within the video. I do believe I have gained a lot of insight into emotions now relating to facial expressions and I think it will help me animate expressions and subtle emotion for the future to come. I also found most of the subtle expression came from the lips and eyes as well as some exaggerated body movements. For me personally I did spot that I tend to use one side of my face to speak more so then the other.

Student D:

Regarding the rotoscope project I have only managed to finish 6 seconds of the animation, however I really enjoyed doing this project and it taught me a lot about human face movement as well as proportions of human face.

Student E:

I found this project was unlike any I had done before. Technically speaking it was rather simple, and not too difficult just time consuming and we had to do it whilst a number of other projects were on the go. However, what i found particularly difficult was how personal this project was. Having to talk to peers about something rather emotional in order to get an emotional reaction out of ourselves made me feel fairly uncomfortable. Besides this though it was rather helpful in teaching me how the face moves when we speak. I can't deny how useful it was, even though it was rather awkward.

G.3: Transcript of verbal feedback taken from the roundtable discussion after the project

26th February 2018 - THERE'S NO WRONG WAY TO HAVE A FACE

The students are asked to speak about their thoughts on the rotoscoped animation they have just completed, 10 students responded verbally, transcribed below. Questions from the researcher are in italics.

Student 1:

“It’s interesting, but it was tedious as well, seeing same the frames over and over again. But most importantly it made me really understand the in between of each frame, made me understand the how of the image. Basically when you get an image, and plot it out in seconds, you get to understand what is actually going on between the frames and know like. It’s not just going from A to B, it’s B then C, and then able to know how to er. Basically like, if you have a shape and you want to be in 3D, it helps a lot, not only as a character but the as different shapes, basically, because it actually had volume, so my line had the rhythm, because I didn’t paint it or anything but yet it looked like it was in 3d and then, it’s very interesting.”

“Did you spot anything unusual about your face as you were tracing?”

“Aha I had a long time, I discovered my... there’s no symmetry, like in humans, I didn’t know and it’s kind of weird, I’m not disabled or anything like that... I noticed a lot about myself, I don’t, I mean, what I said in my video wasn’t that personal I made, with my eyes, without squeezing my expression, I can get a lot done with my eyes and my mouth alone, and then, still tell what I am actually going through, is pain, if I’m starting to feel happy, em, I learnt a lot about myself, what I can actually, like emotions, through my smile, the way I look, looking up, looking down, you can tell if I’m interested in something, so that I feel a lot like understanding.”

Student 2:

"You start to see your imperfections, more so than if you doing normal viewing, I noticed that I speak, more using one side of my face than the other, exaggerating my words, and that's what I saw. Like, every frame you are looking, but each frame is slightly different than the last, it may not be a major thing, it could like be – your eyes, they either like, squint a bit more, the lips are like woah, there's always a slight difference."

"Is it bad though? To see your imperfections?"

"I guess not"

"Did anyone see any microexpressions?"

Student 3:

"I did, I just moved my lips like, like that, you know. I guess not myself"

"it's kind of cool though isn't it?"

"No! I don't hide my emotions that easily. I tend to look like... oh I don't want to say [nervous laugh] I don't want people to notice."

"Anyone else want to chip in with something they noticed?"

Student 4:

"I'm not sure if this is an accurate expression but when I was talking like, there would be like, 2 or 3 frames just me like looking up to think what to say next so, does this link into the microexpressions?"

"Would you have thought to do that when animating your characters?"

“Well, no... Maybe when someone was speaking to the next person and right, and they ask them a more difficult question, instead of straight away going into the expression instead just crane up and then start speaking”

Student 5:

“I do have a point on that, when I was animating it, I didn’t think, I didn’t look up I went like this [rolls head] I literally just tilt my whole head back, I don’t just look up I tilt my whole body up... so actually.. that was annoying, because I had to make sure that the rotation, was accurate, yeah and pushing my head like this.” [gestures with head.]

“but did you know that you do that?”

“No”

“and what did you feel about noticing it?”

“Like it was, one of my friends came round and he was like, I’ve noticed you do that a lot and I’m like, what? What? Do I rotate my head? I move a lot when I talk, I do a lot of head movements, a lot of hand movements, so that was annoying” [to animate.]

The researcher speaks briefly about cultural and family learned movements.

Student 6:

“Also...I chose a moment when I was really excited, so it is so weird seeing... that it looks like I’m happy and angry and I have lots of emotion at the same time. And you kind of like really can’t tell if I’m happy or not it’s like, everything is happening in one moment, and that’s what makes you excited.

I’m really emotional when I’m, because my mother is an actress and my dad is a producer and always in my house was like, really, like emotional! And I felt like, all my life when I was at home, I’m like, “oh I’m reacting normally” I’m quite like, in comparison to my parents I’m

like... normal and I'm like oh my god why am I, I'm comparing myself with my parents because I'm so like extra."

Student 7:

"I guess I'm, I realise that my facial expressions, um, resembled my emotion that I wanted strongly the most in, how do I say it in... halfway through my story? Was like the most expressed, I don't know how to say it!"

"is that because someone is filming you and you feel a bit self-conscious? And then halfway through you forget, and be yourself?"

"Yes I think so"

Student 8:

"There was like a peak, where the emotion, was like clearly, you see it and then, it goes like that [gestures a triangle] pyramid shape and then drops down again, goes back to normal. You build yourself up to it, to maximum emotion and then walk down again."

"did anyone feel their face was not very expressive? That there wasn't much to see?"

Student 1:

"No no.. it is a bit creepy, I felt actually exposed, that what come out of me was like "woah" here was a lot I discovered about myself, like when, when I'm nervous I don't keep eye contact I and most people wouldn't – I don't like confrontation so when I was recording to myself, and my friend asked me my name, we didn't talk about that she asked me my name so I get emotional because she said what's your name and I thought 'are you kidding me? You know my name' and then I was like 'nope that's it! No more recording or anything' but then I feel exposed by, by everything about me that you can actually see."

Student 9 :

“My face was neutral all the way. I couldn’t see anything.”

“Did you feel inhibited – and wanted to keep everything under wraps?”

“Oh yes! Because I knew I wasn’t convincing, different from normal.”

“So you ended up rotoscoping a slightly abnormal face, for you, but that was still cool”

“Yes, it was a good laugh.”

Student 10:

“All I wanted to say was basically when I was doing the rotoscoping is that, you do notice lots more, like kind of subtle movements that you, that you always knew but you never really noted, just like I’ve always sort of known, that I always look to the left when I’m trying to think of something and I never really noticed that until I started doing the rotoscoping. It’s interesting.”

“what did you feel about being forced to do 2D?”

Student A:

“In a way, in a way honestly, if you try to do this rotoscoping thing, you’re going to appreciate 3d!”

Student B:

“Yeah cos I was thinking if you went into 2D animation and you had to create a character you might be drawing over thousands of frames and you feel like, I’m only doing like how many frames and I’m like already crying.”

Student C:

“I’m sticking to 3D!”

Student D:

“How long it has to be for the quality you want, it was fun, it was... I wouldn't say it was easy but because you were tracing but it was, you had to do it over and over, it just takes a lot of time.”

H: Online links to view the animations

Completed Artefact

<https://vimeo.com/164232007>

Facial Capture video

https://drive.google.com/file/d/0B4In3Q7aRQ_nelBDc0pCSml6bmc/edit

Raw motion capture animation, before tweaking or adding mouth movements.

https://drive.google.com/file/d/0B4In3Q7aRQ_nbTdqOHE1RURfdE0/edit

Completed motion capture test intro, character textured, mouth animated, sound

https://drive.google.com/file/d/0B4In3Q7aRQ_nUndqZFVBaExBQ00/edit

“Happy” rotoscoped footage

<https://vimeo.com/163243442>

“Sad” rotoscoped footage

<https://vimeo.com/163245256>

“Happy” freeform animation

<https://vimeo.com/136857197>

“Sad” freeform animation

<https://vimeo.com/136914770>

I: List of Conferences and Academic Publications

Aspects of this research have been published in the following journals. I am indebted to the feedback and advice given to me by the anonymous reviewers of these works.

Mobbs, Sophie (2017) *The Unexpected Path: How Animation Might be Used to Help Carers Interpret Restricted Expressions in Their Patients*. CONFIA 2017: 5TH International Conference on Illustration and Animation Conference Proceedings, P264-277. Guimarães, Portugal

Mobbs, Sophie (2016) *Intimate scrutiny: using rotoscoping to unravel the auteur-animator beneath the theory*. *Animation Studies*, 11. ISSN 1930-1928

Mobbs, Sophie (2016). *The evocation and expression of emotion through documentary animation*. *Animation Practice, Production & Process*, 5(1), pp.79-99.

Aspects of this research were presented at the following conferences. I am indebted to the verbal feedback and encouragement of the audience and academic peers in helping me refine, disseminate and progress my work.

Mobbs, Sophie (2013) *The evocation and expression of emotion through documentary animation*. In: *Redefining Animation: The 25th Annual Conference for the Society for Animation Studies*, 23-27 Jun 2013, Los Angeles, USA.

Mobbs, Sophie (2014) *Intimate scrutiny. Using rotoscoping to unravel the auteur-animator beneath the theory*. In: *The Animator: The 26th Annual Conference for the Society for Animation Studies*, 16-19 Jun 2014, Toronto, Canada.

Mobbs, Sophie (2014) *Intimacy and rotoscoping*. In: *C.A.K.E Creative Animation Knowledge Exchange*, 14-18 Jul 2014, Ormskirk, UK.

Mobbs, Sophie (2015) *Animation and the emotional avatar: using motion capture to reflect on non-verbal communication*. In: *Beyond the Frame: The 27th Annual Conference for the Society for Animation Studies*, 13-16 Jul 2015, Canterbury, UK.

Mobbs, Sophie (2016) *Learning to see: how animation might help carers provide comfort to those in palliative care*. In: *And Yet it Moves: The 29th Annual Conference for the Society for Animation Studies*, 26-30 Jun 2016, Singapore.

Mobbs, Sophie (2017) *The Unexpected Path: How Animation Might be Used to Help Carers Interpret Restricted Expressions in Their Patients*. CONFIA 2017: 5TH International Conference on Illustration and Animation Conference, 14-16 Jul 2017, Guimarães, Portugal

J: Ethics Review Form

J: Ethics Review Form

Section 1 - Applicant details

1.1 Details of Principal Investigator <input checked="" type="checkbox"/> or Supervisor <input type="checkbox"/> (tick as appropriate)		
1.1a Name: Sophie Mobbs	1.1b Department/role: Senior Lecturer Art and Design	
1.1c Qualifications: MA PG Dip Computer Imaging and Animation, PG Cert Learning and Teaching in Higher Education, BA (Hons) Architecture	1.1d Email: s.mobbs@mdx.ac.uk	1.1e Tel: +44 2084 113593
1.2 Details of Student Researcher (if applicable)		
1.2a Name: Sophie Mobbs	1.2b Programme of study/module: MPhil/PhD student	
1.2c MA PG Dip Computer Imaging and Animation, PG Cert Learning and Teaching in Higher Education, BA (Hons) Architecture	1.2d Email: s.mobbs@mdx.ac.uk	1.2e Tel: +44 2084 113593
1.3 Details of any co-investigators (if applicable)		
1.3a Name: none	1.3b Organisation:	
1.3c Role:	1.3d Email:	
1.3e Name:	1.3f Organisation:	
1.3g Role:	1.3h Email:	
1.4 Details of External Funding: none		

Section 2 - Details of proposed study

2.1 Research project title:	Animating Non-Verbal Communication: Exploring the relationship between non verbal communication and animation through creative practice.		
2.2 Proposed start date	September 2010	2.3 Proposed end date	January 2017
2.4 Main aims of the study			
<p>Drawing on my creative practice as a mode of research enquiry, I will use critical reflection, literature analysis and qualitative audience feedback:</p> <p>To investigate the production of non-verbal communication in animation, through a written and practice-centred enquiry.</p> <p>To explore how the animation of non-verbal communication may be used to communicate with an audience.</p> <p>To develop a hypothesis of how animation of non-verbal communication may impart paradoxical or equivocal meaning.</p> <p>To investigate how characters lacking in conventional bodies may use non-verbal communication to communicate effectively.</p> <p>To provide a resource for animators and game makers to further and refine the use of non-verbal communication as drawn from academic research and literature.</p> <p>To produce a short film utilizing different approaches to rendering animation. The film will be used to generate viewer feedback, which in turn will inform my practice.</p>			
2.5 Details of data collection procedures:			

Data will be collected in the form of an anonymous questionnaire, to be completed after viewing my short film. Both the film and questionnaire will be delivered online. (Questionnaire provided alongside this Form)

Participants:
 An invited set of individuals who are not animation specialists. Invitations to be sent via social media.
 The invitation will make it clear that:

- No IP addresses will be collected
- No emails will be collected
- Participation is anonymous
- Responses (anonymous) may be used as part of the research.
- Participants will be reminded that if they are not comfortable with these conditions, they should not proceed.
- The researcher's email address will be provided, to allow participants to query, complain or withdraw responses.

Types of Data:
 Questionnaires (post viewing.) (Questionnaire provided alongside this Form)
 Data will be collected in accordance with Art and Design ethical and health and safety policy. In particular, participants will be informed that they may withdraw at any point of the collection process and before publication of the data.
 All participants will be informed of the purpose of the research, how data arising from the research will be used and sorted and who will have access to that data.
 All data, (anonymised at source) will be placed on private, password protected media.
 All raw data will only be accessible to the researcher and the supervisory team.
 It will be made clear to the participants that data arising from the studies will be confidential, analysed and published. Details regarding publication and dissemination of this research will be published on a public facing website.
 Participants will be given details of this before each viewing.

Section 3 - Initial Checklist to be completed by all applicants	Agree	Disagree
3.1 The research DOES NOT involve human participants or animals (e.g., it is a theoretical discussion, review of existing literature, analytical and simulation modelling)	<input type="checkbox"/>	X
3.2 The research involves secondary data analysis* where the researcher can provide evidence that they have the necessary approval to access* the data (<i>please provide evidence of approval</i>) and DOES NOT involve access to records of personal or sensitive information concerning identifiable individuals , or internet research involving visual images or discussion of sensitive issues , or research which may involve sharing of confidential information beyond the initial consent given . <i>*If there is data linkage or it may be otherwise possible to identify participants, please complete all sections of this form.</i>	<input type="checkbox"/>	X
3.3 The research already has ethical approval from another UK Ethics Committee (e.g., a UK HEI, NHS NRES) and the liability insurance is provided by the other body/institution*. (<i>Please provide evidence of approval</i>) <i>*If MU liability sponsorship is required please complete all sections of this form.</i>	<input type="checkbox"/>	X

If you have answered **AGREE** to any of the questions above, ~~then~~ **no further information is required**. Please go to and complete **Section 9** and **sign the declaration in Section 10**.

Section 4 - Research Methods and Design

4.1 Please detail **ALL methods of data collection** for this research:

Questionnaires (following viewing of a short film)

4.2 Will it be necessary for **participants to take part in the study without their knowledge and consent** at the time, e.g., covert observation?

No

If 'yes', please provide justification and details of how this will be managed to respect the participants/third parties involved to respect their privacy, values and to minimise any risk of harmful consequences:

4.3 Will you **audio or video record** interviews and/or observations?

No

If 'yes' please provide details:

4.4 Will the research involve **respondents to the internet or other visual or vocal methods** where respondents may be identified?

No

If 'yes' please provide details:

All participants will be anonymous.

4.5 Will the research involve the **sharing of data or confidential information beyond the initial consent** given?

If 'yes' please provide details:

No

4.6 How will you ensure compliance with the **Data Protection Act*** in terms of **anonymous data collection, maintaining confidentially**, sharing and secure storage, through research dissemination plans and disposal of research data? (*see DPA checklist)

All raw data collected will be held on secure password protected computers/servers accessible only to the principle investigator. All disseminated data will be anonymized.

4.7 Will you use an **experimental research design** (i.e., implement a specific plan for assigning participants to conditions and noting consequent changes?)

No

If 'yes', please provide details of treatment/intervention (and specify if these are intrusive interventions such as the use of hypnosis or physical exercise) and required resources:

4.8 Will the study involve **discussion of sensitive topics?** (e.g., sexual activity, drug use etc)

No

If 'yes' please provide details:

4.9 Is **pain or more than mild discomfort** likely to result from the study?

No

<i>If 'yes' please provide details:</i>
<p>4.10 Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?</p> <p>No</p> <p><i>If 'yes' please provide details:</i></p>
<p>4.11 Avoiding harm: what has been done to assess, obviate or minimise potential risks and how will participants/third parties be supported?</p> <p>Participants will be made aware, that they can withdraw at any time</p>
<p>4.11 Will participants receive any reimbursements or payments?</p> <p>No</p> <p><i>If 'yes' please provide details:</i></p>
<p>4.12 Will the research involve the participation and/or observation of animals*?</p> <p>No</p> <p><i>*Please see MU Statement on the Use of Animals in Research</i></p> <p><i>If 'yes' please provide details:</i></p>
<p>4.13 Might the research have a negative impact on the environment?</p> <p>No</p> <p>E.g., Air, water, land contamination, noise pollution, damage to habitats, plants or sites with sensitive features (i.e., biodiversity/scientific, archaeological, geological or cultural), or involve the importing of plant material, pests, soil or growing material into the UK.</p> <p><i>If 'yes' please provide details:</i></p>

Section 5 - Research Participants

<p>5.1 Please indicate the types of participants that will be included in this research: (e.g., under 16yrs; patients; MU students; general public; specific group(s) or team(s); vulnerable adults unable to give informed consent* etc) <i>*All research that falls under the auspices of the Mental Capacity Act must be reviewed by NHS NRES.</i></p> <p>This research entails a very broad demographic range, in keeping with the known range of viewers of animation and film. Participants will be at least 16 years old (see section 6).</p>
<p>5.2 Number of participants: (for each type of participant, if applicable)</p> <p>No more than 50.</p>
<p>5.3 Briefly describe how access will be gained to participants: (including details of access through gatekeepers, e.g., managers, parents)</p> <p>By invitation via social media.</p>
<p>5.4 Length of each data collection session, number of sessions and location of data collection i.e., will the study involve prolonged and repetitive testing? If so, please justify and state how participants will be supported?</p> <p>The questionnaire and viewing the short film will take about 30 minutes.</p>
<p>5.5 Does this research require External Ethics Approval?</p> <p>No</p> <p><i>If 'yes' please provide details:</i></p>

Section 6 – Safety and legal issues

6.1 Will you be alone with a participant or group of participants? No
6.2 What safety issues* does your methodology raise for you and for your participants and what mitigating actions will be taken? *While researchers have a duty to not cause harm to participants, some research requires judgements to be made about what are acceptable/justifiable levels of harm in accordance with the potential benefits of the research. <i>If relevant to this research, please specify:</i> None, directly. Participants will be told that the content of the film depicts real, as opposed to acted, emotion.
6.3 What legal issues does your methodology raise for you and for your participants and what mitigating actions will be taken? <i>Please specify:</i> None beyond those already covered in this document.
6.4 Do you hold a current Disclosure and Barring Service (DBS) Certificate* ? No *Needed when working with children or in healthcare.

Section 7 – Research Collaboration

7.1 Does the research involve an international collaborator or research conducted overseas ? No <i>If 'yes', what ethical review procedures must this research comply with for that country, and what steps have been taken to comply with these:</i>
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Section 8 – Protocols for ethical research

	Yes	No
8.1 Will you ensure compliance with the Data Protection Act? (See DPA Checklist)	x	
8.2 Will you provide a Participant Information Sheet *?	x	
8.3 Will you obtain Written Informed Consent * directly from research participants? N/A		
8.4 Will you obtain Written Informed Consent * directly from gatekeepers (if applicable)? N/A		
8.5 Will you inform participants that their participation is voluntary and that they have a right to withdraw from the research at any time?	x	
8.6 Will you tell participants that their data will be treated confidentially and the limits of confidentiality will be made clear in your Participant Information Sheet?	x	
8.7 Will you inform participants of the limits of anonymity they will be afforded as participants? (e.g., their identities as participants will be concealed in all documents resulting from the research)	x	
8.8 Will you aim to avoid harm to your participants?	x	
8.9 Will you ensure your research is independent and impartial ?	x	

8.10 Will you provide a Written Debriefing Sheet *? (if applicable) N/A	<input checked="" type="checkbox"/>		
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*Please submit copies of these forms with this application

If you have answered **No** to any of the questions above, please explain below:

Section 9 - Other Ethical Issues - to be completed by all applicants

Does the study involve any **other ethical issues** not covered above? No

If 'yes' please give details:

Section 10: Declaration - to be completed by all applicants

Applicants should read and sign the following declaration before submitting the application.

Please ensure that you have read and understood the relevant Code(s) of Ethics appropriate to your research field and topic.

In signing this research ethics declaration I am confirming that:

1. I have read and understood the relevant Code(s) of Ethics appropriate to my research field and topic.
2. The research ethics application form is accurate to the best of my knowledge and belief
3. I have read and understand the University's *Code of Practice For Research: Principles and Procedures*
4. I agree to abide by the research ethics applicable to the project and which are listed above.
5. I understand that it is my responsibility to ensure that the research is conducted in accordance with my professional/statutory/regulatory body Code of Conduct/Code of Ethics/Research Governance Framework.
6. There is no potential material interest that may, or may appear to, impair the independence and objectivity of researchers conducting this project.
7. I have received and will submit evidence of authorisation from the relevant authorities to carry out the research with this application - if applicable.
8. I agree to inform my Supervisor/School/Institute or Departmental Research Ethics Committee of any adverse effects.
9. I understand that the project, including research records and data, may be subject to inspection for audit purposes at any time in the future.
10. I understand that personal data about me contained in this form will be held by those involved in the ethics approval procedure and that it will be managed according to Data Protection Act principles.
11. I will notify my Supervisor/School/Institute or Departmental Research Ethics Committee of any proposed changes to this methodology.
12. I have seen and signed a risk assessment for this research study (if applicable)

For supervisors:

1. I confirm that I have reviewed all the information submitted with this research ethics application.

2. I also accept responsibility for guiding the applicant so as to ensure compliance with the terms of the protocol and with any applicable Code(s) of Ethics.
3. I understand that research/data may be subject to inspection for audit purposes and I agree to participate in any audit procedures required by the University Ethics Committee (UEC) if requested.
4. I confirm that it is my responsibility to ensure that students under my supervision undertake a risk assessment to ensure that health and safety of themselves, participants and others is not jeopardised during the course of this study.
5. I have seen and signed a risk assessment for this research study (if applicable).

Signature: ~~Supervisor~~



Print name: Dr Magnus Moar

Date: 17/03//2016)

I

Student's signature (if applicable):



Print name: Sophie Mobbs

Date: 17/03//2016

Please submit to your relevant School/Institute or Departmental Research Ethics Committee.

Please attach the following documents:

1. Participant Information Sheet
2. Written Informed Consent Sheet
3. Written debriefing Sheet (if applicable)
4. Completed risk assessment form (if applicable)

Copy of questionnaire/interview guide/details of materials for data collection