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From terrible toreadors to dwarfs and princesses: Forging Disney's style of animation

Stéphane Collignon and Ian Friend

As Hollywood shifted from slapstick to melodrama during the course of the 1930s, supported by the gradual addition of sound and colour, cinema audiences began to expect fuller, more believable cinematic experiences. Walt Disney's ambition was to be considered a filmmaker rather than *just* a cartoonist, and he was determined to take the challenge.¹ Throughout the *Silly Symphonies* (1929–39) series of cartoons, first, and then with the production of *Snow White and the Seven Dwarfs* (David Hand, 1937), the Disney studio began to improve and develop its animation workflow. The animation pipeline is traditionally a very complicated and time-consuming process, and character animation in particular requires a degree of labour, focused mental agility, skill and a keen observational understanding. While contemporary practitioners have at their disposal a number of digital and virtual tools designed to reduce such production times, the need for the swift execution of appealing and convincing animated performance requires more than technical proficiency and efficient animation tools. Animators have always recognized the need to draw from life, primarily as a research tool (from anatomical and motion studies to sketching) but also as a means to inform and inspire where the task at hand is the communication of a complex human emotion through modes of performance. Early animation studios were compelled to constantly innovate, contrive and develop in

order to produce economically viable cartoons. However, leading the charge from the outset was the Disney studio, a collective of artists, designers and storytellers, firmly captained by the Disney brothers, who subsequently emerged as the most influential and renowned pioneers of hand-drawn character animation in the early twentieth century and beyond.

Focussing on elements of character design alongside the animation process (including, in particular, the rendition of movement), this chapter will discuss how Disney and his animators dealt with notions of reality and believability, while fine-tuning a representational style that would become a standard for animators all over the world. The first part of this chapter will therefore focus on Disney's quest for believable characters from the point of view of character design. It will explore the evolution of the studio's aesthetics from the *Silly Symphonies* to *Snow White and the Seven Dwarfs*, and the studio's desire to achieve the perfect balance of expressiveness and credibility in the pursuit of what could be described as 'emotional contagion', namely, the capacity of a character to invite the audience instinctively to feel its emotion as if by spectatorial infection. For Amy Coplan, 'emotional contagion' designates a sort of instant visual empathy independent from the knowledge of the story between viewer or perceiver and image.² Indeed, that capacity of the animated character to make us feel its emotion at a glance would become central to the long-standing appeal of Disney films. There is, of course, always the risk of teleology when analysing the development of the *Silly Symphonies* through to the arrival of feature-length cel-animation with *Snow White*. However, when one scrutinizes every short in the series made between 1929 and 1937, it is possible to notice that every now and then a new type of design is attempted, and that sometimes these variations become integrated into the general practice of the studio. Eventually a clear sense of the evolution of the studio's aesthetic style emerges, not a fluid linear process but as a more chaotic journey that leaps from one film to another, sometimes missing one, but ultimately keeping whatever new element that seems to improve the quality and believability of the films.

The second part of this chapter will concentrate on the legacy of the live-action referencing workflow pioneered in *Snow White* and will contextualize early rotoscoping efforts with current 'action analysis' techniques used extensively in the modern animation industry.³ The action analysis workflow developed during Disney's first feature was initially devised to complement *Snow White's* groundbreaking character design, allowing the animators to bring believable human animated characters to life. The technique evolved over time, developing into a house style for Disney's output that has become the centrepiece for analyses into the studio's particular style of cel-animation.

In his book on the Golden Age of Hollywood cartoons, for example, Michael Barrier cites *The Goddess of Spring* (Wilfred Jackson, 1934) as the first short film with which Disney initiated its research into creating a human character that would be credible enough to support an entire feature film.

However, the eponymous Spring Goddess is not the first human character to appear in a Silly Symphony short cartoon, neither does she demonstrate Disney studio's first engagement with representation of convincing human figures. While one must really wait until 1932, a change of distributor and a budget raise to witness a multiplication of human characters in Disney films, some attempts had already been made since the beginning of the *Silly Symphonies* in 1929 to tentatively represent human form.⁴ By reviewing the shorts in the series starring a human cast, beginning with *El Terrible Toreador* (Walt Disney, 1929) up until the release of *Snow White*, it is possible to determine precisely how Disney animators progressively made the human shape in animation their own. This trajectory showcases their development of a character capable of triggering strong 'emotional contagion' and able to support the audience's attention for the duration of a feature film. As mentioned before, some may see in this attempt to draw more global trends out of the analysis of various, apparently isolated, *Silly Symphonies* a rather teleological approach towards the studio's formal evolution. However, it seems quite unlikely that a man as involved as Walt Disney was in the output of his studio, and with a true ambition to move animation forward, did not at least try to inspire a certain direction to the films. Through the works analysed here, a trend emerges in which the studio seemingly strived to create ever more verisimilar characters, capable of triggering true emotions within the audience and, certainly as of 1934, with the additional aim of maintaining this emotional state through the duration of a feature film.⁵ Character design tests taking place at the Disney studio in the *Silly Symphonies* would, as this chapter argues, eventually lead to the development of the characters found in *Snow White* that became the standard for realistic animation, imposing with it a new aesthetic style still at the centre of the animation industry today.⁶

Achieving likeable human character design

Released in September 1929, *El Terrible Toreador* is the second of Disney's Silly Symphonies, but the first to explore the representation of human characters. In this short film, Disney animators still demonstrate their commitment to a 'Rubber Hose' style typical of the period, one firmly rooted in the bodily potential of slapstick humour. Character design in the film, animal as well as human, is given the same approach: a sort of potato-shaped body out of which sprout four flexible tubes (or rubber hoses) figuring the arms and legs. Only the head and clothes allow spectators to really distinguish the protagonists. Character design here is actually still placed as secondary, or at least reduced to simple visual archetypes. Movements are fluid and supple to the detriment of anatomical constraints and proportions. Bodies can inflate, stretch and distort at will. The vast majority of the gags

rely on the ‘plasmaticity’ of the bodies, an interpretation of ‘rubberhosing’ put forward by Sergei Eisenstein, who proposed that an important facet of the appeal of early Disney animation was the rejection of ‘once and for all’ fixed constraints of shape, and a freedom from ossification and a capacity to dynamically take any form.⁷ Under this principle, character design is therefore entirely subordinate to the creativity of the animation, which in *El Terrible Toreador* achieves a sort of naive purity detached from any consideration other than the spectacle of movement on screen.

One must wait until February of 1930 and the release of the film *Autumn* (Ub Iwerks, 1930) to glimpse the studio’s first real departure from the ‘Rubber Hose’ style. Indeed, as Barrier notes, ‘Disney had understood that sound could make what was on screen appear more real.’⁸ The studio therefore started to develop films with more elaborated narratives, meaning that comic gags were now not solely reliant upon the humour of bodily distortion. Animators thus endowed their characters with more stable bodies in service of a coherent story, rather than a simple succession of gags relying mostly on the ‘plasmatic’ qualities of the character. In order to sustain these new types of story, the studio also tried to create a new type of character design aimed at triggering a more nuanced and emotional response.

Mother Goose Melodies (Burt Gillett, 1931) was the first Silly Symphony since 1929 to mostly rely on a narrative of human characters. More interestingly, the film offered a couple of archetypal representations of human characters that would be repeated in a number of subsequent episodes. These representations offer, perhaps, a glimpse into the studio’s creative process in attempting to produce more believable characters. The character of Old King Cole certainly constitutes a turning point in the construction of the ‘human’ at Disney. His physique is still largely reminiscent of the ‘Rubber Hose’ style, with one big round head with a button nose on top of an oversized round body with four tube-like arms and legs. However, the treatment of the body clearly takes its distance from the old style. *Mother Goose Melodies* does not rely nearly as much on the distortion, inflation or stretching of the body. The morphology of Old King Cole remains solid, and only through his design is he to express his bonhomie and quasi-constant joyfulness. This type of character would resurface in a number of subsequent Disney shorts, including *King Neptune* (Burt Gillett, 1932), *Santa’s Workshop* (Wilfred Jackson, 1932), *Father Noah’s Ark* (Wilfred Jackson, 1933), *Old King Cole* (David Hand, 1933), *The Night Before Christmas* (Wilfred Jackson, 1933), among many others. However, despite the recurring use of this archetype across numerous *Silly Symphonies*, it tends to stay fixed in an expression of everlasting joviality and can scarcely express or elicit different emotional reactions.

Another bodily archetype also appears in *Mother Goose Melodies*, that of Mother Goose herself. This character is composed of a much less rounded face (moving towards slightly bony) with marked details (prominent nose

and chin) atop a rather slim body. Completely contrasting with the King Cole archetype, the Mother Goose design is used for witches or, more broadly speaking, mischievous characters. The archetype appears in *Babes in the Woods* (Burt Gillett, 1932), and even as a male character in both *Lullaby Land* (Wilfred Jackson, 1933) and *The Pied Piper* (Wilfred Jackson, 1933). These two characters' ultimate designs laid the foundation for more nuanced and intelligible personalities, an essential step in eventually creating characters 'verisimilar' enough to elicit a more invested response from the audience.

A third design archetype is introduced in the following Silly Symphony, *The China Plate* (Wilfred Jackson, 1931). The character of the little girl has a body that is relatively well proportioned but covered in loose clothing, thereby hiding her true shape. Her head is slightly inflated but is not treated in the flexible 'Rubber Hose' style. Her general shape remains solid. She has neither the exaggerated bonhomie of King Cole nor the slim and caricatural aspect of Mother Goose, and her main feature is that the animators avoid a detailed anatomical representation, focussing instead on more simplified lines. The head is inflated in a neotenic exaggeration, but not as much as in the other bodily archetypes or even in the 'Rubber Hose' style of physical distortion.⁹ Although this type of character is still quite far from anything leaning towards verisimilar, it does however clearly mark the moving away from the exaggeration of 'Rubber Hose' and towards something ever so slightly more 'truthful' in its appearance, even if less expressive than the two previous archetypes. Francesco Casetti argues that the expressions 'truthful' and 'likely' are preferable to the vague and ambiguous term 'realist'. For Casetti, 'likely' refers to a representation that resembles something that exists (such as a portrait), while 'truthful' relates to a representation that looks like something that 'could' exist.¹⁰ Disney repeated this 'truthful' way of dealing with youthful character design in several films, including *Babes in the Woods*, where it is used for the two main child protagonists of the story. The archetype was slightly adapted to accommodate adult characters too, being used for beautiful female characters such as the mermaids in *King Neptune* and the wives of Noah's sons in *Father Noah's Ark*.

Another interesting film in relation to Disney's evolution of a realist visual style is *The Clock Store* (Wilfred Jackson, 1931). Here, Disney animators clearly experiment by combining archetypes and pushing the designs of their human characters further. For the first time in the *Silly Symphonies* series, Disney presents two characters with anatomically 'correct' proportions and measures, correct with regard to the representational canons developed during the Renaissance pertaining to the bodily imitation of the real.¹¹ Of course, the whole body structure in such Disney animation remains quite simplified, but this is the first time the studio brings us characters showcasing a certain biological or anatomical truthfulness.

In early 1932, a rise in budgets allowed Disney to devote more time and personnel to each short film, resulting in a significant increase in the number of human characters, which were more difficult to convincingly draw and animate than other non-human characters.¹² Disney soon abandoned the 'Rubber Hose' style, wanting the character's design to elicit and maintain the interest of the spectator from the beginning to the end of the film. If narration remained one of the main factors behind creating empathy for the character, it was not enough, as Leonard Maltin explains: 'One of Walt's most important pursuits was the development of personality in cartoons. He wanted audiences to respond with a variety of emotions, and he knew that character credibility was a major ingredient for this kind of success.'¹³ For Disney, character design was one of the most essential elements in order to emotionally engage the audience. However, the diverse character archetypes and formulas for design used so far by the studio in its *Silly Symphonies* had hardly managed to provoke anything but feelings of joviality and amusement in the audience. When required to represent characters that one might find beautiful or cute and still communicate their affect to the audience, and that would invite a 'willing suspension of disbelief' (over, perhaps, a feature film), Disney did not yet know 'how to animated them'.¹⁴ The studio had yet to figure out how to create characters capable of truly triggering an emotional contagion, because as Barrier notes, 'characters of that kind did not exist in 1930'.¹⁵ Yet things would change with the arrival of a new animator in particular.

Fred Moore joined the studio in August 1930 a month before turning 19. A naturally gifted draftsman, Moore slowly progressed under Ben Sharpsteen's tutelage and began to get credited work around 1932. His first major assignment came with *Three Little Pigs* in 1933, where he eventually managed to bring a part of the charm in his characterizations that Disney was looking for:¹⁶ with animal characters and not human ones, admittedly, but it was already part of the answer. May 1933 marks a decisive step forward in terms of character animation and brings one of Disney's most important popular successes. *Three Little Pigs* does not contain any human characters, but Moore's input revolutionized animation of the time and allowed Disney in particular to fix a series of principles to create more plausible characters with more personality.¹⁷ According to Michael Barrier, Moore based his drawing style on round and soft shapes, immediately inciting pleasant ideas and marking a departure from previous Disney aesthetics. These round shapes, contrary to Rubber Hose, more obviously suggest flesh over bones. Barrier adds that if bodies slightly distort while bouncing to the music, they maintain their initial volume.¹⁸ For Barrier, within a few scenes at the beginning of *Three Little Pigs*, Moore significantly extended Disney's animated vocabulary. Maltin adds too that this film 'was just the beginning for Walt; he knew that he had just scratched the surface of animation's possibilities. From this point on, the *Silly Symphonies* revealed

an ever-growing mastery of the film medium.’ Most of all, the studio was preparing to move on to bigger and longer projects.¹⁹

Going for feature length

The early 1930s presents a turning point in the Disney studio’s aesthetic research and evolution in its visual style. From the end of 1933 and into 1934, Disney clearly marked his intention to produce a feature-length film.²⁰ But for a feature film to be conceivable, Disney animators had to provide characters that were able to withstand comparison with successful ‘live’ actors and performers. The studio’s animators therefore had to learn how to depict the whole range of human affects and emotions if they wanted to be able to grasp the attention of the audience for the duration of a feature film.²¹ To that aim, Disney hired Don Graham, an art instructor from the Chouinard Art Institute in California, who since 1932 had been giving art classes to the animators. Disney hired Graham with the aim of not only training new animators but also sharpening the skills of the existing team of staff artists. Graham organized live model drawing classes, seminars, field trips to the zoo and improvement sessions for various specialized animators of the studio. Despite all this, however, a film like *The Flying Mouse* (David Hand, 1934) demonstrates how Disney perhaps still struggled with the credible representation of human characters. Contrary to the mouse – pleasing and triggering empathy – the fairy (a human character except for butterfly wings) feels stiff and unattractive.²²

While the production of *Snow White* effectively got underway, Disney increasingly relied on the *Silly Symphonies* to give its teams the chance to develop new techniques. The greater sophistication achieved by the studio in layout and backgrounds was quickly matched by their ability to create new and sympathetic characters.²³ But Disney also needed truly credible characters, not just those that could be interpreted as cute or funny by the child audience. The studio’s short *The Goddess of Spring* therefore became the first with a main human cast since *The Pied Piper*, and perhaps the first real attempt made by Disney at creating ‘truthful’ and credible human characters.²⁴ However, the characters in the film are almost inexpressive, especially the goddess, and their design is completely incoherent with that of the secondary cast. Indeed, the devil and the goddess are portrayed with realistic and anatomically correct proportions, albeit with a caricatural face for the devil, while the rest of the spring ‘gnomes’ and hell minions all showcase highly neotenic and altogether more ‘cartoony’ designs.

It was with non-human anthropomorphic characters that Disney animators took their next step forward. In November of 1934, Disney poached Grim Natwick from Ub Iwerks’ studio with a view of working on *Snow White*. Natwick had first earned his stripes on one of the most interesting Silly

Symphonies of 1934–5 under the direction of Ben Sharpsteen, namely a film about anthropomorphic cookies titled *The Cookie Carnival* (Ben Sharpsteen, 1935). Although the story exclusively revolves around strongly anthropomorphic non-human characters, and even if the Sugar Cookie Girl first appears as a flat cookie, during her makeover into the future cookie queen she suddenly becomes so anthropomorphic and humanlike that one can hardly still see a cookie. From one frame to the next the anthropomorphic cookie becomes a human character marking the studio's progression towards realistic character representation. Natwick himself was responsible for this long makeover scene. He managed to imbue the Sugar Cookie girl with all the grace and charm that *The Goddess of Spring* was lacking. The character has more solidity and weight to her body and a lot more credibility, even though she remains a little 'cartoony' in her design, and as such she marks Disney's first attractive and expressive character.²⁵

In February 1936, Fred Moore, who had started to bring more charm into the studio's animation with *Three Little Pigs*, began to fix the definitive design for *Snow White's* dwarfs. In his original model sheets for the characters, they display button noses, large bellies and a physiognomy that barely resembles that of real dwarfs (though strongly reminiscent of the King Cole archetype). Indeed, until they were eventually provided with individual personalities, the dwarfs' highly neotenized features were unmistakably cute. Barrier adds, 'The dwarfs were prime material for an animator like Moore, whose work made its strongest impression through charm and cuteness. ... The dwarfs went through a neotenic evolution, growing younger (despite their white beards and jowls), cuddlier, and more immediately appealing.'²⁶ After spending the first half of the 1930s experimenting with several human character archetypes, the studio was now able to achieve satisfying results when animating children or cute characters. Disney began to experiment with the creation of more visually and behaviourally 'truthful' characters, working towards an increasing expressivity to the characters as a way to overcome their artificiality.

In the spring of 1936, Natwick also was transferred to work on *Snow White*. Around that time, all the talented artists of the studio began to work with Natwick in a special unit devoted solely to the character of Snow White, and for two months all they did was practice drawing her. However, the image of a very drawn and highly stylized Snow White remains.²⁷ According to Natwick, some 2,000 different drawings were made during the development of the character, before the animators began even starting to animate her movements.²⁸ The main difficulty presiding over any definitive design for the character lay in the fact that she was intended to be beautiful. However, studies in cognitive psychology, ethology and neuroscience seem to indicate that a certain level of exaggeration and simplification may increase the expressiveness of a character, and therefore its ability to convey emotional reactions. Gillian Rhodes states that in the field of ethology,

research has shown that exaggerated signals are highly effective for a variety of recognition systems.²⁹ Patrick Power also explains that neuroaesthetic concepts such as the 'Peak Shift Effect' indicate how an aesthetic that he describes as 'expressive' (whose characteristics are isolated and exaggerated) can facilitate cognitive, creative and emotional engagement in the spectator.³⁰ Beauty however, for many scholars, lies in anti-caricature and averageness.³¹ Anyone seeking to create a character that needs to be both beautiful and expressive is therefore faced with an impossible paradox, as beauty seems to rely on averaging out distinctive features, while heightened expressiveness requires the exact opposite.

Disney animator Hamilton Luske eventually reworked the rotoscoped image of Snow White to give her more caricatural proportions, with a larger head and therefore more youthful appearance, thus opting for a design tending towards neoteny rather than fidelity to a certain kind of pictorial realism.³² Indeed, contrary to beauty, neoteny (that triggers cuteness and caring) can be enhanced and supported by caricature.³³ The character of Snow White finally took on lightly caricatural and neotenic traits (smaller size, larger head, bigger eyes). The Prince's design, however, remained more truthful and quite anti-caricatural in order to be charming. His representation is, perhaps, less expressive and is devoid of the degree of liveliness imbued into the *Snow White's* other human characters.

Over the course of the 1930s and leading up to the release of *Snow White*, Disney reached a character design paradox: an over-simplified and caricatural design is not efficient because its artificiality is too obvious to allow for a true 'emotional contagion' of the audience. But each attempt at creating a truthful design proved a failure in terms of expressiveness, eventually revealing its own artificiality. Character designs such as those of the dwarfs, who were caricatural but not in such extremes as in the 'Rubber Hose' era of the shorts, held a certain consistency. As characters, they manage to clearly and immediately express a wide range of emotional reactions.

From the 'Rubber Hose' heroes of *El Terrible Toreador* to the prince of *Snow White*, the evolution of human figures in Disney's films suggests that in order to be affective, the character's design needs to tend towards some degree of visual truthfulness yet retain an element of caricature. The trick therefore is to create a human design 'verisimilar' enough to trigger 'emotional contagion' within the audience but one that is simultaneously caricatural enough to benefit from the expressive strength particular to caricature, and from animation as a creative medium. These issues explored by Disney in his visual designs gave him animated characters that reflected the dramatic tone of *Snow White* as the studios new feature project. However, the animation team still needed to develop and utilize a variety of methods, in conjunction with shifts in design, to create believable movement and styles of character animation quickly and economically for such a pioneering production.

Disney's search for 'believable' animation – live-action footage

Successful character animation often relies on a good understanding of pose, weight, timing and, especially, performance. Consequently, a cornerstone of animation skills development, even as far back as Disney's production of *Snow White*, is the recognition of a long and intense study of human movement. Life drawing is a widely accepted and established method of documenting a character's performance and developing the required skills. During the process of life drawing the animator's perception and documentation of the model is subjective. The animator can adapt and modify the subjects' pose as they see fit in order to improve the animated characters' performance. The process can be slow, lack spontaneity and require considerable time to organize. Time has always been an animator's worst enemy, if not their greatest challenge, and too much time taken in the planning of an animated performance will result in less time to create the final character animation.

During the studio era of Hollywood animation, recorded live action was quickly recognized as an efficient way to stage a refined performance which could be shared across large teams, with the added advantage that film and subsequently video footage could easily be paused, slowed down or replayed by an individual animator. The process gained particular prominence in the 1930s and was utilized in animated works such as *Snow White* and the Fleischer Studio's *Betty Boop's Bamboo Isle* (Dave Fleischer, 1932). The most popular techniques have been commonly acknowledged as rotoscoping and action analysis (also known as Live-action Video referencing). Rotoscope work generally takes place in front of the camera, while action analysis is used behind the camera during a film's pre-production. Each process produces a very different result in spite of their similar techniques. The process of rotoscoping traces the live-action footage precisely, providing the animator with an almost exact replica of the live-action performance.³⁴ It is economical and efficient, and creates smooth and successful character animation, but it can disconnect an audience from an animated character due to the overly naturalistic proportions.

By comparison, 'action analysis' allows the animator to adapt and consider movement, timing and performance rather than just slavishly copying the live-action footage as is demonstrated during the rotoscope process. It is therefore more interpretational, allowing the animator to study the live-action footage in great detail, but still include their own ideas of timing and pose to the performance. The action analysis process pioneered by Walt Disney's studio on *Snow White* certainly enabled the animator to manipulate and interpret the live-action footage to their own needs. This process operates as similar to the more subjective and interpretive process

of life drawing, rather than working to ‘constrain’ the animated character to the recorded movement as evidenced in the rotoscope workflow.

The process of action analysis is discussed comprehensively in Chris Webster’s book *Action Analysis for Animators*, where he examines both its merits and the relevance of including it in modern character animation workflows. Webster states that action analysis can be broken down into four separate actions:

1. *Activity*
Describe the position of an object in time and space, either controlled or random.
2. *Action*
Describe the movements and behaviours that are attributable to a specific object or material.
3. *Animation*
Describe the movements that are generated internally either purposely or instinctively by an animated object.
4. *Acting*
Describe actions and behaviour performed by an object that are driven by psychological and emotional conditions.³⁵

Disney ultimately favoured the more evaluative action analysis method as described above. One of the key animators who worked on *Snow White* as one of the studio’s famous ‘Nine Old Men,’ Frank Thomas, explained that Walt felt the realistic movement created using the rotoscope process was too complex and lacking focus.³⁶ However, trainee animators can often blur the lines between rotoscoping and action analysis, tending to view this form of assistance as cheating, rather than acknowledge the benefits that each process can potentially offer. They believe that a talented professional animator should be able to fully comprehend pose, weight and timing automatically, or as if by magic. Animation students (in particular) will always recoil in horror at the notion of recording themselves as reference, rather than consider the technique of recording movement as an important element of the animation pre-production process. Walt himself believed that practicing live-action referencing techniques could speed up the animation workflow considerably and lend weight, purpose and uniformity to an action or scene.³⁷ In turn, this would sustain successful and economically produced character animation regardless of the experience of the animator involved.

The method of using rotoscoped live-action footage to complement animated work has been practiced since the early days of animated production, not just during the production of *Snow White*. Initially the process was devised as a way to bring lifelike human animated characters to life. Realistic

characters are often perceived as difficult to animate convincingly due to the viewer's familiarity with the human body. The original iteration of the rotoscope process was devised by Max and Dave Fleischer in 1915 and later patented in 1917. Rotoscoping allowed animators to create smooth and natural realistic human character animation in a similar style that Disney desired for the human characters in *Snow White*. Live-action footage was projected frame-by-frame onto a transparent drawing board. Animators were then able to follow the movement to create smooth realistic animation. The process was not practical for most character work at the time due to the early adoption of a less physically realistic aesthetic, particularly in the case of Disney and the transforming, 'plasmatic' quality to their *Silly Symphonies*.

The rotoscope process was used extensively in the Fleischer's *Betty Boop's Bamboo Isle*. The film begins with a live-action segment starring the Royal Samoan Orchestra, featuring a dancer named Miri. Animators rotoscoped (or traced) the live-action footage of Miri to create the dance performed by Betty at the end of the short. This was possibly due to a more carefully observed application of realistic anatomy, action and proportions. The Fleischer Studios would later use the rotoscope process on its first feature-length production, *Gulliver's Travels* (Dave Fleischer, 1939), a film that was produced in response to the success of Disney's *Snow White*. The main naturalistic human character Gulliver was heavily rotoscoped, while the other supporting characters were animated in the traditional style due to their more abstract design. Fleischer's smooth rotoscoped character animation used for Gulliver appears out of place when compared to the traditional animated characters throughout the piece, a common result of mixing heavily rotoscoped action with more lively and stylized characters.

Todd James Pierce argues that, perhaps expectedly, the animators working on *Snow White* were initially overwhelmed, as Disney presented them with such a hugely ambitious debut feature-length project.³⁸ The animators lacked confidence faced with such radically different character design and animation style, as up to this point they had been roughing out characters largely based on simple geometric shapes, the circle and the oval (exactly the kinds of character archetypes repeated at length in the *Silly Symphonies*). As a result, Disney turned to the potential of action analysis. Following their training by the Chouinard animators – including the newly appointed Graham – their confidence grew as they attended these new skills classes. One session involved analysing live-action footage that had been considerably slowed down, thereby allowing the animators to study pose and timing in ways that departed from the practice of Rotoscoping. Rather than use *Snow White*'s voice actress Adriana Caselotti, Disney hired a young dancer Marjorie Belcher to inhabit the role of Snow White for the feature, and she would also later perform other characters for Disney including the Blue Fairy in *Pinocchio* (Ben Sharpsteen, 1940) and Hyacinth Hippo in *Fantasia* (James Algar et al., 1940). The animators were able to analyse the nuances of movement and

capture Belcher's performances, rather than slavishly trace the footage as was demonstrated in Fleischer's rotoscope technique. Thomas animated the dwarfs during Snow White's 'death' scene, and it was he who believed that animation was not a technical pursuit, but that a good animator must have an advanced technical knowledge of movement.³⁹ Thomas stated that successful character animation must adapt and synthesize real live-action performance and produce 'believable' animated movement. Real action is highly complex, but an abbreviated interpretation of believable movement would allow an audience to accept all manner of fantastical characters. To be believable the character's performance must be initially based on real-life movement. This is why the animators on *Snow White* studied motion and movement, including the performances of vaudeville acts, film, art, and attended classes in action analysis. Although anthropomorphic, Disney's characters would always retain natural proportions in order to utilize the reference material successfully. This allowed Disney to continue to use and refine the action analysis process, creating a large library of referenced movement and performance. The studio would occasionally recycle the reference material and use the same movements for several different projects. Reusing the same reference footage again and again can be perceived as cheating, but the recycled animation equally gave the studio its distinct characterful style. The recycled live-action footage thus afforded the animators with a bank of recognizable, believable performances that the viewers would be able to recognize instantly as a Disney product. The shift to the possibilities enabled by action analysis therefore allowed the animators to break from the 'plasmatic' form of the *Silly Symphonies* and instead reorient their cartoon images towards a graphic illusionism. This would ultimately lead towards the 'hyperrealist' house style demonstrated in the character animation and contained in the majority of Disney's early theatrical work.

Conclusion

The Disney studio evidently did much to establish the tradition of utilizing and experimenting with live action for animation. The particular process of 'action analysis' pioneered by Disney and the animators working on *Snow White* is still viable and utilized throughout the animation industry today. Many contemporary American animation studios such as Pixar, DreamWorks and Sony Animation still use the action analysis workflow, and viewings of any show reels of animators employed by these studios display a strong use of Disney's pre-production pipeline. Contemporary Disney character animator Jose Gaytan's own show reel likewise evidences Disney's use of live-action video reference, which adapts and works with human movement rather than simply tracing over the live-action footage.

In 2006, UK-based animation studio Aardman released their inaugural computer-generated animated feature *Flushed Away* (David Bowers and Sam Fell, 2006) in partnership with DreamWorks. Due to various production issues the entire shoot was relocated from the Aardman studios in Bristol to DreamWorks' studio in Los Angeles. Senior production staff from Aardman were sent to LA to ensure that the established Aardman studio style was acknowledged and preserved during its all-important first feature-length computer-generated production. It was during this time that the production team from Aardman (including Animator/Director Jay Grace) became exposed to the Disney style of 'action analysis' technique in practice. Grace was heavily influenced by DreamWorks' character animation workflow, which was influenced by the production of *Snow White* many years earlier. Grace eventually brought the action analysis technique to Aardman's studio in the UK, and it is now an integral part of the studios' pre-production pipeline, where it has revolutionized the studio's feature output.

The Live-action Video reference has established a fast and efficient 'roadmap' for directors and animators, and has drastically reduced approval times for the animated shots. Feature directors can now work with their animators to create live-action video reference for most character animation shots, allowing the director and animator to interpret and refine performance, plan, time and organize shots quickly before they are animated. Due to advances in modern technology, action analysis remains easily available to every animator with a smartphone or digital tablet. Live-action footage can now be appropriated anywhere at any given time. Speed will always be an issue for all animators and animated film producers, no matter the skill and experience they possess. The action analysis technique can enable all animators to considerably speed up their own process. This, in turn, allows them to enjoy the nuances of the character's performance and create the 'believable' animation that Walt Disney had desired so much during the early stages of production on *Snow White*.

Notes

- 1 See Michael Barrier, *Hollywood Cartoons: American Animation in Its Golden Age* (Oxford: Oxford University Press, 1999).
- 2 Amy Coplan, "Catching Character's Emotions: Emotional Contagion Response to Narrative Fiction Film", *Film Studies* 8 (Manchester: Manchester University Press, 2007), 31.
- 3 Chris Webster, *Action Analysis for Animators* (Independence: CRC Press, 2012).
- 4 Barrier, *Hollywood Cartoons*, 86. From 1928 to 1930, Disney films were circulated through Celebrity Pictures (also proprietor of the Cinephone sound system used to add sound to *Steamboat Willie* [Ub Iwerks, 1928]). However,

from 1930 to 1932 the release of Disney films was secured by Columbia, then United Artists until 1937. *Snow White and the Seven Dwarfs* was released by RKO, which officiated until 1953 when Disney opened its own distribution company, Buena Vista.

- 5 Based on the work of Roger Scruton in 'Photography and Representation', in *Philosophy of Film and Motion Pictures: An Anthology*, ed. Noel Carroll and Jinhee Choi (Oxford: Blackwell, 2006), 20. The concept of 'verisimilarity' is borrowed from Karl Popper's philosophy of science and designates here a character whom we know is not realistic but elicits a 'realistic enough' response that we accept it as if it were realistic.
- 6 The word 'character' is used to refer to the body of the character as opposed to its role in a distinction similar to that between an actor/ress and the character s/he portrays.
- 7 Sergei Eisenstein, *Walt Disney* (Circé: Strasbourg, 1991), 28–9.
- 8 Barrier, *Hollywood Cartoons*, 70.
- 9 Neoteny is defined in biology as the retention of youthful features in an adult. In character design it is the use of those feature to give a character a youthful and cute look. See Stephen Jay Gould, 'Mickey Mouse meets Konrad Lorenz', *Natural History* 88 (1979): 30–6.
- 10 Francesco Casetti, *Les théories du cinéma depuis 1945* (Paris: Nathan, 1999), 46–7.
- 11 Circa 1400, the harmonious man is defined as that whose vertical proportion is equivalent to 8 and 2/3 face lengths, while the stretched arm span equates the height. According to Nadeije Laneyrie-Dagen, if this model does not quite reflect reality, this canon, as elaborated by Giotto and later theorized by Cernini, marks a considerable progress from the point of view of the imitation of the real. Nadeije Laneyrie-Dagen, *L'invention du corps. La représentation de l'homme du Moyen Age à la fin du XIX* (Paris: Flammarion, 2006), 120. Other proportion ratios, such as the equivalence between the length of the foot and that of the forearm, or the fact that there is three times the length of the hand in that of the arm (from shoulder to wrist), are also present in many of Disney's character designs.
- 12 According to the theories of Konrad Lorenz, the weakness of distinctive human signals for social release mechanisms has forced us to become experts in the recognition of the human forms. One must therefore be much more precise to create an efficient human character than a non-human one. See Konrad Lorenz, *Essais sur le comportement animal et humain* (Paris: Seuil, 1970).
- 13 Leonard Maltin, *Of Mice and Magic: A History of Animated Cartoons* (New York: McGraw-Hill, 1980): 40.
- 14 Barrier, *Hollywood Cartoons*, 70.
- 15 Ibid.
- 16 Ibid., 87.
- 17 Maltin, *Of Mice and Magic*, 40; Barrier, *Hollywood Cartoons*, 89–90.

- 18 This principle will later be known as ‘Squash and Stretch’.
- 19 Maltin, *Of Mice and Magic*, 41.
- 20 Ibid., 42; Barrier, *Hollywood Cartoons*, 124–5.
- 21 Barrier, *Hollywood Cartoons*, 106.
- 22 Maltin, *Of Mice and Magic*, 42.
- 23 Ibid., 51.
- 24 Barrier, *Hollywood Cartoons*, 124.
- 25 These ideas were first brought to our attention by the lectures of Charles Solomon at UCLA in 2008.
- 26 Barrier, *Hollywood Cartoons*, 202.
- 27 Ibid., 197.
- 28 Maltin, *Of Mice and Magic*, 56.
- 29 See, for example, Niko Tinbergen, *The Study of Instinct* (Oxford: Clarendon Press, 1951); B. T. Gardner and L. Wallach, ‘Shapes of Figures Identified as a Baby’s Head’, *Perceptual and Motor Skills* 20, no. 2 (1965): 135–42; S. H. Sternglanz, J. L. Gray and M. Murakami, ‘Adult Preferences for Infantile Facial Features: An Ethological Approach’, *Animal Behaviour* 25, no. 1 (1977): 108–15; and Gillian Rhodes, *Superportraits: Caricatures and Recognition* (Hove: Psychology Press, 1996).
- 30 Patrick Power, ‘Character Animation and the Embodied Mind–Brain’, *animation: an interdisciplinary journal* 3 (2008): 115–21. The ‘Peak Shift Effect’ implies that if a stimulus causes a specific neurological reaction, then an enhanced stimulus will cause a stronger reaction. See V. S. Ramachandran and William Hirstein, ‘The Science of Art: A Neurological Theory of Aesthetic Experience’, *Journal of Consciousness Studies* 6, no. 6–7 (1999): 15–51.
- 31 Tim Valentine, Stephen Darling and Mary Donnelly, ‘Why Are Average Faces Attractive? The Effect of View and Averageness on the Attractiveness of Female Faces’, *Psychonomic Bulletin & Review* 11, no. 3 (2004): 482–7.
- 32 Barrier, *Hollywood Cartoons*, 198.
- 33 See Sternglanz, Gray and Murakami, ‘Adult Preferences for Infantile Facial Features’.
- 34 See Joanna Bouldin, ‘The Body, Animation and The Real: Race, Reality and the Rotoscope in Betty Boop’, paper presented at the ‘Affective Encounters: Rethinking Embodiment in Feminist Media Studies’ conference, Turku, 2001.
- 35 Webster, *Action Analysis for Animators*.
- 36 Frank Thomas, ‘Can Classic Disney Animation Be Duplicated on the Computer?’ *Computer Pictures* 2, no. 4 (July 1984): 20–5.
- 37 Barrier, *Hollywood Cartoons*, 120.
- 38 Todd James Pierce, ‘Wow, We’ve Got Something Here: Ward Kimball and the Making of *Snow White*’, *New England Review* 37, no. 1 (2016): 123–36.
- 39 See Andreas Deja, *The Nine Old Men: Lessons, Techniques, and Inspiration from Disney’s Great Animators* (Boca Raton, FL: CRC Press, 2015).