

# Animated Shapes: the movement drawn in cartoon animation

## *Formas Animadas: o movimento desenhado na animação cartunesca*

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### ABSTRACT

This research proposes an investigative clipping on the constitution of the shape of certain cartoon characters, selected from the functionality of drawing for animation, with the purpose of arguing how the visual project of certain figures exacerbates the creative variation between their poses to establish consecutive changes to the drawn movement, suggesting spontaneity to cartoon animation. Through a brief historical overview of the dynamic relationships that were established between shape and movement in American cartoons, mainly from the 1910s to the 1940s, the research delimits how certain variations in the external and internal structure of the figure were decisive in influencing this qualitative construction in character animation. From there, the research unfolds to analyze the configuration of some contemporary characters of cartoon animation in relation to the peculiarities of the movement performed by them, proposing to highlight the attributes of the qualitative result of these animations. Thus, we seek to reflect on how the shapes of these characters are reorganized to represent the animated movement, based on the practice of specific fundamental principles, conceptually analyzed, in its constructive structure, in this research.

**Keywords:** Animated cartoon. Cartoon animation. Shape. Change. Movement.

### RESUMO

*Esta pesquisa propõe um recorte investigativo sobre a constituição da forma de determinados personagens caricatos, selecionados a partir da funcionalidade do desenho para animação, com o propósito de argumentar como o projeto visual de certas figuras exacerbam a variação criativa entre suas poses para estabelecer mudanças consecutivas ao movimento desenhado, sugerindo espontaneidade à animação cartunesca. Por meio de um breve panorama histórico sobre as relações dinâmicas que se estabeleceram entre forma e movimento no desenho animado estadunidense, principalmente nas décadas de 1910 a 1940, a pesquisa delimita como certas variações na estrutura externa e interna da figura foram decisivas para influenciar essa construção qualitativa na animação de personagens. A partir daí, a pesquisa se desdobra para analisar a forma de alguns personagens contemporâneos da animação cartunesca em relação às peculiaridades do movimento realizado por eles, propondo destacar os atributos do resultado qualitativo dessas animações. Assim, busca-se refletir como as formas destes personagens se reorganizam para representar o movimento animado, tomando por base a prática de princípios fundamentais específicos, discutidos conceitualmente e analisados, em sua estrutura construtiva, nesta pesquisa.*

**Palavras-chave:** Desenho animado. Animação cartunesca. Forma. Mudança. Movimento.

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Received on: 06/10/2023. Accepted on: 09/11/2023

## INTRODUCTION

The functionality of animation drawing involves specific characteristics in the organization of the shapes that make up the visual project of a character to be animated, precisely because this figure is designed to materialize a perception of apparent movement. In the meantime, there are important aspects to consider for the visual construction of a character designed for animation, mainly in the formal contrast established by the external points of articulation between its limbs compared to the capacity for internal manipulation of its volume. These aspects summarize the object of investigation of this research, animated shapes, in order to address a brief historical overview of the formal variation of American cartoons from the 1910s to the 1940s. The aim was, therefore, to analyze how some contemporary characters were designed to highlight the quality of their movements, such as the bird with long, articulated legs in the short film *Bird Karma* (William Salazar, 2018), from the American producer DreamWorks, or the protagonist with a balloon-shaped head and spherical external eyes, from the British independent short film *The Last Belle* (Neil Boyle, 2011).

The object of analysis of this research addressed how the simple — though efficient — construction of these characters was designed based on the ability of changing their shapes to suggest the movement intended in the animation. This research focuses specifically on the figurative shapes of cartoons, originally the Animated Cartoon conceptualized by Edwin Lutz when: “[...] comic graphic artists began to turn their attention to the making of drawings for animated screen pictures, [...] bringing into usage the expression ‘animated cartoons’” (LUTZ, 1920, p. 10). In other words, after this material support (cartoon) — “related to [...] paper, card, or pasteboard” (LUTZ, 1920, p. 8) — became the vehicle for posting the caricature drawings of American cartoonists: “[...] a printed picture [...] in which notabilities [...] are generally caricatured” (LUTZ, 1920, p. 10). We thus witness the genesis of cartoon animation: the *exaggeration*<sup>1</sup> of the contrast between shapes and facial expressions to imprint extravagant personalities and burlesque tones, with “references coming from cartoon or humorous printed pictures” (FIALHO, 2013, p. 79).

It is this movement recorded in still pictures of a character, but in sequential positions of the figure, and constituted by exaggerated forms, that expands the illusory concept of animated, suggesting an autonomous kinetic perception for its (the character’s) actions when projected for display. By defining animation as “[...] the art of movements that are drawn” (MCLAREN *apud* DENIS, 2010, p. 57), Scotsman Norman McLaren differentiates the essence that sustains the meaning of this illusion, although he himself was not a cartoonist. In other words, within this conceptual perspective of drawing for animation, the shapes drawn by animators are subordinated to the movement that their successive

1 “The principles of exaggeration allude here to the precise staging to visually represent the subjectivity of emotion, just as mime actors seek to enhance both their body and facial attitudinal poses” (FIALHO, 2013, p. 78, translated by the author).

positions evoke. It is its unified construction — and prone to constant changes in stages — that synthesizes the movement represented in the cartoon animation investigated here.

Based on the theoretical framework enunciated by Thomas and Johnston (1981) to guide principles developed in Disney animation in the 1930s, also supported by the *timing*<sup>2</sup> discussed by Whitaker and Halas (2009), essential precepts are noted for constructing the illusion of movement through gradual formal change of parts of a character. Among them, the principle called by Thomas and Johnston (1981, p. 59-62) as *overlapping action* stands out, adapted by this author (FIALHO, 2013, p. 55-57; 61-64) as *ações sobrepostas*, which would only be structured — in elucidating constructive stages — in the analytical processes disseminated by Williams (2001, p. 231-243) and, later, in examples analyzed by Goldberg (2008).

### Shapes in American cartoon animation: brief history

With the emergence of direct filming equipment at the end of the 19<sup>th</sup> century, thanks to the inventive machinery disseminated by Lumière in France and also by Edson in the United States, the mechanism for capturing and projecting images will attract the interest of cartoonists and press comic artists. The illusion of apparent movement materialized by this machinery fascinated these artists to try to suggest life to their static drawings.

Initially, these cartoonists are attracted by the record of optical trickery caused by the photographic capture of quick pictures, made by cartoonists with chalk on a blackboard. In the United States, the first experiments are with “the process of capturing chalk talks or lightning sketches, these ‘lightning-drawings’ carried out in real time in front of the public (and which Méliès already practiced in cinema)” (DENIS, 2010, p 46). In this country, Englishman James Stuart Blackton is one of the pioneering cartoonists in this process, with the short film *The Enchanted Drawing* (1900), which does not materialize the meaning of illusory movement based on fixed drawings, but rather the magical effect of modifying the caricature drawing (created by assembling frames).

With the American comic artist and illustrator Winsor McCay, the term *animated cartoon* will in fact express *anima*<sup>3</sup> to cartoon characters, directing “the

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2 According to Whitaker and Halas (2009, p. 2), it is the rhythmic planning that gives *meaning* to the movement to be animated, as it alludes to the creative manipulation of the intervals of action that a character must perform to suggest a certain variation in impulse and weight (WHITAKER; HALAS, 2009, p. 25), according to the motivations of the emotional state to be represented by it in the animation. Thus, the term refers to regulating the timing of characters’ actions before animating them, which will condition the number of drawings to be created — and the distance between them — to emulate the rhythm intended for each movement constructed by the animator.

3 The characters’ motivation that suggests the illusion of life and singularizes animated movement: the illusionism that emulates the “‘soul’ (*anima*) of inert drawings” (FIALHO, 2013, p. 1). This action with *anima* — animation — is what differentiates it from an ordinary, mechanical action that does not consider the suggestion of natural forces to propel it, because, without taking this dynamic into account, “the result on the screen will be movement, but it will not be animation” (WHITAKER; HALAS, 2009, p. 2).

animation towards unbridled and surreal imagination" (DENIS, 2010, p. 47), already present in his work published in comics. Although his first experiments were with lightning drawings made in public, McCay inaugurated, with *Little Nemo* (1911), a sequence of drawn movements that suggest rotation and metamorphoses of his well-known comic book characters.

However, it was with his next short film, *How a Mosquito Operates* (1912), that this artist innovated in the technique of drawn movement, by materializing the convincing illusion in the animation of his character's paws, as analyzed below.

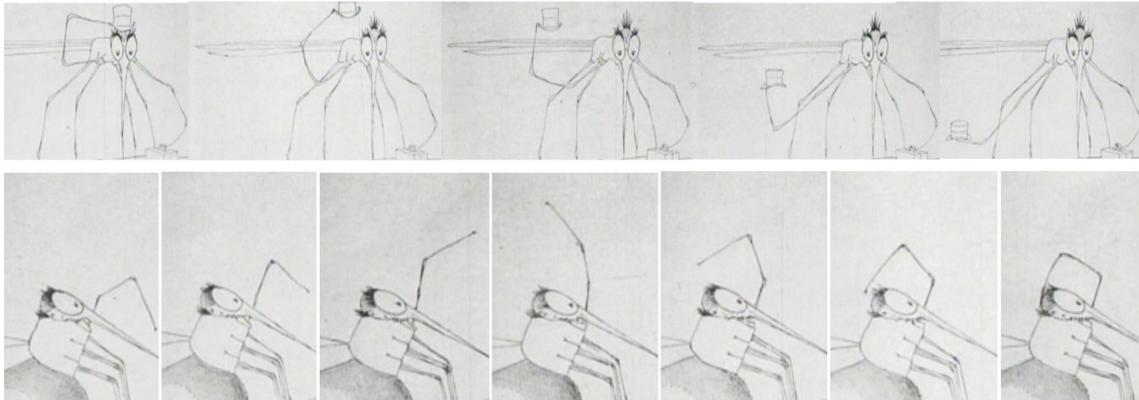
### *1910s: McCay builds movement through articulated shapes*

Cartoonist Winsor McCay's mastery of caricature drawing, although adorned by textures and graphics from his comics, results in formal characteristics that would influence the design of cartoon characters for animation. The shapes of his figures display a clear silhouette and suggest volume in the two-dimensional space of the paper's proportions, graphic qualities that were unprecedented in the representation of the beginnings of American cartoons, during the 1910s.

Still, what seems to differentiate his graphic work from others of his generation is that these shapes convincingly go beyond conventional drawing to constitute a hybrid image composed of a solid structure with anatomical bases that supports the marked *exaggeration* of the schematic caricature representation. This figurative quality permeates his images with a certain formal *appeal*<sup>4</sup> (THOMAS; JOHNSTON, 1981) and magnetism in the eyes of the viewer, who are immediately attracted by the design of his figures.

But what differentiates this cartoonist's contribution to the genesis of more sophisticated character animation is how he crafted his shapes to enhance drawn movement. In *How a Mosquito Operates* (1912), McCay introduces an animated movement that appears flexible due to the juxtaposition of the compound shape that structures the legs of his insect protagonist. By projecting the mosquito's legs through three external joints connecting the straight parts of its structure, the artist appears to have observed the natural movement of insects. With this strategy, McCay performs actions with the insect's legs that evoke the real anatomical structure of a mosquito. This results, for example, in an action with the paw that is revealed by its articulated parts, such as the gesture of the insect removing the top hat from its head or scratching it, before stinging its sleeping victim (Figure 1). The mechanism carried out by the animator was to gradually unfold the straight shapes of the leg through their joints, resulting in an overlapping movement of their parts, highly effective for the animation proposal and consistent with the structure of the insect.

4 "This principle is conditioned to summarize the power and magnetism that a simple main character pose should exert on the viewer, regardless of the quality of the movement in the animation" (FIALHO, 2013, p. 76).



Source: short film *How a Mosquito Operates* (Winsor McCay, 1912).

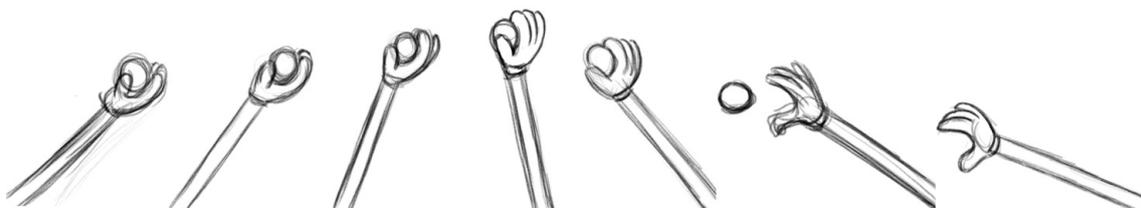
Figure 1. Shape of the legs suggests gradual movement of their articulated parts.

From the example analyzed, it can be seen that this mechanism elaborated by McCay was a precursor to the animation principle called “overlapping actions” (FIALHO, 2013, p. 55-57; 61-64)<sup>5</sup> — stated by Thomas and Johnston (1981) —, when used by Disney to systematize the articulated movement in the studio’s characters (which happened at least 20 years after the release of *How a Mosquito Operates*).

### *1920s: the industry simplifies shape*

But when the production of cartoons in the United States was industrialized in the 1920s, the visual projects of characters chose to unify this external joint of their parts, simplifying arms and legs to straight tubes, in order to accelerate the creation of intermediate positions (drawings) in cartoon animation. The introduction of this type of simplistic design formula will result in rigid movements for the characters’ actions, meaning in a clear regression to the shapes proposed by Winsor McCay for his insect protagonist in *How a Mosquito Operates*.

An obvious example of rigid actions in the animation of cartoon characters is in the short film *Felix Saves the Day* (Pat Sullivan, 1922), in which the notorious cat Felix throws a ball in a baseball game with two boys. While getting ready and throwing the ball, the character’s animation is represented by sequential positions of his arm dragging in an extended and rectilinear fashion, similar to the illustration made by the author in Figure 2.



Source: Animation frames drawn by the author.

Figure 2. Rectilinear arm shape suggests rigid movement.

<sup>5</sup> “Articulated limbs of the body must overlap, progressively, to suggest *flexibility* in movement. Ex: arms moving freely” (FIALHO, 2013, p. 57, translated by the author). This term is also conceptualized in a similar way by Whitaker and Halas, when they maintain that, in animation, it is usual “[...] to have a time lag between the movements of different parts of the figure. This is called overlapping action” (2009, p. 61).

However, still in that decade, American animator Bill Nolan is credited with rescuing flexible movement in cartoon animation, through the introduction of limbs made up of curved tubes to the visual projects of characters. The change proposed by Nolan, curving the rectilinear shape of the tubes that represented arms and legs, became popular in cartoon characters in the 1920s and the method became known as “[...] ‘rubber hose’ animation. It was novel and funny since nobody had any bones and everything flowed with endless curving actions [...]” (WILLIAMS, 2001, p. 232). The new curvilinear structure of the characters’ external shapes “facilitated and supported flexible, wave-like movement in the animation” (FIALHO, 2013, p. 63).

Figure 3 depicts the same ball throwing positions in Figure 2, which allows comparing the changes in arm shape, remaining curved during the throw and then changing direction when throwing it, suggesting a wave motion and, therefore, flexible for animation. The lack of a bone structure to support the parts of the arm — wrist, forearm, and upper arm — characterizes the uniform design proposal, precisely to simplify the creation of intermediate positions in the animation process stimulated by the American industry of the period (which demanded the production of a short film every two weeks).



Source: Animation frames drawn by the author.

Figure 3. Curved arm shape suggests flexible movement.

### *1930s: analysis of the movement sophisticates the relationship between shapes*

This decade is characterized by the maturation of the American cartoon industry, with the release of the first feature films for cinema, in a production dynamic that until then had focused on short films. This feat, previously considered inappropriate for an expanding market (as it was believed that cartoon comedy would not survive more than six minutes to entertain a cinema audience), proved to be commercially successful in the face of the enormous box office success of the 83-minute production *Snow White and the Seven Dwarfs* (Disney, 1937).

This victorious result, which established the animation industry for cinema in the United States, was only possible thanks to experiments with animation processes that advanced the representation of constructed movement, making this illusion more convincing under the effect of natural forces for the actions of people, animals, and special effects (water, fire, smoke). In particular, Disney Studios used short film productions from the *Silly Symphonies* series (1929-1939) to reach new aesthetic heights in cartoon animation, including experiments with animation more based on the naturalism of the human figure.

These qualitative results materialized in the feature film *Snow White* and were only possible thanks to constant studies of animal and human anatomy, introducing movement

adaptations based on filmic observation. This more technical and analytical strategy for animation made it possible to evaluate the changes that occur in external shapes during movement and their impact on the variation in the internal shape of an animal, person or object. Figure 4 illustrates photographic sequences of trotting and jumping positions of a cat at a gallop, taken from boards produced for scientific research by English photographer Eadweard Muybridge, in the second half of the 19<sup>th</sup> century. It is possible to observe how the external joint of the legs articulates to support the cat's weight, as well as the clear distension of the internal shape of the feline's body when changing from trot to gallop.



Source: Muybridge (1979). Cat; trotting; change to galloping, 1872-1885. Available from: <<https://www.royalacademy.org.uk/art-artists/work-of-art/cat-trotting-change-to-galloping>>.

Figure 4. Articulated shape of a cat's paws supports the malleable shape of its body.

Examples like these, which enabled the analysis of animal movement by animators, distinguished important aspects of feline malleability, involving the ability to “squash and stretch” (FIALHO, 2013, p. 18-19; 26-27; 61-65) of its internal shape — another principle praised by Thomas and Johnston (1981, p. 47-51).

However, this analytical research also triggered adaptations for a *bone* structure in animated characters, which advanced to more anatomical arm shapes, simulating curves by juxtaposing rectilinear parts of their components (wrist, forearm, and upper arm). Figure 5 illustrates this modification of the structure, using the same positions to throw the ball as in Figure 3 for comparative purposes. It is, therefore, a return to the articulated movement suggested with spontaneity by McCay in the 1920s, reiterating this mechanism now as a tool to be mastered by animators to design superimposed actions in animation, using a term coined by American animator Art Babbitt in the 1930s: “successive breaking of joints” (FIALHO, 2013, p. 62)<sup>6</sup>.



Source: Animation frames drawn by the author.

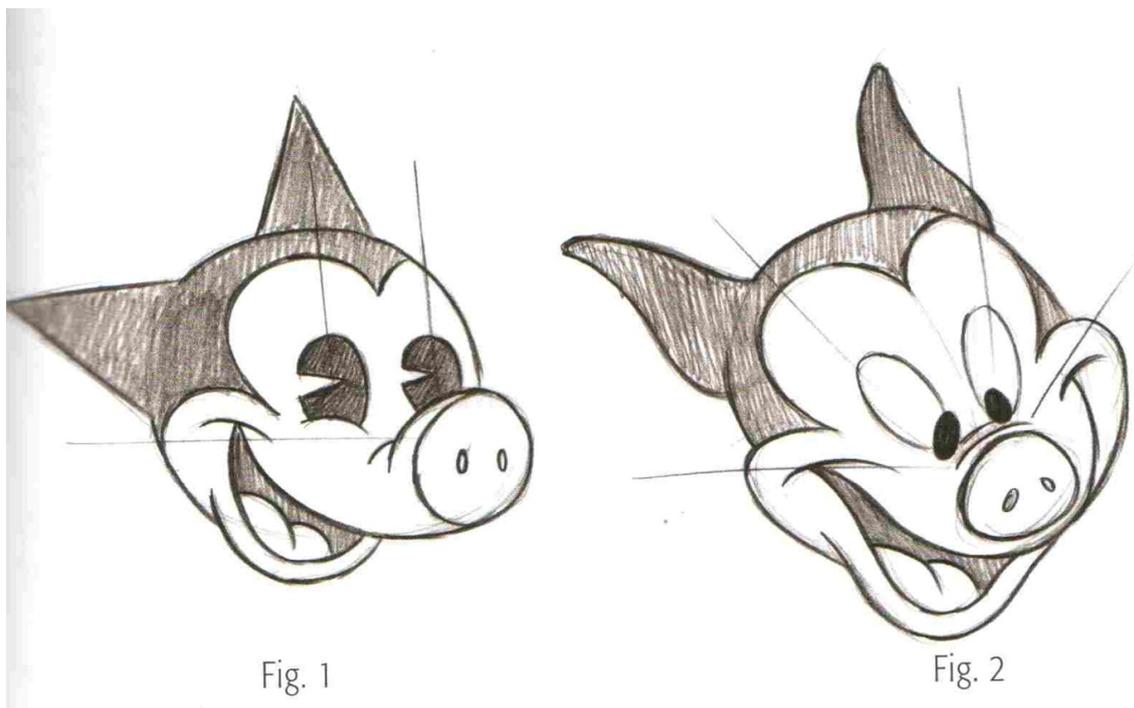
Figure 5. Shape composed of articulated arm parts suggests flexible movement.

### *1940s: dynamic poses readjust internal and external shapes*

In this panoramic view of shape modification in animated characters in the United States, animator Fred Moore was considered a vital reference in the mid-1930s, when his design for cartoon characters, with dynamic lines and postures, became popular at the Disney studio in the 1940s.

<sup>6</sup> (GOLDBERG, 2008, p. 21).

With a drawing that naturally suggested movement in static poses, with the insertion of diagonal and concentric lines in the construction of the face (Figure 6), Moore's sketches expand the malleability of the figure's internal shapes, a characteristic that will define Disney cartoon characters in the 1940s. The result is a certain plasticity of shape, which was *animatable* because it already expressed dynamics before it even moved. In other words, a design that was easily manipulated by animators: "We used the term 'plastic', and just the definition of the word seemed to convey the feeling of potential activity in the drawing: 'Capable of being shaped or formed, pliable'" (THOMAS; JOHNSTON, 1981, p. 68).



Source: Goldberg (2008, p. 51).

Figure 6. Dynamic shape of cartoonish face (on the right) suggests movement in static pose (on the left).

This ability of shapes to distend and compress internally to represent the exaggerated emotions of the caricatured characters concerns the materiality of the figure, when using the *squash and stretch* principle in specific parts of the body. In this sense, postures and gestures are extended to define a clear silhouette that expresses this emotional state, also resulting in a transformation of its external shape, by streamlining the construction of the poses of cartoon characters.

Figure 7 illustrates Goldberg's (2008) demonstration, when drawing his character *Phil* (*Hercules*, Disney, 1997) from a basic construction structure — based on visual projects from the 1940s — to then expand its shape into a sketch, with the intention of redefining the same posture and gesture, only now exaggerated enough in a clear silhouette (external shape) to synthesize his explosive mannerisms in cartoon animation.



Source: Goldberg (2008, p. 55), Copyright of Disney Enterprises, Inc.

Figure 7. Shape stretched by exaggeration (on the right) evidences the character's emotional state.

This step-by-step animation mechanism of the character's shapes, whose precursor was comic book artist McCay, will become a basis for study by animators interested in the technical mastery of movement. The examples selected below seek to discuss how the construction of basic shapes for contemporary cartoon characters can emulate movements with varied artistic results, which are also categorized in the research.

### **Shapes in contemporary cartoon animation: Bird Karma and The Last Belle**

Excerpts from two animated short films were selected for analysis of the drawn movement, with the intention of discussing their kinetic results, considered the following methodological criteria:

- Authorial films made by animators with professional experience in industry productions and, therefore, with a broad command of the animation principles discussed here (*overlapping actions* in external shapes, *squash and stretch* in internal shapes);
- Design of characters with an emphasis on a cartoonish structure, with the arrangement of shapes through contrast and using the modeling of a clear silhouette, to suggest *volume* in the two-dimensional space and *exaggeration* in its constitution, without losing its formal *appeal*. The objective is to discuss examples of animation by *overlapping actions* and by *squash and stretch*, enhanced by the formal conception of these cartoon figures.

In this sense, the choice of *Bird Karma* (William Salazar, 2018) is justified by highlighting flexible movement: it has a formal structure reminiscent of McCay's mosquito, with long, exaggeratedly thin and straight legs, bendable at the joints. Its body is held high in the shape of a small sphere, from which the head

emerges with its long beak, balancing the silhouette of the figure. The intention is to demonstrate how its shape is efficient in the construction of movements that emphasize flexibility, speed, and eccentricity through animation by *overlapping actions*.

On the other hand, the selection of the female protagonist of *The Last Belle* (Neil Boyle, 2011) intends to highlight the movement of her malleable constitution, also emphasizing speed and internal change through anticipation and the character's cyclical actions. Her head, with the distinct shape of an inflatable balloon, is constructed into a caricature that resembles the structure of a frog, highlighting the spherical eyes above her forehead. Its curvilinear silhouette, which recalls the rounded lines of visual projects from the 1940s, is distributed in a hybrid shape that positions her eyes almost in a two-dimensional space, referencing the design of cartoonish figures from 1970s animation. This formal structure works to construct simple movements with creativity, modifying shape in sequential positions that emphasize the internal malleability of the figure.

### *Shape emphasizes articulated movement*

Animator William Salazar, also director of the short *Bird Karma*, uses his bird's long legs with precision to create a controlled walk between pause and movement, while the character carefully follows a fish under the waters of a swamp. The prey does not notice the bird's predatory intentions and appears to play with it, jumping out of the water in quick parabolas that are accompanied by the character with subtle step movements, stealthily controlled with small rests of the paws in the air, out of the water. The bird's intention is not to make noise and organize its leg control during pauses to follow the lurking fish.

Salazar achieves this effect of controlling each step of the bird by changing the direction of the joints of the leg as it descends into the water, contrasting its folded and straight shapes, exactly through the juxtaposition of its articulated parts (similar to the structure of McCay's mosquito). To suggest this flexible movement of the legs during the bird's steps, the walk is constructed by the successive change of its external joints, like a stick with three bending points that changes in the animation due to the formal contrast of its structure (Figure 8).



Source: *Bird Karma* (Storyboard, William Salazar, 2018).

Figure 8. Long shape of the legs juxtaposes articulated parts to suggest flexible movement.

### *Shape emphasizes swift movement*

The legs of Salazar's bird, although long, are also articulated to convey fast actions that show the character hunting. Now he assumes the intentions of a predator and makes clear his intention to catch the fish, after realizing that this prey is a special animal. Without hesitation, the bird starts to move its long legs with extreme agility, moving quickly through all parts of the swamp, while pausing to remove objects from the water, in the hope of hooking the fish (Figure 9). There is no deformation in these positions that represent agile movement, but only successive folds and straightness of the parts that constitute the external shape of the bird's legs (joints).



Source: *Bird Karma* (Storyboard, William Salazar, 2018).  
Figure 9. Leg shape changes successively to suggest agile movement.

In counterpoint to the articulated movement of the external shape of the bird in *Bird Karma* through *overlapping actions*, the variation in the rounded internal shape of the protagonist's eyes in *The Last Belle* is used by the short's animator and director, Neil Boyle, to also represent an agile blink. The action is performed three successive times to suggest that the character is anxious and attentive, as she enters a bar for a scheduled date of couples online. She is also visibly nervous, as she hopes the date will become a possible relationship.

To demonstrate the protagonist's vivacity, both happy and nervous for the date, Boyle contrasts a malleable variation between the spherical and elliptical shapes of the eyes highlighted in silhouette (Figure 10). The formal change works perfectly to express a state of excitement to the character, keeping her focused to look around. This change through *squashing and stretching* of the shape of the eyes drives the creative strategy used by the animator to represent a simple movement, but here constructed in a surprising way (without intermediate positions between open and closed eyes) to express the effect of a rapid blink that conveys the entire character's motivation.



Source: *The Last Belle* (Neil Boyle, 2011).  
Figure 10. Malleable eyes shape suggests agile movement.

### *Shape emphasizes eccentric movement*

To perform a ritualistic dance, with the aim of stimulating hunting to the sound of Indian music, Salazar's bird performs imaginary movements between synthetic poses that vibrate with excitement, extending the observation time of these actions for the spectator. These connecting movements — with the vibratory synthesis-poses of the character standing upright on the water — are quick and constructed with just one or two creative intermediate positions and at unpredictable angles (Figure 11). There is an inventive register due to the intermediate positioning of the character, added to the creative path between these positions, which is more angular, "instead of the traditional wave-like and curved path" (FIALHO, 2013, p. 293, translated by the author). Again, the change perceived in this movement away from its naturalistic bases is highlighted by the constant change between extreme positions, through the contrast between folds and straight lines in the stick shapes of the bird's legs.



Source: *Bird Karma* (William Salazar, 2018).

Figure 11. Leg shape overlaps to emphasize eccentric movement.

### *Shape emphasizes anticipatory movement*

The change in the internal shape of the protagonist of *The Last Belle* records the movement of anticipation performed by her as she coughs, disconcerted, before asking the bar attendant for a drink, still embarrassed after having lost her balance in her high heels and almost fallen to the floor. By designing a head in the shape of an inflated balloon that explains the internal variation of her face, Boyle manages to suggest the character's malleable and subtle movement when she bends down slightly to cough, clear her throat, and ask the attendant for her order. The design summarized by the protagonist's curved lines highlights the small inflation of the internal shape of her head, highlighting the rounded and full cheeks, in the anticipatory pose that registers the protagonist's cough. Her eyes are also compressed in the pose of anticipation, highlighting their elliptical shape for longer than in the protagonist's agile blinks. Figure 12 illustrates the extreme poses of the character, before bending down in her alert state with her head extended, during the anticipatory pose of slight squashing of the face and, soon after, when recomposing her malleable face to place her order.

### *Shape emphasizes cyclical movement*

The curved and continuous silhouette of the external shape of the protagonist of *The Last Belle* facilitates the conception of synthetic poses that express



Source: *The Last Belle* (Neil Boyle, 2011).

Figure 12. Malleable face shape highlights anticipatory movement.

her emotional state directly to the viewer. In this sense, the change in the internal shape of the eyes complements her posture, reinforcing the contrast between the character's different performances, during the secondary action of her hands and fingers cyclical movements. As a narrative synthesis, the character's pensive posture — waiting for her date —, contrasted with her frustrated posture — realizing that he will never arrive —, is outlined by the accentuated curvature of the shoulders and the distinct silhouette of the figure.

However, the internal shape of the character's eyes is what most reinforces and complements the cyclical movement of her hands, circling her finger around the edges of the glass cup, in her thoughtful posture and, in opposition, tapping her fingers sequentially on the table, in a frustrated posture. Functionally, Boyle chooses to relate the protagonist's blinking, maintaining its spherical shape in the pensive posture, but changing it to the shape of a sphere cut in half in the frustrated posture, transforming it into a two-dimensional geometric shape with closed and irritated eyes (Figure 13). Still, in both contrasting shapes, the closed eyes during the blink reinforce the ellipse form as a representation of the compressed state, materializing yet another creative strategy by the animator for simple movements of the character's component parts.



Source: *The Last Belle* (Neil Boyle, 2011).

Figure 13. Malleable eyes shape distinguishes the character's emotional state.

## FINAL CONSIDERATIONS

Constituting a theoretical reflection matured by professional practical experience with cartoons, this text proposed to complement a more comprehensive

research developed on the creative movement in animation, begun in a doctoral thesis (2013) and continued in subsequent academic articles, which address the symbiotic relationships between shape and movement to result in the much-desired *anima*<sup>7</sup> action in cartoon characters.

As we have tried to demonstrate, these shapes — external and internal — first express themselves to suggest movement. In other words, the contrast between a character's shapes alters or changes the perception of movement in the cartoon. In this sense, knowledge and full mastery of the "*fundamental principles of animation* by Thomas & Johnston" (FIALHO, 2013, p. 82)<sup>8</sup> are vital to enhance artistic expression in the work carried out by animators. And, in this research, they are the "Principles that reinforce visuality in animation design: - Appeal; - Solid Drawing [volume]; - Exaggeration" (FIALHO, 2013, p. 27), the most relevant to highlight the unique constitution of the animated shape of a cartoon character.

However, this formal constitution through *appeal*, *volume*, and *exaggeration* between articulated limbs and internal variations of a character's body must be designed to build the apparent movement of animation through successive changes, both in its external shape through "overlapping actions" (FIALHO, 2013, p. 55-57; 61-64), as well as internally due to "squash and stretch" (FIALHO, 2013, p. 18-19; 26-27; 61-65). Thus, shapes are reorganized to represent cartoonish movement in animation through a mechanism of constant change, seeking to emphasize the external contrast — through the compound shape of flexible joints that synthesizes the articulated silhouette of the character — opposed to the internal — through the malleable shape that indicates the elasticity degree of a character's volume.

The result of designing this animated shape — to highlight the movement constructed by drawings (in sequential positions) — expresses qualitative attributes to the animation. This drawn movement appears to have flexibility and malleability, depending on the degree of motivation planned for the cartoon character, which produces an animation of spontaneous perception and can enhance the personification of the animated figure in a creative and captivating way for the viewer.

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<sup>7</sup> Cf. note 36.

<sup>8</sup> (THOMAS; JOHNSTON, 1981, p. 47).

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**Conflict of interests**: nothing to declare – **Financial support**: none.

