VISUAL NARRATIVE THROUGH MOTION LINES AND SPEED LINES: A CASE STUDY OF CONTEMPORARY 3D ANIMATION

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ABSTRACT

The development of 3D animated movies has adapted visual elements of comics, such as motion lines and speed lines, into digital media, but there has been no study that combines visual semiotics, narrative functions, and the transformation of comic styles into 3D animated movies. The purpose of this study is to map the semiotic mechanisms and dramatic functions of motion lines and speed lines through case studies of three movies, including Spider-Man: Across the Spider-Verse (2023), Puss in Boots: The Last Wish (2022), and The Bad Guys (2022). The method used is a descriptive qualitative approach: visual semiotics analysis to unravel denotative and connotative meanings, as well as narrative analysis to map the effects' contribution to the rhythm, conflict, and climax of the story. The results show that motion lines and speed lines operate in two ways: as markers of movement that communicate kinetic intensity, and as narrative devices that reinforce dramatic rhythm and audience affect. These effects also create an aesthetic hybridity between comics and cinema, providing an additional layer of interpretation that enhances affective engagement and dramatic understanding. This research provides theoretical and practical contributions to the study of visual semiotics and digital animation narrative design.

Keywords: Comic-Movie Adaptation, Motion Lines, Speed Lines, Visual Narrative.

INTRODUCTION

Contemporary animation has undergone significant developments in terms of visual style and narrative strategy (Hu, 2021). One prominent trend is the integration of comic book aesthetics into the digital cinema medium, particularly through the use of motion lines and speed lines. These two elements, which originated in both Japanese and American comic book traditions, serve to visually represent movement, speed, and emotional intensity (Cohn & Maher, 2015). In the context of 3D animation, the use of such expressive lines becomes interesting because this medium is usually associated with realistic visual representation. (Hacımusaoğlu & Cohn, 2023). The presence of motion lines and speed lines marks an aesthetic shift that not only emphasizes visual realism but also explores a more expressive, symbolic, and intertextual visual language.

The importance of studying this topic lies in its position as a meeting point between two media: comics with their expressive characteristics and 3D animated movies with their realistic-cinematic tendencies. This encounter produces a form of aesthetic hybridity that has not yet been fully understood within an academic framework. Furthermore, this trend cannot be separated from the dynamics of global popular culture, where audiences are increasingly accustomed to cross-medium visual styles that are collaborative and intermedial (Wells &

Moore, 2017). Therefore, a study that highlights the narrative function of motion lines and speed lines in 3D animation is relevant, both from an aesthetic perspective and from the perspective of visual semiotics and narrative studies.
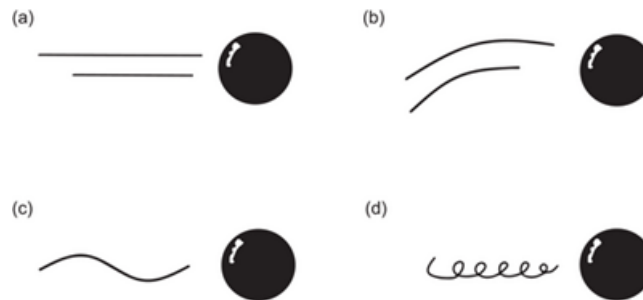

Figure 1. Motion line trailing behind a mover, marking the path it has traversed
(Hacımusaoğlu & Cohn, 2023)

Several previous studies have touched on the importance of lines in comics and animation. Hacımusaoğlu & Cohn (2023), for example, emphasize the role of motion lines as a visual device for visualizing movement and energy. Meanwhile, Roland Barthes (1915–1980) positions visual representation as a sign system that operates in both denotative and connotative realms (Jadou & Ghabra, 2021). Within the realm of animation studies, a trend toward hybrid styles in digital animation has emerged, blurring the lines between traditional and contemporary aesthetics (Wells, 2018). Contemporary movies like Spider-Man: Into the Spider-Verse and its sequel, Spider-Man: Across the Spider-Verse, have been widely discussed in the context of experimental styles that incorporate comic book techniques, graffiti, and even street art into the medium of 3D animated movies.

However, despite the attention paid to aesthetic aspects, academic studies on the narrative function of motion lines and speed lines in 3D animation remain very limited. Most research focuses more on stylistic aspects or technical innovations than on how these visual effects function as dynamic semiotic systems that directly contribute to the construction of meaning and dramatic structure (Thon & Wilde, 2016). Existing studies have not sufficiently explored how these expressive lines function not only as aesthetic ornaments but also as responsive storytelling tools integrated into the narrative.

STATE OF THE ART

1. The gap between formalistic studies of comics and their application to 3D animation. The study of motion lines and speed lines is historically rooted in the study of comics and static illustration, with a primary focus on their representational function in indicating movement and emotion in two-dimensional images. Classical research, such as that conducted by McCloud (1993) or Cohn (2013), has emphasized that these lines function as visual signs that represent speed, direction, and intensity, but within a non-temporal visual narrative framework. Over the last decade, studies by Cohn & Maher (2015) have expanded the discussion to include readers' visual perception and the cognitive effects of motion cues in comic media. However, most of this literature stops at the context of static images, without examining how motion lines transform meaning and function when adapted to the temporal, spatial, and cinematic medium of digital animation.

    This gap is significant because the medium of 3D animation has a different diegetic nature than comics: instead of simulating motion through visual signs, animation creates actual motion in cinematic time. Thus, the existence of motion lines and speed lines in digital

animation is not merely a preservation of comic aesthetics, but rather a visual hybridization process that changes its semiotic function. Until now, there has been little research that systematically describes this change in function through a visual semiotic approach, tracing the shift from denotative meaning (actual movement) to connotative meaning (affect, intensity, or style). This study thus fills this gap by dissecting the mechanisms of visual sign transformation from comics to animation through case studies of contemporary 3D movies.

2. Limitations of visual semiotic studies in explaining the dramatic and emotional dimensions of visual motion effects. The literature on visual semiotics largely highlights the representational and symbolization aspects of visual signs (Kaltenbacher, 2007), but rarely links them directly to the dramatic function in film narrative structures. In the context of digital animation, most semiotic research is still focused on character design, color, or spatial symbolism (Mahalingam & Daniel, 2024), while analysis of motion lines and speed lines as sign systems that play a role in the construction of emotions and dramatic rhythms is still limited. In fact, in the context of movies like Spider-Man: Across the Spider-Verse (2023) or Puss in Boots: The Last Wish (2022), line-based visual effects do not simply indicate movement, but rather build a sense of intensity, tension, and momentum that aligns with the film's dramatic structure.

Using the Barthesian framework of denotation and connotation, this study highlights how these visual signs construct layers of meaning that are simultaneously affective and aesthetic. At the denotative level, lines function as indicators of direction and speed; at the connotative level, they become an expressive sign that articulates emotional intensity and dramatic atmosphere. This dual transformation has not been fully mapped in previous literature. Therefore, this study broadens the scope of visual semiotics by linking it to the narrative dimension, emphasizing that motion lines and speed lines operate not only as aesthetic elements but also as structural components in the formation of rhythm and dramatic conflict.

3. Lack of interdisciplinary studies between narrative analysis and hybrid aesthetic studies in digital animation. The development of digital cinema, particularly 3D animation, has given rise to hybrid visual styles that blur the boundaries between mediums, as noted by Wells & Moore (2017), and Bédard (2022). However, most research on hybridity in animation focuses on aesthetic and technological dimensions without examining how these visual styles function within narrative structures and audience perception. In other words, the "story" aspect is still separate from the discussion of style.

This research offers an integrative approach by combining narrative analysis (Smith, 2018) and visual semiotics (Hans et al., 1978) to explore how motion lines and speed lines play a role in creating dramatic rhythm and visual affection. Through a comparison of three contemporary movies, this study attempts to prove that the use of lines is not merely an aesthetic style, but a narrative strategy that functions to build dramatic intensity. This approach closes the gap that has long separated narrative studies and aesthetic studies in digital animation research, and opens new avenues for understanding how the hybridity of visual styles can influence storytelling and the emotional experience of viewers.

Based on this gap, this study seeks to fill this gap by examining the role of motion lines and speed lines in contemporary 3D animated movies. It positions these two effects as objects of visual semiotic analysis and narrative analysis to understand the meanings they produce at the denotative and connotative levels, as well as their function within the

dramatic structure (Danesi, 2017). Through case studies of Spider-Man: Across the Spider-Verse (2023), Puss in Boots: The Last Wish (2022), and The Bad Guys (2022), this research explores how motion lines and speed lines operate as dynamic semiotic systems that amplify the intensity of movement, emotion, and dramatic rhythm.

The novelty of this research lies in its emphasis on the narrative function of motion lines and speed lines in 3D animation, rather than simply their aesthetic value. There has been no previous study that combines visual semiotics, narrative function, and the transformation of comic style into 3D animated movies. This article presents a new perspective on how these comic-style visual effects serve as a narrative bridge between the comic and cinematic mediums, enriching the audience's visual and emotional experiences. This research not only contributes to the development of visual semiotics and movie narrative theory but also provides practical insights for animators in designing visual strategies that are both expressive and narratively meaningful.

METHODOLOGY

This research uses a descriptive qualitative approach to examine the role of motion lines and speed lines in contemporary 3D animated movies. This approach was chosen because the focus of the research is not on quantitative measurements, but rather on interpreting the visual meaning and narrative function of comic-style effects. The two main methods used are visual semiotic analysis and narrative analysis, which synergistically help unravel the sign system and dramatic structure in animated works.

The first method is visual semiotic analysis. According to Barthes, semiotics functions to understand how visual signs work through denotative meaning (what is literally seen) and connotative meaning (layers of inherent cultural or emotional meaning) (Massari, 2021). In the context of this research, motion lines and speed lines are treated as visual signs that not only represent movement directly but also carry certain connotations, such as intensity, tension, or emotional energy. As a simple example, in Spider-Man: Across the Spider-Verse (2023), the motion lines surrounding the character's movements not only indicate the direction of a jump but also signify strength, agility, and the distinctive atmosphere of the comic world. Visual semiotic analysis allows researchers to decipher how these visual signs operate within multiple layers of meaning and how they shape the audience's experience (Hacımusaoğlu & Cohn, 2023).

The second method is narrative analysis, which focuses on the dramatic structure and storytelling function in movies. A movie's narrative can be mapped through the relationship between events, rhythm, and style that form dramatic cohesion (Liapi et al., 2024). In this study, narrative analysis is used to map how motion lines and speed lines not only enhance scenes but also serve to emphasize conflict, heighten climaxes, or slow down the rhythm to build tension. For example, in Puss in Boots: The Last Wish (2022), radial speed lines appearing in battle scenes serve to emphasize the urgency of the action while strengthening the dramatic rhythm, so that the audience feels the acceleration experienced by the characters. This method helps explain the contribution of these visual effects to the movie's overall narrative structure.

The analysis unit in this study includes three contemporary 3D animated movies with different visual characteristics: Spider-Man: Across the Spider-Verse (2023) which features dynamic motion lines in character movements, Puss in Boots: The Last Wish (2022) which emphasizes radial speed lines in high-speed scenes, and The Bad Guys (2022) which presents hybrid lines as a combination of movement and speed effects. The distinctiveness of these three

movies is the consistent use of line effects as part of the visual style and narrative strategy, thus representing the diversity of forms of application of comic aesthetics in the digital animation medium. Visual semiotic analysis will describe the denotative and connotative meanings of each effect, while narrative analysis maps their functions within the movie's dramatic structure (Cohn & Maher, 2015). This combination of methods allows for a more comprehensive understanding of how motion lines and speed lines work as dynamic semiotic systems and storytelling tools in contemporary 3D animation.

RESULTS AND DISCUSSION
1. Motion lines (Spider-Man: Across the Spider-Verse, 2023)

Motion lines are generally understood as visual lines used to indicate the direction, intensity, and dynamics of movement (Hacımusaoğlu & Cohn, 2023). In the comics tradition, motion lines serve to overcome the limitations of static media by expressing movement that cannot be represented literally. Their presence allows the reader to capture a kinetic sensation, even though the image itself is still (Cohn & Maher, 2015). In this case, motion lines are one of several words that are thought to be stored in human memory as part of a larger visual dictionary, as shown in Figure2a-f. Similar to spoken languages, some parts of a visual dictionary can work on their own, like a picture of an object or a person (as shown in Figure 2a), while others, like motion lines, cannot. These kinds of elements need to be combined with something that can stand alone, called a visual morpheme, using certain combining methods. For motion lines, they must be connected to the thing that is moving, or the base form, to make sense (as shown in Figure 2d). In other words, they use a process called affixation to form a bound morpheme. On their own, just lines without any connection would not have any meaning. So, motion lines can be seen as visual affixes, just like words in spoken languages, and they need to be attached to the moving object to get their full meaning.
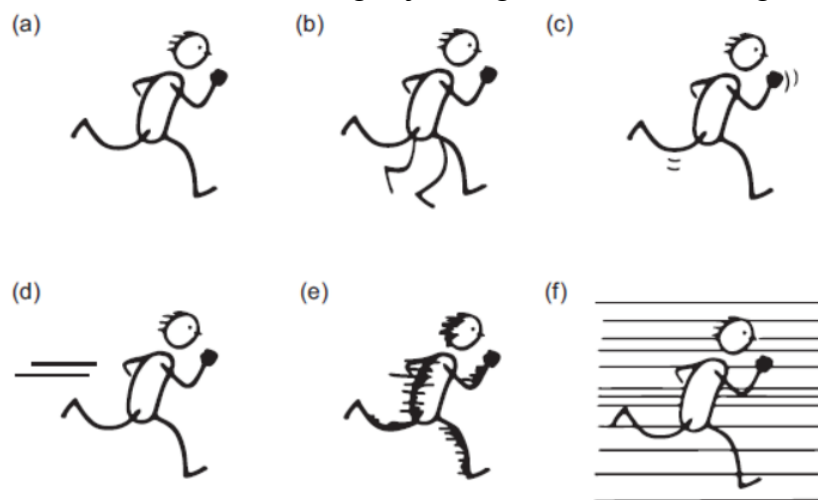

Figure 2. Lexical items that give a sense of movement in two-dimensional images a) postural cue b) repetition of (parts of) the mover, c) contour lines mimicking the mover's contours d) motion lines trailing behind the mover, e) suppletion lines covering parts of the mover f) backfixing lines set in the background, behind the mover (Hacımusaoğlu & Cohn, 2025)

In the medium of 3D animated movies, which is technically capable of representing movement realistically, the presence of motion lines becomes a different aesthetic choice: they are not merely to show movement, but to add an expressive layer that refers to the visual language of comics (Basset et al., 2024).

Figure 3. Motion lines (shown in green) in Spider-Man: Across the Spider-Verse (2023)

In Spider-Man: Across the Spider-Verse (2023), motion lines are consistently used to emphasize the fluidity of the characters' movements. For example, when Miles Morales jumps from building to building or swings his web through the air, dynamic lines appear to emphasize the direction and power of his movements (Figure 3). This use not only complements the already realistic three-dimensional animation but also creates a more hyperbolic and intense sensation, as if the movements transcend the physical boundaries of the real world. Motion lines here also form part of the movie's visual identity, consciously incorporating the aesthetics of printed comics into the cinematic medium, giving the audience the feeling of "reading a living comic" while watching the movie (Barbour, 2021).

Through a visual semiotic approach, these motion lines can be understood on two levels of meaning. At the denotative level, the lines indicate Spider-Man's direction of movement, such as the speed of a swing, jump, or attack. This sign is easily recognizable because it iconically mimics the traces of movement in visual space. However, at the connotative level, the lines convey the character's emotional energy. Miles' movements, with motion lines, not only demonstrate the physicality of the movement but also depict courage, agility, and even nervousness in the face of challenges. The lines serve as emotional indices that deepen the character's affective dimension.

When analyzed from a narrative perspective, motion lines play a significant dramatic role. Bordwell (1985) emphasized the importance of visual style in reinforcing the rhythm and structure of a story, and in this case, motion lines contribute to emphasizing tension in action scenes. When Miles engages in aerial combat, the presence of motion lines makes the scene feel faster, more intense, and more suspenseful. Ultimately, motion lines are not merely ornamental but narrative elements that set the dramatic tempo and enhance the audience's emotional involvement.

The results of this analysis indicate that motion lines in Spider-Man: Across the Spider-Verse serve a dual function: first, as a semiotic system that marks movement while conveying character emotions; second, as a narrative device that reinforces the dramatic tension within the story structure. This dual function confirms that comic-style visual effects can transcend their aesthetic role and instead serve as a bridge between comic expression and cinematic narrative.

2. Speed lines (Puss in Boots: The Last Wish, 2022)

Speed lines are a visual technique originating from the Japanese comic (manga) tradition and developed in animation to indicate the speed of movement or the intensity of action (NAJARIAN, 2024). Speed lines are motion lines that give the comic reader the perception of speed. The addition of suppletion lines (Figure 4c), backfixing lines (Figure 4d), and even

several motion lines (Figure 4e) can become speed lines with different speeds of movement (Hacımusaoğlu & Cohn, 2025).
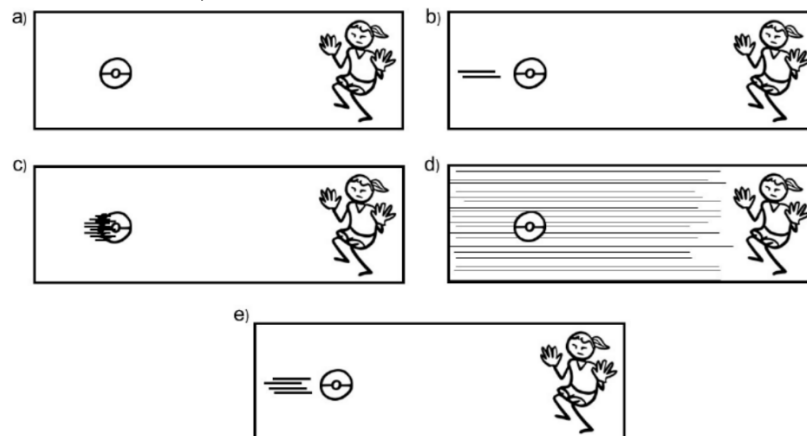

Figure 4. Motion cues of a) object-only condition where no additional cue appeared to indicate motion on the object itself b) motion lines as two parallel straight lines trailing behind the mover c) suppletion lines d) backfixing lines and e) several motion lines (Hacımusaoğlu & Cohn, 2025)

In Puss in Boots: The Last Wish (2022), speed lines are displayed in a radial format, radiating from a central point outward in all directions. This technique appears primarily in battle scenes or when characters are moving at high speed, creating a sense of drama and urgency.

Figure 5. Speed lines (shown in red) in Puss in Boots: The Last Wish (2022)

Semiotically, radial speed lines function as visual signs that convey multiple meanings. At the denotative level, radial lines indicate rapid movement toward or away from a focal point. Meanwhile, at the connotative level, they convey emotional intensity, build an atmosphere of tension, and even add a touch of parody by referencing the aesthetics of classic comics. This aligns with Barthes' (1977) analysis of the dual sign system at work in the construction of visual meaning.

Using a visual semiotic approach, the analysis is conducted by identifying how radial lines strengthen the legibility of the action within a given frame. Using a narrative approach, radial speed lines are understood as visual devices that:

a. Emphasize the urgency of the action, for example, a duel between characters that must be resolved quickly;

b. Accelerate the narrative rhythm by compressing the duration of the action; and

c. Create an immersive sensation for the audience, as if they were drawn into the rapid flow of the battle.

The results of this analysis indicate that radial speed lines are not merely visual decoration but also strategic narrative elements. It serves to build the audience's experience by intensifying the action while maintaining the movie's visual style, which consciously imitates, references, and parodies the aesthetics of comics. Radial speed lines have a unique position as a bridge between the traditional narrative function of animation and the meta-reference to popular comic culture.

3. Hybrid lines (The Bad Guys, 2022)

Hybrid lines are a visual technique that combines two primary styles: motion lines, which emphasize the direction and fluidity of a character's movement, and speed lines, which accelerate the visual perception of the intensity of the action. In The Bad Guys (2022), hybrid lines are used to animate chase scenes, fight scenes, and humorous moments that require both agility and dramatic emphasis. This combination creates a unique visual effect, as it not only conveys physical speed but also represents the characters' emotional expressions simultaneously.
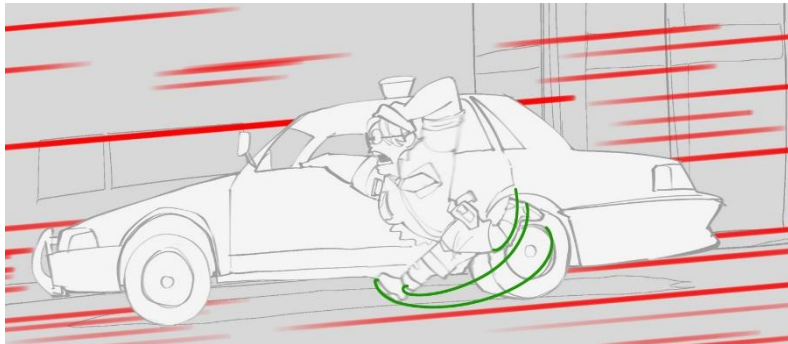

Figure 4. Motion lines (shown in green) and speed lines (shown in red) in The Bad Guys (2022)

In Barthes' (1977) visual semiotic framework, every visual sign consists of a denotative meaning (what is literally seen) and a connotative meaning (what is perceived, suggested, or culturally interpreted). At the denotative level, hybrid lines are visual representations that combine motion lines and speed lines, that is, lines that literally indicate the direction, speed, and intensity of a character's movement. But on a connotative level, this combination creates a more complex emotional meaning: not just "fast movement," but "movement with a certain psychological intensity."

In other words, hybrid lines function as polysemic signs; one visual form that carries many potential meanings depending on the dramatic context and character. For example, in The Bad Guys (2022), when a character runs while looking frantically behind him, the shaky and unstable hybrid lines connotatively convey a sense of nervousness or loss of control. Conversely, when the lines are more defined and radial, the meaning shifts to aggression and dominance. This demonstrates that hybrid lines serve not only as a means of marking movement but also as an expressive language that conveys affective nuances and emotional intensity.

When viewed from a narrative analysis approach (Kozloff, 1986), hybrid lines have a structural function in regulating dramatic rhythm. Lines that appear, change shape, or adjust direction not only follow physical action but also accompany the escalation of conflict and emotional changes in characters. As tension increases, the lines become denser and sharper, creating a sense of accelerated visual rhythm that corresponds to the dramatic pressure.

At the same time, the line also becomes a device of visual subjectivation, that is, the way the film presents the world through the inner perspective of the characters. The hybrid lines effect gives the impression that we are seeing not from an objective camera, but through the affective experience of the character himself. This results in stronger emotional involvement (empathic involvement) between the audience and the characters. Thus, the line is not only a "visual communication tool" but also a "narrative empathetic tool."

Through the combination of these two functions, it can be concluded that hybrid lines expand the spectrum of visual communication from mere kinetic representation to a dynamic semiotic system that connects movement, emotion, and narrative. It allows animated cinema to operate in an in-between territory; between expressive comics and temporal film, between visible action and felt emotion. In The Bad Guys, these hybrid lines, as visual effects, are not just markers of movement, but rather complex narrative devices that mediate between the characters' bodies, the story's rhythms, and meta-comic references, forming a rich and reflective viewing experience.

In the context of the research, this demonstrates the semiotic transformation that is at the heart of the findings: hybrid lines not only make clear who is moving fast, but also how that movement is emotionally experienced by the characters. Thus, its narrative function is interior and exterior at the same time, expressing physical movements that can be seen as well as inner emotions that can be felt.

Hybrid lines in The Bad Guys have a distinct character compared to single motion lines or speed lines. These visual effects are not just markers of movement, but rather complex narrative devices: they mediate between the characters' bodies, the story's rhythms, and meta-comic references, forming a rich and reflective viewing experience.

4. Discussion

An analysis of the three case studies shows that motion lines and speed lines cannot be viewed simply as aesthetic ornaments, but rather as narrative elements with a dual function (see Table 1).

Table 1. Research results

Visual Techniques	Denotative	Connotative	Narrative Function	Uniqueness
Dynamic motion lines in Spider-Man: Across the Spider-Verse (2023)	Directional markers and fluidity of movement	Spider-Man's emotional energy, the intensity of the action	Strengthens dramatic tension, emphasizes the momentum of the action	Combining the dynamics of movement with the visual identity of comics
Radial speed lines in Puss in Boots: The Last Wish (2022)	High-speed marker, visual focus direction	Atmospheric tension, comic parody style	Speed up the rhythm, emphasize the urgency of the action	Creates an immersive visual experience typical of battle scenes
Hybrid lines in The Bad Guys (2022)	Movement and speed markers	Emotional tension and humor, meta-comic style	Bridging character expression and action dynamics, maintaining attention	Complex visual effects that connect the characters' bodies, story rhythms, and comic references

Each work articulates the function of motion lines and speed lines differently according to its visual style and narrative strategy, but all contribute to the formation of dramatic rhythm

and the affective experience of the audience. Spider-Man: Across the Spider-Verse (2023) utilizes motion lines as an integral part of the comic aesthetic manifested in the cinematic medium, where each line is not just a trace of speed but also an emotional mark that emphasizes the intensity of the character's inner conflict. This film shows the most complex transformation from comic conventions to 3D animation, marking a dual semiotic function, both as a visual representation of movement and subjective expression. In contrast, Puss in Boots: The Last Wish (2022) uses speed lines to emphasize the dynamics of action and the expressiveness of a hand-drawn, illustrative style, where the line effect acts as a bridge between physical and dramatic movement, enhancing the tension or parody of certain situations without completely abandoning visual realism. Meanwhile, The Bad Guys (2022) places motion lines and speed lines in a more graphic and symbolic design context; These lines are used to mark the momentum and changes in the rhythm of the story, including tension and humor. Together, the three demonstrate the evolution of the function of motion and speed lines from mere comic aesthetic devices to cinematic elements that mediate perception, emotion, and narrative style in contemporary 3D animated movies.

Considering the comparison above, on the one hand, these visual effects act as motion markers, emphasizing the direction, speed, and intensity of the action. On the other hand, it works as a narrative tool that regulates the dramatic rhythm, focuses the audience's attention on climactic points, and strengthens the emotional tension in the storyline. These comic-style lines demonstrate a role that goes far beyond the literal representation of movement.

Denotatively, motion lines and speed lines work as direct visual signs that represent movement. These lines literally function to mark the direction, speed, or intensity of movement of characters or objects within the frame. For example, in Spider-Man: Across the Spider-Verse (2023), motion lines appear along with changes in the position of characters jumping or swinging, indicating kinetic momentum and helping the audience visualize the trajectory of the motion. In Puss in Boots: The Last Wish (2022), fast lines emphasize the movement of the sword or the twisting of the body in combat, emphasizing the physical action element. Meanwhile, in The Bad Guys (2022), hybrid lines explicitly mark the direction of explosions, jumps, or car chases. All these examples illustrate a concrete denotative function: the line as a visual marker of movement that strengthens narrative clarity and the legibility of action in cinematic space.

Connotatively, a deeper meaning is revealed, namely how motion and speed lines operate as emotional and symbolic signs that create an affective experience for the audience. Lines not only mark "what" is moving, but also "how" that movement is perceived by the character and interpreted by the audience. In Spider-Man: Across the Spider-Verse, the distorted and rough-patterned lines evoke connotations of inner tension, confusion, or bursts of adolescent energy, so that the visuals go beyond simply depicting speed to expressing Miles Morales' identity conflict. In Puss in Boots: The Last Wish, speed lines combine with the painting's textures and warm colors to signify the ambiguity between courage and the fear of death, conveying a deep emotional resonance behind the heroic act. Meanwhile, in The Bad Guys, the hybrid lines with cartoonish shapes and fast rhythms connote a parody of classic comic book styles, signifying an atmosphere of deliberate humor and frivolity, so that the lines convey not only movement, but also an ironic attitude towards the conventions of the action genre.

Thus, the direction of analysis in this research is methodologically divided into two complementary layers: first, mapping of denotative meaning which describes the formal function of lines as signs of movement and supporting narrative rhythm; Second, the

exploration of connotative meaning that interprets how the shape, direction, intensity, and texture of lines contribute to emotional and ideological meaning in the narrative. This approach shows that motion lines and speed lines are not just visual effects, but rather a sign system that builds a dialectic between movement and meaning, between visual form and dramatic structure.

In conclusion, denotative analysis provides a descriptive foundation for visual reading, while connotative analysis opens up interpretive space that explains why and how the lines have narrative power. The combination of the two ensures that this research does not stop at aesthetic description, but rather reaches a semiotic understanding that shows the shift in visual function from motion representation to dramatic expression in contemporary 3D animation.

CONCLUSION

This research confirms that motion lines and speed lines in contemporary 3D animation function not only as visual aesthetic elements but also as a semiotic system that represents movement, emotion, and narrative atmosphere. Through a visual semiotic analysis approach, this research maps the denotative meaning as well as the connotative meaning that contains the emotional and dramatic dimensions of each scene. Meanwhile, narrative analysis shows that these effects have a significant dramatic function in regulating the rhythm, intensity, and cohesion of the plot, making motion and speed lines an integral part of the film's dramatic construction.

Findings from three case studies show that these two effects create a bridge between the visual traditions of comics and the language of digital cinema, resulting in a hybrid style that broadens the spectrum of visual communication. Thus, motion and speed lines play a strategic role as narrative and semiotic devices, which not only strengthen character expression and dramatic atmosphere but also enrich the audience's aesthetic and affective experience.

Theoretically, this research contributes to the development of visual semiotics and narrative studies in digital animation by highlighting how visual signs can transform into storytelling mechanisms. Practically, the results of this study can be a reference for animation designers in designing visual effects that are not only visually communicative but also dramatically and emotionally meaningful in the context of contemporary digital cinema.

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