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TIME AND MOVEMENT: THE CONCEPT OF TIME IN ANIMATION

(How do Aristotle's and Henri Bergson's ideas about time manifest themselves in animation? Animation as a means of time management)

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Annotation: This article analyzes the philosophical views of Aristotle and Henri Bergson on time and their manifestation in animation. Aristotle considered time as a phenomenon associated with movement, while Bergson explained it through internal perception and the flow of consciousness. It examines how time management, motion creation, and visual expression in animation relate to these philosophical concepts. The article also examines the possibilities of time manipulation in animation, as well as its aesthetic and semantic aspects.

Keywords: Time, movement, Aristotle, Henri Bergson, animation, time management, visual art, philosophy.

Time Management in Animation Art: A Philosophical and Technical Analysis through the Theories of Aristotle and Henri Bergson. In animation, time management is a vital part of the creative process—it affects audience perception and shapes the meaning of the visual narrative. This research analyzes how Aristotle's and Henri Bergson's concepts of time manifest in the art of animation. Aristotle viewed time as an objective concept that can be measured. According to him, time is only evident through motion. In animation, this principle appears clearly in classic frame-by-frame techniques, where the smoothness of movement depends on the number of frames. Each frame defines the continuity of motion and serves as a mechanical measurement of time. Classic Disney films (such as Snow White and the Seven Dwarfs, 1937) align with Aristotle's theory of time because they maintain clarity, continuity, and realistic motion dynamics. In contrast, Bergson viewed time as a subjective experience, emphasizing that it is perceived through human consciousness. In animation, this idea corresponds to the principle of timing—which determines how long a movement lasts. The number of frames and the intervals between them define the speed and character of the motion. Spacing refers to the overall speed and rhythm of movements within animation or video. It's closely tied to both timing and spacing techniques. For example, in Hayao Miyazaki's Spirited Away (2001), time is perceived subjectively—some scenes slow down or speed up as events unfold. This affects the viewer's emotional response and gives the story its unique rhythm. This study examined key techniques for managing time and motion in animation, leading to the following conclusions: Timing defines the emotional impact of a scene. Slow movements are used for dramatic moments, while faster ones increase energy. Spacing determines how an object accelerates or decelerates during motion. It reflects the distance between frames. Timing is a core principle—it defines how long a movement lasts and influences whether the motion appears natural or artificial. The position of the movement in space is determined by the distance between frames. For instance, closely placed frames

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at the start indicate acceleration, while wider spacing signals deceleration. Disney animations often use a frame rate of 24 FPS, creating realistic motion. In anime, lower frame rates like 12 or 8 FPS are common, altering the viewer's perception of time. Slow motion is used to intensify drama, as in the iconic "Bullet Time" scene from The Matrix (1999), where movement slows while the camera rotates around the subject. Fast motion can be used for comedic or dynamic effects, like in Tom and Jerry, where rapid movement enhances stress or humor. In animation, time management also involves concepts like anticipation and follow-through, which reflect the continuation of motion beyond the initial action. For example, bending the body before a jump demonstrates anticipation and makes the action feel more natural. This study confirms that time is one of the most essential elements in animation. The interconnection between time and motion is supported by the theories of Aristotle and Bergson. In modern animation, time manipulation techniques have become more advanced—especially through digital methods like Motion Capture (MoCap) and Keyframing, widely used in film, animation, and video games. Classical and experimental animation differ in their time management approaches. Classical animation often aligns with Aristotle's mechanical concept of time, while experimental works lean more toward Bergson's perception-based approach. The audience perceives time subjectively. Using tools like motion speed, frame rate, and time manipulation, animators can influence viewers' emotions and storytelling tone. According to the analysis, Aristotle's and Bergson's theories of time are both reflected in animation through various approaches. In classical animation, time is managed mechanically, while in modern and experimental styles, it is altered based on perception. These findings help deepen theoretical and practical understanding of time control in animation. Animation is recognized as an art form that controls time and motion. It is important to analyze how thinkers like Aristotle and Bergson conceptualized time and how these ideas appear in animation. This article discusses how the concept of time is manifested in animation, its relationship with motion, and how time can be manipulated for storytelling. The word "animation" comes from the Latin anima, meaning "soul" or "life." In French, animation means "to bring to life" or "to set in motion." Animation is a visual expression of the human imagination through movement, and its early traces can be found in ancient cave paintings, the invention of cinematography, and the first animated films. Aristotle considered time as a measure of motion and believed it could not exist separately from physical reality. He described time as continuity and explained its existence through motion. In animation, this concept is embodied in the relationship between each frame and the illusion of continuous movement. Bergson, on the other hand, viewed time as a non-mechanical, emotional, and experiential process, understood through human consciousness. In animation, his ideas are reflected in the manipulation of timing and tempo to create a felt sense of time, allowing natural and expressive motion. Every animated movement is tied to time and shaped through frame sequences. This directly supports Aristotle's idea that time is inseparable from motion. The number and spacing of frames generate either continuity or stylized dynamics. Bergson's notion of duration shows up in animation through the perception of rhythm, silence, and emotional pacing. For example, frame rate and motion realism influence how we experience time's passage. Timing and tempo in animation affect whether the movement appears realistic or stylized. In traditional 24-frame animation, there's a clear balance between time and movement, creating a successful illusion. Animation allows time to be slowed down, sped up, or reshaped, enhancing storytelling by turning time into a narrative device.

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According to Bergson, time isn't just external—it's also a personal experience. Animation enables us to stretch time, slow down motion to deepen emotion, or depict how time feels based on a character's internal state. Animation brings together both Aristotle's and Bergson's views on time. Aristotle's motion-based understanding is realized through frame sequences, while Bergson's idea of duration is captured in rhythm and intuitive timing. That's why animation isn't just visual art—it's also a medium for experiencing and controlling time. In animation, each movement is bound to time—the object's speed, distance, and trajectory all depend on rules tied to time. These relationships appear in key concepts like timing and spacing. Timing defines how quickly or slowly an action occurs, while spacing shows the dynamic path of movement. Realistic and natural animation depends on carefully calibrating these relationships. Timing is one of the most important tools for defining the speed and dynamics of an object in animation. It determines how fast or slow an object moves within a certain time. Timing helps create realism through gravity, inertia, and believable motion.

If an action is fast, the movement appears energetic, light, or urgent. If the timing is slow, the action feels heavy or deliberate—helping the viewer sense the object's weight or resistance. The core rule in animation time-setting is ensuring continuity and coherence between frames and matching motion to the intended duration. To create acceleration or deceleration, animators adjust the number and placement of frames. Time in animation isn't just governed by physics—it's a tool for emotional impact and storytelling. For example, in dramatic or powerful scenes, slow timing draws focus and heightens feeling. In comedic or action scenes, fast timing creates surprise or intensity. By applying these principles, animators can shape motion that feels lifelike, expressive, and emotionally resonant for the viewer.

Referens

1. Aristotle. Metaphysics / Aristotle; translation A.V. Kubitsky. M.: 2012.
2. Bergson A. Matter and memory: experience of movement and time / A. Bergson. - Moscow: Republic, 1999. - 256 p.
3. Frank Thomas, Ollie Johnston. Disney Animation: The Illusion of Life– Published 1981. Publisher Abbeville Press, United States. P.576, 1981.
4. Richard Williams. Published 2001 (Faber and Faber). United States P.379
5. Сулейманова, Камола. "АВТОРСКАЯ ДЕЯТЕЛЬНОСТЬ В РАЗВИТИИ ТРАДИЦИИ АНИМАЦИОННОГО КИНО." Oriental Art and Culture 5, no. 2 (2024): 426-430.
6. Suleymanova, Kamola. "COMPUTER ANIMATION DEVELOPMENT ON VISUAL ARTS." Multidisciplinary Journal of Science and Technology 5, no. 3 (2025): 857-860.
7. Qizi, Suleymanova Kamola Alisher. "INNOVATIONS IN MODERN ANIMATION: AUTHOR AND EXPERIMENTAL PERSPECTIVES." European Journal of Arts 2 (2024): 161-163.
8. Arislanbayeva, Z. Ye. "ZAMONAVIY DUNYODA FALSAFANING O 'RNI." Экономика и социум 7 (110) (2023): 57-61.
9. Arislanbayeva, Z. Ye. "GLOBALLASHUV DAVRIDAGI MILLIY MADANIYAT." Экономика и социум 11-1 (102) (2022): 27-30.