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The Semiotics of Animation. From Traditional Forms to Contemporary Innovations

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Introduction:
Animation as semiosis and as meaning

BY: **Maria Ilia Katsaridou** and **Loukia Kostopoulou**

This special issue of *Punctum* examines the semiotics of animation, a dynamic and interdisciplinary field that intersects art, technology, and culture. From its early origins with Émile Reynaud's *Théâtre Optique*[1] in 1889 to contemporary applications of artificial intelligence (AI) and virtual reality (VR), animation has evolved into a medium that reflects and shapes cultural values. Animation's ability to encompass diverse techniques and styles, from traditional hand-drawn imagery to immersive digital environments, underlines its flexibility and central role in contemporary audiovisual culture.

Animation draws upon various techniques and styles to construct its unique language. Representatives of the Zagreb animation school emphasize that animation creates meaning through a unique vocabulary unavailable to live-action filmmakers. They assert that to animate is to "give life and soul to a design, not through the copying but through the transformation of reality" (Holloway 1972: 9). John Halas similarly stresses that animation's significance lies "not [in] how things look, but what they mean" (Hoffer 1981: 3). These insights underscore animation's semiotic potential, distinguishing it from other forms of audiovisual art.

Moreover, Giannalberto Bendazzi's historical observations reveal how animation's definitions have shifted. Between 1895 and 1910, 'animated' referred to what is now recognized as 'live action.' Bendazzi concludes that "animation is everything people have called animation in different historical periods" (Bendazzi 2020: 1), situating animation within its

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[1] Giannalberto Bendazzi credits Claude Emile Reynaud as the true inventor of cinema with his Theatre Optique (1889) – six years before the Lumiere brothers' Cinematographe (Bendazzi 1994: 6).

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cultural and social contexts. This perspective is particularly relevant today, as AI-generated moving images provoke new questions about animation's boundaries and its role in meaning-making.

Animation's versatility and creative potential have led scholars to redefine its relationship with other forms of visual media. Alan Cholodenko, for example, describes animation as an "overarching category" (Cholodenko 2022: 3) encompassing all moving images, such as cinema and digital games. In his view, animation is the foundational process through which all motion-based visual content is created, challenging the conventional perception of cinema as distinct from animation. According to Cholodenko, cinema has historically marginalized its animated origins, yet animation remains the essential mechanism underpinning the entire field of moving images. This perspective reframes animation as not merely a subset of cinema but as its progenitor.

Similarly, Lev Manovich asserts that digital cinema represents a "return to animation" (Manovich 1995). Unlike traditional film, where motion is captured photographically, digital cinema involves constructing movement frame by frame, echoing the methods of early animators. This reorientation disrupts the classical notion of indexicality – the idea that film is inherently tied to the real world – positioning animation as the defining process in creating contemporary visual media. As Paul Wells famously remarked, animation is "the omnipresent pictorial form of the modern era" and arguably "the most important creative form of the twenty-first century" (Wells 2002:1).

Animation as a semiotic system

At its core, animation is a complex semiotic system that encodes and communicates meaning. Norman McLaren emphasized the importance of movement in animation, asserting that "what happens between each frame is much more important than what exists on each frame" (McLaren cited in Furniss 2007: 5). This focus on transitions and transformations through frame-to-frame movement emphasizes animation's unique capacity to convey narratives, emotions, and abstract concepts.

Semiotics provides essential tools for analyzing animation, enabling scholars to access its multilayered meanings, codes, and themes and reveal how it constructs meaning across different media and contexts. For instance, semiotics can unveil how animation reflects and challenges societal norms, analyze character design and movement, and decode its rich intertextual references.

As mentioned above, animation's role extends beyond traditional cinema, permeating television, video games, advertising, and digital platforms. Its versatility allows it to merge with live-action footage, as seen in hybrid films, or create immersive experiences in virtual reality. Each medium brings its own semiotic conventions, shaping how animation is produced and perceived.

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Technological and cultural transformations

The turn of the twenty-first century marked a significant shift in animation's aesthetics and themes, driven by radical technological advances such as virtual reality (VR), augmented reality (AR), and Artificial Intelligence (AI). These innovations have expanded animation's creative possibilities while presenting new challenges for meaning-making and communication. AI, for example, has introduced algorithmic processes that redefine authorship and creativity, prompting questions about the boundaries between human and machine-generated semiosis.

Moreover, animation's cultural significance has grown as it adapts to contemporary cultural trends. This adaptability reinforces its status in what Katsaridou describes as the "chameleon" of moving images, capable of replicating and reinterpreting any visual style (Katsaridou 2025: 324).

The semiotics of animation: bridging theory and practice

Despite its growing prominence, the semiotics of animation remains a relatively new academic field. This special issue seeks to strengthen the ties between animation studies and semiotics, contributing to the ongoing discourse by addressing its theoretical, cultural, and experimental dimensions. By examining animation through a semiotic perspective, the articles in this collection demonstrate its ability to construct meaning, challenge societal norms, and innovate.

The works featured in this special issue offer novel insights into animation as a medium that bridges artistic expression and technological advancement. They explore fundamental concepts, propose new theoretical frameworks, and analyze animation's role in conveying meaning across various cultural and historical contexts. Together, they reflect the richness of animation as a semiotic medium and its potential to redefine boundaries in contemporary media landscapes.

The first article, **Enzo D'Armenio**'s *Kinetic Images: A Genealogy of Visual Media Based on the Concept of Movement*, offers a theoretical framework for understanding the evolution of visual media through their treatment of movement. D'Armenio identifies three stages in this genealogy: fixative image-movement, where photography stabilizes motion using techniques like motion blur and panning; representative image-movement, associated with early cinema's ability to construct narratives through thematic movements; and diagrammatic image-movement, illustrated by interactive media such as video games and virtual reality, where user actions translate into virtual motion. Introducing the concept of "kinetic anachronisms," D'Armenio explores how

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earlier forms of visual motion resurface and adapt in contemporary digital environments. By bridging media archaeology with semiotics, the article emphasizes movement as a foundational element in visual media's technical and expressive evolution.

Following this, **Raz Greenberg**'s article, *With Strings Attached: Barthes' 'On Bunraku' from Thunderbirds to Japanese Robot Animated Shows*, examines the influence of Japanese puppet theater (Bunraku) on animation and its connection to British and Japanese media traditions. The article explores Roland Barthes' observations on the fragmented performance of Bunraku puppetry and applies these ideas to Japanese robot animation and Gerry Anderson's *Thunderbirds*. Greenberg analyzes how these works emphasize the "parts" of their animated or mechanized figures, breaking conventional notions of totality and realism in performance. The study highlights how cultural and technological contexts shape narrative and visual design by comparing the aesthetic strategies of Japanese robot shows and Anderson's productions. Greenberg's work situates these media forms within a broader discussion of performance, semiotics, and the evolution of animated storytelling across different cultures.

Extending the discussion into the field of abstract animation, **Jussi Pekka Holopainen**, **Xuqin Sun** and **Max Hattler**'s article, *A Semiotic Framework for Understanding Abstract Animations,* introduces a theoretical approach to interpreting non-narrative animations. Drawing on predictive processing, embodied simulation, and conceptual metaphor theory, the authors propose a framework for understanding how viewers construct meaning from abstract visual and auditory elements. The article examines how these animations engage cognitive and sensory processes, allowing audiences to interpret complex ideas or emotions without relying on traditional narrative structures. Through examples and theoretical insights, the authors underline the role of abstract animation as a medium for exploring imaginative and conceptual possibilities, expanding the semiotic dimensions of animated storytelling. This study situates abstract animation within a broader intellectual and artistic landscape, emphasizing its potential to create new forms of visual communication and meaning-making.

The theme of experimentation continues in **Pegah Izadian**'s article, *A Kaleidoscopic View: Studying Diverse Aspects of Experimental Animation*, frames experimental animation as a kaleidoscopic medium, integrating diverse techniques, styles, and concepts into a dynamic and ever-evolving art form. The article explores how experimental animators push boundaries by employing unconventional materials, innovative methods, and emerging technologies. Izadian categorizes these approaches to emphasize their ability to challenge traditional narrative structures and visual conventions, emphasizing the fluidity and adaptability of experimental animation.

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By situating the discussion within historical and technological contexts, the article highlights the role of experimentation in expanding animation's expressive possibilities and its potential to create new forms of meaning and aesthetic experience. Using the kaleidoscope as a metaphor, Izadian captures this unique cinematic practice's multidimensional and interconnected nature.

María Lorenzo Hernández's article, *Midjourney, Jodorowsky, and the End of Reality. Artificial Intelligence as an Animating Technology* examines the role of artificial intelligence in reshaping visual media and challenging traditional boundaries between imagination and reality. Using AI-generated simulations such as *Jodorowsky's Tron* as a case study, the article explores how contemporary tools like Midjourney create hyper-realistic visualizations of speculative cinematic works. Lorenzo Hernández reflects on the implications of AI in transforming animation from a tool of artistic expression into a medium that redefines reality itself. Drawing on theoretical insights, the study connects AI's potential for creating 'impossible pasts' with larger questions about authorship, creativity, and the cultural significance of visual media in the digital age. By underscoring the convergence of animation and artificial intelligence, Lorenzo Hernández positions these technologies as pivotal in reshaping our understanding of storytelling and media production.

Moving to video game animation, **Arianna Maiorani** and **Jason Hawreliak**'s article, *Animating Gender Representation: A Kinesemiotic Analysis of Video Game Characters*, investigates how animated characters in video games convey gendered identities through movement and visual design. Using kinesemiotics – a framework that examines the semiotics of body motion and gestures – the authors analyze how character animations reflect and reinforce cultural stereotypes or challenge traditional gender norms. The article explores examples from popular video games, focusing on how bodily performance and visual style contribute to the construction of gender within interactive digital narratives. Maiorani and Hawreliak demonstrate the nuanced relationship between animation, cultural codes, and player perception, situating video game character design as a key site for examining contemporary representations of gender in media.

Shifting to historical contexts, **Alexandra Milyakina** and **Maarja Ojamaa**'s article, *Soviet Estonian Animation and Its Educational Applications*, examines the use of animation as a pedagogical tool in Soviet-era Estonia. The authors analyze how animated films were used to convey educational content, focusing on the interplay between ideological messaging and creative storytelling. The article focuses on how animators navigated the constraints of Soviet cultural policies while crafting works that engaged

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young audiences with imaginative visuals and didactic narratives. By studying specific examples, the authors reveal how these animations balanced aesthetic innovation with their educational mandate, fostering a unique semiotic environment. The study underscores the role of animation as a medium for both ideological dissemination and cultural enrichment, situating Soviet Estonian animation within the broader context of educational media and artistic experimentation.

John Reid Perkins-Buzo's article, *Animation and Artificial Intelligence: Cartoons and the Eclipse of Semiosis*, examines the impact of artificial intelligence on the production and interpretation of animation. The study explores how AI-driven tools, such as generative algorithms, reshape the creative process, challenging traditional notions of human authorship and meaning-making in animation. Perkins-Buzo discusses the concept of 'mechanosemiosis,' where machines rather than humans create signs, and considers its implications for cultural and artistic practices. By analyzing examples of AI-assisted animation, the article questions how automation influences the semiotic richness of the medium and whether it risks diminishing the human-centered narratives that have historically defined animation. The work provides a critical perspective on the evolving relationship between technology, creativity, and the cultural significance of animated media.

Continuing with technology's influence on animation, **Lila S. Roussel**'s article, *The Animation Medium in the Realm of Vocaloid: A Multidimensional Semiotic Overview*, examines how animation interacts with the Vocaloid phenomenon, a digital music platform where virtual idols are created and brought to life. Roussel explores the semiotic layers of this unique cultural landscape, focusing on how animation functions as a medium that bridges technology, subcultural aesthetics, and participatory creativity. The study showcases the interplay between user-generated content, fan practices, and the technological affordances that enable the Vocaloid ecosystem. The article underlines animation's role in fostering collective creativity and shaping subcultural expressions by analyzing the visual and narrative strategies used to construct Vocaloid identities. Roussel positions Vocaloid animation as a site where traditional notions of authorship, creativity, and media production are continuously redefined.

Marc Russo's article, *Shared Cartoon Style in CG Animation to Maximize Empathy*, examines character design principles in computer-generated (CG) animation, focusing on the balance between realism and stylization – an approach known as the 'Pixar Peak.' The study explores how visual features, such as exaggerated proportions and expressions, are crafted to evoke empathy and emotional engagement from audiences. By analyzing examples of character designs, Russo demonstrates how these

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elements draw on shared cultural and visual codes to create a strong connection between animated characters and viewers. The article underlines how CG animation merges abstraction and realism, using semiotic tools to enhance storytelling and audience interaction. Russo's analysis emphasizes the communicative power of animation, showcasing its potential to resonate across diverse audiences while maintaining a carefully constructed visual language.

Concluding the issue, **Kevin Sandler**'s article, *Full-bodied Puppetry and Bubblegum Pop: US Saturday Morning Television and Kellogg's Presents the Banana Splits Adventure Hour*, investigates the intersections of puppetry, animation, and popular culture in 1960s American television. Using *The Banana Splits Adventure Hour* as a case study, Sandler explores how this program blended live-action puppetry with animation and musical performances to cater to children while embedding broader commercial and cultural strategies. The article examines how the show's playful aesthetic and hybrid media format engaged young viewers and promoted branded products, mainly through its connection to Kellogg's cereal marketing. By situating the series within its historical and industrial context, Sandler reveals how animation and puppetry were leveraged to address evolving consumer culture and television programming trends. The analysis shows the broader implications of such hybrid forms in shaping media, marketing, and audience engagement during this period.

Conclusions

The articles in this special issue collectively highlight animation's multifaceted nature as a complex semiotic medium. As explored across these contributions, animation negotiates boundaries between the historical and the contemporary, the experimental and the conventional, the abstract and the narrative. It demonstrates the power to engage with interactivity, abstraction, and emotional resonance while challenging norms and opening new paths in media and representation.

The interdisciplinary approaches presented emphasize the centrality of semiotics in understanding animation. By offering methodologies for analysis, semiotics provides the tools to understand how animation communicates, innovates, and transforms. Through this light, animation is more than an art form or a collection of techniques; it is also an evolving mode of communication.

We hope this collection inspires further engagement with the semiotics of animation, fosters dialogue across disciplines, and encourages further exploration of the intersections of media, culture, and technology. As animation continues to evolve, its study will remain central to this endeavor.

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Kinetic images.
A genealogy of visual media based on the concept of movement

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BY: **Enzo D'Armenio**

ABSTRACT

This paper aims to propose a new line of research on the historical and expressive evolution of visual media, capable of linking the archaeological approaches of media studies and post-structuralist semiotics around the concept of movement. The central idea of my paper is that of image-movement, expressive systems based on the intrinsic fusion of the qualities of the images and the qualities of movement. The history of visual media will be reinterpreted according to three phases: 1) The fixative image-movement: photographic production is based on the deceleration and visual fixation of natural movement on a substrate. I will present the evolution of the expressive effects resulting from this productive movement, particularly concerning the forms of blur (motion blur, panning, bokeh) that have played a key role in stabilizing photographic genres. 2) The representative image-movement: the magic lantern and the cinema of attractions made it possible to visualize movement and animation for the first time. I will discuss how actors, by making a series of thematically oriented movements, enabled the emergence of the first visual narratives through the autonomization of fictional characters. 3) The diagrammatic image-movements: video games and virtual reality correlate the spectator's movements on the interface with movements in virtual worlds. Overall, this approach will allow us to identify kinetic anachronisms: how digital media transform the typical forms of visual movement associated with traditional media.

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1. Introduction

This contribution brings together two disciplinary perspectives: communication sciences and, more generally, media studies and post-generative semiotics. It aims to open up a new research axis for analyzing mediatic images based on studying the transformation of visual movement.

Semio-linguistic disciplines have traditionally adopted a synchronic approach to the study of images. Following the structural epistemology from which these disciplines have developed (de Saussure 1995; Hjelmslev 1961), semiotics has worked on the articulation of visual languages (Greimas 1989; Fontanille 1989) and the study of the forms of grammaticalization that affect images and in comparison to verbal language (Dondero 2020), as well as on the study of specific corpora, genres or media (Marin 2002; Metz 2016). Sporadic are the cases of diachronic studies aiming to analyze the overall evolution of images along the course of the technical and expressive transformations having affected them. There are exceptions to this tendency. On the one hand, the two essential volumes that Gilles Deleuze dedicated to cinema (Deleuze 1986; 1989) may be considered as a semiotic contribution to the study of the evolution of cinematography that mobilizes and reinterprets the categories proposed by Charles Sanders Peirce. Concerning still images, Victor Stoichita (1997) has reconstructed the emergence of modern genres in painting (portrait, landscape, and still life) from religious painting in a study that has been widely taken up by semiotics to analyze other types of images, including scientific ones (Dondero and Fontanille 2014).

These two researches may be viewed as being characterized by their semiotic approach to the study of the evolution of images: through the elaboration of formal criteria – the articulations of montage for Deleuze, the declinations of meta-painting devices pertaining to the "picture within a picture" for Stoichita – they were able to identify key evolutions in their respective media and languages. However, even in these two exemplary cases, it was a question of studying the evolution of a specific language or medium.

Conversely, the field of information and communication sciences has, from the onset, been characterized by a diachronic approach to the study of images and, more generally, the study of media. The founding book of media studies, Marshall McLuhan's *Understanding Media: The Extensions of Man* (1964), casts a transversal gaze on the question of media, questioning the relationship between technologies in general and technologies of representation, associating techno-social developments around a unified approach. Similarly, one of the most essential books on the digital, Lev Manovich's *The Language of New Media* (2001), formulates a cross-comparison between traditional and digital media. These studies have mostly left aside the matter of semiotic articulations concerning images to focus on more general, techno-social developments: not so much on the impact of a given technology on the expressive solutions of a language,

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but rather on its consequences on the structure of society as a whole. There are also notable exceptions: especially in film studies, the analysis of technological evolution has gone hand in hand with studying the formal evolution of audiovisual discourses. The research of André Gaudreault (2008), Tom Gunning (1989), and Philippe Marion (1997), for instance, have analyzed both the technological and social evolutions as well as the grammatical and linguistic evolutions of audiovisual languages.[1]

Our study will attempt to answer the question: Can semiotics significantly contribute to studying the evolution of mediatic images? Rather than defaulting towards a response shaped by the dominant orientations to be found within the discipline, what will be proposed here is a research axis congruent with the affirmative response to this question. An attempt will be made to articulate the approach to media archaeology and the genealogy of screens with post-generative semiotics. The objective sought herein is to propose a new genealogy of visual media based on studying the transformations that have affected movement in images. We will consider three fundamental stages of this transformation, upon which a genealogical approach will be built: the image-movement of photographic fixation, the image-movement of pre- and post-cinematographic representation, and the diagrammatic image-movement of video games and virtual reality.

The first stage concerns the medium of photography: the way its images are produced through a movement of deceleration and visual fixation of light on a substrate. As we shall see, this movement determines the resulting expressive effects in the photographic images produced, most notably in the case of the blur effect, which helped stabilize the photographic genres (sports photography, war photography, portrait). And yet, the study of such movements tied to production paves the way for a genealogical comparison with visual generative AI. As will later be expounded, these AIs are also characterized by a movement of visual production and have triggered the same feelings of distrust and threat that characterized the early days of photography.

The second stage concerns the visualization of movement, which involves a history of technological and formal evolutions ranging from the stabilization and diffusion of the magic lantern to the cinema of attractions and modern narrative cinema. Numerous studies have focused on the transition from the 'cinema of attractions' to narrative cinema. At first, a clear separation between the two logics was observed (Gunning 1989), with an implicit teleological assumption guiding the study of the transition from attractions to narration. Subsequently, an inverse tendency arose, aimed at identifying how the logics of attraction inhabit contemporary cinema and, more generally, viewing attraction and narration not as antagonistic but as complementary (Parikka 2012). An attempt will be made here to illustrate how the study

[1] The same can be said of Yves Jeanneret's research, in particular regarding the transversal concept of editorial enunciation (Jeanneret and Souchier 2005).

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of movement can shed new light on the evolution of cinematic images. Narrative cinema is found to emerge as a consequence of a fundamental transformation affecting movement: whereas in the cinema of attractions, it was a matter of spectacular movements (visual gags, dance performances, magic tricks), in narrative cinema, movement becomes the vector of a diegetic impulse. The actor produces a series of thematically oriented movements capable of generating a fictional character and, simultaneously, a narration made of gestures. This analysis will also allow us to compare the use of video on social networks with the cinema of attractions: these two media formats present significant similarities – short videos, with fixed framing and with a spectacular rather than narrative dominance – but are underpinned by a different technological and social structure.

Finally, the last stage concerns video games and virtual reality. These two media are usually analyzed with respect to their interactive or immersive qualities (Aarseth 1997; Pinotti 2020) because the video game user – unlike the literary or cinematic spectator – can intervene in the diegesis by making choices. Concerning this line of study, the intention here will be to focus on the key role of movement: to participate in virtual experiences, the spectator must make movements on the interface that are transformed into virtual movements in real-time. This results in a third form of visual movement, which is no longer the movement of photographic fixation nor the movement of audiovisual representation, but rather a diagrammatic movement: by Charles Sanders Peirce's definition of the diagram, the system of movements on the interface is related to another system of movements, that within the virtual worlds.

The objective here is to provide a series of genealogical comparisons between digital and traditional media and, above all, to build a theory capable of modeling visual movement and its expressive qualities. This will be done by proposing two fundamental parameters – the body and the form of movement – articulated into the indirect, absent, or present body and the plastic, figurative, and thematic forms, respectively. This theoretical proposal will allow us to study the semiotic development that characterizes the internal evolution of each of the three families of media images – photographic, cinematic, and interactive – as well as the expressive ruptures that concern the transition from one family to the other. This contribution introduces the general characteristics of our theoretical proposal while briefly presenting the three stages that articulate the kinetic genealogy of visual media.

In the first part of this contribution, we will identify a media studies approach that has privileged the evolution of media: media archaeology and, in particular, the genealogy of screens. We will see how this approach has underestimated a crucial detail: the birth of modern screens, capable of showing different visual configurations from those of the fixed 'screens' of painting and photography, stems from the need to visualize movement.

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Two key concepts inspire this proposal. On the one hand, we have the concept of movement-image proposed by Deleuze for the study of cinema: "In short, cinema does not give us an image to which movement is added, it immediately gives us a movement-image. It does give us a section, but a section which is mobile, not an immobile section + abstract movement" (Deleuze 1986:2). On the other hand, we have the concept of image-environment proposed by Andrea Pinotti to analyze virtual reality experiences:

> Immersivity and interactivity in virtual environments are able to elicit in the user an intense feeling of "being there," namely of being embodied in an independent and self-referential world. Images are consequently transformed into habitable environments, which tend to negate themselves as representational images of something – i.e., as icons: they are veritable "an-icons." (Pinotti 2017:1)

In light of these studies, the concept of image-movement is hereby proposed: expressive systems that base their technological and semiotic functioning on the coupling of kinetic and visual qualities.

In the second part of the article, we will consider the three stages that characterize the evolution of image movement. We will start with the most recent stage, which involves video games and virtual reality. This will allow us to formalize the semiotic parameters necessary to study visual movement, particularly the relationship between the body and form of movement, which will be used to study the photographic and audiovisual stages. The third part will present the genealogical axes enabled by the theory set forth herein. In particular, photography will be compared with visual generative artificial intelligence such as Midjourney and DALL-E, and the cinema of attractions with modern social networks such as Instagram and TikTok.

2. Media archaeology and movement

In reaction to the spread of digital media and the stabilization of its use in production practices, a specific branch of media studies has devoted itself to studying past media in relation to contemporary ones. Under the label of media archaeology (Parikka 2012), a heterogeneous group of scholars has proposed to rethink media history according to a perspective that does not frame it in teleological terms as having a univocal and positivist direction but as a series of innovations, failures, and returns to the past involving technologies, formal solutions, and social contexts: "Media archaeology sees media cultures as sedimented and layered, a fold of time and materiality where the past might be suddenly discovered anew, and the new technologies grow obsolete increasingly fast" (Parikka 2012:3).

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It is possible to identify two primary impulses for developing this approach: the first is the advent and stabilization of digital techniques in mainstream cinema, reinterpreted in the light of a new understanding of film history. Tom Gunning (1989) reinterpreted the earliest stages of cinema as pertaining to a logic of attractions: spectacles that did not aim to tell stories but to immerse the spectator in a spectacular situation, stimulating the senses more than building a diegesis. The logic of attractions can be found in the first wave of films produced with the aid of digital techniques, as in the case of *Jurassic Park* and the prequel to the *Star Wars* saga: the special effects and, more generally, the spectacular purpose that animates such films, seem like those of the period preceding narrative cinema. This thesis has been challenged by Thomas Elsaesser (2018), who suggested that the technological and social contexts surrounding the two periods – and the media cultures that accompany them – need to be analyzed more carefully. Media archaeology develops within this debate and recovers the approach of Michel Foucault's (1969) archaeology of knowledge. Elsaesser, in particular, took up Jonathan Crary's (1990) study of distinguishing geometrical optics, linked to the devices of the camera obscura and linear perspective, from physiologic optics, linked instead to devices such as the thaumatrope and stereoscope.

The second impulse for the development of media archaeology is the spread of computer science techniques and devices that go beyond the boundaries of cinema. Lev Manovich's seminal *The Language of New Media* (2001) has identified a series of characteristics – numerical representation, modularity, automation, variability, and cultural transcoding – that affect the production and consumption of digital media.

In this context, a privileged axis of research within media archaeology concerns screens and, more specifically, a genealogy of screens: the study of how media screens have transformed from painting to immersive media (Buckley et al. 2019). On the one hand, researchers such as Elsaesser (2016) have reclaimed metaphors of the mirror, window, and painting to identify continuities and breaks between pictorial arts and video forms. On the other hand, Lev Manovich (2001) focused on post-cinematic screens, linking computer interfaces to radar technology.

> With radar, we see for the first time the mass employment (television is founded on the same principle, but its mass employment comes later) of a fundamentally new type of screen, the screen which gradually comes to dominate modern visual culture – video monitor, computer screen, instrument display. What is new about such a screen is that its image can change in real time (…). This is the third, after classic and dynamic, type of a screen – the screen of real time. (Manovich 2001:102)

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This research axis is fundamental, as evidenced by the recent book *Screening Fears* (2023) by Francesco Casetti. The history of screens is retraced through the lens of the conceptual pair projection/protection, which is applied to the study of phantasmagoria shows, cinema, and mobile digital media:

> I want to call the *projection/protection complex* – where, echoing both its psychoanalytical and economic meanings, "complex" stands for a set of interrelated processes and components here aimed at creating a "protected" confrontation with the world and at the same time at "protecting" individuals beyond the safe space in which they are located. (Casetti 2023:14)

Our starting point is a trivial observation: as Manovich has already pointed out with regard to dynamic screens, the modern screen, capable of displaying multiple visual configurations, arose with the need to show visual movement. In other words, we find there to be a fundamental genealogical link between the evolution of modern screens and the evolution of visual movement. For these reasons, a genealogy of mediatic images based on the study of the transformations of visual movement will be proposed: on the one hand, the internal evolution of visual movement pertaining to the same family of media (photographic, cinematographic, immersive) will be analyzed; on the other, an attempt will be made to identify the qualitative breaks that have affected visual movement in the techno-semiotic transition from one family of media to another. Finally, this approach will allow us to identify kinetic anachronisms: how the typical forms of visual movement from traditional media are transformed in digital media.

The most recent stage, concerning video games and virtual reality, will be a starting point in proposing a theory and methodology capable of comprehensively examining visual movement.

3. Diagrammatic visual movement: video games and virtual reality

Video games and virtual reality are usually studied with respect to two concepts: immersion and interaction (Aarseth 1997; Pinotti 2020). The second would make it possible to distinguish interactive media from traditional media such as literature and cinema: the user, being able to participate in the experience through his or her choices, would assume an authorial role instead of the more 'passive' reception of traditional media. As for immersion, the fact that video games and VR stimulate more senses and require coordination to cope with the virtual experience would have greater effects on its overall implication (narrative, emotional, or aesthetic).

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Figure 1. A screenshot of the video game *Assassin's Creed II* (Ubisoft 2009).

Concerning immersion and interaction, it appears necessary to focus more carefully on how the player accesses the virtual world and how his or her experience is articulated in proto-linguistic grammaticalizations. Indeed, the user first accesses the virtual world visually: the screen presents a two-dimensional, three-dimensional, or immersive world, marked by a more or less pronounced level of figuration (photorealism, stylization, abstraction). And yet, so-called interaction emphasizes the fundamental importance of another aspect: to access virtual experiences to make them work, the user must perform movements on the interface (using joypads, gyroscopes, motion sensors, or virtual helmets) that are transformed into movements within the virtual world (e.g., running, jumping, shooting or looking). In other words, there are two primary forms of grammaticalization as regards video games and virtual reality: on the one hand, a visual syntax that regulates the degree of figurativeness and the architecture of virtual spaces; on the other, a kinetic syntax that regulates the interactive micro-language through which the player exists within each specific video game.

The video game *Assassin's Creed II* (Ubisoft 2009) may serve to exemplify these formal features (fig. 1). It is a video game set in a series of Italian Renaissance cities, including Venice and Florence, which we could summarily describe as a historical conspiracy thriller similar, in its plot, to Umberto Eco's *The Name of the Rose*. This is, however, if we limit ourselves to considering only the visual syntax and audiovisual narration because the interaction system requires the player to make acrobatic movements, perform vertiginous chases, climb famous monuments, and assassinate key

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figures to unravel the international conspiracy. The meaning-making process is thus linked to two interrelated levels: on the one hand, the international conspiracy depicted with 'traditional' images and the figurative dressing of virtual spaces; on the other hand, the practical narration imposed by the kinetic system – a kind of parkour to be performed in a historical setting, characterized by rhythms and thematic movements such as running, climbing, and killing.[2] Rather than stopping at the simple fact that these are interactive media, this approach makes it possible to analyze the kinetic micro-languages (offensive, defensive, contemplative) specific to each virtual production directly.

The two syntaxes, visual and kinetic, can either reinforce each other or generate conflicts for the user who is forced to negotiate between different pragmatic frameworks, sometimes through kinetic identification with the avatar, sometimes through interpretative and emotional distancing. *Shadow of the Colossus*, for instance, configures a conflict of modalities in the user between /not wanting to do/ and /having to do/. The user is required to kill sacred beings called Colossi (kinetic syntax), but their figurative appearance as giant, innocent beings (visual syntax) makes this task controversial and dramatic.



Figure 2. A screenshot of the video game *Shadow of the Colossus* (Sony Computer Entertainment, 2005/2018).

[2] For a comprehensive semiotic analysis of *Assassin's Creed II*, carried out using the semiotic tools developed by Roland Barthes in S/Z (1970), see Compagno (2013). See also Aroni (2022) for a semiotic study of architecture in video games.

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In the same way, immersion in VR is the effect, rather than the cause, of pragmatic and perceptual movements made in virtual spaces: by moving their head, users change their point of view via the virtual headset and act with their body in the digital world. The price of this increased immersion is that the movements are limited to those the human body can perform in the real world. Alejandro González Iñárritu's *Carne y Arena (Virtually Present, Physically Invisible)*, for instance, sets up an opposition between the user's immersion – achieved through the virtual headset and the remediation of perceptual and pragmatic movements – and the impossibility of carrying out meaningful actions in the virtual environment.



Figure 3. A screenshot of the VR experience *Carne y Arena* by Alejandro González Iñárritu, 2017.

To reproduce the feeling of Mexican migrants in the desert, *Carne y Arena* creates an experience of powerlessness. The user controls an anonymous and ignored character who walks in a daze, jostled by armed policemen.

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3.1. The parameters of kinetic analysis: body and form of movement

Visual syntax can be analyzed in light of the criteria already formalized and stabilized in semiotics (Dondero 2020): the configurations and oppositions of colors, shapes, and spaces, as well as recognizable figures (plastic and figurative relations [Greimas 1989]), how images engage in different forms of dialogue (enunciation [Marin 2002]), and how the point of view allows images to affirm, hide or deny (cognitive modulations [Fontanille 1989]).

As far as the kinetic syntax is concerned, no semiotic studies have modeled its functioning. For these reasons, two fundamental parameters that articulate the functioning of the kinetic syntax are proposed: the form of movement and the body of movement. The form of movement refers to the qualities directly expressed by the movement: plastic forms (pure trajectories, accelerations, rhythms), figurative forms (a movement that constitutes figurative motifs, e.g., the motif of falling), and thematic forms (recognizable and nameable actions, e.g., 'climbing'). The movement's body is its substratum: a body can either be absent from the frame of the image or constitute itself as an indirect body, deducible from the movement, or be present in the form of a human, animal, or object (Fontanille 2004).

These analytical parameters allow us to analyze the evolution of visual movement throughout visual media's history and identify kinetic anachronisms. In particular, they will enable us to identify and analyze two further stages in the evolution of image-based media: the fixative visual movement of photographic media and the representative visual movement of pre- and post-cinematographic forms.

4. The fixative visual movement: photographic media

Photography can be analyzed according to a particular type of visual movement. The movement of photographic production consists of a movement of deceleration and visual fixation of light onto a substrate. It is a negative movement that produces distinctive expressive effects. There are, in fact, two technical parameters that pertain to the control of this movement of production: on the one hand, the lens's aperture, and on the other, the exposure time (or shutter speed).[3]

These two parameters involve specific blur effects that have played a key role in stabilizing photographic genres: motion blur, panning, and bokeh. The motion blur is located in a part of the image where an object or part of an object has moved during the shot. This type of blur is used in sports and motorsports photography (fig. 4).

[3] A third parameter concerns the distance from the objects or scenes being captured.

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Figure 4. An example of motion blur in photography.

On the other hand, panning is spread over the entire surface of the image and is caused by the movement of the photographic camera when the shot is taken. War photography is one genre that has exemplarily used this form of blur, as in the famous case of Robert Capa (fig. 5).



Figure 5. US troops' first assault on Omaha Beach during the D-Day landings. Normandy, France. June 6, 1944. Robert Capa, International Center of Photography, Magnum Photos.

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Finally, bokeh is caused by the wide aperture of the lens and the controlled distance between the photographic camera and the objects to be captured. This form of blur allows only a section of the image to be focused, surrounded, and emphasized in relation to the remaining blurred areas. It is a form of blur widely used in the portrait genre (Fig. 6).



Figure 6. An example of bokeh in a portrait.

Of course, these forms of blur are often combined. Still, overall, the control of the fixative photographic movement that characterizes them helps to identify the photographic language in relation to other visual languages, such as painting. By focusing on the visual fixation of movement typical of photography, it is possible to reread the photographic medium's history and analyze its genres' stabilization and transformation.

It is also possible to test this theoretical framework with respect to the forms of visual analysis used in the chronophotographic studies by Étienne-Jules Marey and Eadweard Muybridge for examining human and animal movement. In chronophotography, the aim is to visually analyze a thematic movement (a man's 'running,' for example) by breaking it down into multiple photographic shots – utilizing multiple fixative visual movements – able to capture its visual features. It is well known that chronophotography allows two types of visualizations. On the one hand, visualization in separate images is arranged adjacently: the same figure is captured in a series of different moments to spatially and temporally articulate the same thematic movement (fig. 7).

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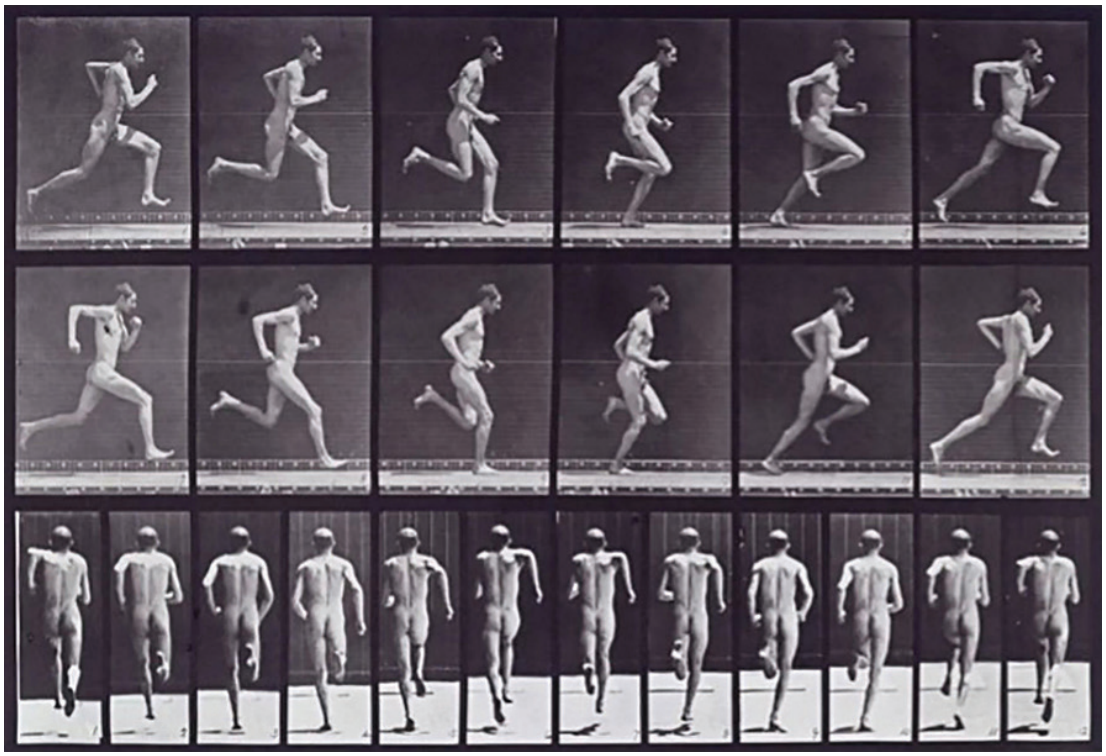


Figure 7. Eadweard Muybridge, *Running at full speed*, 1872–1885.

On the other hand, it is possible to merge all the shots into a single image, making the reduplicated and superimposed parts and bodies almost indistinguishable in a blur effect (Fig. 8).

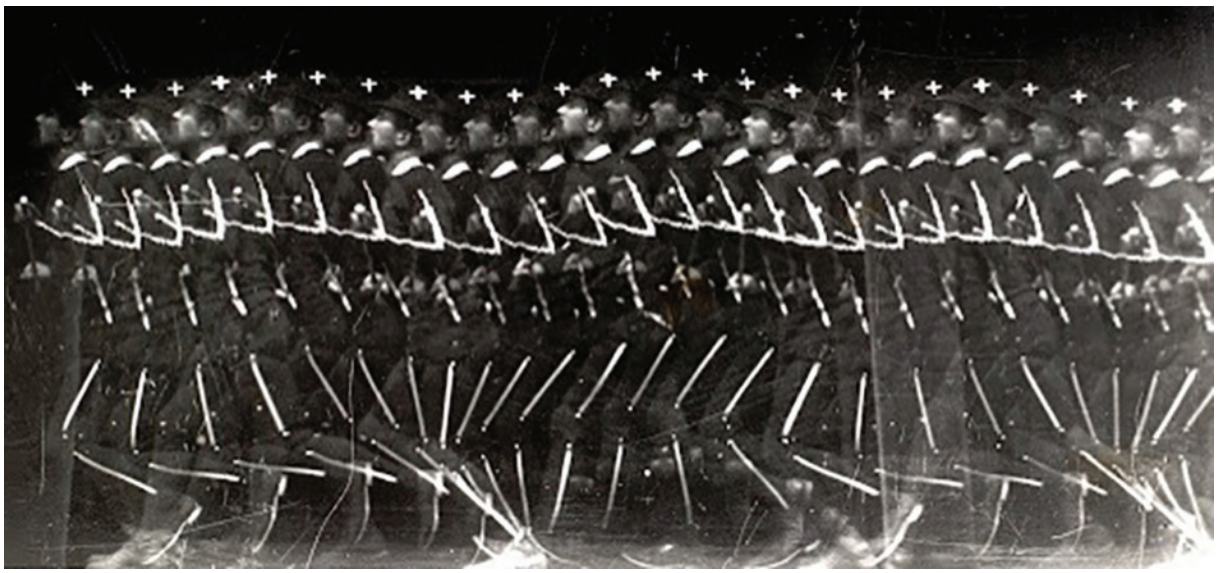


Figure 8. Étienne-Jules Marey, geometric chronophotography of 24 images, on a fixed plate, of a man running, 1886.

We find these two types of visualizations to start from the same form of movement – a thematic form, that of running –to construct two different types of visual analysis. In the case of the sequence of adjacent shots, it is a question of analyzing the body of the movement and its minimal variations in terms of muscular tensions, occupation of space, mereology (the relationship between the various parts of the body and the relationship with the overall space represented). In contrast, in the case of the chronophotographs condensed into a single image, the form of the initial thematic movement – again, running – is broken down not to identify variations in the body but to characterize the form of the movement itself: the visual movement moves from an analysis of the body to an analysis of the plastic form of the movement. What counts are trajectories, accelerations, rhythms, and overlaps.

4.1. Photography and AI: kinetic anachronisms in visual production

Based on the analysis of the fixative visual movement, this approach makes it possible to identify a first kinetic anachronism: the return of a movement configuration typical of traditional media, which is recaptured and transformed within the digital media framework. This stance allows us to compare photography's early days with visual generative artificial intelligence (e.g., Midjourney, and Stable Diffusion).

We can't go into the full details of how these AIs work, but we can look at how the functioning of these two forms of production diverge.[4] These sophisticated visual generative AIs are trained in two main ways on databases of millions of indexed images: they are firstly trained to add layers of visual noise to a given image and then to recompose the same image based on computational predictions and progressive denoising operations (fig. 9).

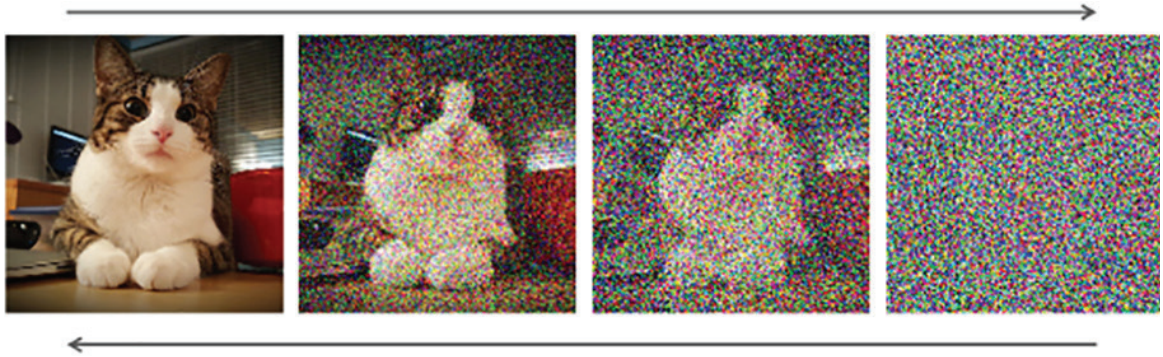


Figure 9. A visualization of the learning phase of a visual generative AI.

[4] For a more comprehensive explanation of the semiotic functioning of generative AI, please refer to D'Armenio, Deliège and Dondero (2024) and D'Armenio (2024).

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Secondly, in their latent space, numerical translations of verbal descriptors are combined with numerical translations of visual features. The two forms of translation constitute lists of numbers ('embeddings'), which the model then absorbs, i.e., integrates into its parameters and weights (Fig. 10).

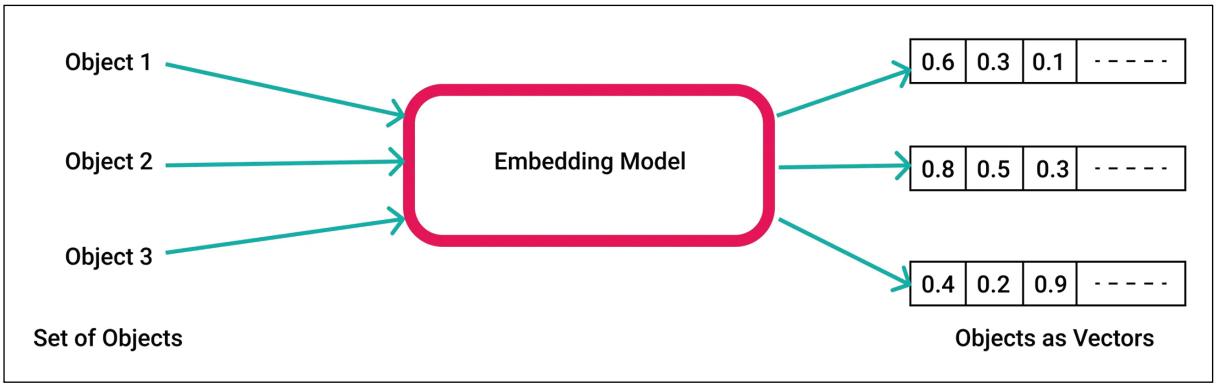


Figure 10. A diagram showing the functioning of embeddings.

During the inference phase (the phase of image generation), the operation is reversed: Starting with an entirely randomly noisy image, the AI must predict and progressively eliminate this noise. In doing so, it composes a new image, activating the pixels following the user's verbal prompts (fig. 11).

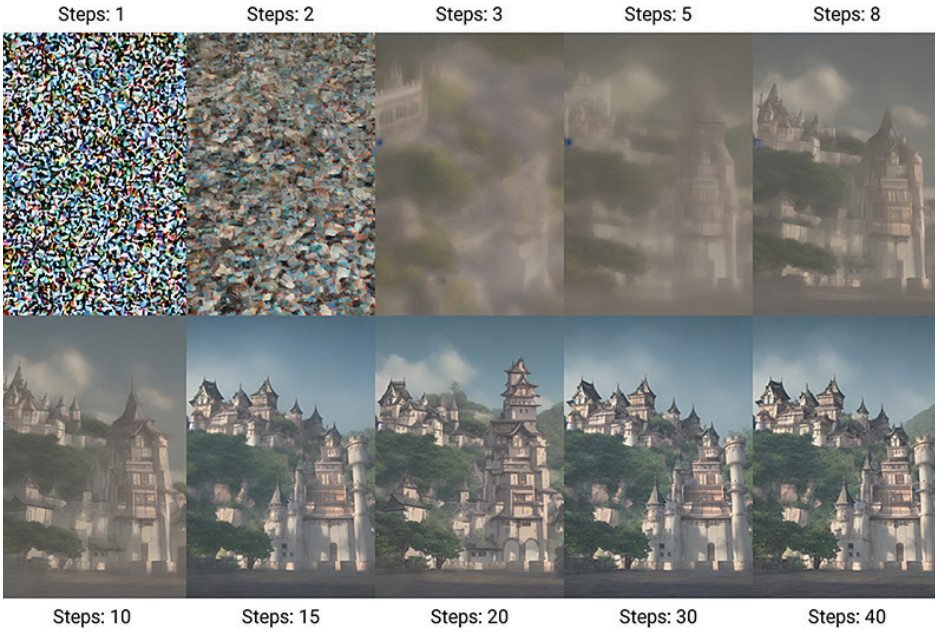


Figure 11. A visualization of the computational generation of images by Stable Diffusion.

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This denoising process can be defined as a compositional movement and may be compared with the movement of photographic production. In photography, it is a movement of deceleration and fixation of light upon a substrate. In generative AI, conversely, the denoising process constitutes a computational compositional movement that reconfigures the visual features encoded during the learning phase through a figurative stabilization of random noise.

Starting from this opposition in terms of the processes of production characterizing the photographic medium and visual generative AI, it is possible to uncover other axes of investigation that pertain to reception during the early days of each of these two media, as both have seen mistrust to develop towards technical autonomization, which reduces the human role. In particular, in relation to the matter of control over artistic production, both photography and AI threaten the role of the human as a result of the mechanical and computational autonomization of production. Secondly, both early photography and AI have been accused of not having developed an aesthetic of their own, limiting themselves to the imitation of styles associated with other arts: this is the case with pictorialism in photography, which developed between 1890 and 1914 and with the parrot metaphor often used to describe generative AI.[5] Finally, these two ways of producing images have been seen as threatening to colonize and standardize different social practices (art, design, information).

In other words, an archaeological comparison between photography and generative AI is possible in light of the movements of visual production that characterize them and in relation to the social contexts that have accompanied their technical and semiotic evolution.

5. The representative visual movement: pre- and post-cinematographic forms

The third form of visual movement concerns pre- and post-cinematographic media. This involves how movement is directly visualized in the devices that preceded and followed cinema. The magic lantern (Fevry et al. 2022) and the cinema of attractions (Gaudreault and Gunning 1989) first made it possible to visualize movement in the form of isolated performances (dance, magic, slapstick). However, it was only during the phase of the "narrativization of cinema" (Burch 1990) that movement was definitively transformed into narration. This reading has been debated, particularly in relation to the idea that the galaxy of visual devices and productions that preceded cinema

[5] Due to the fact that these AIs are trained on large archives and datasets of human-produced documents, and that they are capable of reconfiguring their traits to the level of magnitude of the individual pixel, their composition potential extends far beyond repetition and imitation (D'Armenio 2024).

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should be framed as a preparatory stage for narrative cinema, according to a teleological understanding. It is now generally accepted that the logic of attractions is not a stage that leads to visual narration but that, on the contrary, these two logics have coexisted and will continue to do so.

According to the hypothesis defended here, if we frame the history of cinema based on the concept of the representative visual movement – and of the parameters of the movement's body and form – it is possible to produce a different reading. A fundamental correspondence is postulated herein between the transformation of movement and diegetic autonomization: it was the succession of oriented, thematic movements carried out by actors that enabled the emergence of the first visual narrations and the autonomization of fictional characters. Based on this hypothesis, it would be possible to look back at two periods, 1891-1903 and 1903 -1907, to examine the films of the first operators (Lumière, Edison) and filmmakers (Smith, Méliès, Porter), as well as the chase films from the angle of the relationships between plastic, figurative, and thematic movements. The preliminary criteria for analysis could involve the number of actions in a movie, the presence of spectacular actions ('dancing'), the actantial structure of the movement (intransitive: 'fade away'; transitive: 'pursue'), and the succession of thematic movements ('fight,' 'fall') likely to be connected into a narration. Although the narrativization of cinema has been studied in relation to stabilizing the film editing rules, in our perspective, it was the articulation of visual movement that, through a complex succession of thematic movements, has required a consequent elaboration of the syntax of framing.

This theoretical framework also allows building a second kinetic anachronism concerning two audiovisual forms: early cinema productions and digital videos circulating on social networks such as TikTok (Marino and Surace 2023). These two textual forms share brevity and privilege subjects such as dance performances, comedy gags, sports performances, and magic tricks. And yet, the forms of their socialization and fruition are radically different: on the one hand, films projected during festivals and circus shows; on the other, the systematic exploitation of computer algorithms for digital socialization.

In other words, the comparison between these two forms of visual movement allows one to relate the pre-cinematographic productions with the post-cinematographic ones with respect to three criteria: 1) Discursivity: this concerns the similarities and differences between these two short forms of audiovisual media, for instance, the fact that videos on TikTok make extensive use of the acoustic dimension through new dubbing practices, reinterpretations of existing songs and performances, and through remixes; in contrast, in the cinema of attractions, the acoustic dimension was entrusted to live performers or to soundtracks recorded using other media. 2) Form of life: it is possible to compare the circulation of pre-cinema films in festivals and circuses with the socialization managed by algorithms relating to different economies of value,

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specifically 20th-century industrial societies and contemporary computational societies (Eugeni 2021). 3) Meta-narratives: in the era of the cinema of attractions, the role of human operators and barkers was essential to select, project, and comment on several films during the same event; on TikTok, it is the very user who, based on algorithmic recommendations and subscriptions, organizes meta-narrative streams.

6. Conclusions

This contribution has provided the occasion to propose a convergence between media archaeology, belonging to the field of media studies, and post-generative semiotics. While the former has, from the onset, proposed an approach capable of studying the evolution of media, semiotics has preferred to focus on specific corpora, media, or languages following a synchronic approach. In light of this opposition, the current genealogy of screens has been used as a starting point for proposing a semiotic genealogy of visual media based on the study of the evolution of visual movement. This genealogy is articulated into three fundamental stages.

The fixative visual movement pertains to how photographic production is achieved through deceleration and fixation of light upon a sensitive substrate. An introductory analysis has been proposed for how this visual movement has contributed to the stabilization of photographic genres: in particular, how, by controlling the movement of production through the lens's aperture and the exposure time, different forms of blur are achieved: the motion blur, typical of sports photography; the panning, often used in war photography; and the bokeh, a distinctive feature of portraits. The study of the movement of photographic production can also be used to build an archaeological comparison based on a first kinetic anachronism: the comparison between photography's early days and the current days of generative artificial intelligence. Whereas photography is realized through a deceleration movement, Midjourney and DALL-E work, on the contrary, through a denoising process: the model's traits learned during the training phase are put into motion again to stabilize new images.

The second stage pertains to pre- and post-cinematographic media, which have been characterized in terms of their representative visual movement. Rather than taking sides for or against a teleological reading that sees the magic lantern and the cinema of attractions as a preparatory stage for modern narrative cinema, a new hypothesis has hereby been proposed: it is movement, through the thematically oriented gestures of the actors, that established the first visual narrations. In other words, according to the point of view here defended, the juxtaposition of thematic movement is the fundamental operator of diegesis. This hypothesis also allows us to relate, through an archaeological gesture, the cinema of attractions to digital social networks: how very

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similar textualities – short, spectacular videos linked to dance, comic gags, and magic tricks – build meaning in different ways in the light of their respective social and economic contexts. On the one hand, we have socialization through festivals and circuses for the cinema of attractions, and on the other, a socialization that is disconnected from any specific place, as it is linked to the computational work of algorithms and the mobile fruition enabled by portable devices.

Finally, the third stage concerns the images of video games and virtual reality. An alternative analysis linked to the concepts of immersion and interaction has been proposed, focusing instead on the study of the viewer's physical and virtual movement. To access these experiences, the user must perform movements on the interface that are transformed into movements within the virtual world. As a result, these experiences of meaning-making are fueled by two syntaxes: on the one hand, a visual syntax pertaining to the degree of figurativeness of the virtual world, to its architecture, and the remediation of cinematographic language; on the other, a kinetic syntax that articulates the micro-language of movement in each video game and that can be offensive, contemplative, etc.

Overall, the theoretical framework presented here for studying visual movement opens new research axes for media archaeology and semiotics. The paired concepts of body and form of movement – themselves declined into the absent, indirect, or present body and the plastic, figurative, or thematic forms of movement, respectively – can be used in future research. This may serve, on the one hand, to analyze the techno-semiotic evolution within each media family (photographic, cinematographic, immersive) or, on the other hand, to analyze the qualitative ruptures and kinetic anachronisms that concern the relations between different media families.

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With strings attached:
Barthes' 'On Bunraku' from Thunderbirds to Japanese robot animated shows

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BY: **Raz Greenberg**

ABSTRACT

In his 1983 overview of the semiotic aspects of "performing objects," which focuses primarily on puppet theatre, Frank Proschan criticizes Roland Barthes' impressions of the Japanese bunraku puppet theatre performances, specifically the separation between the different parts of the puppet operation, which leads to the appeal of 'the part' rather than the 'totality' of the body accepted in western culture. Proschan argues that such separation is not unique to Japanese performances. However, Bolton (2002), while not arguing for uniqueness, claims that such separation is a part of Japanese culture and links it to the 1995 Japanese animated film *Ghost in the Shell*. This article examines Bolton's, Barthes', and Proschan's argument in light of the Japanese animated robot shows, where such separation is common, through an examination of non-Japanese influence – the puppet shows, and in particular *Thunderbirds* (1965-1966) produced by Gerry Anderson in the United Kingdom. The article concludes that, while the Japanese animated robot shows and the Anderson productions that inspired them indeed emphasize the appeal of 'the part,' they do so in a manner that challenges both Barthes' impressions of the bunraku and Proschan's observations of the relationship between performing objects and animation.

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1. Introduction

In his 1983 article, 'The Semiotic Study of Puppets, Masks, and Performing Objects' Frank Proschan argues for the importance of the semiotic research of what he describes as "performing objects" – "material images of humans, animals, or spirits that are created, displayed, or manipulated in narrative or dramatic performance." Proschan gives various examples of such objects, including puppetry, masks worn by actors, drawn images used by storytellers, and religious icons carried in religious rituals, among others. According to Proschan, performing objects offer a wide variety of cultural signs that represent different aspects of daily life (3-5). Proschan also discusses possible analysis tools for the study of performing objects, noting that the iconography of such objects can be examined through their design or, if this is not articulate, the movement involved in the performance or other elements such as narration and music that accompany the performance (7-10).

Proschan criticizes several previous studies of semiotic objects, particularly puppetry, notably Roland Barthes' views of the Japanese bunraku puppet theatre. Barthes was fascinated by the performance method of bunraku, in which three puppeteers, all present and standing on the stage, operate a single puppet, each responsible for a different part of the puppet's body. Barthes argued that this method transcends the Western notion of performance, in particular its notion of the "totality" of the body and the voice, focusing the attention instead on the different components of the performance and bringing to focus the appeal of "the part" (Barthes 1971:76-80). Proschan argues that the separation between different performance components is not unique to bunraku or Japan, pointing to examples in French 18th-century theatre and going as far back as the conventions of ancient Greek theatre (1983:20).

Despite this, Christopher Bolton (2002) argues that breaking the theatrical sign in bunraku performances, as Barthes observes, is a practice with strong Japanese origins – given the extent of its echoes in Japanese culture. In his article, Bolton examines this breaking in the context of Mamoru Oshii's 1995 animated film *Ghost in the Shell (Kōkaku Kidōtai)*. The film, based on a manga (Japanese comics) by artist Masamune Shirow, follows a policewoman with a cybernetic body who is tasked with capturing 'The Puppet Master,' a rogue artificial intelligence that takes over bodies and performs cybercrimes in the futuristic city where the story takes place. Bolton recognizes the separation between the body and the voice, a recurring motif in the film, as a parallel to Barthes' observation about how bunraku performances break the performing body into parts. In particular, Bolton points to the film's climatic sequence in which the protagonist's body is torn apart violently, leaving only her voice and the voice of The Puppet Master – with the bodiless voices now representing the world of pure data (2002:748-758). Interestingly, Bolton also argues that the separation of a voice from a body is an essential element in animation as well (since character voices are always dubbed), echoing

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Proschan's observation that "some of the artistic devices of traditional puppetry such as distorted voices and flexible bodies are familiar to most of us only as they have been adapted by film, especially animated cartoons" (Proschan 2002:6).

What Bolton ignores, though, is the different nature of the separation between the voice and the body (and in certain parts of the film – between the different parts of the protagonist's body) in *Ghost in the Shell* and the similar separation in Bunraku performances, as described by Barthes. While in both cases, the body in question is a representation of the human body (hand-drawn and animated in the film, constructed as a puppet in the bunraku performance), in *Ghost in the Shell*, the act of separation is also a representation - it takes place as part of the film's narrative, with no relation to the actual process of the film's production. In contrast, a bunraku performance takes place within the physical space as part of the performance, regardless of the narrative. This is not only a case of a different signifier – a material puppet existing in the three-dimensional physical space against an animated film, drawn by hand on celluloid and projected/transmitted – but also a very different signified; the audience's perception of a puppet theatre shows against the perception of watching an animated film.

In this respect, Bolton's argument, which parallels the separation between the voice and the body in bunraku performances and animation productions, is not entirely relevant to the same separation that he discusses as part of the film's plot – the latter takes place in a different dimension of the film, one related to the content rather than to production. However, suppose we consider Proschan's observation about the adoption of 'artistic devices' from puppet theatre to animation. In that case, it can be argued that *Ghost in the Shell* turned the performance method of bunraku into a narrative and stylistic approach for the film.

This article argues that this adoption exists not only within *Ghost in the Shell* but is also a powerful recurring motif across an entire genre of Japanese animation – robot animation and one of the genre's most recognizable stylistic and narrative elements, the launch sequence. Moreover, the article aims to demonstrate that in addition to bunraku, the genre also adopted the same elements from the television puppet shows produced in the United Kingdom by Gerry Anderson – and that these shows offered the same "breaking of the theatrical sign" as observed by Bolton, in a manner similar to the Japanese puppet theatre.

2. Robot animation and launch sequences

Though the term 'Robot Animation' or 'Robot Anime' (*anime* being the Japanese term for animation) generally refers to Japanese animated productions – television shows or films – that feature robots within their narrative, it is closely associated with narratives featuring human-controlled giant robots. The pioneering work in the genre

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was the animated television show *Tetsujin 28-gō* (known in English-speaking countries as *Gigantor*), broadcasted between 1963 and 1966, based on a manga by artist Mitsuteru Yokoyama. The show follows a boy who uses a remote-controlled robot to fight crime. The show's content strongly reflected Japanese anxieties in the post-war period, as it presented the robot's character as a weapon developed by the Japanese army during World War II, which remained unused due to the country's defeat in the war (Hornyak 2006:58-59).

The more influential work in the genre, however, came in 1972 with the production of *Mazinger Z (Majingā Z)*, produced simultaneously as both a manga serial and an animated television series by artist Go Nagai (originally running in Japan from 1972 to 1974, and released in English-speaking territories as *Tranzor Z*). The narrative also follows a young boy who controls a giant robot to fight adversaries, with the boy protagonist now sitting inside the robot's head, controlling it from within. Although also inspired by the historical events of World War II, *Mazinger Z* owes a narrative and stylistic debt to the works that came before it – as giant robot characters were now common in Japanese animated productions – and to Japan's post-war status as a leading modern industrial country. *Mazinger Z*, according to Hornyak (Hornyak 2006:59-61), celebrated the fusion of the human and the mechanical body, as well as the interaction between the robot and its advanced scientific surroundings.

One stylistic and narrative element that became strongly associated with *Mazinger Z* and the shows that attempted to emulate its success was 'the launch sequence' – a series of scenes showing the robot or robots piloted by the show's protagonists being prepared for action – with an emphasis on the protagonists getting to their pilot seats. The robots are activated in a step-by-step manner.

Much like Barthes' observation of bunraku performances, the launch sequences emphasized the appeal of 'the part' – the individual component of the robot's operation, including the young human pilot (much like the puppeteer). As Jonathan Clements (2013:150-151) explains, the "transforming"[1] of a robot character holds great appeal for young viewers, who initially see it as something magical and later consider it an understanding of the robot's inner workings. This appeal was not lost on toy manufacturers, who mass-produced tie-in toys for *Mazinger Z* and its successors.

At the same time, the launch sequence, much like the separation of the voice, the body, and different parts of the body observed by Bolton in *Ghost in the Shell*, is an entirely narrative-related affair. There are no actual 'inner workings' of a giant robot character in the physical space; they are entirely a part of the robot animated shows' narrative.

[1] The transformation that Clements refers to is actually a more elaborate transformation of a robot into vehicle, or a vehicle into other vehicle (an example discussed further in this article). However, the initial launch sequence of a robot character, as in Mazinger Z can also be considered as a "transformation" of the character from a lifeless form to an active, moving entity.

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Before examining case studies of how the producers of these shows drew inspiration from Barthes's appeal of 'the part' in bunraku performances, another source of inspiration, also related to puppetry, should be examined – the puppet shows of British producer Gerry Anderson.

3. Gerry Anderson, *Thunderbirds*, and the launch sequence

Gerry Anderson (1929-2012) is best known for producing science fiction television shows featuring string puppets and miniature vehicles, notably *Thunderbirds* (1965-1966), which followed a rescue team equipped with futuristic vehicles performing heroic tasks worldwide. His influence on Japanese animation, particularly the robot genre and the launch sequence, is widely acknowledged. In his overview of the history of the genre, Ryūsuke Hikawa (2013:10-11, 52) points to the profound influence that *Thunderbirds* had on the launch sequence within and outside the genre in Japanese productions. At the same time, Masaaki Hirakata, curator at the Tokyo Metropolitan Museum of Photography, explained that "Thunderbirds was like a modern sci-fi expression of bunraku" during a press coverage of an exhibition devoted to Anderson's works in the museum (Gilhooly 2001).

Hirakata's observation is worthy of special attention since it brings together two seemingly different art forms, even though they share the same artistic roots. From a technical perspective, both bunraku performances and productions like *Thunderbirds* are forms of puppetry. However, each employs a different technique (marionettes in Anderson's shows, manipulation by on-stage puppeteers in bunraku) and medium (televised production against stage performance).

Even more significantly, from a cultural perspective, bunraku performances are highly regarded expressions of Japanese culture. At the same time, Anderson's shows have been critically panned for many years for their aesthetic and genre choices. Science fiction critic Gary Westfahl (2012) described Anderson's puppet productions as nothing short of "artistic crimes against humanity," arguing that his attempts to tell realistic genre stories using marionettes resulted in "wooden" performances that "deprive the story of any emotional impact."

Interestingly, Anderson was also critical of the unnaturalness of his work. Despite his puppet shows' success, he was unsatisfied with the unconvincing way his marionettes moved. He tried in vain to make them look more realistic through design. The heavy presence of futuristic miniature vehicles in his shows was a means of overcoming the problem. By placing a marionette inside such vehicles, the marionette's movement would be reduced to a minimum while the vehicle's movement would dominate the action. Unlike his frustration with the marionettes, Anderson was quite happy with his miniature vehicles: to him, they represented realism and beauty (Garland 2009:61-74).

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In retrospect, what frustrated Anderson and his critics about working with marionettes was a form of the breaking of the theatrical sign, observed by Bolton, who echoed Barthes. The 'unrealistic' quality of the marionettes' movement was not some fault in their operation; it was, to use Proschan's argument, an iconographic trait of their movement and performance. Audiences in live performances accept such unrealistic movements by marionettes because they consider it an integral part of the art of puppetry. Anderson's shows, however, were not performed live. They were shot and recorded for television broadcast, and Anderson himself (who was trained in photography rather than puppetry) understood – like his critics – that the medium of television is a poor fit for marionette performances.

However, Anderson's heavy use of miniaturized vehicles, especially in the vehicle's launch sequence, also demonstrates Barthes' argument about the appeal of the part rather than the whole. Anderson's launch sequences often emphasize the elements involved in the vehicle's operation before letting his audience see the complete vehicle in action.

For example, one of *Thunderbirds'* most elaborate launch sequences was the launch of the flying cargo carrier Thunderbird 2. The sequence (filmed once to be repeated in multiple episodes) opens with the pilot sliding down a tunnel into his chair at the carrier's cockpit, where he pulls a lever, turning on the carrier's systems. Different types of cargo containers slide beneath the vehicle, and once the needed container arrives, the pilot pulls a lever again, bringing the carrier down to connect with the cargo. Then, different parts of the rescue team's base island start moving – rock walls that concealed the vehicle slide down, and trees fold sideways to make room for the carrier, which slowly makes its way across the runway. Finally, a section of the runway on which the carrier stopped slowly rises above the ground, allowing the vehicle to be launched upwards.

While Anderson may have created this launch sequence in an attempt to apply 'realism' to his work, the sequence ends up emphasizing the appeal of 'the part,' as observed by Barthes: the 'totality' of the vehicle and its takeoff is reserved to the final seconds of the sequence. At the same time, most of it is devoted to separate segments that portray each element individually.

There are two significant differences from Barthes' observation, though. First, much as in Bolton's analysis of *Ghost in the Shell* and unlike Barthes' admired bunraku performances, the appeal of 'the parts' in the sequence does not draw attention to the actual operation of the miniature vehicle on the show's set. Instead, it's a fictional portrayal of the vehicle's operation within the narrative. It is another layer of fiction meant to make the fictional narrative feel realistic to its audience.

Second, while Barthes' analysis focused on the anatomy of the bunraku puppets and the different puppeteers that operate it, the sequence opens with an examination of the 'anatomy' of the vehicle – the pilot arriving at the cockpit, the connection to the container – but soon focuses on external elements as well, with 'parts' of the

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surrounding environment playing a role in the launch. Unlike the puppet in the bunraku performances described by Barthes, the launch sequence focuses on the launch, the action, and everything that leads to it rather than the vehicle individually. With the whole surrounding environment taking part in this action, the role of the human pilot, portrayed by a puppet, is minimized: the scenes featuring its sliding down to the cockpit give it a passive role, and the occasional scenes showing the pilot pulling a lever are dwarfed by the significant changes in the surface that surround the vehicle, in service of its launch. Anderson's frustrations with creating realistic, nuanced performance using his marionettes found their way to the launch sequence, where a miniature vehicle and its surrounding technical environment substitute the marionette's poor imitation of the human anatomy.

4. *Mazinger Z*, *Getter Robo*, and the Bunraku-Anderson connection

Hikawa (2013:10) argues that the initial appeal that young Japanese viewers found in *Thunderbirds* was not just aesthetic but also political: with its hardware classified as 'rescue vehicles' rather than war machines, the show fitted with the perception of post-war Japan as a peaceful nation. Cull (2006:193-204) argues that the show held somewhat similar appeal to the young audience in its native United Kingdom – allowing this audience to identify with the heroic deeds of the show's protagonists in the Cold War era while at the same time promoting ideals of global and inter-racial collaboration.

In this respect, the giant robots piloted by the young protagonists of the Japanese animated productions distanced themselves from this particular source of appeal, as the robots featured in these shows were very much war machines. The influence of Anderson's productions, particularly *Thunderbirds*, on the Japanese genre remains primarily aesthetic. However, this aesthetic was taken in a direction very different from Anderson's.

This article does not offer an extensive analysis of all Japanese animated robot shows or even a representative sample of them. Instead, it examines the launch sequence of two early shows from the genre, where Anderson's influence is felt most strongly. Hikawa argues that the launch sequence in Go Nagai's *Mazinger Z* (as noted above, the first show to introduce the concept of a young protagonist piloting a giant robot) has a "decidedly *Thunderbirds* flair" (2013:16). This launch sequence opens with the protagonist, Koji Kabuto, flying his hovercraft (named 'Hover Pilder' in the show) and approaching the show's titular giant robot, which in itself rises from an opening water pool in a manner that indeed recalls the launch of the Thunderbird 1 rocket from *Thunderbirds*. Kabuto lands his hovercraft on the top of the robot's head, where it fits in, and the robot – which was motionless up to this point, is turned on in a manner that recalls awakening – its eyes light up, its body straitens, and its limbs start moving.

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While the rise of the robot in *Mazinger Z* recalls Anderson's show, it has two crucial aesthetic differences. First, while the protagonists of *Thunderbirds* piloted vehicles, the protagonist of Nagai's show controls a robot – an object with a structure that simulates human anatomy. Second, Kabuto is far less passive than the protagonists of Anderson's show during the launch sequence. He does not slide into the robot but instead flies another vehicle into it, and his presence and actions in the activation of the robot through levers and buttons are more emphasized in comparison to the occasional lever-pool by the pilots of the *Thunderbirds* vehicles.

If the launch sequences for the different vehicles in *Thunderbirds* emphasized the appeal of the different parts that come together in the vehicle and its surrounding environment to allow the launch, the launch sequence in *Mazinger Z* has only two such parts[2] – the robot and the hovercraft. The hovercraft merely serves as a pilot seat for the protagonist, who lands inside the robot's head – a clear metaphor for the brain and consciousness. The launch sequence of *Mazinger Z* emphasizes the fusion of the pilot's hovercraft with the head of the robot. The turning on/awakening that is presented as the core of this sequence signifies the proper role of the protagonist: he may represent the 'brain' that controls the body, but in effect, he is the puppeteer who manipulates that body. Like a lifeless puppet, the Mazinger Z robot 'comes to life' once the protagonist activates it. As in the bunraku performance admired by Barthes, the show's launch sequence gives the audience a view of the puppeteer. The hovercraft and the robot's body have their appeal, but the most appealing 'part' in *Mazinger Z* is its human protagonist.

1974 saw the release of *Getter Robo (Gettā Robo)*, another robot animated show produced by Nagai, now with a launch sequence that its initial aesthetic is even closer to that of *Thunderbirds* – yet again, its deeper thematic qualities are very different from Anderson's show. The show, now following three protagonists rather than one, featured a launch sequence in which each protagonist slides down a tunnel (an apparent reference to Anderson's shows.[3] After landing in their chairs and automatically being strapped, the protagonists' chairs move into the cockpits of each pilot's respective plane (again, in a manner that strongly recalls Anderson's productions). The protagonists activate their aircraft that fly out of the base. Then, the protagonists manipulate their planes' controls further, causing each plane to transform into another part of the show's giant robot's anatomy: torso, jetpack, and legs. The different planes combine into the robot, and similarly to *Mazinger Z*, the robot's eyes light up, symbolizing awakening and coming to life.

[2] Another part occasionally follows these two, though – whenever the Mazinger-Z robot needs to fly, a flying jet – named 'Jet Scrander' in the show – attaches itself to the robot's body. This, however, is presented in the show as a separate occurrence from the launch sequence itself, even if it follows it immediately.

[3] Although the segment in which each pilot jumps into the tunnel – something that would have been hard if not impossible to achieve with Anderson's puppet, appear to draw more from Anderson's later live-action show UFO, discussed further in this article.

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As with *Mazinger Z*, *Getter Robo* strongly emphasized the pilots involved in the launch sequence, and effectively turned them from pilots to puppeteers once their planes came together to form a robot. However, in *Getter Robo*, the puppeteering was of a different kind: the protagonist of *Mazinger Z*, who sat down inside the head/brain of the show's giant robot, was operating the robot like a puppeteer manipulating a marionette like the puppeteers who worked on Anderson's shows. The protagonists of *Getter Robo* were closer to the puppeteers of the bunraku performances – with each controlling another part of the robot's anatomy, and each part of this anatomy, as Barthes noted, had its own appeal.

5. Broken Puppets and Puppeteers – *UFO* and *Neon Genesis Evangelion*

Anderson's influence over Japanese robot animation continued to extend beyond the discussed examples of *Mazinger Z* and *Getter Robo*. As noted above, this article aims to examine every such case study. One later example that justifies such examination in the context of this article's discussion of the puppet theatre connection between Anderson's productions and Japanese robot animation, though, is the relationship between Anderson's show *UFO* (1970) and the 1995 Japanese animated show *Neon Genesis Evangelion* (*Shin Seiki Evangelion*) produced by Hideaki Anno.

Unlike his previous puppet shows, *UFO* was a live-action show whose characters were portrayed by actors while still utilizing miniature vehicles for its special effects sequences. Anderson hoped to overcome the production difficulties involved with puppets, described earlier in this article, by employing actors. However, the initial critical reaction to this change in production was unfavorable, with critics arguing that the acting had the same wooden quality as the marionettes in Anderson's previous shows (Worley). The show did, however, attempt to feature more adult-oriented stories in comparison to Anderson's puppet shows, especially in its depiction of protagonist Ed Straker (Ed Bishop) as a dysfunctional family man, in contrast to the portrayal of ideal family life in *Thunderbirds*.

While not the first Japanese animated show to try to address the adult audience[4], *Neon Genesis Evangelion* also subverted the conventions associated with its genre as presented in previous productions. As in *UFO*, this subversion focused on the broken family relationships between the show's two main protagonists, scientist Gendō Ikari and his son Shinji, as opposed to the more positive portrayal of father/son relationships in previous genre shows (Malone 2007:113-114).

[4] The long-running Gundam franchise, spreading across multiple media of animated television shows, movies, home-viewing formats, comics, toys and digital games, with its portrayal of futuristic tragic warfare, is a prime example of a title which has addressed this audience since 1979.

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Other than the thematic connection, the two shows share similarities in narrative and style, from similar plotlines (a government-sponsored agency set up to fight aliens or monstrous beings under the threat of budget cuts) to similarities in the design of props and clothes, with characters in *Neon Genesis Evangelion* designed to resemble actors from *UFO*.

Another area in which *Neon Genesis Evangelion* resembles *UFO* is its launch sequences, specifically the segments in which the pilot reaches its vehicle or lack thereof. In *UFO*, the launch sequence for characters posted on the show's 'Moonbase' opens with these characters leaping into tunnel openings. Still, their way through the tunnel into the pilot's seat with moving chairs, familiar from *Thunderbirds* is not seen – supposedly because of the logistics involved with presenting such segments in live-action. The launch sequence in *UFO* cuts immediately from the pilots' leap into the tunnels to their fighter spaceships being lifted to the surface. In this sense, other than production logistics, it can be argued that *UFO* has effectively eliminated the appeal of the 'part' because, with this show, Anderson has finally achieved the realism he strove for – seamlessly blending human actors with miniature vehicles, doing away with any connotations to puppets or puppetry.

Similarly, *Neon Genesis Evangelion* also skips the segment in which its pilot characters enter their robots, and its launch sequence consists of the robots ascending to the surface. Furthermore, the show's early episodes give the impression that the pilot characters play little part in preparing their robots for action. Rather than the puppeteer-pilots who manipulated the robots of *Mazinger Z* and *Getter Robo*, the launch sequences in *Neon Genesis Evangelion* give the impression that the pilot-protagonists of the show are themselves puppets manipulated by greater forces – the adults who surround them, which echoes the show's overall theme of the young protagonists having a dysfunctional relationship with their families and adults in general.

If, according to Bolton's interpretation of Barthes' observations, bunraku performances break down the theatrical sign by exposing the puppeteers behind it, and if, as the analysis presented in this article suggests, this breaking gave Anderon's shows, as well as the Japanese robot animation show their aesthetic appeal, *UFO* and *Neon Genesis Evangelion* denied this appeal from their audience by avoiding this act of breaking the sign.

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6. Conclusions

The analysis presented in this article suggests that Anderson's puppet television productions can be seen as a link between traditional Japanese bunraku performances and modern Japanese robot animation. This link is connected by Barthes' observation about the appeal of 'the part' in bunraku performances, which was expanded on in Bolton's examination of *Ghost in the Shell*. However, the same analysis also indicates essential deviations from Barthes' observations.

First, the analysis does not support Barthes' argument that the appeal of 'the part' in bunraku performances rejects the Western notions of 'totality' and realism. On the contrary, Anderson and the producers of Japanese animated robot shows strived for the same appeal to give a more realistic feeling to their productions. Anderson did away with this appeal once he was no longer bound to use what he considered unrealistic puppets (in *UFO*). Anno did away with it to break the metaphorical puppetry connection in previous genre shows.

On the other hand, it should be noted that as in Bolton's analysis of *Ghost in the Shell*, the analysis of the connection between bunraku, Anderson's puppet shows, and Japanese robot animation also refers to the appeal of 'the part' in narrative frame, rather than in live on-stage performance. The different 'parts' of Anderson's miniature vehicles related to the pilots' arrival into their vehicles were never a part of the miniature vehicles themselves; they were fictional sets designed to give a sense of realism to the vehicles. The giant robots of Japanese animated productions were represented in the physical world as toys. However, such toys often also emphasized the appeal of 'the part,' as in the different toys that came together to form the robot of *Getter Robo* [5], the inner controls of these robots, as seen in the launch sequences of their respective shows, were also rarely represented in the toys.

One possible conclusion of this gap between Barthes' observations and the analysis presented in this article is that animation, or even filmed puppetry, exists on a different artistic dimension than puppet theatre performed live on stage. The change in the medium, in the case of Anderson's filming of his marionettes (and placing them within more elaborate sets that are rarely seen in puppet theatre stage productions) or the drawn animated frames of the Japanese animated shows, eliminate or change the nature of the onstage appeal of 'the part' that Barthes found so fascinating. This echoes Proschan's observation about the tendency to borrow 'artistic devices' from puppet theatre into live-action and animated productions.

[5] In fact, the toy producers had difficulties matching the combination portrayed in the animated show, and were only partly successful in making the toys do the same (Hikawa, 18).

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However, Proschan's other observation is even more relevant in this context: movement can be an essential part of puppet theatre iconography. In the test cases examined in this article, the Anderson puppet productions and the Japanese animated robot shows do more than borrow 'artistic devices'; they adopt the entire iconography of a specific form of puppet theatre: bunraku.[6]

The same argument can be made for Bolton's analysis of the influence of bunraku performances on *Ghost in the Shell*. In Bolton's analysis of the film and the analysis presented in this article of Anderson's productions and Japanese animated robot shows, the iconography may belong to the narrative, rather than the bunraku's original performance method. Still, it is a similar iconography and demonstrates just one way in which animation and puppetry – and the larger category of 'performing objects'- can share. Research can extend to cell animation that directly refers to marionette performances (see, for example, Disney's 1940 film *Pinocchio*) toys manipulated by children as 'performing objects' (as in Pixar's 1995 film *Toy Story*) or animation techniques involving three-dimensional objects as stop-motion that can also be defined as 'performing objects.'

Proschan may have been dismissive about 'animated cartoons,' but the analysis presented in this article suggests that such cartoons, and animation in general, are very much part of his definition of performing objects.

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[6] It can be argued that Anderson, in attempt to eliminate such iconography from his productions (the strings of the marionette) found himself adopting the bunraku iconography instead - though how familiar he was with bunraku is unknown.

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Midjourney, Jodorowsky, and the end of reality.
Artificial Intelligence as an animating technology

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BY: **Maria Lorenzo Hernández**

ABSTRACT

By the end of 2022, social networks started sharing collections of sophisticated images accompanied by suggestive comments as if they belonged to a forgotten past: photos of interrupted filming, lost ancient movies, modern traditions recreated in archaic settings, etc. However, these astoundingly realistic images were but simulations generated by the Midjourney AI, with which users can design pictures from textual descriptions. This article focuses on two series of images devised by Johnny Darrell to recreate a non-existent film: *Jodorowsky's Tron* (2022), as if the Disney film was directed by the visionary Chilean director Alejandro Jodorowsky. If Disney's *Tron* was known for its pioneering incorporation of computer graphics to recreate the inner world of the computer, the new simulations not only point to how AIs imagine the native environment of the AI but, unexpectedly, we may be seeing the preview of what the next-generation films will look like. Although these stylized visions of science fiction to come are, by the moment, just pictures and not *movie* pictures, they help us reflect on AI's implications in the visual arts and, specifically, about the generation of images that re-create alternative history lines. Likewise, the essay explores Mark Langer's suggestions in his article "The End of Animation History" (2002) about the critical moment that the traditional definition of animation – as opposed to live-action cinema – was going through at the turn of the 21st century. Thus, we will examine how the AI simulations propose a new scenario for our structure of reality.

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1. Introduction

This essay is about things that do not exist.

Or rather, about things that could have existed, as they could have been imagined, but only now start to become visible.

About a year and a half ago, I started checking frequently the posts on Midjourney's Facebook page. I would spend days looking on my phone at those posts by artists who used AI to create these fascinating images. One day, as I fell asleep slowly in a waiting room, I saw a kid sitting before me. My first thought was to count the fingers in his hand. It is possible that this was what was hidden underneath Goya's Caprice: "The sleep of reason produces monsters." As fantasy draws attention over itself, the simulacrum of futility goes unnoticed.

The truth is that imagination has never threatened our structure of reality so much. In this realm, not only the worlds that catch our attention because of their fantasy and impossibility come together but also those that present a paradox about a possible impossibility.

Taking these words literally – a *possible impossibility* – this essay is essentially about animation. According to Alan Cholodenko, Artificial Intelligence (AI) is one of those technologies that define an epoch due to its *animating* ability.[1] The same way it happened with clocks' mechanisms, photograph cameras or cinematographic machines, animating technologies set up patterns with which human beings can compare themselves: "'Today' is the era of the computer, an era in which the computer models the human, as the steam engine did before that, the clock before that, and the clay pot or spindle even before that" (Cholodenko 2015:33). Notwithstanding, as Ortega y Gasset stated emphatically, "Without technique man would not exist now and never would have" (2000[1933]:13), as humankind's relationship with technology has nothing to do with adapting to the environment, but about transforming the environment to the subject's very own reality (Sanchis Matoses 2014:188).

In the 19th century, chronophotography made visible the invisible. Before Eadweard Muybridge published his photographic series of galloping horses, it had never been possible to examine thoroughly what lies hidden from the eye because of its speed. Photography established a brand-new relation towards images, an image created by a machine capable of setting an indexical relationship with what is real: what registers its objective is linked to a specific time and space. As Leland Stanford proclaimed when Muybridge's photos were flagged as falsifications, "the machine cannot lie" (Shaffer 2021:0:50:29).

Cameras cannot lie, but they reopen the question of how humans relate to what is visible. Film cameras, with their ability to manipulate time and animating capacity, postulate other chimeras. As Jean Epstein remarks in *Intelligence of a Machine*,

[1] "all technologies, for me themselves animators, do, especially epoch-'defining technologies'." (Cholodenko 2015:31).

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"the cinematograph […] precisely describes a world that starts from the end and advances towards its beginning, an anti-universe that, since then, mankind could barely depict" (2015[1946]:8). That 'barely' is significative, as only when the animation device's motion is turned upside down – by making the pages of a folioscope or the mirrors of a praxinoscope spin – humanity could make that 'anti-universe' visible.

Cinema, as *animated photography*, reveals what is invisible to the eye. Epstein considered the cinematograph machine as "a robotic brain which was not intentional nor strictly commanded to perform an identical job to the living organ [the eye]" (2015[1946]:105). This way, Epstein opposes organic thinking to "mechanic thinking," whose main capacity is that of structuring our relationship with time and space:

> The cinematograph is in itself an experimental device that builds – that is, that conceives – an image of the universe; […] It is just that this trick photography is extremely related to the procedure with which the human soul generally creates an ideal reality. (2015[1946]:109)

In the digital era, the ability to create images without starting from a model, without taking a picture or without sketching it first, being based purely on a brief verbal description – a 'prompt,' something that could be essentially done also by an AI – not only redefines our concept of the creator artist, but reality itself.

There is a broad consensus about how there has never been so vast the possibility to rewrite reality and, therefore, for mass deceit. Indeed, we did not need computers to conduct a simulacrum – what Jean Baudrillard described as the image that marks and denatures reality.[2] Photomontages emanating from many dictatorial regimes, aimed to lead public opinion and perpetuate their power, quickly come to mind. However, what has changed in the last decade is that, because of digital technology, what was only possible for a few now is in the hands of everybody (Venegas Ramos 2023:35-36).

As I write this text, in April 2024, the last beta version of Midjourney is the v6, widely applauded for being more versatile and realistic than its precedent, v5.2. AI-generated images are no longer found in some dedicated social platforms, where they can be easily identified, but *everywhere*. We see pictures of Rita Hayworth or Grace Kelly on the Internet with a high level of definition and color that we could not have before; photo albums of charming houses combine pictures of buildings that exist and those that do not exist. Park benches with unthinkable shapes, Third World kids that assemble all kinds of gadgets made of bottles, or swings shaped like

[2] "Such would be the successive phases of the image: it is the reflection of a profound reality; it masks and denatures a profound reality; it masks the absence of a profound reality; it has no relation to any reality whatsoever; it is its own pure simulacrum." (Baudrillard 1995[1981]:6).

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giant cats challenge our credulity daily. Perhaps, in the face of deception, there only remains patient observation, the expertise to detect the inconsistent, oneiric detail: never a one-year-old baby and four kittens looked at once at the camera.

The idea behind this article was provoked by a series of images created by the designer Johnny Darrell using AI Midjourney: *Jodorowsky's Tron*, divided into two collections. These photorealistic images suggest how a film that does exist (*Tron*, Steven Lisberger, 1982) would have been if it had been filmed by Chilean director Alejandro Jodorowsky and its hypothetical second part.

Before becoming a cult filmmaker, Jodorowsky founded the Panic Movement alongside Fernando Arrabal and Roland Topor. The Panic Movement proposed a dialogue with Surrealism and aimed to re-structure reality through the imaginary. In my view, the acts of psyco-magic that the Chilean advocates are an attempt to transform one's reality through symbolic acts.

Johnny Darrell's *Jodorowsky's Tron* combines the stylized world of the Disneyan *Tron* with the stylistic traits of the legendary filmmaker, evoking his 1960s works *El Topo* (1970) and *The Holy Mountain* (*La montaña sagrada*, 1973). Darrell also integrates elements from Jean Giraud's (aka Moebius) art into Jodorowsky's universe, evoking the French artist's participation in Jodorowsky's adaptation of *Dune* (1974-1976), a project never filmed.

In the course of this article, Johnny Darrell's simulation provides a case study that illustrates the idea of *the end of reality*: just as Mark Langer suggested in 2001, movies and animation share so many means that they can no longer be defined as opposites to

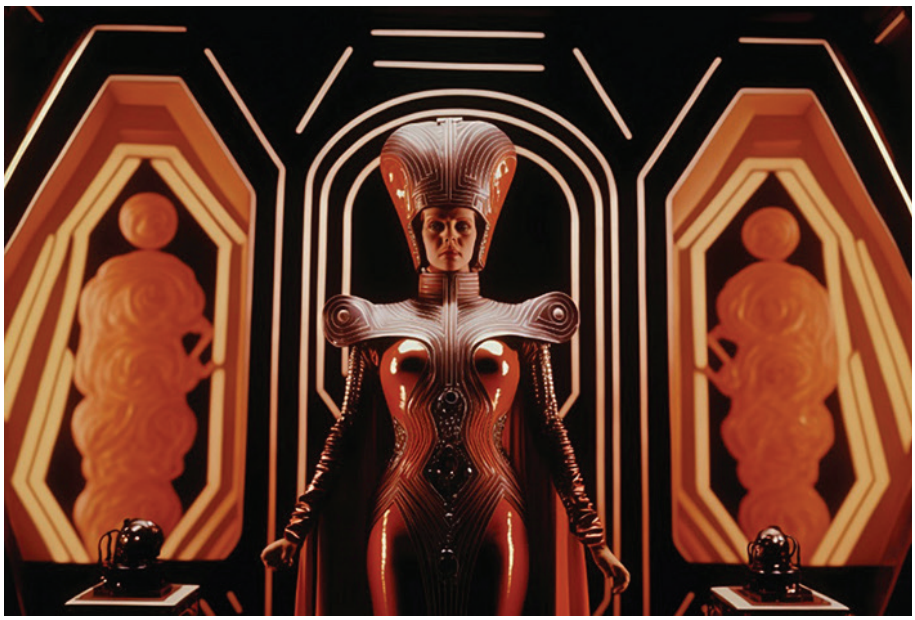


Figure 1. *Jodorowsky's Tron*. Johnny Darrell and Midjourney, 2022. Source: https://www.johnnydarrell.com/jodorowskystron?fbclid=IwAR1OzqA-BUP-2tNuYhbDBCtBM8I_Gi_aIVxUK1X8yOjXr64MI2XWM7d0zY7M

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each other — what would hypothetically lead to the end of the history of animation —, AI-generated images propose a new scenario of what is real that will gradually cease to oppose its simulation, forcing us to redefine our structure of reality.

2. Animating technologies

This is also an essay about unexpected convergences.

If Steven Lisberger's *Tron* was a milestone for incorporating computer graphics into cinema to recreate the inner world of a computer, *Jodorowsky's Tron* is paradigmatic because it allows us to glimpse how AIs imagine their native environment.

At its release, *Tron* elaborated on one of the key elements facilitating users' interactivity with computers: videogames. The possibility of participating in a graphic story, driving a character, or overcoming an intelligence challenge redefined how we relate to a technology that soon shared with us the domestic sphere.

Tron also evoked the paradigm of the origin, the foundational milestone that led to the implementation of digital technology in cinema, although not even the filmmakers themselves believed in its continuity. In an interview with *Metal Hurlant* magazine, Steven Lisberger expressed his reluctance to accept that *Tron* could change the way movies were made at the time: "It was said very lightly that this film was the first in a series of computer animations... I don't think so at all. *Tron* is and will remain unique" (Manoeuvre 1983:48). For a couple of decades, Lisberger's skepticism proved to be correct: as Andrew Housman (2023:s/p) describes, while another landmark film in techno-fantasy cinema featured a mere 40 seconds of CGI – *Star Wars IV: A New Hope* (George Lucas, 1977) – and a later movie as praised as *Terminator 2*: *The Judgement Day* (James Cameron, 1991) had up to 5 minutes, in *Tron* there could be seen up to 15 minutes of film involving computer-generated visual effects. Undoubtedly, the fact that *Tron* had a very lukewarm critical and public success at the time of its release – in relation to its production costs – meant that its immediate influence was scarce.

In addition, *Tron* remained unique in its genre because Hollywood was slow to manage the film's innovative character and acknowledge its legitimacy. In 1983, *Tron* was nominated for the Academy Award for Best Costumes and Best Sound but was disqualified for the Best Visual Effects category because, according to Lisberger, using computer effects was considered "cheating" (Housman 2023:n/p), even though the vast majority of visual effects present in the film were analogical – the same effects for which the Academy had previously awarded prizes.

Currently, many film festivals are disqualifying films for using AI in their production. In contrast, others try to regulate its use by quantifying the percentage of the movie in which it is used, deriving its participation into specific categories. Clearly, AI will not only transform our vision of art and the artist – as when photography emerged –

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but will also demand regulation and criteria to value the art that comes from a machine. Although it is not the only automatic-learning-based image generator, Midjourney has become one of the most representative AIs, together with DALL-E and Stable Diffusion (Wankhede 2024). Midjourney was in closed beta for months until a public beta that began in July 2022 granted access to other users.

Artificial intelligence can create digital art in seconds, using just a few words describing the desired image. Midjourney is an example of generative AI capable of transforming words into images, known as 'text to image.' This process is based on two learning technologies: firstly, 'language models' are based on words, and the first learning technology allows it to understand the concepts introduced as prompts. Once this prompt is converted into a numerical vector, another complex process begins, guided by the second learning technology used by Midjourney: 'diffusion.' In a diffusion model, the computer gradually adds random noise to its image-training data set until it learns to recover the original image by inverting the noise. Calvin Wankhede describes it using the following terms:

> When you enter a text prompt like "white cats set in a post-apocalyptic Times Square," it starts off with a field of visual noise. You can think of this first step as equivalent to television static. The image doesn't look like anything you've asked for at this point. However, a trained AI model then uses latent diffusion to subtract the noise in steps. Eventually, it will yield a picture that resembles objects and ideas in the real world. (2024:n/p)

In a way, the rough process with which Midjourney generates the images, *finding* them in the machine's noise, the world's noise, and the internet's bustle, is by itself an animation process that feeds back on the digital image itself. Digital art, in the Internet era, is conditioned by *hypermediation*: the "processes of exchange, production and symbolic consumption that take place in an environment characterized by a large number of subjects, media and languages technologically interconnected in a reticular way with each other" (Scolari 2008:113). Nowadays, this condition of digital interactivity has made creating elements from scratch an exception because, as a rule, we start from existing material; in this way, artistic creation is fed on the image, digitized, and transformed into pixels.

Consequently, media content – none other than the content with which AIs work – has become "much more self-referential because, when all objects are designed, stored and distributed using a single device, it becomes much easier to appropriate the objects that are already there" (Venegas Ramos 2023:68). This situation is what facilitates the bloom of crossover contents in AI art: through the premise "what if?", what is privileged in digital art is the playful exchange between different artistic and cultural legacies.

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3. The memory of discarded futures

Isaac Asimov's science-fiction story *The Death Past* (1956) posed the existence of a machine that enabled the visualization of scenes from the past, although its range was barely more than a hundred years in time. However, this machine hid the danger of a voracious addiction: that of abandoning oneself to the contemplation of a more recent past, as in a television, seeking refuge in the memory of better times. By ingesting existing data, the AI machine re-animates what we consider history and contributes to its re-reading.

On November 23, 2022, Johnny Darrell first published a collection of 38 images under the slogan: *Walt Disney presents Jodorowsky's Tron*.[3] Two days later, he released his second collection, Jodorowsky Tron 2.[4] Both series of pictures had a significant impact, even on an audience that was not particularly familiar with new technologies. Darrell's work caught the attention of the international press and boosted the production of new collections that fed on nostalgia and cinephile mythomania.



Figure 2. *Terry Gilliam's Little Nemo in Slumberland*. Bruno Samper and Midjourney, 2022. Source: https://www.facebook.com/groups/officialMidjourney/permalink/455451300079773/

In the weeks following the publication of Johnny Darrell's *Jodorowsky's Tron*, it was possible to find numerous series of images presented in deliberately hazy terms as if they were photographs of failed shoots and yet, desirable to our imagination: for instance, a *Little Nemo in Slumberland* directed by Terry Gilliam (Bruno Samper, 2022),[5] or a film that resembles *Hellraiser* (Clive Barker, 1987) as if it had been conceived by Fritz Lang back in expressionist Germany (Dekomposer Artz, 2023).[6] Sometimes, it was possible to provide some movement to the images, suggesting head turns and facial expressions, such as those seen in the fake trailer of *The Lord of the Rings* directed by Wes Anderson (Curious Refuge, 2023).[7]

[3] Available in : https://www.johnnydarrell.com/jodorowskystron?fbclid=IwAR1OzqABUP—2tNuYhbDBCtBM8I_Gi_aIVxUK1X8yOjXr64MI2XWM7d0zY7M
[4] Avaliable in: https://www.facebook.com/groups/officialMidjourney/posts/454166656874904/?mibextid=HsNCOg
[5] Available in: https://www.facebook.com/groups/officialMidjourney/permalink/455451300079773/
[6] *Hellraiser Metropolis 1927 Inspired | Fritz Lang* (https://www.youtube.com/watch?v=FG2yPibwDYk).
[7] Lord of the Rings by Wes Anderson Trailer | The Whimsical Fellowship (https://www.youtube.com/watch?v=KrjL_TSOFrI).

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Pictures that bring up a hypothetical past or reinvent existing imagery have been anticipated by photomontage and by the artistic interpretation that feeds on the idealization of the past – for example, Pre-Raphaelitism or even the Italian Renaissance. However, it has expanded considerably in the digital world as a phenomenon. A distant relative of these Midjourney collections is worth mentioning: the *mondo* posters, which are the creation of classic cinema posters or popular films by contemporary artists. The idea of offering an alternative vision of the film became seminal for some creators, such as Peter Stults, who published in the 2010s several collections of posters under the slogan *"What if..." Movies reimagined for another time & place...* His poster designs of contemporary films, mischievously disseminated through blogs and websites, suggested alternative casts and directors as if they had been shot in another era:[8] for instance, how would *Groundhog Day* (Harold Ramis, 1993) have looked like if it had starred Peter Sellers in the 1960s? Or would it have been possible to see a young Natalie Wood in a vintage version of *Avatar* (James Cameron, 2009)?

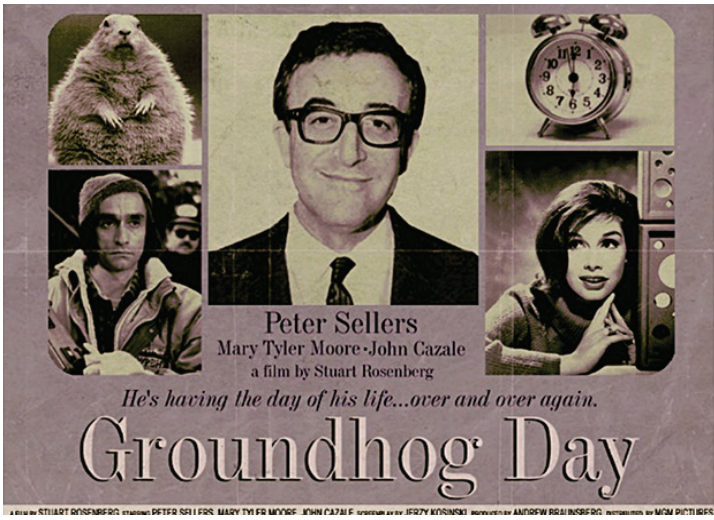


Figure 3. *"Groundhog Day" What If…? Poster* © 2012 by Peter Stults. Source: https://www.behance.net/gallery/2783319/What-if-Movies-reimagined-for-another-time-place

Digital art has encouraged new readings of the past, which materialize through *remediation*: the reuse of previous content (more aggressive in digital than in analog media), the creation of *retroplaces* (stereotypical images that embody the spirit of an era for the public); the *pastiche* (the collection of media content superimposed in layers, such as mosaic, collage or photo-bashing); and the production of *ectypes* (a replica taken from the archetype, but never original or authentic). The relationship of indexicality that the photographic image had to reality disappears when it is combined and superposed with other images, aiming to provide verisimilitude – the quality of seeming real – to what is represented to favor the immersion of the spectator (Venegas Ramos 2023:52). Remediation connects deeply with those non-existent versions of films that, however, invite us to dream.

We can return to Peter Stults' photomontages to illustrate the impact of remediation: because of their graphic style, many of these designs could have been made exclusively by analog means such as collage; however, the conceptual process that these images contain, which has to do with uchrony, is attained by the reuse of contents previously available on the net.

[8] First collection published in 2011, available in: https://www.behance.net/gallery/2783319/What—if—Movies—reimagined—for—another—time—place

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The ectype, of which Deepfake is an example (when the image of a person is used to generate an image that pretends to be real) conforms, in Venegas Ramos' opinion, "a new historical realism completely photorealistic that questions what we consider real or not. In fact, there are many who have seen this technology as a threat" (2023:73-74). Ectype, which refers to the copy extracted from a relief mold or the impression left by a stamp, is a term coined by Luciano Floridi to describe a kind of copy with a unique link to the original, although it is not authentic. Taking a case study as a starting point, *Microsoft's Rembrandt* – a portrait of the Dutch master digitally extracted as an average of all his known portraits – can establish two classes of ectypes, taking into consideration their relation to their source: ectypes that would be 'authentic' in style and content, but not 'original' according to their archetypal source; and, on the contrary, there are ectypes 'original' in style and content, but not 'authentic' concerning their source: "In other words, ectypes can be authentic but unoriginal artifacts, like Microsoft's Rembrandt, or inauthentic but original artefacts" (Floridi 2018:319). An ectype that is original in style but inauthentic would be *JFKunsilenced* (2018): the synthesized voice of John Fitzgerald Kennedy's reading the speech he was scheduled to deliver on the very day of his assassination in 1963; although the *content* of the speech is genuine, the *form* – JFK's voice – is inauthentic.

Sergio Martínez Luna describes the Barthesian dialectical image as essentially different from the historical image: "the dialectical image disrupts the present because it makes unclosed pasts and discarded futures penetrate it [...] it is not the death of the image, [...] but the re-emergence of other histories and other lives of the image." (2019:136-137). To sum up, AI art poses dilemmas that are related to the rewriting of non-occurring pasts. When digital artists propose these apocryphal versions of films, remakes, crossovers, or interrupted shootings, they throw a stone into the pond of the collective imaginary that generates a fascinating mirage: that of reanimating the memory of discarded dreams.

4. *Jodorowsky's Tron*: an analysis

Jodorowsky's Tron is not a film, and it is not by Alejandro Jodorowsky. It does not even articulate a narrative. Instead, it is an unstructured image set that revolves around specific iconographic and aesthetic motifs. What these images suggest is more important than what they contain. Nevertheless, they conjure up something that demands analysis.

What role would Jodorowsky play as the conceptual axis of this simulation? We must deduce that it is related to the cursed aura surrounding the Chilean director in Hollywood, which provides the excuse for creative speculations of all kinds. Besides, the link between *Tron*'s and *Dune*'s universe is none other than the

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common participation of the artist Jean Giraud "Moebius" in its design. When Moebius was asked about *Tron*, a film for which he designed storyboard and costumes, the Frenchman replied: "*Tron* is a mythical universe where a rather classical story is told" (Manoeuvre 1983:51). In fact, the cosmogony from Disney's *Tron*, with its social structure, its power struggles, its initiation rites and messianic dimension, is comparable to the conflicts found in *Dune*.

Frank Pavich wrote an opinion article for *The New York Times* based on *Jodorowsky's Tron* entitled "This Film Does Not Exist." In a tone reminiscent of Maxim Gorky's mythical 1986 chronicle when he first contemplated the cinematograph –"Last night I was in the Kingdom of Shadows" (quoted in Cholodenko 2013:99) – the article starts with a feeling of disbelief and estrangement towards the images:

> I was recently shown some frames from a film that I had never heard of: Alejandro Jodorowsky's 1976 version of *Tron*. The sets were incredible. The actors, unfamiliar to me, looked fantastic in their roles. The costumes and lighting worked together perfectly. The images glowed with an extravagant and psychedelic sensibility that felt distinctly Jodorowskian.
> However, Mr. Jodorowsky, the visionary Chilean filmmaker, never tried to make *Tron*. I'm not even sure he knows what *Tron* is. And Disney's original *Tron* was released in 1982. So, what 1970s film were these gorgeous stills from? […]
> The truth is that these weren't stills from a long-lost movie. They weren't photos at all. These evocative, well-composed, and tonally immaculate images were generated in seconds with the magic of artificial intelligence. (Pavich 2023:n/p)

Significantly, the author of this chronicle, Frank Pavich, was the director of *Jodorowsky's Dune* (2013), a documentary about Jodorowsky's project on Frank Herbert's saga that never got into a film.[9] After the success of *La montaña sagrada* in 1974, the Chilean filmmaker undertook with French producer Michel Seydoux an arduous task to design the project, in which he invested approximately two years of working together with those he called his "spiritual warriors": the designers Moebius, Christopher Foss or H. R. Giger, and special effects artist Dan O'Bannon; Orson Welles, David Carradine, Mick Jagger and Salvador Dalí also signed up to be part of the cast, while Pink Floyd would have composed the soundtrack. Expectations could not have been higher.

[9] Available in: https://www.youtube.com/watch?v=AfJi2sfduqk

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However, Jodorowsky never filmed *Dune*. In his own words, "Dune was the arrival of an artistic and cinematographic god. For me, it was more than a film; it was a sacred object, free, with new perspectives, because I felt like I was in prison at that time" (quoted in Pavich 2013:0:03:31). He wanted to carry out the book's prophecy and change the world, sharing with the audience a ten-hours long film that would provide the same hallucinogenic sensations as LSD (idem:1:12:32), which was considered unfeasible by Hollywood producers. In Jodorowsky's opinion, his project "was French and not American. Its message was not 'quite Hollywood'" (1984:39). Ironically, during the following years, the designs and storyboards made by Jodorowsky's team became highly influential to the development of science fiction films during the 1980s, to the point that emblematic movies such as *Star Wars. Episode IV - A New Hope*, Ridley Scott's *Alien* (1979) – with designs by Moebius and H.R. Giger – or also Scott's *Blade Runner* (1981) showed how much Jodorowsky's Dune art book inspired them.

Jodorowsky hints at the key to its influence at the crossroads between science fiction and fantasy cinema in the late seventies: "The project taught Americans the possibility of making science fiction films on a large scale and outside the scientific rigor of '2001 Space Odyssey'" (1984:39). The setback experienced with *Dune* was balanced by two comic book sagas written by Jodorowsky: *El Incal* (1980-1988), designed by Moebius; and *La casta de los megabarones* (1998-2003), which the Chilean began with Juan Giménez. Ironically, while David Lynch's subsequent *Dune* (1984) became a commercial failure, Jodorowsky's shadow has lengthened to the present day: now Frank Herbert's saga has returned to the big screen, and Hollywood is planning to film *El Incal* (Bas 2024:n/p). In the opinion of filmmaker Richard Stanley in Pavich's documentary, "It [Jodorowsky's *Dune*] will forever be the greatest film never made because it exists solely in our imaginations" (2013:0:06:15).

Johnny Darrell's approach to Jodorowsky is not an isolated event in the hypermediated AI universe. Just a month earlier, on October 23, 2022, an anonymous author posted on YouTube a video montage from images synthesized with DALL-E and Stable Diffusion, showing realistic snapshots of the cast planned for *Dune*, with dresses, props, and sceneries alike to the artbook designs.[10] In addition, just one day after the publication of *Jodorowsky's Tron 2* on Midjourney's Facebook, Bruno Samper shared his version of the galactic epic generated by Midjourney, whose visual appearance was significantly closer to the vision that the same generative AI had offered of the hypothetical *Tron*.

In January 2023, when asking an AI (ChatGPT) about what the movie Tron would have been like if Alejandro Jodorowsky had directed it, I received the following answer:

[10] Available in: https://www.youtube.com/watch?v=qShRMiUggKE

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Tron is a science fiction film directed by Steven Lisberger and released in 1982. It is known for its innovative visual effects and its subject matter related to the digital world. The question of what *Tron* would be like if directed by Alejandro Jodorowsky is purely speculative, as Jodorowsky has a distinctive and unique style that differs significantly from the approach of Steven Lisberger, who directed the original version of *Tron* in 1982. Jodorowsky is known for his surreal, symbolic, and often experimental approach to filmmaking. His earlier films, such as *El Topo* and *The Holy Mountain*, are notorious for their unconventional storytelling and striking imagery. Had Jodorowsky directed *Tron*, we might expect a very different interpretation of the story, with visual and narrative elements that align with his distinctive artistic style. He might have explored more philosophical or esoteric themes, and the film would likely have had a unique production design and art direction sensibility.



Figure 4. *Jodorowsky's Tron 2*. Johnny Darrell and Midjourney, 2022. Source: https://www.facebook.com/groups/officialMidjourney/posts/454166656874904/?mibextid=HsNCOg

ChatGPT's response is thought-provoking since it does not point to anything concise, yet the set of images proposed by Johnny Darrell describes a very specific world. The simulations refer to a 1970s sci-fi imaginary environment that takes geometric patterns from a vintage era with pop resonances – as could also be seen in some environments of another stylized film, *A Clockwork Orange* (Stanley Kubrick, 1975) –intertwined with aspects of dystopian cinema, such as the limited and cold chromatic range or the computer technology scenarios that today we feel obsolete, like *The Andromeda Strain* (Robert Wise, 1971). On the other hand, the settings are eerily imbued with the most modern possibilities of imaging technology, such as the visual effects used to recreate the computer world in *Tron*: *Legacy* (Joseph Kosinski, 2010) – but very little of the visual effects in Steven Lisberger's *Tron*. Pavich describes Darrell's proposal as follows: "The software gives you a kind of turbocharged pastiche. But there's still some fresh splendor in that imitation. It's succeeding at one of filmmaking's main jobs: transporting you to another time, to another world" (2023:n/p).

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Moreover, the aspect that can be identified as most Jodorowskian comes from details akin to the director of *El Topo*. In fact, Darrell proposed this *Tron* as it was dated in 1976, the year when Jodorowsky's *Dune* was canceled (Bas 2024: n/p). ChatGPT's suggestion about exploring more philosophical or esoteric themes is hinted at in some images when the machine operators in Darrell's images are vaguely characterized as if they were monks or members of a sectarian cult. The symmetrical compositions, the hyperbolic costumes with spherical crowns – an evident wink to the initiatory eye in *The Holy Mountain* – or the tall wide-brimmed hat, the portrayal of characters as archetypes and, in general, the creation of an unreal and hypnotic space that is assumed to be the inner world of the machine as a metaphysical universe, are related to the Chilean filmmaker's imaginary to a certain extent. As Pavich points out, the AI artist determined the prompt, but "the creativity bubbled out of the machine":

> When Mr. Darrell generated these images, he didn't choose the colors, the framing, or what the characters would be doing. He also didn't determine some of the other choices that the A.I. program assimilated from 1970s science fiction: the seemingly all-white cast and the vintage gender roles. Whatever he might have had in his mind's eye was not what he was going to get. He needed to state his prompt cleanly and clearly. (2023:n/p)

Significantly, each image from *Jodorowsky's Tron* is purged of the obscene and transgressive elements from Jodorowsky's films; instead, they are conveniently aseptic and stylized. Perhaps the machine takes more into account that *Tron* is a Disney film than a potential Jodorowskian theme, so it avoids any allusion to the physicality that fascinates the Chilean so much: the effluvia of the body, putrefaction, mutilations, congenital malformations, sex, etc.

Or maybe not. The AI deliberately excludes the visceral part of Jodorowsky's style during the 1970s because this is also absent from another AI simulation, this one based on an existing work by the tarot reader: *Holier Mountain* (1975), an alleged sequel to *The Holy Mountain* designed by Martin Lien and published on December 4, 2022,[11] which essentially responds to the same aesthetic patterns that unfold in *Jodorowsky's Tron*.

Pavich denies Darrell the rank of the creator. Generating is different from creating. Although Midjourney provides control over many variables, the case study offers sad evidence: the hypermediated image needs to be harmless, emptied of any countercultural nuance, because it is mainly based on what can be found on the Internet, on what can be shared (and published).

[11] Available in: https://www.facebook.com/groups/officialMidjourney/permalink/460589052899331/

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Figure 5. *Holier Mountain (1975).* Martin Lien and Midjourney, 2022. Source: https://www.facebook.com/groups/officialmidjourney/permalink/460589052899331/

5. Discussion: the end of reality

Jodorowsky's Tron was the starting point for reflecting on which direction to take. The emergence of digital animation at the turn of the century was another such watershed.

At the 2001 Society for Animation Studies conference, Mark Langer delivered his proceeding "The End of Animation History," a provocative reflection on digital animation in which he postulated that we had hypothetically reached the end of animation's history as it was defined in opposition to live-action cinema. In 2001, digital cinema had already given birth to works such as *The Matrix* (Wachowski Sisters, 1999), in which digital animation effects became the standard in major Hollywood productions. If, ultimately, live-action film – becoming less and less live-action – and animation cinema can no longer be separated as they had traditionally been, in opposition to each other, then the history of animation as a distinctive way of generating moving images – frame to frame – or as a unique way of suggesting what cannot be suggested by other means, had ended (Langer 2002:8). The author notes: "Rather than reveling in its own illusory nature, much animation now seeks to make the illusory "real" – in other words, photoreal animation is indistinguishable for the overwhelming majority of viewers from live-action cinema." (ibid. 9)

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Langer coined his hypothesis taking from Francis Fukuyama's book *The End of History and the Last Man* (1992), which developed about the interruption of the historical process at the end of the Cold War – after the collapse of the Soviet Union and the dissolution of rivalry between opposing ideological blocs. In turn, Langer also considered Samuel Huntington's response to Fukuyama in his book *The Clash of Civilizations and the Remaking of World Order* (1996), where it was pointed out that historical conflicts do not take place between ideologies but between civilizations and that in the future, the battlefield will be between identities.

Taking this idea of historical conflict to how animation and cinema have traditionally been defined – "Liveaction is 'not-animation,' and animation is 'not-liveaction' (ibid. 9) – Langer describes how these polarized definitions leave a wide gray area behind in which, by technological means, animation is also real image, and real image is *also* animation, such as rotoscoping or photocomposition, until both media have become digitally imbricated.

In other fields of discussion, such as photography, experts agree that the indexicality of photography fades out when it is transformed into pixels (Martínez Luna 2019:20-21). On the contrary, media, as evidently graphic, such as cartoons, are now available to documentary cinema because, as soon as photorealistic images have seen their credibility eroded, animation finds a larger room in the realm of non-fiction film (Ehrlich 2024:19).

Moreover, this ontological shift in a genre devoted to objective reality reveals that we increasingly tend to describe reality in terms of fiction. In a trial, we listen to the *narratives* of each part; in describing a conflict, we speak of *actors*; and when we foresee possible situations, we call them *scenarios*. The hypermediated digital world has boosted this fluent exchange between reality and fiction.

At the same time, as Langer already commented 23 years ago, "Animation is on the verge of being able to both perfectly simulate the reality of live-action AND to make that which cannot be expressed in live-action real." […] "(and I believe that true photo-real animation is just around the corner)" (ibid. 10). Nowadays, that space for simulation has been occupied by AI, which technological DNA announces how it will animate the future. But this may also be the end of art history, or even the end of humanity's history, if what we take into consideration to define humanity as opposed to machines is our creative capability.

At the turn of the century, Langer pointed to a myriad of film titles such as Christopher Nolan's *Memento* (2001), Peter Weir's *Truman's Show* (1998), David Fincher's *Fight Club* (1999), and *The Matrix*; films that depicted the identity crisis of individuals who are confronted to an ambivalent scenery. As Langer points out, not all these films contained hyperrealistic digital effects. However, many of these relied on them – which, over time, have become a constant in the films of Fincher or Nolan. As well,

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many films of today develop anxiety towards a kind of technology that threatens to replace us, such as Ari Folman's *The Congress* (2013), *Ex Machina* (Alex Garland, 2014), *M3gan* (Gerard Johnstone, 2023), *Blade Runner 2049* (Denis Villeneuve, 2017) or even *Wall-E* (Andrew Stanton, 2008). A crumbling structure of reality becomes evident from a fiction that questions itself, which exposes its limits. Virtual reality, augmented reality, the metaverse, Snapchat filters, and *Pokemon Go!* have only been mere tests. The simulation begins now.

Langer could not end his article without first approaching the scenario that, 23 years later, is happening every day: "But now, we are at a point where the animated image and the spectator are beginning to merge" (ibid. 11). Langer depicts how conversational programs, such as Microsoft's Cartoon Chat, allowed the users to become avatars and talk to each other through graphic signs and comic strips. Although Langer is talking about the interactivity of social networks and online video games released 20 years ago, he anticipated the possibility that a user, *any user*, generated graphic art in conversation with a robot.

And that *its* reality was as strong as yours.

That is what *Tron* was about, and that is what Midjourney has reminded us with *Jodorowsky's Tron*.

6. Conclusions

AI simulations such as *Jodorowsky's Tron* prove the need to evolve human thought to value the art produced within a machine. On one hand, for Frank Pavich, the art designed for Jodorowsky's *Dune* required mastery of drawing and painting techniques, while for the documentarian, it was the AI who did all the work in *Jodorowsky's Tron* (2023: n/p). On the other hand, for Dalí – in his essay "Photography, Pure Creation of the Mind" (1927) – machines free artists from physical limitations and open the possibilities of the imagination:

> When hands cease to intervene, the mind starts to know the absence of murky digital flowerings; inspiration is extricated from the technical process, which is entrusted solely to the unconscious calculations of the machine. […] New organic possibilities of photography! […] grasping the most subtle and uncontrollable poetry! (Dalí quoted by Pou van den Bossche, 2023: 19)

AI art extends the idea of the readymade that the surrealists advocated for, whereby *anyone* could be an artist. The capabilities demonstrated by generative AI, particularly Midjourney, open up a stimulating landscape where users, regardless of their technical ability, can visualize the ideas they have in mind. This does not necessarily

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displace the work of creative roles such as visual development or storyboard artists. Still, it does shorten the process of bringing a project to fruition, providing preliminary concepts, and facilitating workflow with the creative team.

We are only at the dawn of a new form of artistic expression: the audiovisuals edited from AI simulations do not yet reach the category of films because there is no structured narrative behind them, although this does not prevent us from thinking that one day we may take an existing or barely sketched script and shape it in a completely autonomous way. This possibility would not only reformulate the production of images but also their consumption, which, in fact, is already taking place.

Even though the simulations that make up *Jodorowsky's Tron* do not navigate deeply into the philosophy of the Chilean filmmaker, they allow us to (re)imagine a world populated by characters who face not only existential but spiritual dilemmas, going beyond the mere doubt with Cartesian echoes that could be heard in Lisberger's Tron: "Do you believe in the users?" The world of the machine, as an inner universe that reflects the world of the mind, offers a particular connection with the abstract spaces in which Jodorowsky's more metaphorical fictions unfold. However, this idea needs some clarification: the encrypted world of the computer is not the cryptic world of the psychomagician. The difference in meaning is enormous.

As we have seen in the case study, the algorithm does not interpret the artist's intentions but rather the material known and available to all. How Jodorowsky's work was selected, absorbed, and reinterpreted by the science-fiction filmmakers who followed him is essentially different from how the computer ingests and metabolizes his images. As Pavich suggests, "influence is not the same thing as algorithm." (2023:n/p). As aforesaid, with AI, any person can be an artist, but not just like any artist.

It could be discussed that the balanced statism in *Jodorowsky's Tron* staging, their *tableaux non-vivants*, not only obey the coldness with which the AI imagines its native environment – which, as in the Disneyan *Tron*, is visualized in a polished, stylized way – but a symptom of an art that is contemplating its birth, more alike to a wax museum than to the moving cinematograph that causes the same surprise as automatons and talking dolls and that, as Maxim Gorky would have said, "It is not life but its shadow, it is not motion but its soundless specter" (quoted in Cholodenko 2013:99). A silent specter, motionless but at the same time animated, neither alive nor dead, which leads us to the idea of the simulacrum:

> Suggesting that there is always something 'inanimate' in animation and vice versa. What returns as the return, the automaton, neither (completely) dead nor (completely) alive, both alive and dead at the same time, is of the order of the simulacrum […] – the illusion of life and the life of illusion. (Cholodenko 2007:503-504)

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One last remark by way of epilogue: in 2013, Jodorowsky cried out before the Dune art book, "If I die, they can take this book and turn it into animation" (Pavich 2013:1:25:42). In January 2022, a group of cryptocurrency investors, under the common name TheSpiceDAO, acquired one of the original art books for the sum of $2,9 million to produce NFTs from it, burning the physical copy and lately producing an animated film for which they went on to raise $12 million (Westenfeld 2022: n/p). However, the initiative has led them to economic ruin and the dissolution of the group since they acquired the copy believing that, with it, they also acquired its copyright: they did not understand that, by buying the object, they did not automatically own the rights to produce and sell the film. The misunderstanding contains a profound irony that only provides evidence of the progressive fictionalization of reality: "In *Dune*, Herbert envisions a world without computers; as the lore would have it, "thinking machines" were once mankind's greatest adversary. Maybe Herbert was onto something there?" (ibid.).

Will AI be able to carry out the visionary dreams of Jodorowsky, Orson Welles, and Oskar Fischinger, materializing their canceled projects that did not find a place in the reality of their time? Maybe one day, the version of Dune envisioned by Jodorowsky and his "spiritual warriors" will become a reality, but what is certain is that human beings will not be able to see it without an adequate ability to think.

SPECIAL MENTION
to Enrique Millán Almenar, who nurtured this article with his dialogue and curious collecting.
Translated by José David Losada.

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A semiotic framework for understanding abstract animations

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ABSTRACT

This paper presents a novel framework for understanding and analyzing semiotic processes in abstract animations. The framework builds on predictive processing, a paradigm in cognitive neuroscience proposing that perception, and consequently action and interaction, involves the brain making multi-level and parallel predictions of potential sensory data and then modifying the predictions based on the actual data received. Building on this approach, we use embodied simulation theory to explain how humans comprehend animations (or any other stimuli) in general and, in our case, abstract animations in particular. According to this theory, humans generate several potential simulations of how we would bodily and actively respond to the given stimuli. For example, when we see a cup (or a picture of a cup), the generated simulations involve our motor circuitry in a way similar to if we would actually reach out and grasp the cup (cf. Gibson's affordances). Next, we use conceptual metaphor theory and the notion of image- and motor-schemas to explain how the motor simulations activate more abstract metaphoric, but still embodied, interpretations of the animation sequences. We explain how this semiotic chain supports the Waltonian mimesis as a make-believe theory of fiction. Finally, the paper uses the proposed framework to analyze three prize-winning abstract animations by Max Hattler. The analyses demonstrate the framework's crucial features and provide examples of how to use the framework for concrete semiotic analysis of animations.

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1. Introduction

Abstract animations represent a unique and complex form of artistic expression that challenges conventional narrative and perceptual paradigms (Gascard 1983). This paper proposes a theoretical framework that integrates cognitive and aesthetic theories to explore the semiotics of abstract animations. By weaving together predictive processing, embodied simulation theory, conceptual metaphor theory, and Walton's mimesis as make-believe theory, we aim to provide a comprehensive framework to analyze and understand the semiotic processes underlying abstract animations. This framework enables a deeper analytical engagement with abstract animated art, making it a fertile ground for practical semiotic analysis.

Abstract animations eschew traditional representational forms, instead employing non-representational, often kinetic visual elements that engage viewers in ways distinct from conventional cinematic experiences. These animations construct experiential spaces that invite viewers to interpret and interact imaginatively (Hattler and Cheung 2024). The complexity and dynamism inherent in abstract animations make them ideal subjects for exploring the advanced cognitive functions of prediction, simulation, and metaphorical thinking.

Predictive processing, a central concept in our framework, posits that the brain functions as a prediction machine, continuously generating and refining hypotheses about incoming sensory data to minimize errors between expected and received inputs (Clark 2015; Hohwy 2020). This approach highlights how viewers engage with abstract animations, anticipating and interpreting visual narratives even in the absence of recognizable objects or scenarios.

Embodied simulation theory (Gallese 2011) complements predictive processing by emphasizing that these interpretations are both cognitive and bodily. According to this theory, viewers engage with animations by internally simulating physical and emotional responses, thus experiencing the visual stimuli in a profoundly embodied way.

Conceptual metaphor theory (Kövecses 2016) extends the cognitive engagement with abstract animations by suggesting that our understanding of abstract concepts is fundamentally rooted in physical, bodily, and concrete experiences. Through metaphorical extensions, viewers use embodied knowledge to interpret the abstract visual elements of animations, mapping familiar sensory experiences onto novel visual scenarios.

Kendall Walton's (1990) proposal of mimesis as make-believe provides a framework for understanding how abstract animations function as 'props' in imaginative activities. This theory helps explain how viewers participate in a dynamic game of make-believe, where meanings are actively constructed rather than passively received. Thus, abstract animations are not just viewed but interacted with, as viewers generate personal and often varied interpretations of what they see.

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Semiotics provides a theoretical backdrop for analyzing how meaning is constructed and interpreted in abstract animations. The semiotic analysis of animations examines how visual signs (shapes, colors, movements) function as aesthetic elements and carriers of meaning, engaging viewers in complex interpretative processes. By applying a semiotic approach, we can dissect the layers through which abstract animations signify and influence viewer experiences, invoking both cognitive processes and emotional responses in the meaning-making process.

This paper will detail these theories and their interconnections, applying them to analyze three prize-winning abstract animations by Max Hattler. Through this analysis, we will demonstrate how these theoretical frameworks can deepen our understanding of abstract animations and suggest broader implications for how we perceive and interpret dynamic visual media in contemporary digital culture.

2. Literature review

2.1. Definition of abstract animation

Ehrlich proposed that "Animation's constructedness and break with naturalistic representation and visual 'realism,' which since the mid-19th century has been applied to art that aims to reproduce nature and humanity without any ideal, theological determinations or preconceived notions" (2011: online). Yet, such non-representational styles embody the essence of artistic creation, the process of abstracting things. In this process, prominent elements in the scene are emphasized more than non-prominent ones. Abstract art emphasizes the distinction between essence and form, presenting a sensibility that transcends language and culture (Walls 2016). Correspondingly, animation is a structuralist symbolic representation that can effectively extract and exaggerate the characteristics of objects. Abstraction is essential in animation representation because it simplifies and abstracts visual effects, forming a language of visual symbols.

From the early days of animation until now, the relationship between abstract design and animation has been inseparable. According to Jenkins (2016), excessive character design can make animation too realistic, losing its magic – its variability. However, if too few moving lines are used, it is impossible to create a character with a unique personality, which fails to evoke audience identification and sympathy. So, balancing the realism and abstraction of character design has always been one of the conditions that animation creators need to consider in the creative process. In animation production, most directors strive to exaggerate and abstract objects to create their unique animation styles. Abstract representation in visual effects is one of the essential forms that distinguishes animation from movies in the traditional sense. As a style of art, it has been continuously discussed and innovated in the development of animation. According to Wells (1998), in the book *Understanding Animation*, the

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core feature of animation is its ability to give life, that is, to animate static images and make them vivid. Due to the traditional hand-drawn craftsmanship, early animations tended to depict simple shapes and movements frame by frame, unable to smoothly display the movement process of highly detailed shapes. During this period, animation was called graphic narrative, where moving lines were considered animated characters. Characters' movements were exaggerated to create a more dramatic effect. This performance style defied the laws of physics because the animation was done by drawing on paper or combining different layers of celluloid. Felix the Cat cartoons are a perfect example of graphic narrative, particularly in depicting moving lines on a flat page. (Jenkins 2016). However, even with the ability of computer graphics technology to render entirely realistic scenes, many abstract animation works are still being produced.

The development of animation has reached a point where styles are no longer distinguishable through a single and absolute definition. The typical characteristic of abstract animation is the lack of narrative, expressive, or causal elements. Abstract animation contrasts sharply with traditional animation genres, moving images for the sake of moving images (Walls 2016).

2.2. **Animation as a fusion of film and painting**

The emergence of abstract animation was aimed at adapting to the era of accelerating movement, reflecting the "kinetic urge" (Gascard 1983). This form of animation, based on abstract painting, incorporates the element of time, allowing viewers to see the changes in shape produced by the movement of objects. The birth of film art precisely addressed the artists' desire to express time. Gascard (1983) states that painting and film intersect and theoretically promote each other's development. However, they each have their limitations. Painting cannot escape the constraints of the plane to express space and time. At the same time, the film cannot transcend the existence of objective reality to satisfy the demand for formalized geometric artistic styles. The existence of animation solves this problem by integrating the two. Compared to traditional film, animation has abstract characteristics and increases the variation of time compared to painting.

The relationship between animation and film has always been a subject of discussion. If animation and live action are considered as two ends of a spectrum, one can use 'abstraction' and 'mimesis' to define their characteristics. Still, this relationship is relative rather than an absolute distinction. In other words, a work can be more abstract or more mimetic (Furniss 2008).

Abstraction in animation allows for more freedom in visual expression than in film. In animation, creators can design characters in various styles and make them

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move freely. Many artists in animation tend to break traditional rules of movement, exaggerating and showcasing their freedom of creativity. Kota Ezawa (Beckman 2012) believes that animation is abstract, with each line seen in animation originating from human consciousness. Every detail in animation comes from the director's mind, providing more possibilities and flexibility for creativity. This freedom brings fresh visual experiences to the audience. Unlike live-action films, animation is a highly flexible medium that often avoids confusion with reality and stability (Hernández 2007).

Hernández suggests that simplifying the depiction of characters in animation allows for greater exaggeration, making them distinct from real models and creating more dramatic effects. As a visual symbol, animation can convey new contexts beyond the surface, known as 'puns' in animation. Visual metaphors and metonyms create rhetorical connections, allowing for double entendre through juxtaposition, substitution, or understatement. This way, animation can surpass its mere functional purpose and strengthen its role as a language of symbols, representing a different dimension of reality. As Hernández (2007) described, this language can construct representations of any virtual universe. In animation, images typically do not directly imitate the real world but are represented in a simplified or exaggerated way to create a visual style different from reality. This stylistic choice emphasizes that animation is not a direct copy of reality but the result of artists creating based on their imagination. Due to its symbolic nature, animation can break traditional physical and logical limitations, creating a world entirely different from reality. Therefore, animation is not just a form of entertainment but an art form that can exist independently of reality, created and coded freely by artists.

2.3. **The difference between animation and film in the creative process**

As Jenkins (2016) has suggested, the main difference between animation and film lies in their fundamental approaches to producing and representing moving images over time. In traditional film, the reproducibility of time is based on shooting scenes of continuous movement, composed of a series of static photographs, presented in rapid, coherent succession during projection, creating the illusion of motion. In other words, film captures and reproduces moving parts of the real world. In contrast, animation does not rely on capturing moving scenes from the real world. It creates the illusion of time and motion through a series of static images, usually hand-drawn or computer-generated pictures. These images have not moved; they are not specific moments in time. Animation generates a sense of time and motion different from the real world. It is derived from the creator's understanding and expression of things, organisms, and their forms, motion, and meaning.

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If movies are the art of editing, animation is the art between frames. The animation follows and yet remains independent between images, and the editing of animation can occur between each frame (Gascard 1983). This means that animation directors can complete changes between different scenes according to the needs of the work, and such changes can be non-sequential and free. This characteristic is particularly prominent in some deformation animations, where the audience can never imagine what will happen in the next frame.

2.4. **Perceptual abstraction**

Research on the role of abstraction in animation cannot be separated from the development of abstractionism in visual arts and its value. Why humans can perceive abstraction is more of a topic in perceptual psychology and neuroscience. Snibbe and Levin (2000) explained in their article the viewpoint in Kandinsky's *Concerning the Spiritual in Art* (2012 [1912]) that human perception of the abstract is part of our lower-level perception and is innate to us. Such abstract perception may be part of our lower perceptual mechanisms, innate notions of beauty shared by all humans. This indicates that humans are born with the capability to understand the abstract. Aviv (2014), from a neuroscientific point of view, suggests that the functional constraints of real life do not limit artworks; they can strive to find new ways to organize and express things. This means that artists can freely describe depicted objects in various non-functional ways. People appreciate abstract artworks because they can freely scan the surface of the image, encouraging their minds to explore new associations and generate creative connections.

Jenkins (2016) claims that the sensation processors in the brain for processing representational motion and real motion are the same. Therefore, even when we see such a 'representational' motion like animation, we can still feel the presence of real motion. Here, the author refers to the motion occurring in the physical environment as real motion and the motion drawn by the creator as representational motion, which does not truly exist. However, the audience knows that the characters and motions in animation do not exist, yet they can still sense the motion's presence. This contradiction can bring a sense of wonder to the audience, which is why many viewers become fond of animation. Jenkins compares this experience with synesthesia and explains it as 'mimesis' in animation. 'Imitation' is distinguished from 'mimesis.' It is called 'imitation' when it is done in a replicative manner. 'Mimesis' is not a visual experience but a tactile experience, an interchange between different senses. The animation experience produces a kind of empathy, allowing the audience to feel the characters' emotions, even if the characters are very abstract.

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2.5. The function of abstraction

Abstraction is undoubtedly a key presence in animation. From a production perspective, simple shapes reduce the workload for animators during the production process. But more importantly, images, lines, and forms seem to have their own lives within the animation (Gascard 1983). Abstract animation adds a layer of narrative and interpretation to shapes. In other words, the existence of animation adds logical relationships to single, simple shapes, implying a narrative causality. At the same time, abstract shapes can strengthen focal points, highlighting the key information that needs to be conveyed.

Ehrlich's (2011) article on animated documentaries indicates a close connection between form representation and the actual value of images. Although animation is more straightforward in its ability to express detailed visual elements compared to live-action videos, it can still convey the same meaning as a form of symbols. However, Ehrlich believes that such fragmented and ambiguous information is the advantage of animation as a documentary. Because these symbols can prompt viewers to think and empathize, allowing viewers to use their subjective consciousness to understand the story and enhance their sense of participation. In addition, animation's 'non-realistic' characteristics can be seen as a disguise, exposing shots that cannot be obtained due to various reasons from real people or real scenes.

From the perspective of emotional expression, animated works that combine the movement variations of geometric shapes with music, akin to dance, connect the animation's animacy with the mechanics of life through actions (Walls 2016). This type of work performs free emotions in the rhythm of music. Despite lacking narrative logic support, it is still an effective way to convey emotions. It vividly and thoroughly showcases the essence of animated movements.

3. Theoretical frameworks

Our approach combines several prominent cognitive theories (predictive processing, embodied simulations, conceptual metaphor theory) with Kendall Walton's mimesis as a make-believe theory of fiction. We propose that this framework helps analyze abstract animations and can give us better semiotic insights into this art form. The framework is inspired by existing work on applying the '4E cognition' (embodied, embedded, enacted, or extended) approach to understanding different forms of art and expression, e.g., narrative (Caracciolo and Kukkonen 2021), theatre (McConachie 2011), animation in general (Bissonnette 2019), and performance studies (for an overview see Mancing and Marston William 2022).

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3.1. **Predictive processing and embodied simulations**

Predictive processing is a paradigm in cognitive neuroscience proposing that perception, and consequently, action and interaction, involves the brain making multi-level and parallel predictions of potential sensory data and then modifying the predictions based on the actual data received (Nave et al. 2022).

These predictive processes work on several layers of neural information processing, from low-level sensory information, such as visual tracking, through high-level cognitive planning to even long-term life aspirations (Hohwy 2020). The architecture also claims a tight interaction between perception and action. For example, the experience of seeing a cup of coffee on the table involves multiple layers of neural predictions that try best to reduce the errors in the incoming visual sensory data. Simultaneously, the action predictions involve neural activations for grasping and holding the cup, thus giving rise to affordances (Dotov, Nie, and De Wit 2012; Gibson 1977, 2014). Affordances are opportunities for action provided by the environment. They are the actionable properties or features of objects or the environment that suggest possible interactions. For example, a chair affords sitting, a door affords opening, and a staircase affords climbing. According to predictive processing, just perceiving the actionable features in the environment activates the same neural systems as actually performing the action. Seeing a coffee cup on the table activates the same motor neuron systems as the actual grasping action. (Nave et al. 2022) The higher-level predictions are constantly modulated by the incoming sensory data and vice versa; the lower-level responses are similarly modulated moment-by-moment by the top-down predictions. The action and perception loops are thus tightly interwoven and evolve over time in a circular and self-organizing way based on reducing overall prediction errors.

This view on predictive processing is close to *embodied simulation theory*, as proposed by Vittorio Gallese (2005, 2011). According to embodied simulation theory, organisms generate several potential simulations of how they would bodily and actively respond to the given stimuli. For example, when we see a cup (or a picture of a cup), the generated simulations involve our motor circuitry similarly to if we would actually reach out and grasp the cup, as mentioned above. While embodied simulation theory and predictive processing theory approach cognition and human experience from different angles, they share common themes related to the embodied and predictive nature of perception, cognition, and action. Both theories emphasize the active role of the body and the brain in shaping cognition by generating predictions and simulations based on sensorimotor experiences in an ever-changing environment.

The same principles apply when observing representations, even very abstract ones (Kesner 2014, 2024). Our embodied minds try to make sense of the visual scenes according to how we perceive the real world (Frascaroli et al. 2024). According to predictive processing, our action-perceptual systems try to reduce the prediction errors

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between the subconsciously generated predictions and the actual incoming sensory data. The continuous discrepancies between the predictions and the actual data catch our attention and may even cause anxiety. For example, abstract paintings can captivate and hold our attention since our sensory systems try to make sense of the scenes based on real-world examples. The predictions are based on our experiences with real-world objects and their visual features, while simultaneously, the incoming sensory data partly confirms and partly diverges radically from these predictions. For example, the overall features in a cubist painting of a human face give rise to predictions about seeing a realistic human face. Still, at the same time, the features that contradict the 'normal' real faces maintain the prediction error. The constant prediction error might explain our fascination (or abhorrence) with art styles such as cubism and, in our case, abstract animation.

3.2. **Conceptual metaphor theory and image schemas**

We use conceptual metaphor theory (Kövecses 2016) and the notion of image-schemas to explain how the motor simulations activate more abstract metaphoric, but still embodied, interpretations of the animation sequences. Conceptual metaphor theory, proposed by George Lakoff and Mark Johnson (1980), is a framework originating in cognitive linguistics that suggests that abstract concepts are understood and structured through metaphorical mappings from more concrete domains. Conceptual metaphor involves mapping elements of one conceptual domain (the source domain) onto another conceptual domain (the target domain). This mapping allows us to understand and reason about abstract concepts in terms of more concrete domains. For example, in the metaphor 'time is money,' the idea of time (target domain) is understood in terms of the concept of money (source domain), with ideas like 'saving time' or 'spending time.'

In conceptual metaphor theory, image schemas are foundational concepts that help to explain how abstract concepts are structured and understood through metaphorical mappings from more concrete domains (Johnson 1987, 2008). Schemas provide cognitive structures based on bodily experiences that facilitate our understanding of abstract concepts.

The schemas are cognitive structures that represent patterns of bodily movement and interaction with the physical world. These schemas are derived from our experiences of moving and acting in the world and are closely linked to our sensorimotor systems. Image schemas serve as the basis for understanding abstract concepts by providing a metaphorical framework grounded in bodily experiences. For example, the schema of 'approach' involves the physical experience of moving towards something, which can be metaphorically extended to understand abstract concepts such as approaching goals ('we are moving closer to our objectives'). In a more abstract

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domain mapping, the idea of 'love' might be understood metaphorically in terms of a journey ('our relationship is on the rocks'), a physical force ('falling in love'), or a container ('filled with love').

Image schemas enhance our understanding of predictive processing and embodied simulation by grounding cognitive processes in physical bodily experiences. They offer a means through which the brain's predictive mechanisms are informed by both our evolutionary history and personal past interactions, thus shaping perception, action, and cognition in a deeply integrated manner (Johnson 2018). In abstract animations or any abstract visual representation, these schemas allow viewers to infer motion, relationships, and interactions, even when not explicitly depicted. By activating relevant image schemas, abstract animations prompt the viewer to predict and simulate potential realities, leveraging both concrete physical experiences and more abstract conceptual understandings. This dual activation makes abstract content comprehensible and emotionally resonant.

3.3. **Mimesis as make-believe theory of fiction**

Kendall Walton's theory of mimesis as make-believe (1990) provides a promising framework for understanding animations by treating them as props in games of make-believe, where viewers participate in imaginative experiences. In Walton's theory, objects and representations (images or texts) serve as 'props' that prescribe specific imaginings. In animations, the animated characters, objects, and scenes function as props that guide the audience to imagine a fictional world. For example, when watching an animated movie about talking animals, the animation prompts viewers to imagine a world where animals can speak and interact like humans. Principles of generation are rules that dictate what is to be imagined from the props. In animations, the principles of generation are primarily dictated by the narrative and visual style of the animation. For instance, cartoon characters' exaggerated expressions and movements encourage viewers to imagine intense emotions and slapstick humor that would not be taken literally in a real-world setting. The same applies to abstract shapes and their movements. However, in their case, the principles of generation are more open and free, potentially allowing many different imaginings. Walton argues that we have emotional responses to fictional events and characters but are directed at what we imagine, not real-world entities (Matravers 2021; Walton 1990). Thus, when viewers feel sad for a character's plight in an animation, they respond to their engagement in the game of make-believe, not a real person. Understanding abstract animation through Walton's theory also involves recognizing how different elements (style, genre, and cultural references) guide the viewers' imaginative experiences. This approach enriches the interpretation of animations by focusing on how they engage

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viewers in complex games of make-believe that might involve complex themes, moral lessons, or cultural critiques, even when the animated entities are abstract.

Abstract animations often lack a conventional narrative, realistic imagery, and recognizable characters and thus primarily rely on visual and auditory elements to evoke specific imaginative responses (Kulvicki 2021). The movement of shapes can suggest different types of action or interaction in the make-believe of animation. Circular shapes that expand and contract rhythmically prompt viewers to imagine breathing or other natural rhythms. Angular, jerky movements of sharp shapes might suggest mechanical or tense scenarios. These kinetic properties guide the viewer to interpret abstract forms in ways that evoke physical or emotional states. The interaction between abstract elements – such as overlapping shapes or intersecting lines – can generate ideas of conflict, harmony, or balance. For instance, if two differently colored shapes merge and create a new color, it might suggest a theme of integration or synthesis. The rhythm established through repetitive visual patterns or pacing can guide the viewer's emotional and cognitive responses. Fast-paced sequences with rapid changes might generate tension or urgency, whereas slower paces with minimalistic changes might evoke tranquility or melancholy. Finally, color can be a significant prop that guides our imaginations.

Different colors may evoke specific emotions and atmospheric qualities. For example, a sequence of bright, rapidly changing colors might generate excitement or chaos, guiding viewers to imagine a dynamic and energetic environment, even without recognizable forms or figures.

3.4. **Overall framework**

Together, these approaches provide a comprehensive framework for interpreting abstract animations. First, predictive processing and embodied simulation are closely linked as they both underscore the role of the body and brain in generating simulations and predictions that guide perception and action. In animations, viewers simulate interactions with abstract forms based on bodily experiences. Conceptual metaphor theory connects with the above theories by explaining how abstract thinking is influenced by these bodily-rooted simulations and predictions. Abstract animations, through metaphorical mappings, can activate these schemas, allowing viewers to understand and interpret animations in relation to our bodily experiences and interactions. Finally, Walton's mimesis as a make-believe approach complements these theories by framing animations as tools that engage viewers in imaginative experiences. These imaginative engagements are informed by predictive processing (as viewers anticipate and make sense of visual stimuli) and embodied simulations (as viewers subconsciously simulate embodied interactions with the animated forms).

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Thus, when viewing abstract animations, these cognitive and perceptual frameworks collaborate to allow viewers to predict, simulate, and metaphorically interpret visual and narrative elements. Animated entities acting as props in Waltonian make-believe games guide this imaginative framework. This multi-layered cognitive engagement explains why abstract animations can be compelling and emotionally impactful despite their nontraditional narrative and visual forms.

4. Analysis of artworks

The following three abstract animations were selected for more detailed analysis. The research team considered them fruitful in testing the limits of the proposed framework.

Divisional Articulations (2017)[1] is a 2D digital abstract animation film directed by Max Hattler. The film draws on influences ranging from Constructivist art and Paul Klee's Bauhaus teachings to computer animation pioneer John Whitney's seminal film experiment *Matrix III* (1972). In *Divisional Articulations*, music and image collide in an electronic feedback loop. The images represent Hattler's interpretation of the fuzzy analog loop-based music created by Lux Prima, the alter ego of composer and producer Jean-Gabriel Becker. The animation was created with a group of students under Hattler's direction, where everyone worked on a short sequence only, moving basic geometry to the music to create simple, synchronized visual configurations. The result was then fed through a digital video feedback process. Repetition and distortion are key motifs in the music, and video feedback became the way of mirroring this visually through repeating geometries and distorting complexities. Hattler's artistic intention for *Divisional Articulations* was to create a visual music experience that completely entrances viewers, where they stop questioning the meaning or purpose of the work, stop differentiating between sound and image, and enter a flow state.

Matter and Motion (2018)[2] is a 2D digital abstract animation film directed by Max Hattler and animated by a team of students from the School of Creative Media at the City University of Hong Kong. Here, abstract shapes hover, move, and spark across the screen in tight synchronization to a Lux Prima soundtrack derived from synthetic sounds and field recordings of gymnastics. The film builds and releases tension through swelling synths combined with gradients of purples, reds, and blues, interspersed with abrupt noises perfectly synchronized with explosive movements of flickering rectangles and glowing lines. Using an early version of the soundtrack as a base, the animation was created to synchronize, as closely as possible, to the development of the soundscape. After the animation was completed, the soundtrack was further adjusted to support the visual elements.

[1] https://www.maxhattler.com/divisionalarticulations/
[2] https://www.maxhattler.com/matterandmotion/

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The artistic intention for *Matter and Motion* was to combine shapes, movements and sounds in an abstract synaesthetic space of kinetic combustion and energy transmission. The film draws inspiration from the music-synchronized dancing shapes in Oskar Fischinger's *Studies* (the 1930s), the vibrating scratched movements in Norman McLaren's *Blinkity Blank* (1955), and the flickering shapes in Robert Breer's *70* (1970). Inspired by these predecessors but decidedly electronic in nature, *Matter and Motion* is aesthetically closer to the vertical collapse of a cathode ray tube than to celluloid film.

Shift (2012)[3] is a 3-minute analog-based film directed and animated by Max Hattler, combining science fiction themes through abstract stop-motion animation of objects and color. On a black ground, as if floating in space, the materials, including metal tubing, fixtures, pop rivets, and ball bearings, present a self-governing mechanism that continually reshapes itself into new kinetic sculptural configurations. Hattler's previous stop motion film, *AANAATT* (2008), featured abstracted scenes in real, discernible environments. With *Shift*, he wanted to remove it further from reality to increase the distancing effect of non-objectivism while still keeping a connection to the everyday by animating real objects.

Shift was commissioned by Animate Projects in the UK for Channel 4's Random Acts short film strand, with the thematic limitation '2012 Apocalypse.' Mirroring the theme, Hattler proposed an abstract film inspired by the notion of a 'dimensional shift'– a shift from our four-dimensional reality into the fifth dimension, purported by some New Age beliefs to happen at the end of 2012. Hattler aimed to probe the idea of an other-dimensional, quasi-non-objective world with its own logic, aesthetics, and rules, conversely consisting of real-world objects and materials. To help transcend the real-world origin of the objects in *Shift*, to turn them into the machine-like workings of another dimension, and raise their scale from earthly to galactic, sound designer and composer David Kamp created a tightly synchronized abstract soundscape. Setting a framework for the audience's imagination to explore, the film's audio-visual transformations create anthropomorphic and mechanomorphic associations. Formally, *Shift* is inspired by the aesthetics of early 20th-century modernism, linking it to the period's utopian impulse: El Lissitzky, Man Ray, and films such as Ralph Steiner's tribute to the Machine Age, *Mechanical Principles* (1930), and Fernand Léger's *Ballet Mecanique* (1924), which combines the dynamic abstraction of Constructivism with the absurd qualities of Dada, all fed into the work. The materials used in *Shift* come from the archives of product designer Hans (Nick) Roericht, a graduate and long-time custodian of the now-defunct Ulm School of Design, a direct descendant of the Bauhaus.

[3] https://www.maxhattler.com/shift/

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4.1. **Method of analysis**

The first author used multiple viewings of the animations to ensure a thorough understanding. Next, the first author performed a series of recorded 'think aloud' sessions of the animations. The animations were intermittently paused during these sessions to allow for immediate reflection and commentary. These commentaries were then transcribed. The resulting transcriptions were the primary source for subsequent analysis guided by the proposed theoretical frameworks. Throughout the analysis, iterative references to the animations were made as necessary to clarify or elaborate on the insights being developed. Additionally, discussions were held regularly with the other researchers to refine the interpretations.

4.2. **Predictive processing**

This cognitive theory posits that the brain continuously creates and updates a model of the world by predicting sensory inputs and then adjusts these predictions based on new sensory information to reduce the error between prediction and actual sensory input.

As the viewer begins to watch the animation, their brain generates predictions about what will happen next based on visual cues like the movement of circles and their trajectories in *Divisional Articulations* (00:00-00:22). These predictions are based on past experiences with similar stimuli, such as moving objects following predictable paths. When the animation introduces elements that deviate from these predictions (e.g., sudden changes in direction, unexpected interactions between objects, abrupt shifts in the soundscape (00:22), these constitute prediction errors. The viewer's brain must then update its predictions to account for these new, unexpected inputs.

In these animations, the moving objects frequently change direction or speed, and music/sound plays a vital role in these dynamics. Each change forces the viewer to adjust their internal model to accommodate the new information, recalibrating their expectations in real-time. The increasing complexity and rapid changes within the animations challenge the viewer's predictive capabilities, leading to moments of confusion or cognitive overload (02:00-02:09). This indicates high prediction error rates, where the viewer's predictive model struggles to keep pace with the stimuli.

Sound significantly influences the viewer's predictions. Changes in tempo or rhythm lead to anticipatory changes in how the viewer predicts the motion of visual elements. This aligns with predictive processing, which posits that all sensory inputs (including auditory) are integrated to form a coherent expectation of the sensory environment.

Some of the animations contain visual cues that emphasize the predictive processes. For example, traces left by the moving shapes in *Divisional Articulations* (02:17-02:21) help the viewer track their movement history, forming more accurate predictions about future positions and paths. This reduces prediction errors by providing a clearer picture of motion patterns.

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Figure 1. Traces of moving objects in Divisional Articulations

As the animation deviates from expected patterns, it may evoke surprise or confusion, which are emotional reactions to unresolved prediction errors (*Shift* 01:20-01:26). These emotional responses can enhance engagement by making the viewing experience more compelling and unpredictable. The viewer's emotional and cognitive responses to these prediction errors can further influence their attention and subsequent predictions, creating a feedback loop that continually shapes their viewing experience.

4.3. **Embodied simulations**

According to embodied simulation theory, when we observe or imagine actions, sensations, or emotions, our brain activates similar neural mechanisms as if we were experiencing those actions or sensations ourselves.

Embodied simulation theory suggests that the movements in these animations (lines moving, shapes shifting, objects appearing and disappearing) trigger the observer's brain to simulate these movements internally (*Matter and Motion* 01:02-01:07). This could involve the activation of motor-related brain areas, even though the observer is not physically moving.

The animations' allusions to three-dimensional space and depth indicate an embodied simulation of spatial orientation and depth perception. The viewer interprets the illusion of depth created by the animation using their sensory experiences of navigating through space, mentally simulating a three-dimensional environment.

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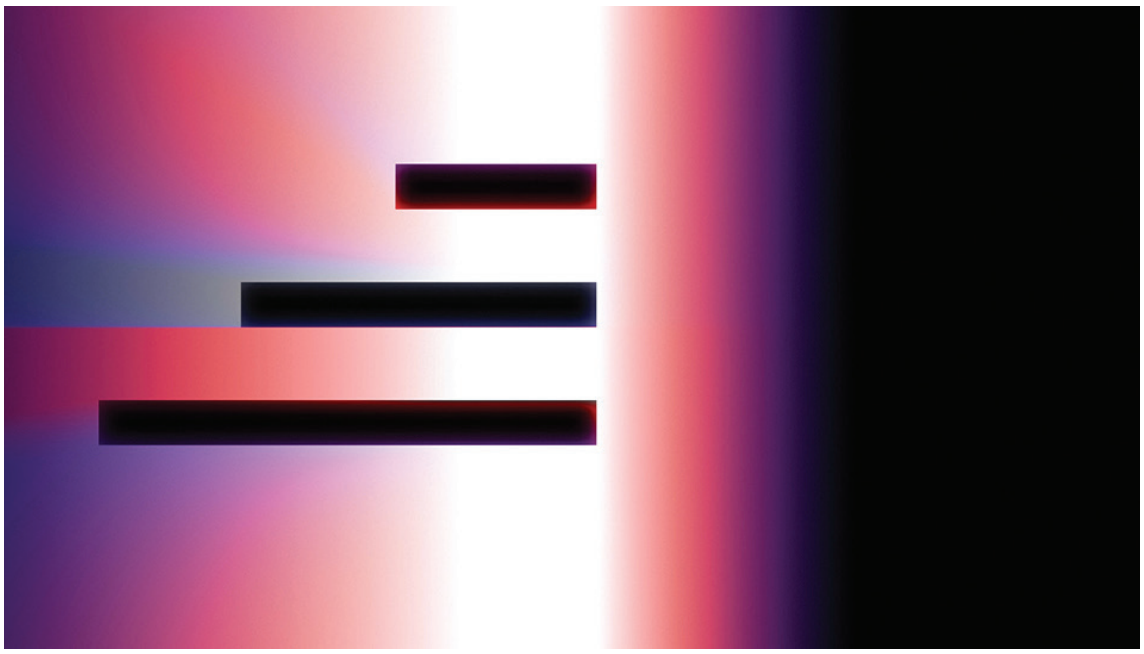


Figure 2. Illusion of depth in *Matter and Motion*

The viewer's anticipation of potential collisions between the moving objects and their adjustments in trajectory illustrates an embodied understanding of physical dynamics (*Shift* 0:10-0:18). By simulating these interactions, the viewer uses their own experiences of movement and physical space to make sense of the animation, essentially 'feeling' the motion and tension through an internalized bodily response.

The synchronization of movements with music and the noted changes when the music shifts suggest that the viewer is not only audibly processing the music but also embodying it in their visual and spatial simulations (*Matter and Motion* 01:08-01:17). The music influences the perceived intensity and pace of the visual changes, which might be internally mirrored through changes in the viewer's physiological or emotional state, thus affecting how they simulate and interpret the scene.

The animations contain many scenes that give rise to moments of conflict between different interpretations of the visual elements, for example, whether they are moving or static and whether changes are due to object movements or visual effects (*Matter and Motion* 01:12-01:22). This cognitive and perceptual dissonance might activate brain areas associated with conflict resolution and decision-making, simulating the internal struggle to resolve ambiguous stimuli. When the animation becomes chaotic or complex, the viewer experiences cognitive overload, which could be seen as an embodied response to sensory overload. Their mental simulation of the animation's dynamics becomes too demanding or confusing, mirroring physical sensations of being overwhelmed or lost, thus grounding their cognitive experience in bodily responses.

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From the perspective of embodied simulation theory, the viewer's experiences indicate an active, ongoing internal simulation of visual, motor, and emotional experiences. This simulated engagement allows for a deep, embodied understanding of and interaction with abstract animation, highlighting how abstract art can evoke complex, embodied responses without literal representation.

4.4. Schemas

Motor and image schemas play a central role in how the viewer processes and interprets visual content, in this case, the abstract animations. These schemas are fundamental cognitive structures derived from bodily interactions and perceptual experiences that help us make sense of the world. As discussed above, these schemas heavily depend on lower-level predictive processing and embodied simulations. Below, we describe prominent schemas and how they are activated in the animations:

Path Schema: This schema involves movement along a trajectory from one location to another and is deeply ingrained in how we conceptualize motion and direction. The movement of objects and figures toward destinations, changing directions, and avoiding collisions reflect the activation of the path schema. This schema helps the viewer predict where the objects might go next based on their current trajectory. For example, at the beginning of *Divisional Articulations* (00:00-00:22), the moving circles leave a trace behind them, making the path schema even more concrete and obvious. The trace also reveals how our predictions are violated in moments when the circles change their direction and speed extremely rapidly.

Container Schema: This schema involves understanding phenomena in terms of in/out and boundaries. First, the viewer interprets the screen as a bounded space where objects move, interact, and change trajectories. Second, in many parts of the animation, the objects seem to, at least momentarily, be contained within other objects. For example, smaller squares move within the boundaries of a larger square and together with the larger square (*Matter and Motion*, 02:15-02:19). This gives the impression that they are contained within the larger structure.

Source-Path-Goal Schema: This extends the path schema and includes a starting point, a path traveled, and a destination. The viewer uses this schema to make sense of the objects' movements, ascribing intentions and predicting future locations based on observed movements, which align with this schema's elements. The objects leaving traces, such as the circles in *Divisional Articulations* (00:00-00:22), heighten the activation of this schema, similar to the path schema mentioned above. The traces are a constant reminder of the source and the path already taken, which makes the viewer constantly predict the goals of these movements. Rapid changes in direction and speed often thwart these predictions, leaving the viewer in a constant state of uncertainty.

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Blockage Schema: This schema is activated when the viewer predicts collisions or movements where an object avoids intersecting with another object's path (*Shift* 00:18-00:30). It involves the concept of an obstacle that must be navigated around, which is integral to understanding and anticipating the interactions among the animated objects.

Force Dynamics Schema: This schema involves the interaction of forces, which can be seen in the viewer's interpretation of objects that seem to push against each other, avoid each other, or are influenced by unseen forces (such as music changing the dynamics of motion (*Divisional Articulations*). The viewer interprets these dynamics to ascribe cause and effect within the animation.

Balance and Support Schemas: The descriptions of objects in terms of their physical support and balance (e.g., one object resting on another) invoke balance and support schemas. These are fundamental for interpreting how objects relate to each other in terms of stability and support, adding a layer of understanding to the physical and visual structure of the scenes. Additionally, when the viewer notes changes in speed or direction in response to music or other visual cues, the balance schema might be activated, particularly in understanding how objects maintain or lose stability (*Divisional Articulations*, 02:00-02:09). This schema is tied to physical experiences of maintaining or observing balance, thus also invoking embodied simulations related to bodily balance and support.

Rotation Schema: This is particularly relevant when describing movements that involve spinning or rotating objects. For example, the appearance of circular motions and concentric circles activate this schema based on the bodily experience of rotation or seeing objects spin (*Divisional Articulations*, 02:17-02:21).

Scaling Schema: This schema involves changes in size and scale, which are described when objects grow larger or smaller within the viewer's field of perception (*Divisional Articulations*, 01:43-01:52). It is linked to the physical experience of objects moving closer or farther away or growing in importance.

These schemas bridge the gap between sensory experiences and conceptual understanding, allowing the viewer to construct a coherent narrative from the complex visual stimuli presented in the animation. Furthermore, these schemas give rise to and interact with the conceptual metaphors discussed below.

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4.5. Conceptual metaphor theory

The animations, understandably, use spatial metaphors extensively, such as the viewer experiencing moving toward the horizon or the movement shifting from horizontal to vertical. These experiences can be understood as grounding abstract visual changes within familiar spatial experiences. Conceptual metaphor theory suggests that these reflect our innate tendency to understand abstract phenomena (such as the progression and transformation within the animation) through more concrete, spatial experiences; for example, IDEAS ARE DIRECTIONS ('moving towards'), and TIME IS SPACE ('progression along a horizon'). The viewer frequently ascribes intentions and purposes to the moving objects (e.g., avoiding collisions or moving toward a destination), giving rise to the standard conceptual metaphor PURPOSES ARE DESTINATIONS. The viewer interprets the movement of shapes within the animation as agents with goals, similar to how people navigate toward destinations (*Divisional Articulations*, 00:00-00:22).

The references to objects and substances, notably opacity and the emergence of shapes such as rectangles and triangles, align with metaphors that conceptualize abstract ideas as physical objects (ABSTRACT IS CONCRETE). This allows the viewer to apply everyday reasoning about objects (e.g., objects blocking each other, light sources behind objects) to interpret the abstract visual elements of the animation.

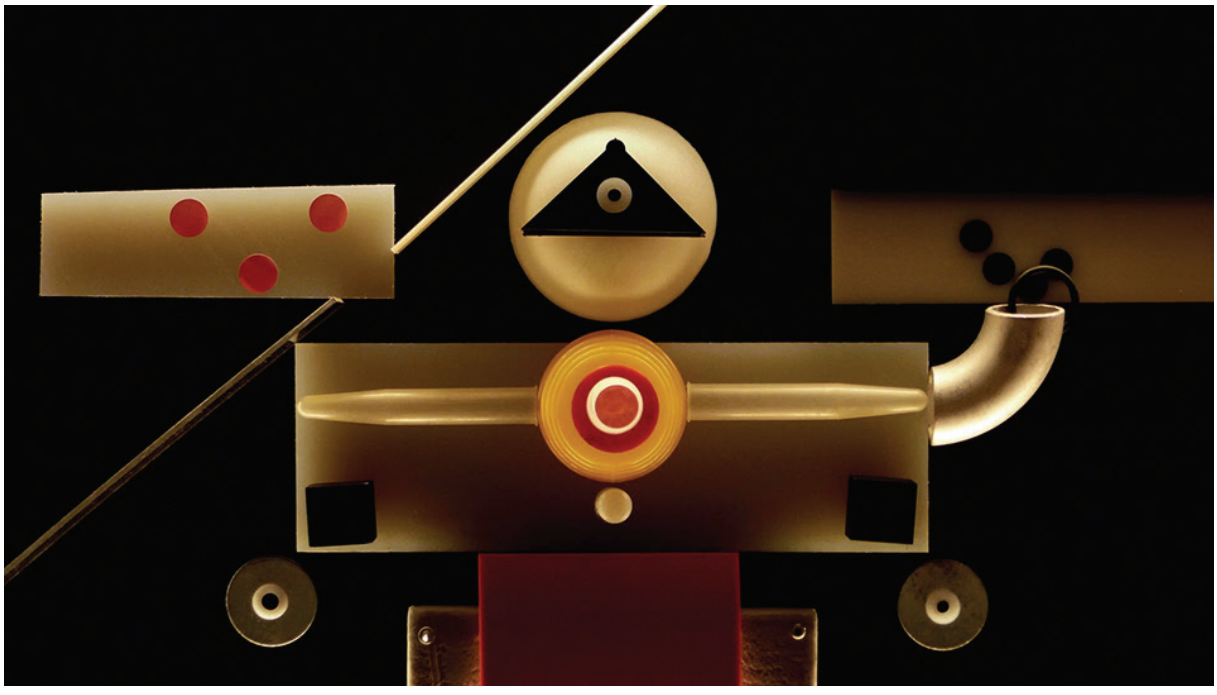


Figure 3. Abstract visual elements form seemingly concrete objects in *Shift*

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Changes in the animation are often described as journeys or movements through time (e.g., abrupt changes, quick shifts). This can be linked to the metaphorical framework where TIME IS MOTION, and CHANGES ARE MOVEMENTS ALONG A PATH (*Shift* 01:53-01:58). This reflects how people typically conceptualize time and change as physical movements through space.

The animations frequently use concepts of light and visibility, with elements becoming brighter, emitting light, or being occluded (*Matter and Motion*, 00:00-00:13). These can be tied to metaphors like UNDERSTANDING IS SEEING and CLARITY IS LIGHT. The fluctuating visibility and brightness in the animations could be metaphorically interpreted as fluctuations in understanding or clarity regarding the unfolding visual narrative.

The experiences of conflicting interpretations and visual ambiguity might be interpreted through metaphors such as KNOWING IS SEEING, and AMBIGUITY IS DARKNESS. The conflicting visual elements generate a sense of uncertainty or cognitive 'darkness' where clarity and understanding are momentarily obscured.

4.6. **Mimesis as make-believe**

In Walton's theory, props (objects within a work of art) prompt the viewer to engage in acts of make-believe. In the case of these animations, the abstract elements – shapes, motions, and configurations – serve as props. These props can encourage viewers to imagine familiar objects and scenarios (such as various tools in *Shift*). The viewer is not just seeing abstract shapes but is prompted to use these shapes to make believe that they are witnessing familiar objects and processes. For instance, the appearance of concentric circles (*Divisional Articulations, Matter, and Motion*) might guide the viewer to imagine these as ripples caused by an unseen impact.

Walton discusses generative rules that govern how we engage with art. These rules help viewers determine what to imagine when they encounter particular props. For instance, when the viewer sees rapid circular motions or objects that construct and deconstruct, as in *Shift* (01:18- 01:22), they might imagine these dynamics as mechanical or biological processes based on the generative rules that associate certain motions or transformations with specific real-world behaviors.

The viewer's experience involves applying principles of generation that dictate what should be imagined upon encountering certain visual stimuli. When the viewer notes that objects maintain constancy (e.g., staying circular) despite transformations, it might invoke the principle of object permanence in their make-believe play, leading them to see continuous identity in changing forms.

Principles of generation can evolve as the engagement with the prop unfolds. Initial interpretations may shift as new elements are introduced. For example, in the

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dynamic environment of an abstract animation, initial assumptions about the behavior of objects may change as the animation progresses and introduces new visual or auditory elements. The principles also govern emotional and symbolic interpretations; dark, looming shapes might evoke a sense of dread or menace, guiding the viewer to feel tension without explicit narrative context.

Even without a straightforward, linear narrative, the viewer uses make-believe to construct a narrative or thematic framework for understanding the animation. In *Shift*, constructing and deconstructing objects might be imagined as a theme of creation and decay, transformation, or cyclical change, allowing the viewer to explore these concepts through a personal, imaginative lens.

The abstract nature of the animation allows for multiple interpretations, each potentially consistent with the visual and auditory inputs. This flexibility is a key aspect of Walton's theory, where different viewers might engage with the same prop in varying ways, each constructing their own unique set of fictional truths based on personal cognitive frameworks and imaginative capabilities.

5. Conclusion

This paper has explored a multilayered framework for analyzing the semiotic processes in abstract animations, integrating predictive processing, embodied simulation theory, conceptual metaphor theory, and Kendall Walton's mimesis as make-believe. Our analysis of Max Hattler's abstract animations demonstrates this theoretical approach's practical application, offering insights into the interplay between viewer perception and abstract artistic expressions.

The application of predictive processing explains how viewers' brains anticipate and react to sensory data, forming a continuously evolving perceptual and interpretative experience. Embodied simulation theory further enriches this understanding by highlighting how viewers engage with animations cognitively and bodily, simulating interactions and emotions that the animations might provoke. Conceptual metaphor theory provides the cognitive scaffolding that supports translating bodily experiences into abstract thought processes, essential for decoding the non-representational forms found in abstract animations. Meanwhile, Walton's theory of mimesis as make-believe captures the imaginative engagement of viewers, who use the animations as props in personal games of interpretation and meaning-making.

Exploring the complex meaning-making processes in viewing abstract animations can potentially open new avenues for employing the frameworks in broader digital media and interactive art domains.

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A kaleidoscopic view: Studying diverse aspects of experimental animation

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BY: **Pegah Izadian**

ABSTRACT

This article examines the field of experimental animation, offering various definitions and analyzing artists' approaches. The study aims to thoroughly classify different aspects of experimental animation, proposing it as a kaleidoscopic form that incorporates a wide range of elements to create a distinctive yet comprehensive structure. This research builds on the foundational work of experimental and digital cinema scholars, including Robert Russett, Cecile Starr, Paul Wells, Maureen Furniss, Miriam Harris, Paul Taberham, and Corrie Francis Parks. Given the continual advancements in technology and the evolving practices of experimental animation, it is essential to update and redefine its concepts. Experimental animators often eschew convention, developing new techniques and expressions. Consequently, the first section of this paper offers an in-depth analysis of the definitions surrounding experimental animation. It further explores diverse methodologies regarding technique, context, and production processes. The third section reviews emerging platforms for creating and exhibiting experimental animation, emphasizing the importance of establishing appropriate venues for such work. It also highlights the audience's critical role in completing the experiential loop of experimental animation. In conclusion, this research will describe experimental animation as a kaleidoscopic form that integrates diverse elements to create a unique and multifaceted structure. The proposed classification chart will organize methods derived from experimental animation studies, emphasizing categorizing key features and techniques.

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1. Specifying experimental animation

In the context of experimental animation, the term 'experimental' often has a fluid meaning. Experimental animation is sometimes understood as equal to or partially overlapping with the avant-garde, abstract, or expanded forms of animation, as well as new approaches, styles, and expressions in creating animated films. While experimental animation can be either narrative or non-narrative, it is primarily characterized by personal or single authorship of techniques. In outlining the properties of experimental animation, Paul Wells describes the form as interpretative rather than strictly narrative, emphasizing "the presence of the artist" (Wells 1998: 36), in contrast to the artist's relative absence in mainstream or orthodox animation.

To highlight the primary distinction between the role of technique in commercial or industrial animation and experimental animation, commercial animation typically emphasizes content, with new techniques employed to serve the narrative or intended meaning. In contrast, experimental animation tends to explore new materials, devices, settings, and mechanisms, prioritizing aesthetic innovation over conventional narrative concerns.

In *Experimental Animation: An Illustrated Anthology* (1976), Robert Russett and Cecile Starr explore various techniques and attitudes toward experimental animation through multiple approaches. They describe experimental animators as those who, by avoiding the standard animation stand and the production-line methods of commercial studios, personalize their equipment and techniques or offer innovative technical directions to others. Alternatively, some animators construct complex devices or employ sophisticated computer languages rather than relying on conventional methods. According to this book, the primary aim of experimental animation is to diverge from the traditional frameworks of standard animation (Russett and Starr 1976: 7).

To achieve this, experimental animation urges animators to pursue innovation, demonstrate intelligent leadership in their style, align with their expression, and develop new and distinctive techniques. Furthermore, the authors categorize experimental animations as "non-cartoon animations" (ibid.), distancing them from techniques commonly associated with animation or widely employed by Hollywood filmmakers. This distinction arises from the early dominance of cartoon animations in animation cinema, where audiences primarily associated the medium with the fantasy, comedy, and musical genres popularized by studios like Disney and Warner Brothers.

However, this does not imply that experimental animation cannot be enjoyable. On the contrary, experimental animations can provide a fresh perspective on visual and human concepts, often engaging the audience in deeper contemplation and appealing to a more specialized viewership. In their book, Russett and Starr categorized experimental animators up until 1975. Later, in 1988, they wrote:

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> These animators, along with other experimenters concerned with the artistic potential of technology, are working with tools and techniques that are patently different from other forms of animation. They have introduced into the field of motion pictures not only a fresh vocabulary of visual images and structures but also new levels of consciousness and intelligence. (Russett and Starr 1988: 179)

Providing a fresh study, *Experimental Animation from Analogue to Digital* (2019) takes a more analytical approach, with scholars identifying new forms of experimental animation in recent years. The articles are organized into four chapters: (1) Definitions, Histories, and Legacies, (2) From Analogue to Digital, (3) Close Analysis of Individual Artists, and (4) Science and the Cosmos. In the first chapter, Paul Taberham (2019) explores various elements of creating experimental animations, including movement, form, color, and sound. In Defining Experimental Animation: A Follow-up (2020), he asserts that:

> [Experimental animations] evoke thoughts rather than present concrete ideas; surface details (such as paintbrush strokes or clay texture) play a more significant role in the experience of the film compared to commercial animation; the materials used may be employed in a way that draws attention to the medium itself; psychologically defined characters with clear motivations and goals are typically absent. (Taberham 2020: 13)

Paul Taberham (2023) further explores the aesthetics of experimental animation, connecting its essence to the process of *medium expansion*. He notes that "experimental animators were the first to explore the possibilities offered by computer technology" (Taberham 2023: 220). For example, John Whitney and Peter Foldes pioneered new fluid visuals by experimenting with early computers and digital technologies. Also, Miriam Harris (2019) compares the overlaps and distinctions between digital and analog experimental animation. She emphasizes that digital media can appear in contrast with its mechanical, cold, and lack of imaginative innovation nature when artists are driven to push boundaries and explore new creative possibilities (Harris 2019).

Paul Wells in *Understanding Animation* (1998) specifies experimental animations as fluid in contrast with the solid essence of commercial, orthodox, industrial, and mainstream films. Comparing 'experimental' and 'commercial' animations, he describes experimental animation as abstract, non-narrative, and interpretative, often based on music and the artist's inner world exploration. In this book, Wells introduces a new category under the rubric of animation called "developmental," which lies between commercial and experimental animation. This category combines elements of both

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commercial and experimental animations and employs various techniques to convey conceptual stories that explore controversial subjects. Despite being rooted in traditional animation approaches, developmental animation pushes the boundaries of storytelling by incorporating individual techniques and innovations (Wells 1998: 51).

Experimental animations illustrate how music can evoke emotions by synchronizing the flow of sound with visual imagery. Paul Wells acknowledges the significant role of music in experimental animation, suggesting that music can manifest as colors and shapes moving through time with varying rhythms, motions, and speeds. He highlights the spiritual and emotional connection between sound and image, facilitated by free-form structures in animation. Wells also asserts that sound is essential in all animated films, but it holds particular importance in experimental works. The use of silence, avant-garde music, unconventional sounds, and other alternative auditory designs in experimental animation starkly contrasts with the dialogues, stereotypical cartoon sound effects, and classical music typically found in commercial animations (ibid.).

From a different perspective, John Halas (1968) defines experimental animation as films that do not fit neatly into any specific category of filmmaking. He argues that these films are often created by non-professional or semi-professional filmmakers who are passionate about filmmaking and seek to advance its technical and artistic dimensions. Halas acknowledges that experimental animation does not follow typical production methods, as many of these films stem from personal enthusiasm, aiming to showcase pure artistic expression or explore the unique potential of animation in specific fields or subjects (Halas and Manvell 1968).

Although Halas's perspective may seem to isolate experimental animators, he acknowledges that the discoveries made by these filmmakers ultimately benefit the film industry. Through ongoing experimentation, experimental animators test the feasibility and success of various techniques, often pioneering new styles that influence mainstream filmmaking.

The root of the word 'experiment' is *experiri*, which means 'to try' in Latin. Andy Buchanan (2016) states that "both linguistically and as a process, this *experiri*, or trying, leads to 'experience' and 'expertise'" (Buchanan 2016: 1). Regarding the meaning of experimentation in experimental animation, Birgitta Hosea (2018) holds that this concerns the animators' pursuit of generative strategies, which may involve exploring materiality or structuring processes. She suggests that the common factor in experimental animations is that "they are created with the intention to investigate rather than to entertain or embellish" (Hosea 2018: 258).

Accordingly, the present study suggests that experimental animation primarily functions as a space for developing new techniques without a fixed identity. It serves as a platform for evaluating their potential in creating new aesthetics and movements, ultimately leading to the definition of their own unique identity (see Diagram 1).

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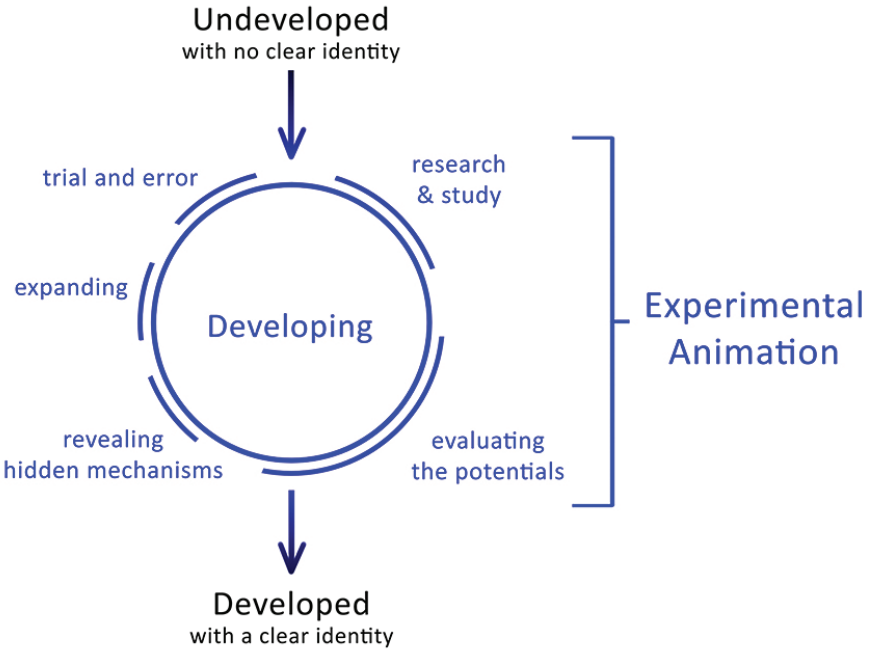


Diagram 1. Areas to study experimental animations

From this perspective, creating an experimental animation can be considered an independent research endeavor to explore innovative concepts and contribute to studying this art form. Tim Barker, drawing on Gene Youngblood's statements in *Expanded Cinema* (1979), compares experimental art to experimental science:

> […] experimental art could be meaningfully considered alongside experimental practices in science, and further, as a part of a larger 'experimental culture'. This is, of course, not to say that experimental practice in science and art consists entirely of interchangeable methods and principles. Instead, we could position science and art within a culture of technological experimentation, where both disciplines converge in their use of new techniques and technologies to reimagine our bodies, minds, and the worlds that we live in. (Barker 2013: 282)

He uses the term *artist-scientist*[1] to highlight that experimental artists design the conditions of an experiment to test new ideas and uncover new connections through hypotheses, constraints, and methods. He further suggests that creativity and experimentalism are closely intertwined, as being creative and introducing novelty into the world necessitates conducting numerous experiments (ibid.).

[1] Gene Youngblood coined this term in *Expanded Cinema* (1979). Moreover, the current article suggests using the term *artist-researcher* to describe experimental artists.

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On the other hand, under the categories of hypothesis, falsifiability, and repeatability, Andy Buchanan (2016) analyzes the differences in priorities and processes between science and art, particularly concerning these terms, and examines their implications for experimental animation. He cautions against adopting a pseudo-scientific approach in the artistic domain (Buchanan 2016). Buchanan also addresses a fundamental question regarding the value of artistic achievements in experimental animation compared to scientific experimentation:

> […] from a practical point of view, visual experiments that do not produce the anticipated valuable visual results might be considered 'falsified' or disproven by simply failing to resonate with the artist in a way that inspires their continued pursuit. There is a natural, informal attrition of these hypotheses, which makes their assessed value quite subjective. (Buchanan 2016: 3)

Buchanan asserts that when creative arts research is compared to other fields that use experimentation to discover new knowledge, there may be a conscious or unconscious bias against these subjective and seemingly undeniable expressions. Such expressions are often considered inadequate because they produce a different stable truth than scientific inquiry (ibid.).

Based on these studies, the current research emphasizes the significance of technical innovations in experimental animation, which arise from using new materials, devices, structures, systems, tools, and mechanisms. The central discussion will focus on distinguishing innovative techniques from creative approaches (or artistic styles) and advancing experimental animation from a term used to describe unknown styles to an animation technique with a clear definition.

According to *Merriam-Webster's* dictionary, in terms of the meanings associated with innovation and creation, innovation is synonymous with novelty, coinage, or the introduction of a new idea, method, or device. To clarify, while creativity seeks to answer 'how to create something new,' innovation addresses 'how to design a new method to create something new.' Furthermore, innovation tends to be more external and practical, focusing on new mechanisms, whereas creativity is more internal, subjective, and related to artistic approaches. In this context, technical innovation, as referenced in this article, pertains to the design of new mechanisms that result in distinct aesthetics, movements, and concepts.

From this perspective, not all experimental animations are technically experimental; some may utilize existing techniques to convey the creator's experiences and thoughts, sharing their inner world with the audience. In *Fluid Frames* (2016), Corrie Francis Parks states:

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> Ultimately, the best works are those that use an innovative approach to production, and also relate to the message or emotional tone the film is trying to communicate. Then, the audience is moved emotionally, dazzled visually, and the message, whether commercial or artistic, becomes memorable. The animations that will be shown generation after generation are those that marry innovative animation techniques with meaningful content. (Parks 2016: 2-3)

On the other hand, Parks asserts that experimental animators should adopt an "experimental frame of mind" (ibid.). This phrase refers to the artists' self-expression and ability to showcase their distinctive approaches through creative settings, new materials, or mixed techniques.

From a more holistic perspective, art evolves in response to the circumstances and advancements of its time, leading to a broad range of creative approaches. These approaches often address themes such as personal concerns, social anxieties, fears, nightmares, and mental health disorders, portraying both the conscious and unconscious aspects of the mind and facilitating a flow of self-expression. These animations bear similarities to postmodern and surrealist expressions, which challenge viewers by subverting their expectations through shifts in plot, characters, and atmosphere. The following section will investigate and gather other experimental approaches.

2. Various approaches to experimental animation

In animation studies, experimental animation appears to resist a concise definition. Norman M. Klein (2005) argues that animation has always retained a fluid quality that does not require a rigid framework. Instead, it invites the audience to see themselves within the story. This fluidity is a defining characteristic of experimental animation, allowing the artist to express the film's underlying narrative through the free flow of thought (M. Klein 2005).

Building on this perspective, rather than seeking a fixed definition of experimental animation, this research proposes investigating the various approaches to creating such works, acknowledging the fluid nature of the medium. When studying experimental animations, it is essential to recognize the importance of creativity and improvisation. Creativity is linked to inner thoughts and emotions, which may be innate or shaped by external influences. For example, James Whitney and Oskar Fischinger incorporated meditation into their creative processes, resulting in distinctive styles. Additionally, creativity can manifest in blending diverse materials and artistic elements to develop a unique concept, ultimately offering a fresh perspective.

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Figure 1. Film strips – comparison between two styles in direct animation:
(Top) *A Color Box* (1935) by Len Lye (reference: https://filmcolors.org/galleries/a-colour-box-1935/)
(Bottom) *Mothlight* (1963) by Stan Brakhage (reference: https://walkerart.org/calendar/2012/rene-gades-vision-evening-stan-brakhage-films)

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In experimental animation techniques, artists can apply a single technique across various styles. For instance, artists such as Len Lye, Norman McLaren, Stan Brakhage, and Steven Woloshen have examined film strips through trial and error, each developing a distinct direction and identity (see Figure 1). Additionally, some techniques involve re-experimentation with traditional styles by incorporating modern visuals. *Choros* (2011) by Michael Langan can be seen as a re-experimentation or a digital reinterpretation of Norman McLaren's *Pas De Deux* (1968), offering a new approach to reconstructing old methods or addressing issues identified in earlier experiments.

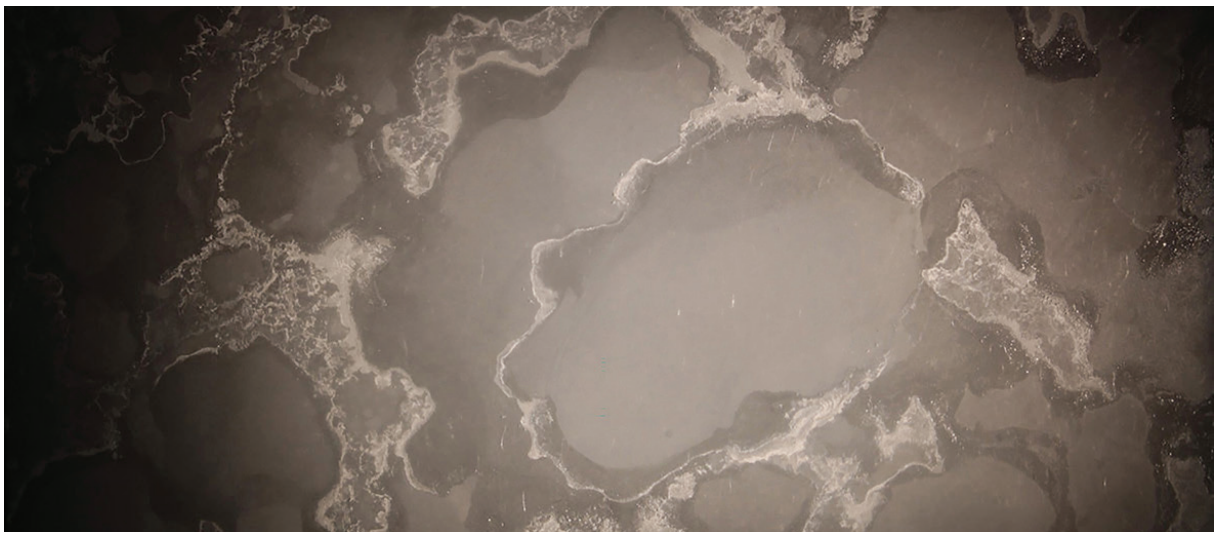


Figure 2. *Motus* (2023) by Nelson Fernandes
(still frame, reference: https://linoleumfest.com/en/program/experimental-animation/events/Motus)

On the other hand, some experimental animations focus on utilizing new materials and establishing distinct settings. For instance, in *Coyote* (2017) by Corrie Francis Parks, while the technique aligns with other under-the-camera methods, she employed various types of grains in different sizes and shapes to create a new visual experience.[2] Similarly, Nelson Fernandes in *Motus* (2023) adopts this approach by uniquely using under-the-camera animation. In this case, the artist employed ethanol as a raw material to create accidental abstract figures on a metal sheet (see Figure 2).

[2] https://medium.com/@corriefrancis/the-individual-grain-7f8b05bc1751#.dh20ryyyj

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As previously discussed, technical innovation is a key characteristic of experimental animation. Artists often employ new mechanisms or devices driven by curiosity to discover unique styles. This approach is evident in artists who embrace emerging mediums to achieve novel styles and expressions in their artwork. Pioneers like Mary Ellen Bute, John Whitney, and Peter Foldes have created exceptional works demonstrating computer technology's potential as a fresh form of artistic expression. These artists primarily produced their works for research purposes, aiming to explore modern art expressions.

In *Choreography for Copy Machine* (1991), Chel White employs a copy machine as an innovative device to create an experimental animation. The film presents a captivating sequence of body parts and objects, using the unique photographic capabilities of a photocopy machine to produce sequential images. On Vimeo, Chel White describes this animation as "humorous and sublime, the ultimate Xerox fetish film."[3] White's artistic vision is brought to life through the seamless combination of black-and-white photocopies and electronic instrumentals, resulting in a surreal and intriguing sequence. His innovative approach highlights his talent and creativity, making this work a notable contribution to experimental animation (see Figure 3).

The most recent development in this approach involves using emerging technologies, such as Artificial Intelligence (AI) and Extended Reality (XR), to explore new ways of expanding animation techniques. *The Orchid and the Bee* (2022) by Frances



Figure 3. Choreography for *Copy Machine* (1991) by Chel White (still frame, reference: https://rarefilmm.com/2021/09/choreography-for-copy-machine-photocopy-cha-cha-1991/)

[3] https://vimeo.com/11252439
[4] https://research.fhstp.ac.at/en/projects/vrinmotion

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Figure 4. *The Orchid and the Bee* (1991) by Frances Adair Mckenzie (still frame, reference: https://www.nfb.ca/interactive/the_orchid_and_the_bee/)

Adair Mckenzie (see Figure 4) and *VRinMotion*[4] are two examples of hybrid stop-motion animation projects incorporating VR technology. In the *VRinMotion* research project, led by Franziska Bruckner, experimental artists collaborate to examine the potential of virtual reality in pushing the boundaries of artistic stop-motion animation.

The current article emphasizes the innovative methods used in research projects to advance animation techniques, particularly in adapting these techniques to rapid technological and scientific developments. By investigating cutting-edge methodologies and integrating them with technological advancements, this approach enhances animation's creative potential and provides new perspectives on emerging technologies. The article offers an additional example to illustrate this approach further.

At the Maryland Institute College of Art, scholars collaborate with NASA scientists in a course titled Astro-animation to conduct interdisciplinary research projects. This course explores the synergies between various research methods in astronomy and the development of art projects through experiential education. In *Astro-Animation: A Case Study of Art and Science Education* (2020), the editors describe how small collaborative groups of students create short animations based on scientific investigations, interpreting them through a creative lens and allowing them to experience "science in action" (Arcadias et al. 2020: 2). For instance, by applying NASA Goddard's methodology from the Asuka 12236 Chondrite project, one student developed the *Scientific Method of Animation*, exploring the question, "How does Asuka connect to the themes of life?" which led to the creation of editorial pieces of art (ibid: 15).

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Many artists use computers to merge various methods and achieve their desired expressions. In *Forming Game* (2008), Malcolm Sutherland employed multiple techniques to create black-and-white images with distinct shapes and contrasts. He combined his drawings, archived sports films, and documentaries, using the rotoscoping method to remove backgrounds and create abstract lines and forms. Additionally, Sutherland employed a technique reminiscent of pinboard animation by pressing objects against a curtain to produce shadow effects and embossments. In *A Tangled Tale* (2013), Corrie Francis Parks integrates sand animation with digital layer composition in After Effects. On Vimeo, she describes her approach: "This vibrant, watery underwater world showcases my revolutionary approach to sand animation, a seamless blend of traditionally handcrafted imagery and technological innovation."[5]

Much like early experimental computer animators like Peter Foldes, CG artists continuously experiment with computer mechanisms – including software, programming, and coding – to discover new techniques and push the boundaries of creativity in computer animation. For instance, Nikita Diakur and Redbear Easterman created *Ugly* (2018) using dynamic computer simulation. Diakur explains on Vimeo[6] that many aspects of the animation rely entirely on the computer's calculations. He further notes that he embraced this process based on "accidents" to avoid creative stagnation (see Figure 5).



Figure 5. *Ugly* (2018) by Nikita Diakur and Redbear Easterman
(still frame, reference: https://www.stashmedia.tv/ugly-full-film-nikita-diakur/)

[5] https://vimeo.com/78802560
[6] https://vimeo.com/281529369

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Some artists incorporate elements from other art forms to develop a distinctive style. For example, multimedia artists such as Eric Paré and Jeff Frost use stop-motion in combination with long-exposure photography to create hybrid animations. The photography technique known as 'light painting' was first explored by a few artists, including Man Ray, Barbara Morgan, and Pablo Picasso. With the advancement of digital cameras and photography tools, this technique has become more accessible to a broader range of artists. Over the past decade, this has led to the fusion of light painting with stop-motion animation,[7] producing unique visuals in low light or darkness.

In *Light Spin* (2012), Eric Paré used 24 cameras positioned around dancers to create circular strips using the bullet-time technique, light painting, and stop-motion. Unlike a traditional photographer, Paré actively engaged in the performance as an animator. Dressed in all-black clothing, he held lights and rotated them around the performer during the dance, creating dynamic light patterns as part of the animation (see Figure 6).

To provide further examples of expanding animation through other art forms, *Trespass* (2012) and *Uncanny Valley* (2015) by Paul Wenninger stand out. In these animations, Wenninger employs a unique approach to creating pixilation animations, enhancing the aesthetics of stop motion by incorporating elements of theater, performance art, and cinematic decoupage.



Figure 6. *Light Spin* (2012) by Eric Paré (still frame from the video)

[7] Known as: light painting in stop-motion/light painting stop-motion/light painting animation

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Moreover, in *Dont Know What* (2019), Thomas Renoldner employs the method of single-frame editing, focusing primarily on sound and creating a musical composition by experimenting with the human voice and transforming language into sound and music. In this example, realistic film shots evolve into a surreal, structuralist, and abstract film. On Vimeo, Renoldner explains that *Dont Know What* "questions classical rules of different film genres by combining elements of avant-garde film/video art and entertainment cinema."[8]

As previously mentioned, improvisation plays a fundamental role in experimental animation techniques. From the perspective of this research, improvisation involves animating through spontaneous inspiration without relying on structured production pipelines, encouraging artists to avoid rigid planning. In many instances, the influence of improvisation is evident in the form of accidental animated movements and effects. Paul Taberham suggests that creating experimental animations functions as a method of discovery. He further highlights "non-rational intuitions" as a tendency or alternative approach in experimental animation:

> The artist may try to express that which cannot be articulated by spoken word, such as abstract feelings or atmospheres. In a sense, they try to express the inexpressible by calling upon their non-rational intuitions. (Taberham 2019: 24)

In this context, some experimental animators use film as a medium to explore surreal, philosophical, and mystical themes, often centered on self-exploration and non-verbal communication. The imagery in these works frequently reflects the inspirations filmmakers encounter during their creative process. For example, Ishu Patel, Harry Smith, Jordan Belson, and James Whitney created abstract animations influenced by Eastern philosophy, Jungian psychology, alchemy, yoga, Taoism, quantum physics, and surrealism.

Before continuing to explore this approach, it is essential to acknowledge that although live-action films and animations have fundamentally different definitions, experimental and avant-garde cinema appear to follow a similar trajectory. In *Avant-Garde Film: Motion Studies* (1993), the author explains that the earliest avant-garde films were a critical response to commercial cinema, giving rise to two key cinematic trends: abstraction and surrealism (MacDonald 1993). These artistic expressions contrast with industrial and commercial cinema, serving as a vehicle for self-knowledge and allowing filmmakers to express their deepest thoughts.

Additionally, MacDonald notes that experimental cinema prioritizes formal and technical concerns, while avant-garde cinema emphasizes critical reactions to societal

[8] https://vimeo.com/412906856

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and surrounding issues (ibid.). Consequently, some experimental animations adopt an avant-garde approach. This approach reflects diverse ways of life and explores new processes and ideas that challenge dominant beliefs and reject conventional norms. Moreover, it broadens the medium by providing a platform for marginalized groups, such as black communities, feminists, and LGBTQ+ individuals, to express their unique perspectives.

Another group of experimental animators creates artworks designed to evoke direct emotional responses from the audience. The films of the Quay Brothers serve as a prime example of this approach. Suzanne Buchan (2005) explains how these films deeply immerse the audience in the experience. According to Buchan, the Quay Brothers' animations offer a unique and refreshing art experience, enabling the audience to observe moving objects and abandoned dolls within the scene while attempting to grasp the unfolding events and feel omniscient. Although this task may seem impossible, the Quay Brothers' films convey to the audience that the objects on the screen possess life and motion, regardless of the viewer's acceptance (Buchan 2005).

The final approach to experimental animation has the broadest audience due to its incorporation of elements from folklore and traditional narratives. Notable examples include the masterpieces of Lotte Reiniger and Caroline Leaf, who use folk tales and ancient myths to reinterpret these stories. Their experimental techniques leave a lasting impact on the audience.

Unlike commercial cinema, experimental animation prioritizes artistic expression over audience satisfaction. Giannalberto Bendazzi (1994) notes that many experimental artists are defined primarily by their individualism and unique artistic approach rather than by their popularity with the audience. Len Lye, for example, admits that he does not know who his audience is; perhaps they are like him, drawn to art as a form of self-expression (Bendazzi 1994).

Before fully understanding the crucial impact of the audience on experimental animations, it is essential to examine the production strategies and platforms associated with these works. According to *Art in Motion: Animation Aesthetics* (2009), experimental animation comprises personal, abstract, non-linear, and non-narrative films that challenge conventional beliefs. These films are typically limited to private or small screenings and represent alternative ways of life. Furniss notes that experimental works are often produced on low budgets, using unconventional techniques, and are frequently created by artists from marginalized social groups (Furniss 2009).

On the other hand, as experimental techniques and styles have been increasingly utilized in film titles, promotional teasers, and video clips, these platforms have become ideal for showcasing new and avant-garde expressions. Moreover, innovative techniques developed in experimental animation have significantly influenced commercial cinema, contributing to the evolution of filmmaking. In Experimental Animation and its Influence on the Mainstream (2018), the author states:

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> While *Coraline* might be made by a mainstream studio within the Hollywood system, the influences of the experimental stop-motion animations of Svankmajer and the Quay brothers can be seen within the designs of the characters, with puppets having or gaining sharp facial features, the use of sharp teeth and hands, and the appearance of needles as weapons of destruction. (Rouschop 2018: 9)

In this context, independent or government-affiliated organizations allocate dedicated budgets to support experimental animations and related academic and research projects to promote the development of new and diverse styles. The primary objectives of these organizations include:

- Introducing native cultures to international audiences, as the National Film Board of Canada website highlights.
- Addressing contemporary art challenges, as exemplified by art networks such as ARTE and Channel 4 (UK).
- Promoting moral and humanitarian messages, as seen in productions by organizations like Amnesty International and UNICEF.
- Providing educational content, as displayed by networks such as BBC and TED.

Furthermore, it is essential to provide suitable platforms for the audience to engage with experimental animation, promoting its growth and expanding its reach. There are five well-known platforms for connecting the audience with art:

1. Private or public spaces specifically designed for interactive performances, such as museums and galleries.
2. Dedicated festivals, whether experimental or internet-based.
3. Television and home video networks.
4. Screenings in movie theaters.
5. The internet.

In what follows, we explore the role of the audience in experimental animation.

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3. The audience of experimental animation

How a film is presented, and the artist's intent can significantly influence the audience's perception. Buchanan notes, "An audience may be considered another site of resonance testing, where subjective aesthetic or institutional appreciation becomes a measure of success of the experimental works" (Buchanan 2016: 3).

In other words, understanding the factors that influenced a film's creation can help the audience engage with and appreciate its unique experience. Just as experimental animators require the right conditions and a calm state of mind to convey their emotions effectively through art, audiences also need an appropriate setting to fully appreciate experimental films' aesthetics.

Regarding avant-garde cinema, Scott MacDonald observes that most viewers have seen hundreds of mainstream films in theaters or on television before ever encountering an avant-garde movie. Their perception of film is shaped from childhood, both consciously and unconsciously, and this understanding is continually reinforced throughout adulthood (MacDonald 1993).

Furthermore, while watching a movie, the audience is affected by various visual and auditory elements. The moving images on screen and sound convey concepts through dialogue and other audio effects, simultaneously engaging the audience's eyes, ears, and mind. As Andy Buchanan (2016) notes, animation offers a broad range of opportunities for artistic exploration. It is a hybrid medium incorporating art, storytelling, sound, photography, handcrafts, drawing, and other processes. These elements, individually or collectively, can serve as platforms for experimentation, yielding innovative results in many aspects of animation. As a result, audiences are exposed to new forms across various fields.

In *Film Appreciation* (1976), Allan Casebier suggests that emotions play a vital role in the cinematic experience beyond visual and auditory elements. He argues that cinematic experiences are influenced by three key components: visual, auditory, and emotional expressions. Casebier emphasizes that emotional expression, shaped by the artist's identity, inner state, philosophy, and perception of societal issues, creates a distinct mode of expression. This expression is also influenced by the artist's aesthetic interpretation of a work of art's visual characteristics.

Additionally, in *From Pictorial Signs to the Text* (1996), Babak Ahmadi [9] emphasizes that tone plays a crucial role in understanding a film. Specific codes within a film create an invisible thread that allows the audience to grasp its expression (Ahmadi 1996). In this respect, the audience of experimental animation needs to be familiar with various techniques and styles, allowing them to comprehend the tones and codes employed in these works fully.

[9] Babak Ahmadi is a well-known Iranian author, translator, art critic and researcher.

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According to Malcolm Le Grice, the content or action of a film is directly connected to the audience's behavior or reaction, enabling viewers to shape their perception of the film's content (Le Grice 2001). In Archeology of a Computer Screen (1995), Lev Manovich examines the evolving relationship between viewers and screens across various media, emphasizing how the viewing experience has shifted with the advent of Virtual Reality (VR):

> [With VR], the spectator is no longer chained, immobilized, anesthetized by the apparatus that serves him the ready-made images; now s/he has to work to speak, in order to see. (Manovich 1995: 22)

Manovich notes that in traditional cinema, the screen functions as a window into another space, fostering strong identification between the viewer and the image while the viewer's body remains still. This creates a division between physical presence and the virtual world. With VR, however, the screen disappears entirely, merging real and virtual spaces into a unified experience (Manovich 1995). In this context, interactive media transforms viewers into participants, allowing them to personalize their experiences rather than passively consume content.

Maureen Furniss (2009) emphasizes the audience's crucial role in interpreting abstract cinema. Abstract films aim to expand our ability to perceive and understand the world, encouraging viewers to actively engage in meaning-making. Furniss argues that experimental works offer the artist and the audience a unique experience, as the artist explores new forms of expression and the audience gains a deeper appreciation of them (Furniss 2009). Ultimately, abstract cinema can be seen as a collaborative effort between the artist and the viewer, contributing to the construction of meaning.

According to Furniss (2009), viewers of abstract art are free to experience a wide range of reactions. This is the essence of the art form: while some may find it perplexing and chaotic, others appreciate its aesthetic value. Furniss suggests that interpreting abstract works engages different parts of the brain. Viewing such art can evoke unease or apprehension because the brain's right hemisphere, which processes abstract concepts and regulates sensations, becomes more active. In contrast, the left hemisphere, responsible for cognitive processing and reasoning, may become less engaged. This shift in brain activity can cause viewers to feel detached from their rational faculties (Furniss 2009).

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The audience of experimental animation needs a foundational understanding to grasp the meanings and ideas thoroughly. To facilitate this understanding, the current article suggests that filmmakers provide a more detailed introduction and explanation of the animation before its screening. This enhances the viewing experience, allowing the audience to develop a deeper engagement with the unique qualities of experimental animation and ultimately aiding artists in expanding the medium.

At this point, we propose the term 'experimental audience' to highlight viewers' evolving role in experimental animation. In this context, the audience becomes a co-creator of the artwork. At the same time, the artists transition from creators to observers, much like how Internet Art invites audiences to participate in the creative process by soliciting their preferences. For example, Caroline Robert's *Brainstream* (2021), an online interactive animation, involves the audience in shaping the story (see Figure 7). This suggests that a new form of global communication has emerged through the internet, enabling artists to pursue their creative desires with greater independence.



Figure 7. *Brainstream* (2021) by Caroline Robert (still frame from the website: brainstream.aatoaa.com/en.html).

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4. A kaleidoscopic view

In conclusion, this article contends that experimental animation prioritizes aesthetic innovation over narrative content, resulting in highly individualized and inventive designs. This art form challenges conventional filmmaking by employing mixed media and novel animation techniques to convey unique expressions. Furthermore, it is a powerful medium for communicating ideas shaped by cultural, social, and political contexts.

Experimental animators seek to disrupt mainstream norms and introduce new visual and aesthetic paradigms through unconventional materials, unexplored techniques, and emerging technologies. Experimental animation must be redefined through theoretical and practical lenses as these methods continually evolve. This ongoing redefinition highlights that creating experimental animation can be a research effort, resulting in new insights into animation studies.

This research has examined various approaches to experimental animation by categorizing the methods used to develop new techniques and modes of expression. Additionally, it has highlighted the significance of creating suitable platforms where experimental works can thrive and gain support, allowing the audience to actively shape new interpretations of the films. It can also be concluded that the artist and the audience share an empirical experience by watching (or, better to say, *observing*) an experimental piece of art. In this context, the presentation method and venue are crucial factors.

One of the primary objectives of this study was to establish a more precise definition of experimental animation. The findings suggest that the characteristics of this form can be classified into the following categories:

Context: Non-narrative, nonlinear, abstract, interpretive, metaphorical, and hybrid.

Technique: Innovative and boundary-pushing, often utilizing new technologies, materials, and experimental approaches to create unconventional aesthetics.

Graphics: Form-oriented and dynamic, often accompanied by music. The emphasis is placed on creativity, spontaneity, and aesthetic innovation.

Production Procedures: These are typically low-budget, with the artist playing a prominent role in highlighting individuality. Such works are often shown to niche audiences.

Approach: Cross-disciplinary, Avant-garde, and alternative, often reflecting the experiences and perspectives of marginalized groups. The process is inherently linked to self-expression and self-discovery.

Subjects of Interest: Common themes include psychology, philosophy, surrealism, literature, nature, anthropology, and sociopolitical issues.

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These categories help comprehend experimental animation, distinguishing it as a dynamic, expressive, and innovative art form. However, as with all art forms, experimental animation continually evolves, making providing a precise definition challenging and ongoing.

The fluidity and dynamism inherent in experimental animation generate constant debate, complicating the establishment of a concise definition. Nevertheless, a core function of experimental animation across eras remains pushing artistic boundaries and aesthetic innovation through individual techniques. We conclude by presenting experimental animation as a kaleidoscopic form that integrates diverse elements into a singular, dynamic visual experience. This is best conceived through the *Kaleidoscopic Experimental Animation Indicator*, a model we designed to offer a comprehensive and nuanced perspective on experimental animation (see Diagram 2).

This diagram is derived from a comprehensive review of previous research and an analysis of key components, including visual aesthetics, narrative structure, and thematic exploration. Acknowledging the multifaceted nature of experimental animation, the objective was to define criteria that effectively capture the complexity and diversity of the approaches and techniques utilized in this art form.

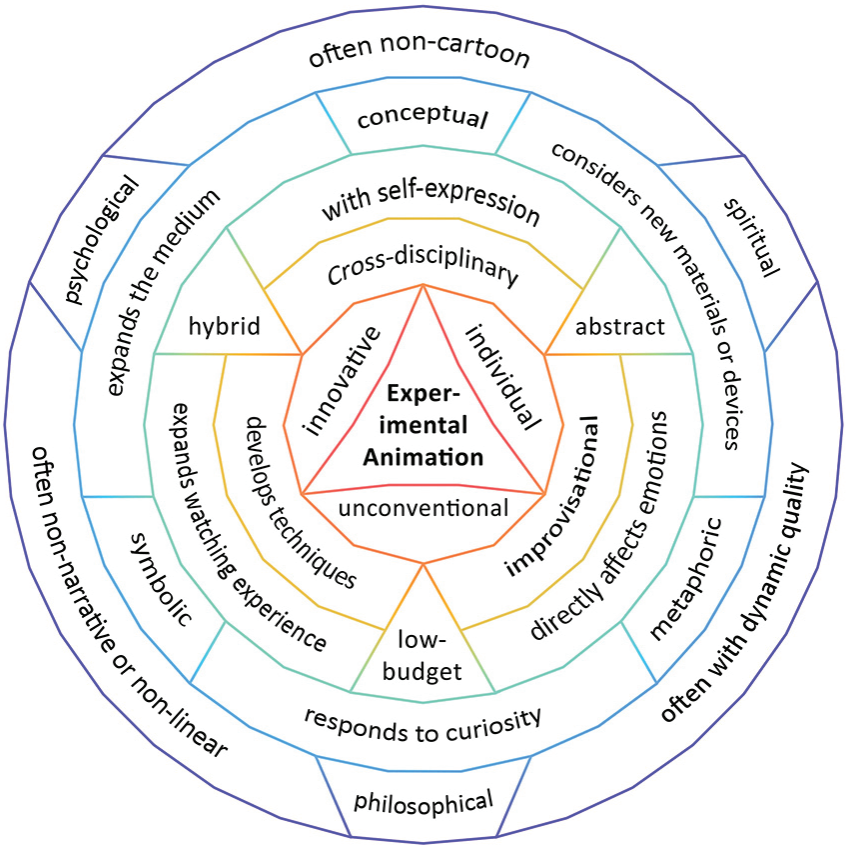


Diagram 2. Experimental Animation Indicator

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Meaning in motion:
A kinesemiotic approach to videogame analysis in *Street Fighter V*

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BY: **Arianna Maiorani** and **Jason Hawreliak**

ABSTRACT

Videogames are a semiotically rich medium, capable of utilizing virtually all modes of human expression (Ensslin 2012; Hawreliak 2018). Furthermore, they rely heavily on visual signification practices and have historically been the leading driver of advances in graphical technologies. This makes them ideal objects of study when examining animation trends, techniques, and representational practices. In this paper, we propose a novel methodological approach to analyzing animation in videogames, drawing on principles of Multimodality (Kress and van Leeuwen 2021; Jewitt 2009; Bateman, Wildfeuer, and Hiippala 2017) and Kinesemiotics (Maiorani 2021). As a variegated research area that focuses on communication across media, Multimodality provides a rich theoretical background, especially in the domain of Kinesemiotics, which focuses on movement-based communication in natural, hybrid, and digital environments. Drawing on the Functional Grammar of Dance (Maiorani 2017, 2021; Maiorani and Liu 2022) and its implementation in manual and digital annotation, the area of Kinesemiotics has expanded beyond the study of dance discourse and towards performance analysis in general, thus proving a flexible and adaptable approach. This method has considerable potential for systematically analyzing choreographed movements performed by characters in videogame environments. To demonstrate the value of this approach, we present a systematic analysis of movement in the popular fighting game *Street Fighter V: Championship Edition* (Capcom 2020), focusing on how gender-based stereotypes are coded in character movements. By comparing the same movements between female and male characters (e.g., a kick), we

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demonstrate how the game encodes gender norms through animation, i.e., how a move is conveyed as 'feminine' or 'masculine.' We conclude the paper by examining how representations on-screen are influenced by animation practices themselves, including motion capture direction. This research presents a novel methodological approach for investigating animation generally and has the potential to illuminate unconscious bias in the animation industry.

1. Introduction

In 2018, YouTube user sn0wsh00 uploaded a video from a *Batman: Arkham Knight* mod (a 'modified' game), which quickly went viral. The footage showed a cutscene with Batman and Catwoman walking outside onto a roof and conversing. This is nothing out of the ordinary; what made this video unusual is that a game modifier ('modder') swapped Batman and Catwoman's character models while keeping their original animations, meaning that Batman walked with Catwoman's animations and vice versa. The result was that Batman emerged from the building outstretching his arms dramatically, his hips swaying back and forth hyperbolically as he walked; Catwoman, in contrast, walks stiffly, her arms appearing to hold invisible kegs underneath them, her head and upper torso barely moving. The swap was generally viewed as humorous, as Catwoman's exaggerated femininity mapped to Batman's hyper-masculine frame presented a stark, somewhat absurd juxtaposition. However, while amusing, many also noted how the swap brought to light how gender stereotypes are coded in movement (e.g., Carter 2019). Even considering the exaggerated, idealized bodies of superheroes, the clip reinforces the Butlerian concept that what it means to be 'masculine' or 'feminine' is deeply ingrained and very much a matter of performance.

The representation of gender in videogames is one of the most well-established topics in game studies, appearing at the dawn of the field as an academic discipline in the late 1990s (Dietz 1998; Schleiner 2001) and persisting today (Malkowski and Russworm 2017; Vossen 2020; Rennick et al. 2023). Historically, representational analyses typically focused on visual and auditory content or how people look, dress, speak, and sound. Less attention has been paid to how meaning is conveyed through game movement, though there have been essential contributions in this area (e.g., Simon 2009; D'Armenio 2022). Through an analysis of movement in *Street Fighter V: Championship Edition* (Capcom 2020), a game in which players fight opponents in hand-to-hand combat, and drawing on Maiorani's (2021) concept of kinesemiotics, we argue that understanding the meaning of motion is an integral part of conducting representational analysis in videogames and other animated media. What does it mean to 'move like a woman,' or in our case, 'fight like a woman'? How might comparable actions – e.g., a kick, punch, or special move – differ between male and female characters? As we

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demonstrate, there are indeed differences, and they map well with dominant conceptions of the masculine and feminine. Applying kinesemiotics to videogame animation is novel and has several scholarly applications, especially for those working in areas related to gender, race, and disability studies. We also hope that a clearer understanding of how movement reinforces entrenched stereotypes will benefit developers when animating their characters in games and other animated media.

2. Animation in games

The history of animation and videogames are deeply intertwined. As engineer, Ralph Baer – inventor of the first home videogame console – has noted, "[i]f not for videogames and their enthusiasts… advanced computer graphics would perhaps still be found only in the exclusive domain of universities and the high-tech world" (quoted in Bushnell 2013: 101). As videogames have progressed from two-dimensional, monochromatic entities (like *Pong*) to three-dimensional, ultra realistic-looking simulations, they require increasingly powerful graphics hardware, which, in turn, has bred innovations in animation styles and techniques. These innovations have not stayed within the domain of games, either, as cartoons, film, and seemingly unrelated disciplines such as cartography have also benefitted (Edler and Dickmann 2017). This close relationship makes sense; with few exceptions (e.g., *The Vale* from Canadian developer Falling Squirrel), videogames rely primarily on animation and other visual signifiers for communicating information. Generally speaking, players engage with a game's content by interacting with objects visualized on a screen; these objects can be directly manipulated (such as a playable character) or provide a setting in which to act (such as an environment). In addition, most games have a user interface (UI), which displays information such as health, inventory menus, objectives, etc. While each facet of visual communication in games is essential, we primarily focus on 3D character animations of people, as they are most likely to help us understand broader cultural norms, attitudes, and symbolic systems concerning gender and other identity markers.

Given the importance of animation in games, it is helpful to understand some of the processes and technical aspects that go into creating game animations. Game studios indeed use many of the same animation tools and techniques as other media like film (e.g., software like Autodesk Maya or 3DS Max, and hardware like Wacom tablets and high-powered graphics cards); however, games' interactive nature means there are several differences in how animations are developed and consumed. A critical difference between animating for video games versus non-interactive media like film, for example, is that the user typically has control over one or more animations in a game. This means that animators must liaise closely with other components of the development team, such as design, as they must account for all possible actions available to

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players. It also may mean that animators need to prepare more animations than film animators since players often have control over the camera in contemporary games, meaning they can view a character from many different angles and scenarios. In short, game animators need to surrender a degree of control and predictability to players, which film animators typically do not.

Like film, game animations are created differently depending on myriad factors, including the desired level of visual fidelity (e.g., realism), scope, dimensionality, and budget. While pipelines and processes differ according to studio practices, character animation typically involves a) concept art (usually a 2D iteration); b) 3D modeling (a general shape, few details); c) texturing (applying details); d) rigging (applying a skeletal frame for movement); and e) lighting and other visual effects (e.g., glowing lines to indicate fast movement). Once a character has undergone this process, it is put into a game engine (like Unity or Unreal) to ensure it works properly in the game. Like all animation, this can be a lengthy, resource-intensive process; one way to avoid some of the manual components of the process is using motion capture, or mocap, which, as it happens, was used in the development of *Street Fighter V*. Most high-quality mocap technology requires precise calibration of both space and equipment and so actors are typically required to come into a physical location to perform. Once in the studio, performance actors are outfitted with tight-fitting suits with ping-pong ball-sized markers attached to them. These are necessary for giving the cameras something to track and translate into a 3D image on a computer (usually appearing as a skeleton).

The number and placement of markers vary widely, depending on the project, degree of fidelity required, hardware/software, etc. Markers are typically placed on joints (elbows, ankles, shoulders, etc.) but can also be placed on other body parts – including the face – to generate a more comprehensive dataset. Generally speaking, the more markers employed, the more accurate the data. Movement actors are then given directions to perform a specified move or movement sequence. Once the movement data has been captured, it usually needs to be 'cleaned up.' For example, if capturing a walk cycle, there may be some 'jittering' in a leg, an arm can become detached, etc. Animators must then work in a piece of software to remove these issues. Once the mocap data has been cleaned up, animators can overlay a character model onto it. This is very cost-effective as a single rendered skeleton can be re-used as often as desired. In the popular game *Fortnite* (Epic 2017), for example, players can purchase 'emotes,' or dances which all characters can use; there are hundreds of characters to choose from in *Fortnite*, so allowing each character to perform a single dance move is very efficient, and often leads to humorous scenarios, such as Darth Vader doing the Macarena dance.

We outline the process in some detail to help demonstrate its deliberateness. Choices are made at every stage: hiring the actor(s), setting up the equipment, providing direction to the actor, cleaning up the data, and overlaying the data with a character model. If not careful, each choice can contribute to gender stereotypes, whether intentional or not.

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3. Games and gender

As noted, gender representation in videogames is one of the most well-established topics in game studies, which emerged as an accepted academic discipline in the mid-1990s. In 1998, Dietz published a foundational survey of the portrayal of women in videogames in relation to violence, social roles, and behavior, highlighting the frequency of stereotypical and negative representations of women as subordinate to male characters. Almost ten years later, a study on the evaluation of gender stereotypes, based on a social-cognitive domain framework (Brenick et al. 2007), demonstrated that male character stereotypes that focused on strength and aggressiveness were viewed more positively than female character stereotypes, which were often hypersexualized to please male gamers, which in turn led to the exclusion of female gamers. The study also showed that while female gamers evaluated gender stereotypes more negatively, male gamers were more likely to condone stereotypical images. In 2009, Maiorani focused on avatars as multimodal representations and evaluated body feature choices available to players when creating their avatars (i.e., race, gender, color, body type); these choices would then determine possibilities and limitations in terms of avatars' movement-based communication, interpersonal relationships, and acquisition of skills.

Following a pioneering study by Bartlett and Harris (2008), Matthews et al. (2016) used Social Comparison Theory to compare body type model perception through videogames and other media to verify whether specific body features negatively impact female gamers' body image perception. They start from data that confirmed that the standard body types in videogames had tended to align with the typical heteronormative fantasies of hyper-muscular, strong male characters against hypersexualized female characters. The findings indicated that because hyper-sexualized female bodies reflected male fantasies rather than female fantasies, female gamers were not that affected by games in terms of their body perception. What is disconcerting is that the female avatar bodies keep on perpetrating female body imagery that portrays women as hypersexualized objects created solely for male gamers' enjoyment. More recently, Gray (e.g., 2014; 2020) has demonstrated the adverse effects of racial and gender-based stereotypes, especially among Black men and women gamers. She has persuasively shown that even when Black characters are represented in games, they often perpetuate harmful stereotypes relating to race and gender. With so much work on bodily appearance in avatars, we want to approach the problem of gender stereotypes in videogames from a different angle. Going beyond analyses of body type, skin color, clothing, and other static markers, our research focuses on how avatars' movement reinforces gender stereotypes, especially within female characters who are often hyper-sexualized in their animations. We argue that movement is an important yet understudied component of this representation as it is used to *perform* hyper-sexualization. We mainly focus on fighting games as movement is a central feature for all characters, male and female, and it is a prominent feature of these games.

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Representation in the specific area of fighting games has also been a common area of inquiry both in academic (Cassell and Jenkins 1998; Harper 2013; Thrasher 2015; Droumeva 2019; Sengün et al. 2022) and non-academic publications (Fussell 2015; D'Anastasio 2018). Gestures and movement in videogames have been studied in the past (Simon 2009; D'Armenio 2022), but these studies did not look specifically at movement in relation to gender. In their comprehensive review of the latest developments in terms of gender, race, and ethnic stereotypes in videogames, Şengün et al. (2022) focus on the broad cultural impact of fighting games, which is amplified by spin-off media products like films, comics, and sponsored tournaments. Gender, race, and ethnic stereotypes in these games, which present large rosters of playable characters, lead to problematic representations of minoritized groups and the hyper-sexualization of female characters in particular. They also tie these representational disparities to the fact that the videogame industry is mainly white-male-dominated, which is one likely reason why gender and racial stereotypes continue to persist in the industry. The study is based on investigating 64 characters taken from *Street Fighter V* and *Tekken 7*. It shows the negative impact of playing these and other fighting games on social behavior. It also shows that developers themselves seem to have problems in matching skin colors to races or nationalities and, therefore, end up with a skin tone palette that generally reflects a stereotypical 'Black or White' opposition. We build on this study and others as they do not tend to focus on how movement itself might generate bias and reinforce stereotypes. The following section outlines our primary methods for analyzing movement-based representation in fighting games: multimodality and kinesemiotics.

4. Methods: Multimodality and Kinesemiotics

Videogames are a semiotically rich medium, capable of utilizing virtually all modes of human expression (Ensslin 2011; Toh 2018; Hawreliak 2018). Although videogames rely heavily on animation to communicate information, animations are just one semiotic resource for developers. Multimodality is, therefore, a valuable framework to employ when analyzing videogames. While there is still debate about what constitutes a semiotic mode (Castaldi 2024), for our analysis, we take a broad view of the term as "a means for making meaning" (Jewitt 2009). In this conception, modes include still images, moving images, music, sound effects, gestures, writing, speech, haptics/tactility, etc. In short, a mode is a distinct way to signify information. Multimodality, then, looks at how individual modes combine to create meaning potentials (Kress and van Leeuwen 2021; Jewitt 2009; Bateman and Schmidt 2012). In a fighting game such as Street Fighter, the game employs

- **Moving image** (character movements);
- **Still image** (backgrounds);

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- **Text** (e.g., character names);
- **Haptics** (rumble controller);
- **Music** (typically pertinent to the fight's geographical location) and
- **Sound effects** (grunts, special move calls, thuds, etc.).

These modes convey multiple forms of information to the player. The visual modes convey character aesthetics, such as physical appearance. Still, they also provide essential information about the game, such as player position (e.g., distance from the opponent), health bars, whether a hit has landed, etc. Each player has animations, including combat moves like punches and kicks, idling, celebrating victories, walking, jumping, and so on, which also help distinguish between characters.

In addition to these more established modes, videogames also employ the procedural mode, which refers to how games use rules, processes, and mechanics to signify information (Murray 1997; Bogost 2007; Hawreliak 2019). For example, suppose I wanted to signify that a particular character in a fighting game is powerful. In that case, I can use filmic modes like moving images (the character can be depicted as large, muscular, etc.) and sound effects (a loud thud for footsteps). Still, I can also provide mathematical information in a game engine, such as giving the character a high damage value. In fighting games, there are two primary values: health, the amount of damage a character can take before losing a round, and damage, the amount that a particular move subtracts from health when landed. I can define a variable – e.g., punch damage – and assign it a specific value indicating how much damage I want the player to inflict when throwing a punch, as seen below in pseudocode for two characters, Ryu and Cammy: [1]

Ryu punch Damage = 100;
Cammy punch Damage = 80;

In this example, Ryu has a stronger punch than Cammy since Ryu's punch inflicts more damage. I have communicated this information to the player via a rule (i.e., the amount of punch damage assigned to particular characters), which is semiotically distinct from indicating strength via image, sound, etc. In most fighting games, simple moves like punches are granted the same damage as these games are highly competitive, so it is essential to balance characters as much as possible. As we detail below, however, some moves are primarily for combat (winning a match) and moves that are mainly decorative and so serve less of a procedural purpose; the distribution of these moves, as one might expect, falls closely along gendered lines.

[1] These are arbitrary values used for the purposes of illustration.

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In the context of multimodality, while we will focus on animation (i.e., moving images) here, it is essential to note that other modes profoundly influence the meaning of a particular animation. Our analyses below demonstrate how movement reinforces gender norms already present in different modes, such as still and moving images (e.g., body type, clothing) and speech/sound effects (Droumeva 2019).

5. Kinesemiotics and the functional grammar of dance

As we are focusing on movement and what movement communicates through the interaction of body and space, the analytical tool we have used is the Functional Grammar of Dance (Maiorani 2021), and specifically, some of its features that are particularly useful in the application to choreographed combat movement in a controlled environment like the one in *Street Fighter*. The Functional Grammar of Dance (FGD) has been honed and successfully employed in international, collaborative research projects on movement-based communication in dance: *The Kinesemiotic Body*,[2] funded by the Arts and Humanities Research Council in the UK and the Deutsche Forschungsgemeinschaft in Germany and involving an interdisciplinary team of researchers based at Loughborough University (UK) and at the University of Bremen (DE) as well as the English National Ballet (UK). The FGD was created drawing on M.A.K Halliday's Functional Grammar (Halliday and Matthiessen 2013) for verbal language and Multimodal Discourse Analysis (Kress 2009; O'Toole 2011; Bateman et al. 2017). It is a model for the analysis of choreographed movement-based communication that focuses on how movement is structured and performed to create meaning through the interaction of body and meaningful portions of space (i.e., areas and/or spots in the communicative/performative context that are characterized by the presence of people, objects and/or props).

Several examples of analysis carried out on various dance solos performed in different contexts by different dancers (male and female) and in different styles (classical ballet and modern dance) have already shown that the use of the FGD implemented in ELAN[3] (a software to segment and annotate audio and video recordings synchronically by setting up semi-automated controlled vocabularies on an imported clip) annotation provides insightful discoveries of character-defining movement patterns that may not be immediately captured by the viewer but that generate specific meanings throughout the performance (see Maiorani et al. 2022 and Maiorani and Liu 2022; 2023). As dance choreographies are created to communicate identities, stories, ideas, and concepts, so are choreographies created for videogames. In the case of fighting games, movement

[2] https://www.uni-bremen.de/en/fb-10/forschung/institute/bitt/forschung-und-lehre/multimodalitaetsforschung-in-bremen/projekte/kinesemiotic-body
[3] ELAN stands for EUDICO Linguistic Annotator; it is a computer programme developed at the Max Plank Institute for Psycholinguistics (Nijmegen, The Netherlands). It is available for free and regularly updated to newer versions.

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features can be analyzed to understand whether choreographed movement choices made by game developers generate meaningful stereotypes concerning gender.

The FGD is a model for the analysis of movement-based discourse and not a model for movement analysis like traditional notation systems (i.e., Labanotation, Benesh notation) that record only movement in the physical space with its physical qualities. For example, when used to analyze the different choices that different dancers may make when dancing the same role, our FGD-based analysis highlighted how different choreographed movements can define two different takes on the same character (Maiorani 2022); this type of analysis does not only record how various body parts move in space but how and what kinds of meanings they generate through the interaction with the surrounding space. These interactions are created through what the FGD defines as *projections*. While performing, dancers *project* towards the surrounding space by extending or turning their body articulators (arms and hands, legs and feet, head, torso) towards people, props, and objects, connecting extended body parts to surrounding people or objects, thus creating meaningful visual interactions. These interactions provide visual information that viewers can interpret about the context of the performance. Projections can also be directed to the audience, creating an 'involving' effect and thus breaking the invisible wall between them.

The foundational principle of the FGD is that movement-based communication, like verbal communication, always happens in a specific Context of Situation. The Context of Situation is the sociocultural and physical environment that anchors the act of communication to a particular place and time and informs – and is informed by – the communication itself. To understand how this dimension that is *external* to the semiotic system/s that is/are used to communicate is systematically incorporated in the message/s that is/are produced, we recognize that it can be defined by three variables without which communication would not happen: Field, the variable that accounts for what the communication is about; Tenor, the variable that accounts for who is taking part in the communication; and Mode, the variable that accounts for the ways meanings are organized and communicated. These three variables activate many types of meanings that, in the act of communication, will express the topic (experiential meanings) respectively, the type of relationships occurring among the participants (interpersonal meanings), and the relevant textual configuration that will provide the act of communication with a specific 'shape' (textual meanings). These meanings will be realized by specific semiotic structures depending on the semiotic system used.

In the FGD, these structures are the *choreographic affordances*, structured movements that the body articulators can perform to realize different types of projections (Fig.1). Projections happen in what the FGD theory defines as the *Contextual Space*, the space where the performance takes place and which is designed for the purpose populated by contextually relevant objects, people, props, etc. The FGD recognizes two different types of *projections* that realize two kinds of meanings necessary to carry out any communicative act:

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Narrative Projections, which indicate action directed and oriented within the contextual space of the performance (i.e., going to, coming from, locating, connecting, addressing, engaging, etc.), and Interactive Projections, which indicate interaction either with the viewers of the performance or with participants within the contextual space. On the other hand, choreographic units provide the 'shapes' through which we recognize the textual composition of a movement-based communication. The smallest of these units is the building block of our analytical system and of the movement-based discourse we can trace through the FGD: the Move. When applied to dance, the Move is the smallest structural unit of movement performed *across* the contextual space. Two sets of projections mark it: the starting set – the configuration of projections realized by the dancer before moving across space – and the arrival set, the configuration of projections realized by the dancer after having crossed the minimal space that is necessary to transition from the starting set to the arrival set. The FGD also looks at the way articulators can cluster (or not) to focus towards one direction (Modal values of Projections), and at Narrathletic Enhancers, those movements of different types (turns, jumps, etc.) that are included in moves and inserted in the narrative of the performance to showcase the athletic skills of the dancers. However, as we will see, these Narrathletic Enhancers are frequent in specific cases and have very different functions in fighting games.

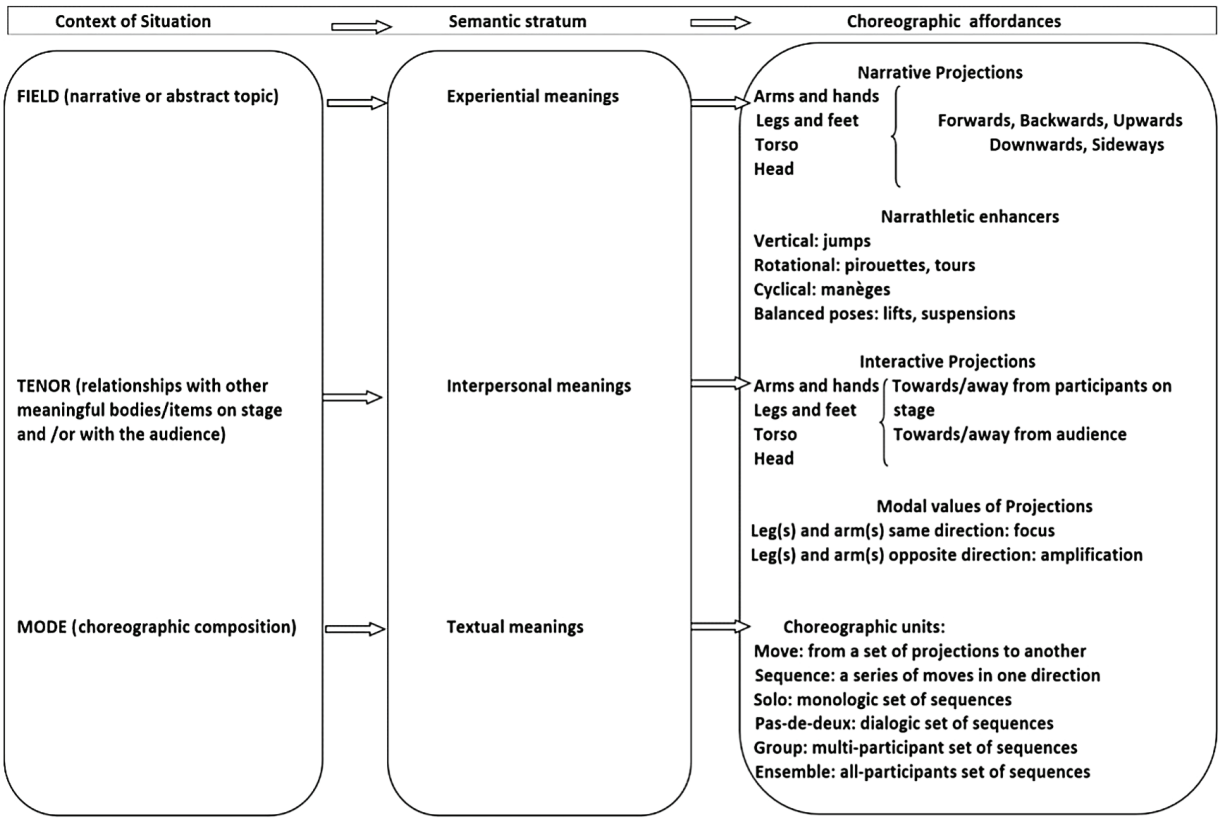


Figure 1. The most recent version of the Functional Grammar of Dance (Maiorani 2021:30)

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6. Street Fighter V and the application of the FGD

Fighting Games are a logical starting point for applying the FGD model to videogames. While they are often fantastical and hyperbolic, fighting games typically animate fighting styles associated with various martial arts, including Kung-Fu, Capoeira, and Aikido. There is a close relationship between dance movements and martial arts; this is most clear in forms such as Tai-Chi, a Chinese martial art, and Capoeira, a Brazilian form that combines dance and combat, but there are similarities across many forms (Allen 2015; Mason 2022). Like dance, martial arts require fluid movement and the application of learned movements in novel environments. Additionally, Fighting Games are a valuable object of analysis as they typically include a large cast of playable characters from diverse demographic backgrounds. This allows us to compare movements and movement styles across demographic categories. Fighting Games are also a strong candidate for analysis because the genre has been popular for decades, has a thriving competitive scene, and has received extensive scholarly attention. Let's compare the setup of fighting games with the setup of dance performances. There are many fundamental features that the two have in common that allow us to justify the application and adaptation of FGD elements to the analysis of fights in videogames.

For starters, fights are staged like dance performances, and each character in Fighting Games is assigned and characterized by specific moves that will determine their efficacy or failure in matches. Fights also occur against backdrops that portray particular locations in time and space and include objects and background characters (usually portrayed as viewers who cheer or react to a knockout or K.O.). However, we had to consider several factors that led us to some adaptations in applying the FGD to the analysis of characters' movements in *Street Fighter V*, discussed below.

Secondly, the use of contextual space in Fighting Games is similarly well suited to an application of the FGD model: the game offers the player a choice among several backdrops populated by background characters, props, and objects in locations at a variety of times of the day. However, these backgrounds primarily serve an aesthetic rather than functional purpose, as characters cannot interact with them; instead, they are meant to provide a dynamic and atmospheric environment to the fights. Like in most Fighting Games, characters in *Street Fighter* only interact with each other on a horizontal plane with respect to the gamer (left side to right side of the game screen and vice versa), moving backward to get away from each other or forwards to move closer to each other, or performing jumps that send them up and down the screen. Projections are, therefore, only directed toward each other, though as we demonstrate below, there are clear differences in how movement is used between male and female characters.

Although any fighting game would be suitable for applying the FGD, *Street Fighter V (SFV)* has several advantages. First, it is one of the most successful and long-running franchises in videogame history. Its first installment in 1987 was developed in Japan

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and initially designed for arcade play. While this game was undoubtedly successful, its sequel, *Street Fighter II* (Capcom 1991), found new audiences and became one of the best-selling arcade and console games ever. The series has regularly released new versions, the latest being *Street Fighter VI* in 2023. Although there have been several changes to the games' character rosters and combat moves, the game's basic structure has remained the same: players select a character and engage in 1 vs. 1 fights against an opponent, who another human or computer may play. During the match, players can employ typical martial arts moves, such as punches and kicks, but also extraordinary and often entirely fanciful moves (like Ryu's 'Shoryuken' fireball). Each match has three rounds; the first player to win two rounds is victorious. In addition, SFV boasts a wide range of playable characters, each with their own aesthetic characteristics, narrative backstories, countries of origin, etc.

Moreover, there is a good balance between male and female characters; almost all boast ideal gendered bodies (i.e., muscular men and thin but curvy women). Significantly, besides being popular in entertainment gaming, *SFV* is also popular in eSports (competitive gaming). This means that although each character has individual strengths and weaknesses, developers go to great lengths to ensure balance in the character roster and not to give anyone an unfair advantage.

For this initial investigation, we adapted the Move as a unit of analysis because space is used in a minimal way for the fights, and the direction and orientation of the Moves are only determined by the way fighters hit each other, not by ongoing narratives where projections interact with space in different directions. We then considered the Move as the slightest movement in space marked by an *initial position*, which is usually static for all characters waiting to deliver or receive a blow, and a *blow position*, a striking set of projections that is achieved when a character manages to hit (or at least tries to hit) the opponent. For each Move in the fight (part of a fixed and limited repertory for each character), we considered projections in Initial positions and Blow positions as well as interim positions assumed by characters to prepare to deliver a blow and reset to the next Move after it. Because of the fighting function of Moves, which are primarily intended to strike blows to the opponent, we have decided to consider for this initial investigation arms with hands and legs with feet (head blows are very rare) as enacting Narrative projections having a primary Combat Function because these are the articulators that mostly enact the fight in its various phases; consequently, we have focused on head and torso for the Interactive Projections as having a primary Combat Function too, as these are the articulators that mainly indicate the attitude of each character towards the opponent and the viewer. As these fights also include very spectacular movements due to the characters' exaggerated muscular mass and physical capabilities, we have included Narrathletic Enhancers that appear very frequently, especially in characters' special moves.

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7. Results (Game Analysis)

The analysis table below (Figure. 2) compares four characters in *SFV* while performing their signature moves: two female characters, R. Mika and Menat, and two male ones, Abigail and Vega. In terms of physical appearance, R. Mika presents all the features of a professional Western wrestler, though even more hypersexualized; in her default clothing (players can choose different outfits), her breasts are almost entirely exposed, as are her buttocks. Menat more closely resembles a fantasy character showcasing stereotypical features of ancient Egyptian culture combined with those of a contemporary gymnast (she has a crystal sphere that she handles like a ball, and she walks on toes albeit with a hypersexualized move of her hips). For the male characters, Abigail has all the features of a typical superhero villain with unrealistically huge muscles and hands; Vega, though lither and less muscular (but still well defined), combines the stereotypical features of a Spanish torero, dons a mask reminiscent of the Phantom of the Opera, and boasts a steel claw-like Wolverine from X-Men. Taken together, these four fighters provide us with a good starting point for analysis, as genders are evenly split, and some characters are more exaggerated/fantastical than others.

The Move has been broken down into four phases to provide evidence for our argument that female fighters are more frequently characterized by the performance of a considerable amount of superfluous movement within each Move that is not functional to combat (defense or attack) but that is instead functional to the showcase of specific hypersexualized body parts (i.e. enhanced breasts, buttocks, thighs, hips); moreover, these body parts are often revealed by these decorative moves due to very revealing clothes or gear that are lifted on purpose. For this reason, the function of this extra movement has been labeled as a *burlesque function* (BF), compared to moves primarily used for inflicting damage or a *combat function* (CF).

PF = Projections functions:
- **CF = combat function (defence-offence)**
- **BF = burlesque function (showcasing body parts)**

NH = Narrathletic Enhancer
- **J = jump**
- **T = turn**
- **B = balanced position**

The structures of the arms, hands, legs, and feet are interchangeable depending on whether the characters are moving towards one side or the other.

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Table of comparative special moves

Character and body structures	**Starting position**	**P F**	**N H**	**Path to blow**	**P F**	**N H**	**Blow position**	**P F**	**N H**	**Reset position**	**P F**	**N H**
R.Mika												
Right arm and hand (interchange-able side)	Bent downwards up forwards with fist	C F		Bent downwards up forwards with fist while jumping	C F	J	Straight upwards sideways in the air	**B F**	J	Straight sideways downwards in backwards somersault	C F	T J
Left arm and hand (interchange-able side)	Bent downwards up forwards with fist	C F		Bent downwards up forwards with fist while jumping	C F	J	Straight upwards sideways in the air	**B F**	J	Straight sideways downwards in backwards somersault	C F	T J
Right leg and foot (interchange-able side)	Bent downwards, calf down with foot flat on the ground	C F		Bent forwards, calf down with foot flat while jumping	C F	J	Straight upwards sideways, kicking opponent in the air	C F	J	Straight sideways downwards in bacwards somersault	C F	T J
Left leg and foot (interchange-able side)	Bent downwards, calf down with foot flat on the ground	C F		Bent forwards, calf down with foot flat while jumping	C F	J	Straight sideways, kicking opponent in the air	C F	J	Straight sideways downwards in bacwards somersault	C F	T J
Head	Straight forwards looking at opponent on opposite side	C F		Straight forwards facing viewer	C F	J	Straight forwards facing viewer	**B F**	J	Straight facing backwards	C F	T J
Torso	Straight behind thighs facing opponent on opposite side	C F		Straight forwards facing viewer behind thighs while jumping	C F	J	Bent sideways, facing viewer and showcasing breasts	**B F**	J	Bent forwards facing backwards, showcasing bottom and thighs	**B F**	T J

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Table of comparative special moves

Character and body structures	**Starting position**	**P F**	**N H**	**Path to blow**	**P F**	**N H**	**Blow position**	**P F**	**N H**	**Reset position**	**P F**	**N H**
Abigail												
Right arm and hand (interchangeable side)	Straight forewords downwards with fist on floor	C F		Straight forwards upwards while jumping	C F	J	Straight upwards while in the air after somersault	**B F**	T J	Straight forewords downwards with fist on floor	C F	
Left arm and hand (interchangeable side)	Straight backwards perpendular, with fist	C F		Straight forwards upwards while jumping	C F	J	Straight upwards while in the air after somersault	**B F**	T J	Straight backwards perpendular, with fist	C F	
Right leg and foot (interchangeable side)	Bent forwards, calf down with foot flat on the ground	C F		Straight backwards upwards while jumping	C F	J	Straight upwards while in the air after somersault	C F	T J	Bent forwards, calf down with foot flat on the ground	C F	
Left leg and foot (interchangeable side)	Bent backwards, calf perpendular, foot not in line with toes on the ground	C F		Straight backwards upwards while jumping	C F	J	Straight upwards while in the air after somersault	C F	T J	Bent backwards, calf perpendular, foot not in line with toes on the ground	C F	
Head	Straight facing opponent on opposite side	C F		Straight forwards facing opponent	C F	J	Straight facing up while in the air after somersault	C F	T J	Straight facing opponent on opposite side	C F	
Torso	Bent forwards facing ground	C F		Straight facing ground while jumping	C F	J	Straight facing up while in the air after somersault	C F	T J	Bent forwards facing ground	C F	

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Table of comparative special moves

Character and body structures	**Starting position**	**P F**	**N H**	**Path to blow**	**P F**	**N H**	**Blow position**	**P F**	**N H**	**Reset position**	**P F**	**N H**
Menat												
Right arm and hand (interchangeable side)	Straight forward, perpendiular	**B F**	B	Bent forwards, perpendiular	**B F**	B	Straight sideways perpendiular	B F	B	Bent forwards, perpendiular	**B F**	T B
Left arm and hand (interchangeable side)	Straight forwards downwards	**B F**	B	Bent forwards, perpendiular	**B F**	B	Straight sideways perpendiular	B F	B	Bent forwards, perpendiular	**B F**	T B
Right leg and foot (interchangeable side)	Straight forwards downwards, with foot point touching ground	**B F**	B	Straight forwards upwards, foot, showcasing bottom	**B F**	B	Straight sideways perpedicular, facing back, hitting and showcasing bottom	B F C F	B	Bent backwards perpendular, foot in line, showcasing bottom and thighs	**B F**	T B
Left leg and foot (interchangeable side)	Straight supporting, foot flat on the ground	C F	B	Straight supporting on demipointe	C F	B	Straight supporting on demipointe	C F	B	Straight supporting on demi-pointe	**B F**	T B
Head	Straight forwards, facing back	**B F**	B	Straight facing opponent's side	C F	B	Straight facing opponent's side	C F	B	Bent backwards facing up	**B F**	T B
Torso	Bent forwards, showcasing bottom	**B F**	B	Bent sideways facing back, showcasing bottom	**B F**	B	Bent sideways facing back	C F	B	Straight facing ground, showcasing bottom and thighs	**B F**	T B

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Table of comparative special moves

Character and body structures	**Starting position**	**P F**	**N H**	**Path to blow**	**P F**	**N H**	**Blow position**	**P F**	**N H**	**Reset position**	**P F**	**N H**
Vega												
Right arm and hand (interchangeable side)	Bent sideways, perpendiular	C F		Bent sideways, perpendiular	C F		Bent sideways, perpendiular	C F		Bent sideways up	C F	
Left arm and hand (interchangeable side)	Straight forwards, perpendiular	C F		Bent sideways, perpendiular	C F		Stretched sideways up	C F		Stretched sideways up	C F	
Right leg and foot (interchangeable side)	Straight forwards down	C F		Straight forwards down	C F		Stretched supporting	C F		Stretched supporting	C F	
Left leg and foot (interchangeable side)	Bent Backwards down, heel up	C F		Straight forwards down	C F		Stretched sideways up, facing front and hitting	C F		Stretched supporting	C F	
Head	Straight forwards, facing opponent's side	C F		Straight forwards, facing opponent's side	C F		Straight facing opponent's side	C F		Straight facing opponent's side	C F	
Torso	Straight, facing viewer to stretch arms	C F		Straight forwards, facing opponent's side	C F		Bent sideways facing viewer	C F		Straight facing back	C F	

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The table above has been adapted from the FGD to the combat modality in Fighting Games. It includes a description of the body structures performed by each character through the use of the articulators and the corresponding types of projections with relevant functions described as typical of this type of choreographed performance. The Move has been broken down into four phases marked by as many positions: the initial position (starting position in the FGD), the blow position (arrival position in the FGD), which ends with the delivery or the attempt at delivering a blow, and two interim positions that characterize the Move in the analysis of this type of combat where the contextual space is purely decorative, and where movement is choreographed so that projections supposedly fulfill the combat function in the aspects of defense or attack. These two interim positions have been singled out precisely because of the observation of the amount of extra movement that characterizes female characters before the delivery of a blow and before they reset to the following initial position.

The *path to blow* is an extra position that characters perform in preparation for the blow delivery; the *reset position* is the position they assume after the blow and before resetting to the initial position. Rather than mere transitions, these two positions mark strategic moments in the combat when a character performs a movement to maximize the effect of the blow (path to blow) and when they collect themselves before starting a new Move in the fight (reset position). These positions also provide micro-pauses to the game, allowing players to evaluate their fighting strategy. From this perspective, the reset position can also be considered an after-blow path. Limb articulators have also been combined into sets (arm and hand, leg, and foot) because of the primary combat function their projections are all supposed to fulfill simultaneously.

In contrast, the head and torso can project independently from each other. Each set of projections performed through a body structure created by the articulators has been labeled with its function, combat (CF) or burlesque (BF). Narrathletic enhancers have also been captured according to their types. Table 1 provides immediate evidence. In contrast, both female characters' Moves are characterized by many BF projections (with burlesque function, in bold in the table), while both male characters' Moves only feature CF (combat function) projections. Therefore, female characters' performance is a component that characterizes both their fights, often with spectacular narrathletic enhancers and the showcase of hypersexualized body parts, typical of burlesque.

The table also shows that while narrathletic enhancers are only present in the more classic male fighter, Abigail, who is also characterized by unrealistically huge body parts, these elements are not present in Vega, who can instead count on other 'weapons' to enhance the effectiveness of his blows. Abigail's narrathletic enhancers are used to deliver his blows, but Vega enhances his attacks through his Wolverine-like steel claws. Both female characters instead perform narrathletic enhancers: their function, though, is not only to enhance the effectiveness of their blow delivery.

The more classic R.Mika uses jumps to prepare and to deliver her blow as well as to showcase her breasts with her arms and hands straight up in the air; in her reset position, the jump and turn of the somersault that happens in the air after a blow have the only function to facilitate a full view of her naked buttocks and thighs when she lands back on the ground with her torso bent forward. On the other hand, Menat's movements on her toes do not provide extra balance to her blows: she uses them to enhance the swinging of her hips and the position of her buttocks and thighs. She does the same when preparing and delivering her blow, with her clothes shifting to reveal the lower parts of her body even more. The same burlesque show is prolonged by her reset position, which includes a turn that, in a real fight, would put her in a vulnerable position rather than allow her to reset for the next move. The gender bias perpetuated through movement is revealed by the objective analysis of comparable signature Moves using the same criteria for all characters.

This table is representative of the movement characteristics that are typical of several characters across genders that we have looked at, though not included in this paper (Kolin, Chun-Li, Dhalsim, Balrog, Cammy, Ryu, Blanka, Flake, Lucia). An interesting factor is that due to the movement features highlighted by the table, clothes in female characters move much more to reveal body parts during moves. In contrast, even loose clothes on male characters mostly remain in place. It is also noticeable that while all characters focus on each other with their faces, female characters tend to more often offer the view of their hypersexualized torsos to the gamer's look. In contrast, male characters' torsos are more predominantly facing the opponent.

8. Conclusion

This paper demonstrates the usefulness of applying the Functional Grammar of Dance and Kinesemiotics to movement-based communication in videogames. Our analysis shows that male character movements primarily have a combat function that indicates a damaging blow. In contrast, female character moves tend to involve greater decorative animations with little to do with combat. While there are certainly stereotypically gendered moves in *SFV that* can be ascertained at a glance (e.g., R. Mika's 'shooting Peach' move in which she attacks her opponent with her bare buttocks), the FGD allows us to break down individual moves into their constituent parts, thereby giving us a tool to analyze movement beyond what is visible superficially. Furthermore, these differences in movement correspond to other modal signifiers in the characters since their body shapes are almost invariably depicted according to gender-based ideals (i.e., super muscular men and thin but curvy women whose breasts and buttocks are exaggerated), and their vocalizations also tend to follow stereotypical gender representations. A multimodal approach is, therefore,

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helpful in understanding how *SFV* and media objects generally communicate conceptions of gender. By focusing on the under-studied area of movement in videogames, this study has the potential to make significant contributions to game studies, game development, and other animated media studies.

At this project stage, we have limited our scope to a handful of characters in the game and focused on gender representation. In future iterations of this project, we aim to expand our analyses to more characters, other game genres, and other identity markers, such as race, disability, and sexual orientation. There are different applications of the FGD, such as how representation might compare across animated media: how might gender be depicted in video games compared to an animated film or television show? We hope that the FGD will be utilized by scholars in a wide array of disciplines and applied to various media, animated and beyond.

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Learning (with) animation: semiotic premises of a transdisciplinary pedagogical framework

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BY: **Alexandra Milyakina** and **Maarja Ojamaa**

ABSTRACT

The paper employs the principles of semiotics of culture and social semiotics to explore the educational applications of animation with an empirical focus on Soviet Estonian animated films. We begin by discussing the polyglottic nature of animation as a medium, highlighting features unique to the local context. Soviet Estonian animation, conceptualized as a representative of the "Soviet West" (Pikkov 2016: 28), combines the universal conventions of the genre with the experimental approaches originating within the constraints of totalitarian ideology. Using a methodological framework grounded in Juri Lotman's functions of text (2001) and Gunther Kress's modes of communication with the text (Kress 2010), we examine three potential roles of animation in education: technical packaging, a historical artifact, and a poetic object. The case study revolves around three animated films featured on the digital learning platform "Estonian Animation" (Eesti animafilmid 2023) developed at the University of Tartu in collaboration with the Estonian Film Institute. The paper analyzes the project results while discussing the role of animation within the transdisciplinary framework of cultural education. Examples from the platform are complemented with an overview of educational materials developed by teachers and accessible in Estonian educational databases. The transdisciplinary pedagogical framework combines three approaches to learning (with) animation: relating content to various subject fields, exploring the historical context of animated film, and interacting with it through the prism of design.

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1. Introduction

The animated film can be regarded from the perspective of intermedia, as it entails conceptual fusion between different forms of arts (Higgins 2001: 53). With its roots in distant pre-digital and pre-film history, animation maintains close ties with cinema, painting, theater, comic art, video games, and other media. Perhaps it is the heterogeneous nature of animation that supports its protean ability to fulfill different roles and appeal to various audiences. Often associated with children's stories and entertainment, animation can create an "illusion of understanding" in its viewers (Lotman 1973: 6) while, in reality, offering something deeper and more intricate.

The versatility of animation makes it a valued educational tool. It effortlessly navigates between simplicity and complexity, concreteness and abstractness, familiarity and estrangement. Even more so than cinema, animation can show the world from an unusual perspective, whether from a divine viewpoint or inside a living cell. While a significant body of research delves into the use of animation in learning, the primary focus lies on instructional animations explicitly created for educational purposes rather than animated films. A meta-analysis by Berney and Bétrancourt (2016) indicates the effectiveness of animation in educational settings over static visual materials, primarily due to its ability to engage students' attention and demonstrate the functioning of dynamic systems. The transdisciplinary educational potential of animated films not initially designed for learning is also notable, with recent research emphasizing benefits in language learning (Hofmann 2018), life sciences (Kenna and Waters 2017; Stibbe 2008), social sciences (Champoux 2001; Russell 2012), and beyond. From a broader cultural perspective, the animated film can be considered a reflection of an era and a self-portrait of the society (Pikkov 2016: 30). Similar to fairy tales, animated films serve "as agents of cultural memory, national consciousness, and identity" (ibid. 31), therefore are subject to both historical-political and socio-cultural analysis. As highlighted by Lotman, "film is part of the ideological struggles, culture and art of its era" (1973: 54).

This paper applies the principles of semiotics of culture and social semiotics to explore the educational applications of animation, focusing empirically on Soviet Estonian animated films. Using a methodological framework based on Juri Lotman's functions of text (2001: 11-19) and Gunther Kress's modes of communication with the text (Kress 2010), we examine three potential roles of animation in education – as a technical packaging, a historical artifact, and a poetic object. The analysis centers on three Estonian films featured on the digital learning platform 'Estonian Animation.' Drawing from our direct involvement in the project, we complement the theoretical analysis with our personal experience in the development process.

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2. Estonian animation from an educational perspective

To this day, the Estonian animation landscape is defined by two main directions established with the founding of the Tallinnfilm studio's puppet animation department in 1957 (now Nukufilm) and the hand-drawn animation department in 1971 (now Eesti Joonisfilm). As part of the broader Soviet cultural system, Estonian animation had a complex relationship with the Soviet ideology. On the one hand, just like all other cultural productions, animation was strictly censored and required to adhere to the principles of socialist realism, which emphasized the heroism of the working class, the advantages of socialism, and optimism about the communist future. On the other hand, due to the peripheral position within the Soviet Union, the animators of Baltic republics enjoyed a "slightly greater degree of creative autonomy" compared to those in the metropole (Pikkov 2016: 28). This autonomy allowed them to explore more risky topics, such as national identity (ibid.), and to experiment with unconventional artistic methods. According to Pikkov, Soviet Estonian animation was characterized by "relatively bold experiments that corresponded to contemporary Western art movements and music" (ibid.).

Children's stories and fairy tale adaptations were viewed as relatively safe genres, less likely to undergo thorough scrutiny than feature films. When necessary, the primary tool for outmaneuvering the censors was utilizing Aesopian language, consisting of allegories, ambiguous references, and critical symbolism (Pikkov 2017: 33). It was not always successful as in some cases, the Goskino (Государственный комитет по кинематографии СССР; Госкино) officials were incredibly paranoid, leading, for example, to a scandal about a wrench, which had been randomly colored red in Avo Paistik's *Trifle* (*Pisiasi*, 1975) (Kiik 2006a: 104-105), and Paistik's *Vacuum Cleaner* (*Tolmuimeja*, 1978) being shelved for nine years, because the title character's red color was interpreted as criticism of the Soviet regime (Kiik 2006b: 92). At the same time, Paistik's immensely popular *Three Jolly Fellows* (*Naksitrallid*, 1984-1987) that got green light, depicted the main characters' victorious triumph over rats and cats in an idyllic village, while the audience quickly identified the rats as Soviet Russians and cats as the German aggressors (Pikkov 2017: 38). In general, censorship was primarily targeted at verbal scripts rather than visual implementation, gradually diminishing verbal language's importance in Soviet animation over time (Pikkov 2016: 32).

The climate of control coexisted with the perks of state funding, which ensured animators stable income and allowed them to focus on their creative work, including investigating sophisticated artistic techniques that might have been financially inaccessible otherwise (Pikkov 2016: 36). This paradoxical situation – balancing creative freedom and ideological control – fostered the creation of unique and original works and led to the lasting legacy of Soviet Estonian animation, which continues to play a significant role in both formal and informal education today.

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All three films featured on the 'Estonian animation' platform and chosen for this analysis exhibit typical characteristics as described above. Both films by Heino Pars – *Jussike's Seven Friends* (*Jussikese seitse sõpra*, 1967, 09:47) and *The Town of Honeymakers* (*Meemeistrite linn*, 1983, 19:54) – as well as Priit Pärn's *Is the Earth Round?* (*Kas maakera on ümmargune?* 1977, 09:45) are regarded as classics of Estonian children's cinema.[1] A representative of the earlier generation of Estonian animators, Heino Pars was celebrated for his children's films in the puppet animation genre. Pars' work is marked by the innovative integration of documentary and popular science elements into children's animation, exemplified by *The Town of Honeymakers* – a puppet animation that explores the inner workings of the beehive. His earlier film, *Jussike's Seven Friends*, is a simple and straightforward adaptation of the book written and illustrated by Silvi Väljal (1966). This didactic cutout animation portrays a village boy, Jussike, who gets acquainted with different days of the week and types of work. *Is the Earth Round?* is the first independent work of the now-renowned classic Priit Pärn, who was already a successful caricaturist then. While the film's visual style is reminiscent of caricature, the story – fitting into two lines of text[2] – can be seen as a commentary on the absurdity of Soviet life (and school textbooks, in particular).

Soviet Estonian animation continues to play a significant role in both formal and informal learning in present-day Estonia. Film education in the country has seen substantial growth in the past decade, leading to a plethora of initiatives and educational resources (Lõhmus 2020: 34). According to a survey conducted by the Estonian Film Institute in 2018, Estonian teachers regard the integration of films into various school subjects as an important direction (ibid. 62). While teachers typically create most learning materials of this kind, the Estonian Film Institute also supports institutional efforts, such as developing the digital educational resource 'Estonian Animation' (2023) by the University of Tartu. The project is a recent addition to the 'Education on Screen' platform established in 2015 by a team of students and researchers of the Department of Semiotics. Targeted primarily at school students, the initiative combines a thorough examination of key texts of Estonian culture with theoretical introductions on topics of cultural memory, identity, environmental awareness, and more (Ojamaa and Milyakina 2019; Milyakina 2019). The materials of 'Estonian Animation' have been developed by master's students in Semiotics in collaboration with the Estonian Film Institute.

[1] For instance, these three films were included in the series of 30 DVDs featuring the best Estonian children's films, as selected by the newspaper *Eesti Ekspress* (EE filmitoimkond 2014).

[2] The whole screenplay of *Is the Earth Round?* has only two sentences: "The Earth is round. This is easy to prove: If we start moving and keep going in one direction, eventually we will return to where we began our journey."

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3. Methodological framework

Our methodological framework based on the principles of cultural and social semiotics allows for the examination of animation from both the perspective of the text and its interpretation. The first direction follows three textual functions identified by Lotman (2001: 11-19): transmission of available information, capacity to preserve information, and creation of new information. These functions define how a text operates in culture but also determine its role in relation to cultural and historical contexts, creating a complex dialogue between past, present, and future interpretations. From the social semiotic perspective, the types of reader's relationship with the text can be described in terms of competence, critique, or design (Kress 2010: 6). For this research, we will attempt to integrate both perspectives to investigate the educational applications of Estonian animation.

The communicational function of texts lies at the heart of the positivist understanding of literacy aimed at acquiring competence. In the words of Kress, "[c]ompetence leaves arrangements unchallenged" (2010: 6): if the relation between the signifier and signified is arbitrary and kept stable only with the social power of convention, then literacy means passively abiding by this power. From this perspective, the act of communication is considered successful if the message remains unchanged on its way from the sender to the receiver. Text is regarded as a mere "technical packaging" for the message, and any discrepancies between the initial message and its interpretation indicate a communication breakdown (Lotman 2001: 12). Language is considered a stable and predictable system where all meanings are fixed. The passage of time does not impact the message's meaning, as if it is excluded from the temporal dimension.

The preservational function of the text introduces a diachronic perspective and allows the text to accumulate information about its previous contexts. As noted by Lotman, "Nowadays Hamlet is not just a play by Shakespeare, but it is also the memory of all its interpretations, and what is more, it is also the memory of all those historical events which occurred outside the text" (2001: 19). A text becomes a discrete sign of all the non-discrete essence that has surrounded it, which remains latently coded in the text even when it has been moved to a new communicative situation (Lotman 1988: 56). Apart from the original message intended for communication, the text also preserves memory about all its contexts, as well as images of the author and the reader (Zolyan 2016: 86). When moved into another cultural context, long-lived works of art "function as an informant that has moved to a new communicative situation and bring out hitherto latent aspects of their own coding system" (Lotman 1988: 56). From the social semiotic perspective, the preservational function can be explained by intentional or unintentional inclusion of contextual meanings into the text: "The makers of signs 'stamp' present social conditions into the signs they make and make these signs into the bearers of social histories" (Kress 2010: 69). Critique is a backward-oriented process that targets these additional layers of meaning and exposes the underlying power relations (ibid., 23).

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Finally, the creative function allows the text to generate new information, which is not deducible from already existing information. The meaning-generating capacity of text is determined by the heterogeneity of languages involved in its creation. The unpredictable interaction of languages leads to accidents and errors in communication, while partial untranslatability means that the target message never equals the source (Lotman 2000a: 582). While a competence-based approach to communication implies stable structures, and critique targets hidden meanings implicitly embedded in these structures, design thrives in unstable, provisional, and fluid environments (Kress 2010: 133). The design draws on both competence and critique, "carries their insights forward and deepens them" (ibid., 6). Rather than reinforcing already existing systems of signs, a design approach to communication suggests that individuals have the power to assert their interests by creating new forms of signs (ibid. 63). Brand-new languages, genres, and discourses can emerge from the transformative combination of languages within one text, and the outcome will always be unpredictable. Therefore, the creative function can be associated with poiesis – the process of creating something out of nothing.

Depending on textual functions and the reader's relationship to the text, the role of animation in the learning process can be framed as that of technical packaging, a historical artifact, or a poetic object (see Table 1).

Table 1. The role of animation in education against the background of Lotman's functions of text and Kress's modes of communication with the text.

Functions of the text	Communication	Preservation	Creation
Reader's relationship to the text	Competence	Critique	Design
Role of the text in education	Animation as a technical packaging	Animation as a historical artifact	Animation as a poetic object

In the first scenario, an animated film functions as a visual textbook portraying certain phenomena or events (Russell 2012: 158). The audience perceives the text uncritically as an accurate depiction of 'how things are.' In the second case, the film is considered a reflection of the era when it was created, serving as a historical artifact of that time (ibid. 160). Finally, an animated film represents a unique form of artistic language continually reinvented with each interpretation, whether by the author or the reader.

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Figure 1. Front page of the digital learning platform 'Estonian Animation.'

4. 'Estonian Animation': a case study

'Estonian Animation' is an open-access resource, currently available only in Estonian language (Fig. 1). The platform consists of three independent sections, each created by different authors and tailored to various audiences: the material based on *Jussike's Seven Friends* is developed by Jaanika Palm and is aimed at elementary school students; *Is the Earth Round?* (by Ulla Juske) focuses on the upper secondary school level; *The Town of Honeymakers* (by Karmen-Eliise Kiidron) targets students on the upper basic school level. Each material is divided into several parts, including the introduction, instructions for a creative project, discussion questions, and teachers' guidelines. The animated films are available to view on the same website.

In the following analysis, we will discuss the immanent properties of chosen texts and their role within the digital learning platform 'Estonian Animation.' The platform functions as a digital archive, which aims "to frame and re-frame, connect and re-connect, their various composite texts, in this way creating new textual wholes at a 'higher' level, or simply in terms of actual 'reading' sequences" (Ibrus and Ojamaa 2019: 9). Following the logic outlined in the methodological introduction, we will distinguish between two sets of functions: those inherent to the texts themselves, and those arising from the pedagogical context. The perspective presented by the 'Estonian Animation' platform will be compared to the examples of teacher-generated materials accessible in various databases.

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4.1. **Animation as a technical packaging**

The communicational function dominates animated films with a solid didactic orientation to convey specific information to children. This approach is characteristic of Heino Pars' films – *Jussike's Seven Friends* and *The Town of Honeymakers*. Like the classic edutainment series *Sesame Street*, *Jussike* introduces basic concepts, such as days of the week and different occupations, through simple verbal and visual language. The clear and straightforward story has been adapted into numerous media formats, including theater performances and radio shows, while lesson plans based on *Jussike* are available in several teacher databases (E-koolikott, Opiq, European School Education Platform). Most online resources are aimed at elementary school students or preschoolers, which corresponds to the target audience of the respective section of the 'Estonian Animation' platform.

The *Town of Honeymakers* also focuses on communicating a package of constant information, although through more sophisticated means, in terms of the narrative and technical implementation. Executed in the technique of puppet animation, the film follows the conventions of the nature documentary genre. Whereas the animation tells a fairy-tale story featuring anthropomorphized bees, the depiction is scientifically sound and enriched with typical elements of the popular science genre, such as infographics detailing the bee's life cycle (Fig. 2) and authentic beehive sounds. A keen nature enthusiast, Pars regarded *The Town of Honeymakers* as one of his best films and modestly cherished the fact that "beekeepers watched the film and did not criticize it" (Tuumalu 2005). To the present day, Pars' animation has served as a primary source of knowledge about bees for several generations of Estonians. It is actively employed as an educational tool in preschools and elementary schools. (Meehommik 17. novembril. 2023)



Figure 2. Infographics about the life cycle of a bee embedded into Heino Pars' animated film *The Town of Honeymakers*.

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The communication function is expressed differently in the third example. Priit Pärn defies narrative conventions by crafting a deliberately absurdist and looped story in his film *Is the Earth Round?* Even if the text fulfills a communicative function, it is hard to pinpoint its exact message. The character's journey around the globe never resolves whether it is possible to return to the same point if one always moves in the same direction. Similarly, the author admitted that he intentionally left viewers pondering what is right – to stay at home or to wander the world (Teede 2017).

To summarize, the communicative function is dominant in Heino Pars' films but less explicit in Priit Pärn's work. Among three parts of the 'Estonian Animation' platform, only the *The Town of Honeymakers* section reinforces a communicative perspective. The lesson plan designed for a nature class frames animation as a source of information about the bees' life cycle, the structure of the beehive, and the various roles of bees. After watching the film, the students are encouraged to complement the acquired knowledge with additional information and create posters on different topics (the role of bees in an ecosystem, methods to increase bee populations, and ways to support biodiversity). The film's historical context or artistic qualities are not in the lesson's focus. While 'Estonian Animation' does not emphasize the communicative aspects of the two other films, we discovered various teacher-made lesson plans that use *Jussike* to teach numbers and days of the week. Additionally, *Is the Earth Round?* could potentially serve as a visual aid in a geography class to illustrate different geographical zones and the shape of the Earth.

4.2. Animation as a historical artifact

A text also functions as a "condenser of cultural memory," preserving information about its previous contexts (Lotman 2001: 18). Each of the three films reflects the era in which it was created, as seen in both the artistic language and portrayed topics. Despite the relative artistic freedom experienced by the animators in the Baltic republics (Pikkov 2016: 18), all cultural production within the Soviet Union was subject to censorship and ideological constraints. As mentioned earlier, adaptations of fairy tales and folklore, significantly enhanced with didactic messages, provided a safe ground for animators. Both of Heino Pars' films, along with most of his other work, fit into this category.

Jussike and *The Town of Honeymakers* have a solid didactic orientation and convey the core values of Soviet society: diligent labor, social solidarity, and the importance of all forms of work. Rather than merely entertaining young viewers, both films aim to educate the audience, thus "combining business with pleasure." Additionally, *Jussike* introduces some signs of the Estonian national identity, vaguely reflected in the design of the characters' clothes, architectural elements, and natural surroundings. This aligns with the proclaimed multiculturalism of the Soviet Union as a family of many nations, which granted animators from national republics greater freedom to express national sentiments (ibid. 28).

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When asked in an interview about any complications with approving his first films by the Moscow committee, Heino Pars answered: "We started with children's films; I do not know that there were any misunderstandings" (Kiik 1995: 9). However, Priit Pärn's experience was different from the very beginning, as his first film, *Is the Earth Round?*, was not approved for all-Union distribution and was only screened in Estonia. As Pärn himself suggested in various interviews, possible reasons for this might include "the film's non-Soyuzmult drawing style and animation style" (Teede 2017), as well as its "excessively pessimistic" atmosphere (Trossek 2008: 33). Pärn's film exhibits some typical traits of the Soviet animation of the 1970s – a diminishing reliance on verbal language, focus on the surrounding reality, and an increasingly melancholic mood (Pikkov 2016: 29). *Is the Earth Round?* places familiar artifacts of Soviet everyday life – such as an iconic milk carton or a children's scooter – into an absurdist narrative, where objects constantly move and shape-shift. The familiar reality is contrasted with the capitalist abundance of the symbolic 'West' – depicted with flashing billboards, loud music, and constant consumerism. As markers of the parallel 'Western' timeline, Pärn's animation includes allusions to contemporary art, such as the surrealist animated film *Yellow Submarine*, inspired by the music of the Beatles (Fig. 3).



Figure 3. Allusions to the *Yellow Submarine* animated film in Priit Pärn's animation *Is the Earth Round?*

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The educational material 'Estonian Animation' does not explicitly delve into the historical context of chosen films. However, this topic might arise during students' discussions. For instance, the section dedicated to *Jussike* briefly introduces the history of animation, situating Estonian animation within a broader historical context. Similarly, Is the *Earth Round?* is complemented by the theoretical introduction to the history of Estonian animation and juxtaposed with the works by other Estonian artists. As a part of their creative assignment, students are asked to analyze the depictions of the environment in the film, focusing on the cultural meaning of the elements. The instructions are as follows: "What signs of cultural history do you notice? What do they represent? What does their use do for the narrative? Here, it is recommended to use additional materials and the Internet" (Eesti animafilmid 2023). Finally, the lesson on *The Town of Honeymakers* includes a gallery showcasing depictions of bees across various media, such as modern animation and advertising. This prompts students to compare different approaches in terms of their accuracy. One possible outcome of this discussion could be the learners' realization that Pars' portrayal of bees is more biologically accurate than that of his contemporary counterparts. In conclusion, while 'Estonian animation' does not explicitly frame selected films as historical artifacts, this approach would be potentially applicable, albeit requiring more background knowledge or research from both teachers and students. By adopting a critical perspective, learners can analyze the films as reflections of the era, bearing the imprint of contemporary ideology and artistic tendencies.

4.3. **Animation as a poetic object**

The third approach allows us to consider the creativity of animated films from several perspectives: the texts themselves, the authors, and the interpreters. Animations' inner creativity is fueled by the unpredictable interaction of languages involved in their development. Despite the constraints imposed by censorship and ideology, Soviet Estonian animators introduced their unique perspectives into their work, leading to the emergence of new styles and tendencies.

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Figure 4. Character dance reminiscent of abstract art in the final sequence of Heino Pars' *Jussike's Seven Friends*

For instance, Heino Pars' work is characterized by a peculiar combination of topics and genres influenced by his personal inclinations: his films unite documentary and fiction, technology and nature, puppet animation, and live action. While *Jussike* largely followed the narrative and visual style of the original book by Silvi Väljal, the filmmakers had to find creative methods to bring the story to life. This resulted in some intriguing artistic decisions, such as a final sequence in the film portraying a collective dance of all characters, reminiscent of abstract art (see Fig. 4). The innovative synthesis of fairy tale and popular science genres in *The Town of Honeymakers* impressed even the editorial committee, one of whom admitted: "As far as I know, nothing like this has been done in world multiplication" (cited by MTÜ EFA 2022). Despite the educational nature of the film, the authors chose some unconventional approaches, such as letting the characters speak for themselves instead of relying on traditional background narration, which made the story more personal and relatable. The filmmakers' choice to incorporate actual recordings from the beehive and involve professional beekeepers in the discussion distinguished *The Town of Honeymakers* from a mere fairy tale cartoon about bees, elevating it to the status of an all-time Estonian favorite.

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The creative function is expressed even more explicitly in Priit Pärn's work, not least due to the author's innovative choices. As a professional caricaturist, Pärn transferred elements of his artistic style into his first animated work, which critics characterized as "not a film but a moving graphics" (Laaniste 2006: 79). Similarly, reviews considered the film a polemic with the traditional plot structure, as the narrative line ends up being a circle (Gens 1978: 7). The ambivalence of the message – whether to stay or to go – is reinforced on the level of visual language through the use of relativity. The author himself explained in the interview: "For example, when the main character feels that he is very big and powerful, the foot of a huge animal enters the frame" (Teede 2017). The creativity of the text is further enhanced by the heterogeneity of elements depicted in it, ranging from mundane artifacts of everyday life to deeply symbolic images. Subsequently, this adds a symbolic value to everyday objects, like a carton of milk, and places existential problems, such as life and death, within the context of everyday life.

The platform 'Estonian Animation' focuses on the texts' creativity and promotes learners' creative engagement. As mentioned earlier, *The Town of Honeymakers* is predominantly approached from a communicative perspective; however, the educational materials dedicated to *Jussike* and *Is the Earth Round?* thoroughly examine the artistic choices of the authors and actively involve students in hands-on experiences. For instance, younger students can create their own versions of *Jussike* using cartoon-inspired templates. The instructions guide them through the entire process of filmmaking: cutting out and coloring the images of characters and backgrounds, filming scenes, adding a voice-over, and finally sharing the results with the audience. What is particularly interesting is that the students can observe how their creative choices affect the final results. Despite using the same source materials as in the original film (and book), each student's work will be unique.

An overview of teacher-created educational materials dedicated to the three selected films also demonstrates the significant influence of a creative perspective. For instance, a lesson plan centered on *Jussike* (Tegevuskava "*Jussikese*…") invites students to craft their rendition of the story with the help of the educational robot Qobo. Another lesson plan ('Jussikese seitse sõpra koos BeeBot'iga') combines creative and communicational perspectives by introducing numbers and days of weeks to preschool students while involving them in coding and artistic creation. A similar approach is adopted in the lesson based on *The Town of Honeymakers* for first graders (Ainetepäev), which integrates the creation of bee characters and animating the story with the assistance of an educational robot. Interestingly, we could not find any teacher-made educational materials centered on *Is the Earth Round?* which may be explained by the more experimental and 'adult'[3] nature of Priit Pärn's text.

[3] Priit Pärn's film *Is the Earth Round?* can be associated with a more adult audience due to its ambiguous message and visual style, which also includes depictions of nudity.

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5. Conclusion

Despite their seemingly simple nature, children's animated films can serve as a springboard for diving into complex topics, discussing the historical context of animation, or contemplating the meaning-generating potential of artistic texts. Instead of being dismissed as relics of a bygone era, Soviet Estonian animation continues to play a significant role in educating the new generations of Estonians. The case study of three animated films featured on the digital learning platform 'Estonian Animation' demonstrated the educational potential of animation as a visual textbook, historical artifact, and poetic object.

The perspective brought forward in the educational context does not necessarily have to coincide with the dominant of the text itself. For instance, a film created with a communicative aim in mind could also be considered through the lens of critique rather than as a neutral 'technical packaging.' At the same time, it seems reasonable to emphasize the inherent features of the text in their educational interpretation. For example, *The Town of Honeymakers* is typically presented by teachers for what it is – a comprehensive exploration of bees' lives. At the same time, *Jussike* is employed to introduce numbers and days of the week. Similarly, the overtly law-defying nature of the animated film *Is the Earth Round?* calls for its examination from a creative perspective.

Any animated film has the potential to be analyzed from all three perspectives within a transdisciplinary pedagogical framework. A communicational approach highlights the informational value of the text, intentionally assigned by its author. A critical perspective allows for examining the animation as a product of its era, implicitly carrying the imprint of conventions and ideologies – a particularly relevant aspect of Soviet cultural production. Finally, the perspective of design brings forward the meaning-generating function of artistic texts and their capacity to engage the audience in further expansion of the artistic universe. In conclusion, this framework can potentially enrich classroom practices and perhaps the creative process of animators by offering multiple lenses through which animations can be understood and produced. It invites educators to employ animations in diverse ways, from teaching concrete facts to cultivating critical and creative thinking. At the same time, it could also challenge animators to consider the educational impact of their artistic choices.

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Animation and Artificial Intelligence: Cartoons and the eclipse of semiosis

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BY: **John Reid Perkins-Buzo**

ABSTRACT

In the second volume of *Technics and Time, Disorientation*, Bernard Stiegler finds that Artificial Intelligence (AI) profoundly shapes memory and, thereby, identity and time (2009:162-187). Through this shaping, AI weakens these two since it excludes human beings from the production of every sort, both material and intellectual. Human labor, with its concomitant radication in shared cultural and historical experience, is lost or diminished, creating a desiccation of meaning and the devaluation of human existence. Anthroposemiosis, described by John Deely as "the fulfillment of 'human nature' in the creations of 'culture,' scientific and literary alike" (1994:118), no longer perfuses the entire production of culture but is supplemented or even replaced by other-than-human "generative transformers." This is especially true of the art form of animation, which has striven to communicate human culture through moving images, mainly visual stories and motion graphics. As AI takes over larger and larger portions of the animation workflow, questions arise concerning the very nature of the activity. We can ask with Steigler, "Who animates what?" (2009:177). Will the who, as it becomes excluded, leave the *what* meaningless? By closely examining the AI generative image software, Stable Diffusion, and OpenAI's Sora, I will propose a tentative response to these difficult issues. Drawing on C.S. Peirce's essay "Man's Glassy Essence," I explore his musement that human beings truly exist on the level of shared cultural realities and that these "are no mere metaphors…" (1892:21). Animation which persists at the shared level of anthroposemiosis, and resists industrialized AI, maybe one way that "the semiotic animal … becomes aware of the historicity [*νόμος*] within human experience of nature [*φύσις*] as a whole" (Deely 2009:107).

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1. …ἔπλετο νείκεος ἀρχή

[… came the beginning of strife] (Homer, *Iliad* 22.116)

A few years before he died in 2020, Bernard Steigler commented on the state of artificial intelligence in 2016: "The first thing to understand is that artificial intelligence has changed and that today it's a *network* of artificial intelligence. It can produce artificial stupidity, and if we don't want artificial stupidity, it is necessary to understand well what it is" (2016: 0:24 seconds into the video clip).[1] Artificial stupidity occurs when artificial intelligence (AI) gets applied in a manner that obscures or confounds the intelligibility of the field of application. In a Large Language Model (LLM) like ChatGPT, this sort of algorithm behavior expresses itself whenever inaccurate, disconnected, or even fictional results are generated. The most egregious of these fictional results are termed 'hallucinations' and can be quite detailed and convincing. Medical researchers have noted the high rates of inaccurate and fictional references generated by ChatGPT 3, making it not recommended for scientific work.[2] Robin Emsley, the editor of *Schizophrenia* journal, writes in *Nature* of this type of algorithm behavior,

> This is outrageous. While concerns and cautions have been expressed in the rapidly emerging literature, I would have expected a stronger response. How could the use of such a profoundly defective tool as this be permitted without public outcry and calls for prohibition of its further use in the research environment? The phenomenon has been charitably referred to as hallucinations. This is a misnomer. Hallucinations are false perceptions. What I experienced were fabrications and falsifications (2023).

These 'hallucinations' occur frequently when user prompts fail to exhaustively detail a subject being queried, but sometimes even with a high level of detail (McGowan 2023). The fault potentially lies in the probabilistic outputs of LLMs, which derive from estimates of semantic similarity between texts, which allows a certain amount of "informed guesses, with bits of false information being mixed with factual information" (Emsley 2023). In Emsley's view, researchers should "use ChatGPT at [their] own peril … I do not recommend ChatGPT as an aid to scientific writing" (Emsley 2023). At this point, LLMs cannot help but generate false and confabulated results, and it is often tough to discern bad information from accurate results without expertise in the field of

[1] My translation from the YouTube video, originally recorded in French.
[2] In a 2023 study using ChatGPT3, "115 references were generated by ChatGPT … Among these references, 47% were fabricated, 46% were authentic but inaccurate, and only 7% were authentic and accurate" (Bhattacharyya 2023). The authors conclude that researchers "are advised to verify medical information from reliable sources and avoid relying solely on artificial intelligence-generated content."

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application. This is precisely the 'artificial stupidity' that Steigler warned against even before the construction of LLM transformer models (Wolfram 2023:6). This egregious behavior of AI algorithms is not limited to contemporary LLMs but is also present in the popular diffusion algorithms used to generate images, video, and animation. It is not noticed as much due to the visual nature of the output but causes frequent consternation when hands and feet do not render accurately, eyes slide around a face, or three arms sprout from a human figure. Beyond these examples of 'artificial stupidity' lies a more profound obstacle for the use of these diffusion techniques in the generation of art that Steigler identified in *Technics and Time*: AI de-forms human memory and, by doing so, distorts the relations of human labor (rooted in shared culture and history) to the meaning of human existence and identify. How does this come about?

In the second volume of *Technics and Time, Disorientation*, Steigler recalls his disagreement with Leroi-Gorhan over the idiomatics of early hominids (Steigler 1998:172-175; Leroi-Gorhan 1993:114-116; 229), which launches a discussion of Heidegger's Dasein as indeterminate: "Is Dasein the individualized who, or the group … of the *who* as *we*? In other words, where must indeterminacy finally be instantiated? – in the *I* or in the *we*?" (1998:67). This has a crucial significance since, if idiomatics is ethnicity, always already, as Steigler holds, then *Dasein* must be "a *we* [which] would inscribe indeterminacy firmly within idiomaticity which is consistent with Heidegger's last proposals" (Steigler 1998:67).[3] He then introduces a type of memory, following Leroi-Gorhan, that does not fit into a socio-ethnic level: "the appearance today of the pre-programmed machine as ejecting the *who* from its ethnicity while destroying its elementary operational and behavioral chains, and thus destroying ethnic unity …" (Steigler 1998: 67-68). The pre-programmed machine (which from the side of *Dasein* reaches its epiphylogenetic apex in contemporary AI algorithms) provides the *what*, which is "an essential aspect of technics *today*," in opposition to the *who*, which is always already embedded in some socio-ethnicity. Because of this embedding, the *who* is at some point expelled from the algorithm using a sort of "exteriorization of the nervous system and the imagination…" (Steigler 1998: 69). This is brought about by the introduction of indeterminacy, improbability, un-programmability into the algorithm.

How does this happen, since an algorithm is at odds with un-programmability or indeterminacy? In 1958, much earlier than Steigler, Simondon wrote that "a machine

[3] Peter Trawny, editor of Heidegger's *Gesamtausgabe*, discusses this, concluding that "As *Dasein* 'anticipates death' and carries out 'finitude,' it becomes … sensitive to events that either stem from or correspond to its 'heritage.' … Moreover, *Dasein* is never alone in its comportment toward its 'heritage.' … 'fateful *Dasein* essentially exists as being-in-the-world as being-with-others.' Therefore, *Dasein's* 'happening' (*Geschehen*) is a 'happening-with' that Heidegger understands as 'destiny' (*Geschick*). The latter is the 'happening of a community or of a people.' Thus *Dasein's* 'historicity' entails that *Dasein* 'always already' belongs to a 'community,' i.e., a 'people' (*Volk*)." (Trawny 58-59). *Dasein* is a unified being which is both a *who* and a *we* in Trawny's view. This also aligns with John Deely's equivalence of *Dasein* with Aquinas' *esse intentionale* (Deely 1971:105-07); for more on this, see Kemple's illuminating discussion of Deely's insight (Kemple 2017: 327-330).

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that has regulation is in effect a machine that harbors a certain margin of indeterminacy in its functioning; it can, for instance, go fast or slow" (2017:152). For this reason, he held that as a machine reduces its level of indeterminacy through internal regulation, it restricts the information the machine can pass. From this, he concludes that,

> The notion of a perfect automaton is a notion which is obtained by confronting a limit, and so it harbors something contradictory: *the automaton is supposed to be a machine so perfect that the margins of indeterminacy of its functioning would be null, but which would be able nevertheless to receive, interpret, and emit information.* And yet if the margin of indeterminacy function is null, then there is no possible variation and consequently, this iteration has no signification … Information is all the more significant, or rather, a signal has all the more informational value as it acts in concordance with an autonomous form of the individual who receives it… [emphasis in the original]. (Simondon 2017:152)[4]

Simondon was writing before the diffusion of digital technology, and thus, his examples involve analog signal processors. Still, his objection to the exclusion of indeterminacy in information transmission retains its validity (Schwartz 2017:20-21).

The AI algorithm expels the *who* at the training phase by automating the socio-ethnicity of a presumed *who* (Steigler 2009:71-78). The automated compiling of datasets and training of large neural networks (LNNs) manufactures an ersatz simulation of the *who*, which can never be found in real-world circumstances.[5] This exteriorization

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[4] Schwartz, et. al., point out two basic types of uncertainty (indeterminacy) in AI systems, *epistemic* and *aleatoric*, that is 1) uncertainty in the parameters of the computed model and 2) uncertainty in the datasets themselves. The computed model used in an LLM or diffusion-based algorithm relies on mathematical methods such as nonconvex minimization of an appropriately-chosen *cost function* to generate its internal neural-network connections (a *cost function* computes the 'cost,' usually a weighted distance, to link from one point in the neural-net to other points). Formulating the problem in this way introduces non-unique mathematical solutions, hence indeterminacy (Kochenderfer and Wheeler 2019:220-21). In some cases, augmenting the size of representative training data can make the space of solutions smaller, reducing the epistemic uncertainty. However, the mathematical methods can never exclude indeterminacy.
Epistemic uncertainty impacts the behavior of an AI system when employing real-world data, especially when there is a mismatch between the real-world and training data. Undesirable results will likely emerge in the AI system's robustness, resilience, etcetera —providing biased or hallucinatory output. More rarely, using convex formulations to compute the models (namely, multiple linear regression) may exhibit epistemic uncertainty when the formulation neglects an important decision variable.
Aleatoric uncertainty refers to the uncertainty inherent in the data, that is, the uncertainty of the process that labels the data making up the training dataset. Is this photo a cat? Or a dog? Or perhaps a rabbit? Aleatoric uncertainty is often non-systematic, especially when humans provide the labels. It remains an irreducible factor in dataset uncertainty, and so, in the computed model.
Indeterminacy occurs all the way down to the mathematics of AI algorithms.

[5] This has some affinity to Baudrillard's notion of the implosive nature of a society of simulation (1994: 81-82). The trained large neural-network (LNN) constructs a *retis memorias* (digital connections) which encompasses elements of economics, politics, art, fashion, sexuality, music, and other spheres of culture (Weng and Brockmann 2022). As such it implodes them inextricably. Yet it itself is simply a computed "decoction" of the real. As such, it emulates a hyperreal entity (Baudrillard 1994:1).

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of the *who* is unlike the primal exteriorization of "the [hominid] cortex into flint … accomplished between the Zijanthropian and the Neanthropian, for hundreds of thousands of years in the course of which the work in flint begins the meeting of matter whereby the cortex reflects itself" (Steigler 1998: 141). In that primal event of technics, there was a unity of *who* and *what* in the memory-carrying link that was painstakingly transformed by exteriorization (Steigler 2009:176).

Instead, in the case of AI based on large neural networks (LNNs), exteriorization proceeds through an iterative process: building digital connections (the *retis memorias*) in the LNN by using the broad range of competencies in the socio-ethnicities of the *whos* on which it is being trained (such competencies might be linguistic, imagistic, or audio-focused (Giannakopoulos 2020)). In particular, the success of the large language model paradigm (as used in ChatGPT or Google Bard) comes about in part by the production of *tokens* during training that implode diverse idiomatic modalities of text (including natural languages, mathematics, computer code) into unified digital objects (that is, a *token*). This tokenization exteriorizes the *who* from the neural network by reconfiguring *Dasein's* socio-ethnicities into digital objects with no counterpart in human memory. As the training of the LNN iterates, "the model evolves to produce increasingly accurate outputs," as each step edifies the internal connections that will guide the network when fully trained (Weng and Brockmann 2022). Through this production, every iteration expels more of the original *whos*, with their socio-ethnicities, from the model, finally terminating in a *who* simulation that has expelled all the originals. The source of the *hypomnesia* in the process (to adopt Steigler's term) is the trainer's goal to construct an LNN that acts in such a manner as to give accurate output in response to detailed prompts of text, image, or audio types (note that the prompts, and even the trainer, may be of human or algorithmic origin).

The algorithm's output – the simulated *who* the user invokes through the input prompt – constructs the *what* of an image, audio, video, or text. It is not the user that originated the prompt. The prompt can be said to have *incited* the output, but no further claim can be made. The output emerges from the trained LNN, which has successfully exteriorized socio-ethnicities through its training. Such an LNN is the quintessential 'black box,' defined by the Oxford Dictionary of the English Language as "a device which performs intricate functions but whose internal mechanism may not readily be inspected or understood … any component of a system specified only in terms of the relationship between inputs and outputs" (OED 2000).[6] The training process yields a

[6] Scabini and Bruno point out that "… black-box approaches [are] becoming usual in many applications… the lack of understanding of its [an application's] internal details causes some intriguing inexplicable properties to be observed in deep convolutional networks, one of the most popular ANN [advanced neural networks] architectures… It is widely known that different weight initialization can cause drastic changes in neural network behavior, such as some specific distributions which may make training particularly effective…" (Scabini and Bruno 2023).

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'black box,' entirely closed in on itself through its training; outside observers, including those data scientists who trained it, do not understand how it produces its output (Scabini and Bruno 2023). The LNN in a diffusion-based image transformer achieves the *what* based on the digital connections formed during its training. Just as 'simulated leather' has nothing in common with genuine leather except a marketing *nom du déploiement*, the *simulated who* functioning through the acts of the LNN is an entirely different entity from a who described by Steigler, Simondon, Leroi-Gorhan, et al. It is rid of *Dasein* altogether.

Recently, Yuk Hui (a student of Steigler), in *Art and Cosmotechnics*, has responded to 'black box' art produced by LNNs, writing that it has been "conceived to reduce organism to machine, life to calculation" (Hui 2021:185-240). In this text, he approaches technology from the perspective of art via *cosmotechnics*, that is, "a unification of the moral order and cosmic order through technical activities," but with particular regard for the local individuation of the cosmic order, which specifies its technics (Hui 2021:40-41, 184-186). In *The Question Concerning Technology in China*, he examines Keiji Nishitani and Mou Zongsan on Heidegger, finding in their work the continued importance of Dasein in understanding the technics of Japan and China, despite the implications of machine learning (Hui 2016:255-267). His *cosmotechnics seeks* to open the closed loop found in 'black box' AI algorithms using LNNs (Hui 2021:190).[7]

Stiegler reminds philosophers that the three types of memory common in human affairs rely on the *who* (Steigler 2011:13-20) in a fundamental 'cinematographic' manner, that is, it "unfolds through a montage of temporal objects – objects constituted by their movements" (Steigler 2011:26). Because of this the *who* has a 'cinematic consciousness' that conforms consciousness (the I) to the socio-ethnicity it is thrown into (the *We*)[8] (Steigler 2011:93-103). The fourth type of memory, 'the pre-programmed machine,' is situated *par excellence* in the current generative AI (Stiegler 2009:67-68). Trained generative transformers using LNNs (based on a closed-loop architecture)[9] rid themselves of the *who* and its socio-ethnicity and thereby exclude human beings from all sorts of material and intellectual production.

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[7] Hui recalls the late Heidegger's challenge to these approaches in a 1967 essay, "The Provenance of Art and the Destination of Thought" (Heidegger). He quotes the essay, "… the basic principle of the cybernetically designed world is the control-loop. It is based on the possibility of self-regulation, the automation of a system in action. In the cybernetic world, the difference between automatic machines and living things disappears… The broadest control-loop encompasses the interrelation between human and the world. What is happening in this enclosure? The world relationships of man and their entire social existence are included in the domain of cybernetic science. The same enclosure, i.e., the same captivity shows up in futurology… So it is evident: The industrial society exists on the basis of the enclosure in its own power" (Hui 2016:188).

[8] Steigler, following Horkheimer and Adorno, develops how film and television have become the dominate force in shaping socio-ethnicities across the world, especially through the dissemination of films produced in the Hollywood system (Steigler 2011:37-40, 103-107).

[9] The structure of a generative transformer is well known. Wolfram offers a basic explanation but lacks a complete flow diagram (2023:68-78). Verma has a very succinct but good description and a helpful flow diagram of a transformer detailing its loop structure (Verma 2023). The paper of He et al., is a theoretical development of transformer architecture from earlier research into the field at Microsoft (He et al. 2015).

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Human labor with its concomitant radication in shared cultural and historical experience (i.e., its socio-ethnicity, including Heidegger's *Weltgeschichtlichkeit* (Steigler 2011:36-37)) is lost or diminished, bringing about a desiccation of meaning and the devaluation of human existence (Hui 2021:212-218). By excluding the who, generative transformers also eliminate the human use of signs from their output and eliminate anthroposemiosis. Anthroposemiosis, described by John Deely as "the fulfillment of 'human nature' in the creations of 'culture,' scientific and literary alike" (1994:118), no longer perfuses the entire production of culture but is supplemented or even replaced by other-than-human generative AI applications.

2. ἀλλ' ἄγε δὴ μετάβηθι καὶ ἵππου κόσμον ἄεισον δουρατέου

[But come on, change the song, tell of building the wooden horse…]
(Homer, *Odyssey* 8.492-3)

One of the major diffusion-based generative transformer applications is *Stable Diffusion*. It is created by the company Stability.AI. They claim to be "the world's leading open source generative AI company. We deliver breakthrough, open-access AI models with minimal resource requirements in imaging, language, code and audio" (Stability.AI website). I have worked extensively and taught courses with it at both the graduate and undergraduate levels in animation and image production. A critical part of the animation workflow in my work (and in my courses) has been an extension to *Stable Diffusion* called *Deforum*, which enables the creation of animations entirely within *Stable Diffusion*.[10]

Stable Diffusion was designed to produce single images, and it must be extended through additional code to make animations and other videos. *Deforum* adds the ability to keyframe[11] properties, allowing *Stable Diffusion* to create a series of images partially determined by properties gradually interpolating from one keyframe to the next. The user can provide inputs of text prompts and guide images to influence the output of *Deforum*. The goal is to produce an animated sequence that communicates the user's intention.

[10] Good sources for Deforum can be found on the *Deforum GitHub Repository Wiki*. See the References section for the web URI for this site.

[11] Keyframes (or key drawings) in traditional hand-drawn animation were significant story-telling frames drawn by lead animators (Thomas and Johnston 1990:225-226). Keyframes define the start and end points of an action. The transitional frames connecting these keyframes were known as 'in-betweens' which were drawn by animators called 'in-betweeners' with the intention of creating smooth and fluid motion in the animated sequence (Thomas and Johnston 1990:241). In digital animation, an animator will set up markers on a sequence timeline to mark the time-locations (called 'frames') that represent the beginning and end of an action. These are then referred to as 'keyframes,' since they play an analogous role to the earlier notion of key drawings. The digital algorithm will then automatically generate the frames between each keyframe to produce interpolated motion. Again, the intention is to produce a smooth and fluid change throughout the animated sequence.

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Figure 1. Four consecutive frames from a Deforum + Stable Diffusion animation (Student Work).

Another extension of Stable Diffusion, which can produce animations, is *ControlNet*. *ControlNet* adds a neural network on top of *Stable Diffusion*'s own LNN, providing an extra range of image parameters for greater control over image generation (Zhang 2023). There are several ways of using it to produce animations (and stylized video). Still, these fall into two types: keyframed approaches (similar to *Deforum*) and image-to-image approaches (*img2img* in *Stable Diffusion* parlance). One of the best of these ways at present is *AnimateDiff*. It takes a text prompt and a video input to produce a stylized animated video using Stable Diffusion. To do that, *AnimateDiff* uses its own trained LNN to influence the *Stable Diffusion* neural



Figure 2. Four sequential frames from an AnimateDiff + Stable Diffusion animation. (Example is taken from the AnimateDiff GitHub site. See the References section for URI).

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network (via *ControlNet* and its LNN parameters). The *AnimateDiff* LNN is trained with various short video clips most typically found on social media. Its LNN modifies the *Stable Diffusion* image generation process to produce images that look like the video clips it has learned. Since *AnimateDiff* follows the motion learned from its training dataset, it produces generic motion often seen in popular social media videos. When the initial video and the text prompt match the typical video found on many social media sites, it produces very high-quality results. As a general animation program, it cannot produce a video that follows a detailed sequence of motions listed in the prompt. Nor can it reproduce specific graphics not found in the training dataset. The quality of motion that *AnimateDiff* can produce relies on its training dataset. However, there are three ways of making its videos animate more tailored motion: 1) changing the prompt during video generation (a technique called prompt-travel), 2) using a reference video in *ControlNet* to guide the output, and 3) retraining the *AnimateDiff* LNN to a more congruent set of video clips.



Figure 3. Three frames from different Sora animations. (Examples are taken from the *Sora* website. See the Reference section for URI).

The third approach, called Sora, was unveiled by Open AI in February 2024. Sora is based on two other Open AI products, ChatGPT and DALL-E (Brooks et al.). According to Open AI's technical report *on Sora*, it is built on "a transformer architecture that operates on spacetime patches of video and image latent codes" (Brooks et al. 2024). Its largest model, named *Sora*, generates a minute or less of high-fidelity video. The larger goal for *Sora* is beyond merely producing video (and animation): "Our results suggest that scaling video generation models is a promising path towards building *general purpose simulators of the physical world*" [emphasis added] (Brooks et al. 2024). This does not mean Sora is only suitable for simulating the physical world. It can also simulate situations communicated to it in a text prompt, including many situations that would be impossible in the physical world. The examples on the Sora website show a few such physically impossible situations.

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Sora uses a large language model (LLM) approach to animation and video production. However, as discussed in §2, where LLMs have text tokens, *Sora* analogously has *visual patches*. Such patches effectively implode visual data into digital objects that the extensive neural network can manipulate. Visual patches are highly scalable and powerful for training generative models on diverse types of videos and images. It is important to note that visual patches are not visual data but rather a 'unification' (*implosion* in the Baudrillardian sense) of the original visual data, which then produces a non-visual digital object. As found in §2, with respect to the token in an LLM, the visual patch has no counterpart in human memory. It is entirely a construct made while training the LNN on the dataset. It is hidden inside the 'black box' of the AI application. Perforce, *Sora* is free from *Dasein* and the *who* has been entirely exteriorized through its training process.

The remarks in the previous paragraph about Open AI's *Sora* could also be made, *mutatis mutandis*, about the *Stable Diffusion* methods discussed above (i.e., *Deforum* and *ControlNet*). Each of these AI applications uses a diffusion transformer LNN that produces tokens due to the LNN training on the massive video and image datasets. These tokens implode ('unify' in the parlance of AI engineers) the datasets into digital objects unrecognizable to even human AI engineers. These are the integral contents of the 'black box' making up the application. Add to this that often, several LNNs work simultaneously to make the images and video output by the application, each trained on a particular dataset and creating their own range of tokens (i.e., digital objects). The example referenced above of *Stable Diffusion* + *ControlNet* + *AnimateDiff* has three different LNNs working simultaneously. It is also the case that most LNNs currently are constructed with multiple groups of digital neurons (intermediate layers) between the input group (initial layer) and the output group (terminal layer). This has led John Kelleher, Chair of Computer Science at Trinity College Dublin and Director of the ADAPT SFI Research Centre for AI-Driven Digital Content Technology, to say that LNNs "are possibly the least interpretable" (Kelleher 2019:245). As a direct result of this training, all these AI applications exclude the socio-ethnicities of any possible *who*, thereby cutting free of *Dasein* in their LNNs. In this way, they are also empty of anthroposemiosis, which, per Deely, is "the fulfillment of 'human nature' in the creations of 'culture,' scientific and literary alike" (1994:118). Images, animations, and videos produced by these applications no longer continue the human use of signs, the usage that formerly perfused the entire production of culture, but now supplement or even replace it with non-human generative transformers. The what has been severed from its relation to the *who*.

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3. …εἰσότε κούρη εἵλετ' ἀπ' ἀθανάτων ὤμων θεοείκελα τεύχη Παλλὰς Ἀθηναίη

[…til the maiden Pallas Athena had shed from her immortal shoulders the armor of divinity] (Homer, Hymns, 28.14b-16a, *To Athena*)

This severing is especially true of the art form of animation, which has striven to communicate human culture through moving images, mainly visual stories and graphics. As AI takes over larger and larger portions of the animation workflow, questions arise concerning the very nature of the activity. One must ask, following the thoughts of Steigler, "*Who* animates *what*?" (2009:177). Will the *who*, as it becomes excluded, leave the *what* meaningless?

As discussed in §2, an AI application that has been specialized for producing animation must implode, by virtue of its training, all visual elements included in the training dataset into non-visual digital objects. These digital objects have no counterpart within *Dasein* and can rightly be termed *inhuman* in Lyotard's second sense (Lyotard 1991:2). It may then manipulate these digital objects as the LNN(s) at the core of the application operate. As image sequences are produced in response to text and/or image prompts, the *what* coming forth is only loosely and indirectly founded on the original prompt.[12] Instead, it directly arises from the trained connections enclosed within the application's neural network(s), which join and disjoin in ways that are very different than human understanding – which is the foundation of anthroposemiosis (Deely 2002:110-118). Perforce it is *machine semiosis* producing the *what*.

Is machine semiosis possible? Deely's work on *physiosemiosis* indicates that such semiotic action indeed occurs. He points this out in one of his final papers,

> … Peirce had the genius to recognize that it is not the fact of an *interpreter* being involved that is essential to the relation constitutive formally of the action of signs, but simply that there be a *third term* indirectly attained along with the direct relation of the sign vehicle or "representamen" to the object signified or "significate." Hence, Peirce correctly asserted that the "third term" attained in the triadic sign relation "need not be of a mental mode of being," and hence

[12] In most contemporary diffusion-based AI image generation applications, there is a parameter called *Classifier Free Guidance* (CFG) that can be adjusted to tighten the effect of the text prompt on the output of the algorithm. Ho and Salimans in their foundational paper in this area describe how CFG works: "… it [Classifier guidance] decreases the unconditional likelihood of the sample while increasing the conditional likelihood. Classifier-free guidance accomplishes this by decreasing the unconditional likelihood with a negative score term …" (Ho and Salimans 2022:9). The method is *not* a direct control over the image output but works *indirectly* by adding or subtracting noise during the iterative production of the image. CFG often has unintended side effects such as increased color saturation and decreased realism (comic-book-like images).

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> that *there need not be an interpreter* in order for semiosis, i.e., the action of signs, to occur in the physical universe. But, furthermore, Peirce's idea of "being *in futuro*" as sufficient for the notion of Interpretant opens the way to semiotic understanding *even of the universe's physical evolution prior to the advent of life*: for when an Interpretant as a physical situation results indirectly from a direct *dyadic* interaction that *changes the relation* of the universe in the direction of being closer to being able to sustain life, that new *situation* must be regarded as a Thirdness in comparison with the presupposed Secondness. (Deely 2015:343-44; emphasis in the original)

A machine can produce 'virtual' signs that involve a third term, an interpretant, that is not mental and need not exist in the present. Thus, an AI application with LLN transformer architecture can exhibit mechano-semiosis.

It produces an output that accords with its internal neural network, its own *retis memorias*, which, albeit the application was incited to semiosis by the input prompt, outputs a *what* that signifies outside the provenance of anthroposemiosis. Before Peirce, such semiosis was not even considered a possibility. Taking two examples, in 1607, the Conimbricenses (following Bonaventure) specified that "in any sign, there are two directions or respects, one to a thing signified and the other to a potency to which it signifies" (*in quovis signo duas esse comparationes, habitudinesve unam ad rem significatam, alteram ad potentiam cui significat*) (Conimbricenses 2001:38-41). Poinsot (following Aquinas), in the 1632 *Tractatus de Signis*, defines a sign as "that which represents something to a knowing power" (*quod repraesentat aliquid potentiae cognoscenti*) (Poinsot 2013:125). It had seemed obvious that only beings with the power to comprehend their *milieu*, namely animals (including human animals), could interpret the sign as representing this or that object within its *Umwelt* (Deely 2020:313). Peirce's insight put this assumption to rest and freed the understanding of the range of action of signs, semiosis, to virtually all reality.[13]

But where does this leave us with the question of the *what* produced by mechano-semiosis? It has no origin in Dasein but instead gets made through a generative transformer that has exteriorized the socio-ethnicities of all human sign systems and built its own inhuman *retis memorias* to produce its output. How can it mean anything to humanity? Looking to Peirce, there may be a place to catch a glimpse of an answer. Between 1891 and 1893, he wrote a series of five essays for publication in the *Monist*

[13] "For the proper significate outcome of a sign, I propose the name, the interpretant of the sign. … it need not be of a mental mode of being. … it seems to me convenient to make the triadic production of the interpretant essential to a 'sign'," (Peirce c.1906: CP 5.473) while four years earlier he had noted that, "It is not necessary that the Interpretant should actually exist. A being in *futuro* will suffice" (c.1902: CP 2.92).

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through an agreement with the publisher, Paul Carus. On April 24, 1892, in the middle of writing the essays, Peirce had "a sudden and overwhelming mystical experience" (Brent 1998:208-209). As Joseph Brent writes in his biography of Peirce, "[t]hese five essays, written during an intensely promising and threatening time, clearly exhibit the impact of his mystical experience on his philosophical perspective … which reappears consistently in his work for the rest of his life" (Brent 1998:215).

"Man's Glassy Essence" was the fourth of the series and appeared in 1892. One of the essential abductive inferences that Peirce explores in the essay is a musement that human beings truly exist on the level of shared cultural realities and that these "are no mere metaphors…" (Peirce 1892:21). The unity of feelings found in various gatherings of humanity leads him to write "there should be something like personal consciousness in bodies of men who are in intimate and intensely sympathetic communion" (Peirce 1892:21). Such ordinary consciousness forms the everyday habits that undergird the socio-ethnicities vigorously tracked by Stiegler and Hui. Seen this way, Peirce has been held to have found a homologous mapping of *Dasein avant la lettre* (Kemple 2019:244). A semiosis that operates from outside this 'Being-there,' indeed from another 'there' altogether, as *mechano-semiosis* genuinely does, cannot produce the *what* (in this case, animated sequences) as has been done through the human use of signs (that is, anthroposemiosis).[14] It is just not the same.

So, how do we recognize the animations and videos produced by these AI applications? The answer is simple for Peirce: by habit. In later writing, he explains, "multiple reiterated behavior of the same kind under similar combinations of precepts and fancies, produces a tendency – the *habit* – actually to behave in a similar way under similar circumstances in the future …" (c.1906, CP 5.487). He continues a few lines later that, "*reiterations in the inner world – fancied iterations – if well-intensified by direct effort, produce habits*, just as do reiterations in the outer world; *and these habits will have the power to influence actual behaviour in the outer world*" (c.1906, CP 5.487, emphasis in the original). Since we have the habit of understanding animated film as it has been produced by us (i.e., humans), it is now *zuhanden*, integrated into *Dasein*. Although it is possible, in roles that we may take up as AI engineers, to interpret the outputs of the AI applications as *vorhanden*, part of our scientific study of AI, this will be outside of the usual care we bring to an animated film and limited to a very few specialists in AI.

The fact that it is less and less produced-by-us – incited by prompts input by a human-with-intentions – drastically minimizes human labor in the production of

[14] Flusser and Bec, in their work, *Vampyroteuthis Infernalis: A Treatise*, construct just such a premise: a uniquely other sentient creature interrupts the human philosophical monologue with a serious critique (Flusser and Bec 2012:36-43).

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the animation. Steigler, Simondon, and Deely have stressed that this minimization strips cultural and historical experience from animation, replacing it with visual patches or tokens that LNN(s) have calculated by implosion during the training process. Through habits gained from "*well-intensified direct effort*," we mistake mechano-semiosis for anthroposemiosis, thereby losing and diminishing our culture and history. This desiccates meaning and eventually devalues human existence. It would be the end result of the 'artificial stupidity' that Bernard Stiegler warned of before his death.

Animation, which persists at the level of anthroposemiosis and resists production by AI, may be one way that "the semiotic animal … becomes aware of the historicity [*νόμος*] within the human experience of nature [*φύσις*] as a whole" (Deely 2009:107). It will not be possible to stem the tsunami of AI in animation production, but it is possible to resist it in many ways. As an animator, I will resist this onrushing tide, which is destructive of human labor and meaning, as much as I humanly can.

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The animation medium in the realm of Vocaloid: A multidimensional semiotic overview

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BY: **Lila S. Roussel**

ABSTRACT

The digital voicebanks/virtual idols known as 'Vocaloids' are associated with a vast and diverse repertoire of artifacts, most of which are not industry-sourced but rather the product of self-published hobbyist labor. Among the diverse media through which Vocaloid culture has developed and spread, the animation medium stands out for its variety of uses and the multiplicity of affordances it provides. Not only have the animation practices surrounding Vocaloid impacted the objectual consumption of these entities both as musical instruments and as virtual idol personas, but they have also given rise to the development of new specialized software tools, in addition to having propagated fandom-distinguishing subcultural markers and genre-defining aesthetic orientations to be found within the vast corpora of artistic productions utilizing the Vocaloid technology and/or characters. This article examines these practices from a semiotic perspective by reflecting on their underlying technological and cultural conditions of development and the manners in which they may serve as both subcultural and genre-identifying signifiers in the resulting repertoire of user/fan-generated media. It furthermore looks at how the generation of and engagement with kinetic scripts in the animation practices tied to Vocaloid are seen to incorporate materialities that are exogenous to the medium and considers the role of animation in the playful engagements of users and fans with the virtual idol characters. Finally, it examines some of the aesthetic features that particularly distinguish the repertoire of Vocaloid music videos, most notably in their recourse to principles of limited animation.

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1. Introduction

The concatenative voice synthesis technology commonly known as *Vocaloid* has been at the center of a vast body of crowd-sourced artistic production since its first release to the public in 2004. Though the name 'Vocaloid'[1] has become chiefly evocative of the now emblematic virtual idol characters associated with the various voicebanks it utilizes, it appears that the primary intent behind the development of these software products may not have initially been so much to create virtual idols, but foremost to produce digital musical instruments (Itoh, as cited in Okada 2008).

In the progression of these entities from the status of mere musical instruments to that of fully-fledged virtual idols, mainly at the hands of user/fan hobbyists, the recourse to kinetic ensoulment through various animation techniques has played a key role. Not only have such animation practices impacted the objectual consumption of the entities known as 'Vocaloids,' but they have also led to the development of new animation software tools and to the emergence of fandom-distinguishing subcultural markers and genre-defining aesthetic orientations to be found within the vast corpora of artistic productions utilizing the Vocaloid technology and/or characters.

This article aims to examine these practices from a semiotic perspective by reflecting on the technological and cultural conditions that have shaped their development and the manners in which they may serve as both subcultural and genre-identifying signifiers in the resulting repertoire of user/fan-generated media. It furthermore looks at how the generation of and engagement with kinetic scripts in the animation practices tied to Vocaloid are seen to incorporate materialities that are exogenous to the medium and considers how they may serve in the playful engagements of user/fans with the virtual idol characters themselves. Finally, from a semiotic point of view, it examines some of the aesthetic features that particularly distinguish the repertoire of Vocaloid music videos, most notably in the recourse to principles of limited animation.

[1] VOCALOID™, a trademark of Yamaha Corporation, refers to a set of digital vocal synthesis software products released or licensed by Yamaha. Colloquially, the term 'Vocaloid' is, in practice, most often employed to designate any concatenative synthesis software voicebank or associated character such as those produced by Yamaha or by other manufacturers, and even sometimes to designate unofficial, fan-created Vocaloid-derivative characters. In this article, the term 'Vocaloid' is generally used in the common, broader colloquial sense while reference to Yamaha's trademarked brand name is distinguished by its capitalized letter case stylization.

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2. The Vocaloid technology and its associated virtual idol characters

The anthropomorphic characterization of the very first Vocaloids to reach the market – a pair of English-language voicebanks produced by British company Zero-G (Zero-G Development 2004a, 2004b), intended for use by technologically-savvy professional musicians – was initially limited to their designation by human names (LEON and LOLA, respectively) as well as to pronouns that were both speciated and gendered ('he' and 'she,' rather than 'it' and 'it'), as shown in the product descriptions and various announcements by the manufacturer.

Rather than serving the narrative purpose of character development, the box art for both software products (Figure 1) modestly used variants of the same stock image depicting a female pair of lips in profile, in one case decolorized and flipped, while the 'gender' attributed to each synthetic voice was notably underscored by the typographic stylizations using the male and female planetary gender symbols, these being in conformance with the genders of the human providers upon whose vocal substance these digital voicebanks were based. The real-world identities of the human providers of the vocal specimens for these early Vocaloid voicebanks remained undisclosed, in contrast to the manufacturer's later release of the Vocaloid MIRIAM, based on the voice of South African-born singer Miriam Stockley, represented in both name and photographic image on the product box, and to whose real-world identity the digital voicebank was closely tied.

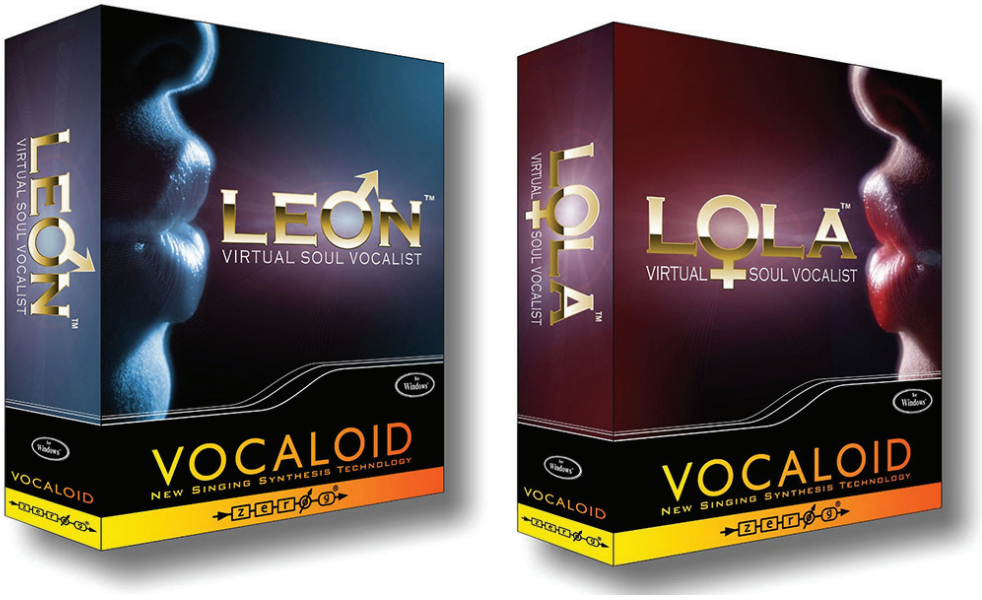


Figure 1. Box art for the LEON and LOLA Vocaloids by Zero-G, historically the first Vocaloid voicebanks to be commercially released. Images © Zero-G Ltd.

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Figure 2. Box art for the current releases (VOCALOID™ 3) of Crypton's MEIKO and KAITO Vocaloids. Art by iXima © Crypton Future Media, INC. www.piapro.net

As for the Japanese Vocaloids, it was only later the same year that Crypton Media Future Inc. would begin releasing libraries associated with graphically-developed anime-style characters for use with the VOCALOID™ software (colloquially designated as 'Cryptonloids' by fans), the first of which, designated as MEIKO and released in 2004, being marketed as a female-gendered voicebank character (based on real-world singer Meiko Haigou), and a second one, named KAITO, released in 2006, marketed as male-gendered (based on the voice of the singer known as Naoto Fuuga). It may be contended that this visual characterization of the voicebank personifications eventually favored their development into fully-fledged virtual idol personas and stimulated their playful figuration by users and fans within a wide body of media productions, including numerous animation videos.

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Though still considered to this day to form somewhat of a 'niche' interest, it is, however, only with the later release, in 2007, of the voicebank known as Hatsune Miku (Figure 3), derived from the vocal substance provided by voice actress Saki Fujita, that the Vocaloid technology began to gain widespread visibility and to achieve anything akin to commercial success.[2] Following this, another concatenative vocal synthesis software called UTAU was developed and released as shareware starting in 2008, rendering the confection of one's own vocal synthesis digital libraries widely accessible and spurring the rise of a plethora of novel digital voicebank characters to be projected into the narrative universe of Vocaloid, most often in conjunction with the recourse to graphical avatars to be used in fanart, cosplay, and/or animation videos, just like the Vocaloids, with some UTAUs even being integrated into industry-sourced Vocaloid-themed products.[3]



Figure 3. Crypton's Hatsune Miku, most famous among the Vocaloids. Art by iXima © Crypton Future Media, INC. www.piapro.net

[2] It must be noted that Crypton Future Media's latest installment of Hatsune Miku, that is, Hatsune Miku NT (New Type), released in 2020, rather uses Crypton's own *Piapro Studio NT* editor.

[3] We may think, for instance, of the availability of the Kasane Teto UTAU character in games of the *Project DIVA* series by Sega.

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The two-pronged nature of the Vocaloids (and UTAUs) as both musical instruments and virtual idols leads us to reflect, from an object-oriented semiotic perspective, on their artifactual status and on the semiotic practices through which each of these natures are realized. This article contends that as these vocal synthesis library characters developed into virtual idols, the fictional embodiment that solidified their constitution into doll figures of sorts was achieved through a broad set of decentralized semiotic mediations, which included, among others, a vast array of animation practices adopted by music creators, dedicated animators, and fans alike, be it, for instance, to produce music videos to accompany audio tracks using Vocaloid synthesizers or as an autonomous vector through which to engage in play with the visual representations of the personified voicebank characters. Thus, the visual constitution of the fictional personas of the Vocaloids, galvanizing the enthusiasm the latter garnered from a subcultural demography in considerable measure made up of *otaku*,[4] became central among the semiotic objectification[5] practices underlying the crowd-sourced development of these ontologically dual entities. So much so that even the avatarless Vocaloids, including the aforementioned early Voicebanks released by Zero-G, came to be endowed with their own, fanon-based avatars to be used namely in fanarts, cosplay, and, as interests us here, in fan-made animations where they would homogeneously coexist with the official, industry-sourced anthropomorphic representations of the commercial Vocaloids as well as with those of the UTAUs or even *fanloids* – the latter constituting the unofficial characters derived by fans from preexisting Vocaloids, characters that will in most cases present designs that exhibit their objectual genealogy by conserving key identifying features of their source object, with which they are often made to interact in the user/fan imagined narratives utilizing them.[6]

In terms of their objectual constitution, like dolls, the Cryptonloids were quite purposefully provided with only minimal character specification, thus leaving them with significant areas of indeterminacy to favor the creative agency of users (see the comments by Crypton developer Sasaki Wataru, as reported in Macias 2011). On the other hand, some of the Vocaloid characters remain closely entangled with the identity of their voice provider, that is, with the identity of the human entity from whose vocal substance they were materially derived (as in the case of the Vocaloids Gakupoid, Yohioloid, and Fukase, derived respectively from the vocal substances of human singers

[4] See in this respect Karin de Rouville's 2023 paper on the topic of how the relation of Vocaloid to *otaku* subculture actually extends far beyond the mere question of the image.
[5] The semiotic practices by which they are constituted into objects (artifacts).
[6] One example may be found in the animation music video by Atora (2009) for Suzuki-P's *Nishiki no Mai* [Dance of Brocade] (2008), which figures in both audible and visible form Internet Co. Ltd.'s Vocaloid Gackpoid and his gender-bent fan-derivative Gakuko, uploaded to: https://www.nicovideo.jp/watch/sm8620311

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Gackt, Yohio, and Satoshi Fukase), while in other cases, their identity remains closely intertwined with the identity of another, preexisting fictional character of which they are deemed to be the embodiment in Vocaloid form (as in the case of Gachapoid, derived from cartoon character Gachapin, and of ARSLoid, derived from 2.5D dance unit ARSMAGNA character Akira Kano[7]).

Thus, it must be considered that the animation practices engaged by several Vocaloid users and fans occur within multi-layered schemes of semiotic objectification, with the kinetically ensouled visual representations employed therein having in some cases as a final object either a character distinct from the Vocaloid locally executing its role, the Vocaloid character itself in its own transcending identity, or with such Vocaloid character (simultaneously) serving as a medium towards a real-world artist or other entity with which it stands in a relation of rigid historical dependence – to employ a term used in the artifactualist ontology of Thomasson (1999). By virtue of this, many fans have been keen on playfully leveraging the indexical link between the Vocaloid character and its voice provider, including their recourses to the animation medium.[8] It must be noted that in the animations or other narratively operative semiotic practices where Vocaloids are made to perform characters 'other' than themselves – thereby instituting a regime of second-order fictionality – rarely do the respective identities of each character (of the character local to the piece and the Vocaloid character 'performing' said local character) remain, ontologically speaking, fully hermetic to one another. Instead, by virtue of the feedback dynamics between performer and performed taking place in the semiotic realization of the performance, the identity of the Vocaloid is likely to be accreted with the determinations of the performed character and reciprocally, regardless of the author's actual intent.

Be this as it may, it should equally be stressed that in enabling the kinetic ensoulment of the visible representation of the Vocaloid characters, the animation medium provided not only a supplementary means of character instantiation to support the musical usage of the software but itself became a vector of play in its own right – one often even completely autonomized with respect to the musical purpose of the Vocaloid.[9] As for the distinguishing features developed by the animation practices surrounding Vocaloids, one will find that they were facilitated by the convergence of a specific set of technological and subcultural conditions, which we will now proceed to overview.

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[7] Himself performed by real-world artist Keiichi Oosemachi. See ARSMAGNA's character list at: https://ars-magna.jp/chara/

[8] For an example, see the MMD animation video by Sukaretto Gonzales (2020) where PowerFX's Vocaloid Yohioloid is made to perform a cover of a song originally performed by its own voice provider, Swedish singer Yohio, uploaded to: https://www.youtube.com/watch?v=I13z-oI_F80

[9] One may think of the numerous animation videos where Vocaloid models are used to perform preexisting comedic sketches, gesticulating and lip-syncing to the voices of human comedians having nothing to do with Vocaloid.

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3. The Vocaloid (sub)cultural ecosystem and its technological underpinning

The popularization of the Vocaloids and the development of the semiotic and subcultural practices surrounding them was, from a historical standpoint, narrowly tied to the development of the Internet and, particularly, to a specific range of content-sharing platforms. Such platforms, favoring the fandom-sourced conventionalization of many of the visual, acoustic, and narrative attributes of each Vocaloid persona, developed around the same time as the release of Crypton's Hatsune Miku. Thus, the formation of the cultures surrounding these platforms was intertwined with the semiotically-based evolution of the entities known as Vocaloids into virtual idols. In particular, the Niconico Douga video-sharing site,[10] set up in 2006 and of which Vocaloid-related media still forms a significant proportion of the content to this day, became a privileged channel for disseminating Vocaloid music. Its capability for audio-visual diffusion may have contributed to the simultaneous emergence of genre-specific conventions around Vocaloid music videos and adjoining semiotic practices.[11] Parallel to this, the illustration-focused art-sharing website Pixiv,[12] launched in 2007, became another essential platform for the development of Vocaloid-related visual content, while Crypton set up its own online peer-production platform named Piapro,[13] intended to favor the development and sharing of user-generated content related to the Crypton Vocaloid characters.[14] The latter aim was achieved not only by Crypton's establishment of the platform but also by its design of a favorable, modular licensing scheme (akin to the Creative Commons licenses). The site thus enabled the sharing of single-media materials (for instance, illustrations, text, audio, and animatable 3D models) and the possibility for their creators to define specific terms of usage according to standardized licenses modularizing different usage rights. This allowed the single-media artifacts thereby made accessible to become an essential source of materials employed by other users/fans, notably in their creation of Vocaloid animation videos, giving rise to a vast body of asynchronous and distributed collective artifact production mainly operating according to the terms of a creative gift economy thoroughly rooted in independent, DIY subcultures formed around the engagement with niche-interest

[10] https://www.nicovideo.jp/
[11] One may think in particular of human covers of Vocaloid pieces, be they vocal, instrumental, and/or choreographic, as well as of non-Vocaloid productions emerging from the Niconico platform and espousing many of its distinguishing features
[12] https://www.pixiv.net/en/
[13] https://piapro.jp/
[14] See https://piapro.net/intl/en.html

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peer-produced media. In the West, websites such as DeviantArt[15] became essential platforms for users to share media components for Vocaloid animation videos. In contrast, YouTube[16] became a privileged site for sharing original Vocaloid-related animated videos as well as reprints of media originally uploaded to Niconico, with an increasing number of creators themselves publishing on both sites in parallel. These various platforms were key not only in providing the technical infrastructure that was to ensure the circulation of the artifacts and media components based on which the Vocaloid repertoire of animation videos would develop but also in solidifying, through their nurturing of the user/fan communities surrounding the Vocaloid genre, the cultural norms underlying the bulk of Vocaloid artifactual production and shaping many of the features that the Vocaloid animation music videos would come to be associated with.

In addition to the impact made by the development of these Internet-based platforms on the diffusion of media components and on the emergence of creative communities collectively forming aesthetic inclinations, genre characteristics, pools of media components, and shared narratives, two other critical technological developments should be discussed for their historical significance in shaping the animation practices that interest us here: the development of the MikuMikuDance 3D animation freeware and the licensing of the Cryptonloids to Sega Corporation for the *Project DIVA* series of video games.

As the Vocaloid user/fan community developed and as the latter's creative aspirations expanded, in 2008, the freeware animation program called MikuMikuDance (MMD), developed by Yu Higuchi (HiguchiM), was released to provide Vocaloid enthusiasts with a highly accessible means for producing 3D model animations, initially intended for use in the production of Vocaloid music videos. Similar to what occurred with the vocal scripts used by the VOCALOID™ editor software (.vsq, or 'Vocaloid Sequence' files), which could be readily shared with other users and made to be executed by any other Vocaloid voicebank library – thus giving rise to endless possibilities for experimentation and remakes utilizing a same programmatic sequence of musical data – the kinetic scripts generated using MMD (.vmd, or 'Vocaloid Motion Data' files), thanks to their similar limitless transferability, paved the way for the development of a whole new set of collectivized practices of videographic creation and play, practices that, in turn, themselves led to the emergence of a significant number of specialized creators, such as MMD modelers, pose designers, accessory makers, and stage builders, to name but a few.

[15] https://www.deviantart.com/
[16] https://www.youtube.com/

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It may reasonably be argued that as semiotic processes, the creative and playful engagements of users and fans with the Vocaloid characters using the MMD animation software brought the doll status of the Vocaloids to new heights, in addition to expanding and enmeshing their diegetic universe, and even their artifactual genealogy, with those of non-Vocaloid characters. Thus, many non-Vocaloid characters have also been modeled for use in MMD – for instance, by altering and repurposing Vocaloid MMD model design components (Figure 4) – and/or made to interact with the Vocaloid characters themselves in playful MMD animation videos.



Figure 4. A transformative Miku-based MMD model serving as a substrate for instantiating a gender-bent anthropomorphization of the FNAF character Toy Bonnie. Video by Temiichi Art (2016), https://www.youtube.com/watch?v=9Hqf-Vcm7PY

The introduction and uptake of the MMD animation software also had the effect of establishing a new pathway of distributed embodiment along the human-machine continuum as both the moving human body and animatable programmatic components became treated as pooled resources for much of the choreographic production to accompany Vocaloid music. So much that many Niconico dancers (*odorite*) have been seen to exhibit a doll-like or puppet-like style of corporeality in their own original choreographies to Vocaloid music, thus endowing the resulting choreographies with a predisposition for entailing aesthetically pleasing results should they be applied to MMD models – despite such applications historically having had recourse principally to modest techniques of motion-tracing – demonstrating the extension of the human dancers' cognition of the body to the machine's virtual manner of corporeality to which they have become acculturated and transmedially co-extensive (Figure 5).

Parallel to this, the eventual licensing of the Crypton Vocaloid characters to Sega Corporation for the development of the *Hatsune Miku: Project DIVA* series of rhythm-based video games, for its part, not only opened up an additional route for music dissemination – one providing for the establishment of a canonical musical repertoire making famous

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Figure 5. Demonstration of an MMD animation using a kinetic sequence originally motion-traced from a human choreographic performance to Giga-P's *Drop Pop Candy*. Video by Carlos Sneyder Higuera Oliveros (2015), https://www.youtube.com/watch?v=5jTVtLmgTts

a roster of composers (known as 'Vocaloid-Ps') – but also for the circulation of a whole new set of Vocaloid choreographies executed in-game by animated 3D models (generally created using sophisticated motion-capture technologies that were historically less accessible to the average user / fan), many of which have been and continue to be replicated by human dancer-fans (Figure 6), further intermeshing, through the transferral of kinetic scripts, the material corporeality of the participating human (fan)artist with the virtual corporeality of the semiotically-constructed fictional 'body' of the animated Vocaloid.



Figure 6. Human dancers in cosplay performing a cover of the dance to sunzriver's *Reverse Rainbow*, which was initially developed to be executed by animated 3D models in the *Hatsune Miku: Project Mirai* video games by Sega. Pup Kity (2023), https://www.youtube.com/watch?v=OikHl8sV900

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In addition to providing more routes for the interchange of kinetic scripts between the concrete body of the human dancer and the virtual body of the animated Vocaloid character, the release of the *Project DIVA* games also led to the emergence among the fandom of a whole supplementary set of user-generated animation works. In addition to the modification (modding) of the music videos that were included in the games from the onset and that served as a backdrop to the actual gameplay, users and fans enjoyed the ability to import their own audio tracks and chart their own gameplay of rhythmical sequences by utilizing the available 'Edit mode.' This functionality gave rise to a new repertoire of user/fan-sourced animations and edits, not only for audio tracks already available in-game but also by importing other, non-included tracks of Vocaloid music. The novel animation music videos thus produced would leverage the videographic resources available through the game's video editor while developing new sets of fictional roles for the Vocaloid characters they would stage.[17] In addition to studying the significance of the use of the Vocaloid character models in the user/fan-made animated music videos thus generated, the manners of using the 'Melody Icons' and 'Targets' in the track's charting[18] may also be considered for semiotic analysis, as these can be observed to function semantically through a variety of modes ranging from iconicity (for instance, when the indicators are made to draw shapes presenting a visual resemblance with an element forming part of the theme or narrative of the lyrics)[19] to elicitation (for instance, when their presentation triggers in the player physiological and/or psychological states that are akin to those exposed in the piece's narrative).[20]

It must also be noted that a considerable measure of the hedonics of the ludic offering provided by the games of the *Project DIVA* series, beyond the rhythm-based gameplay and access to music they enable, lies in those of their functionalities that may correctly be classified as doll play: for instance, prettily dressing up the Vocaloid models with unlockable costumes and accessories, customizing the animated music videos so as to deploy the interchangeable Vocaloid characters through the whole diversity of narrative and choreographic roles the videos comprise, programming simple movements or elaborate scenarios using the 'Edit mode,' or cultivating fictional parasociality by 'hanging out' with the Vocaloids in the user-decoratable dollhouse of sorts called the 'Diva Room' (where one can 'communicate' with the Vocaloids by 'patting' them through interface-mediated simulated touch, by giving them gifts they

[17] See for instance the surrealistic Diva F 'Edit mode' animation by MuikaMe (2013) set to Chiitan's *Francium*, uploaded to: https://www.youtube.com/watch?v=OdmPzGmjz9E
[18] This refers to the on-screen indicators that dictate the commands the player must activate to succeed in the challenge.
[19] One example may be seen in the fan charting for Masa-P's *The Fox's Wedding* (credited to PSN ID: xSyNtheTic_FeaRx), in which we can see, notably, a fox head being traced using the 'Linked Star' lines. An example of a gameplay video using this chart has been made available at: https://www.youtube.com/watch?v=P5bnjRqbRrA
[20] For instance, with the eye movements required from the player inducing vertiginous states in parallel to those being experienced by the main character of *The Fox's Wedding* (Ibid.).

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enjoy so as to increase affinity scores, by playing games with them, by 'conversing' with them through the console's microphone, etc.).[21]

As specifically concerns the interfacing of the human player with the game interface rendered on screen through the animation medium, it has also been observed to form a point of insertion where fans and hobbyists may interpose a supplementary mediatic stratum of doll play, expanding the scope of gameplay to incorporate unforeseen materialities. An example of this may be seen, for instance, when *Project SEKAI* player jack (2024) manually puppeteers a plush doll of *fanloid* Hachune Miku in real time to interface with the game's commands displayed on-screen,[22] or, for instance, when HiRaKi (2011) builds a Hachune Miku-shaped animatronic robot to execute the gameplay set out by the on-screen commands for *Sadistic.Music∞Factory* in *Diva F* on PSP, thereby also altering the expected temporal structure of the gameplay through the interposition of programmatic (differed time) puppeteering.[23]

It should also be noted that the animation medium, from very early on in the *Project DIVA* series, was notably put to the service of the simulacrum of the live musical performance. Referring to the latest among the Sega Vocaloid-themed games to be released at the time of writing this article (*Hatsune Miku: Colorful Stage!*, aka *Project SEKAI*, produced in collaboration with both Colorful Palette and Crypton Future Media Inc., and initially released in September 2020), the quality of the simulacrum of the live performance is observed to be heightened through means such as temporal restriction (lives accessible at a specific date and time), 'spatial' circumscription (player-spectators being summoned to direct their animated avatars to 'enter' a lobby to wait, and then, at the designated time, to proceed to the concert room), communication (with other attendees or by directing messages of encouragement towards the performing virtual idols), and kinetic engagement with the event through the manual control of one's avatar (ability to wave one's glow sticks in sync with the crowd, to jump up and down to the beat, etc.). In these cases, the animation medium will serve to virtually insert spectators amidst the virtual space of the simulated live concert through the phenomenic continuity of their physical, embodied movements on the interface with the visible movements of their avatar within the virtual environment thanks to the conjoint functioning of what Enzo D'Armenio would call the visual and kinetic syntaxes[24] exploited by the interface design.

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[21] This functionality was initially made available as the 'Miku Room' in *Hatsune Miku: Project DIVA* and then as the 'Diva Room' in subsequent releases, and as 'My Room' in the *Hatsune Miku: Project Mirai* installments of the game, the specifics of the functionality varying from one installment to the other. A gameplay video documenting the Diva Room functionality in *DIVA F 2nd* has been uploaded to: https://www.youtube.com/watch?v=JNs9xDckE4Q

[22] Gameplay video uploaded to: https://www.youtube.com/watch?v=qKerV96TMEE

[23] Gameplay and robot design video uploaded to: https://www.nicovideo.jp/watch/sm19266574

[24] See D'Armenio (2022) for an exposition of the semiotic relevance of accounting for the conjoint working of the visual and kinetic syntaxes for the analysis of interactive media such as video games and VR experiences.

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Conversely, and this will be the last area of mediatic development concerning Vocaloid-related animation practices to be inventoried here, the semiotically actualized co-presence, within a shared space, of spectators and Vocaloid characters is also seen to be pursued in the opposite direction in the case of the Vocaloid concerts held in physical space and in which the Vocaloids may be actualized in real-time using effects produced using so-called 'holographic' projections. Most typically, up until recently at least, the 'live' Vocaloid concerts would showcase real-life, in-the-flesh musicians, usually positioned to the sides, with a large transparent screen being set in a central position on the stage to receive the animated 'hologram' of the Vocaloid model-puppet rendered in physical space thanks to Pepper's ghost illusion effect.[25] The animated Vocaloid 'hologram' would then be made to execute choreographies and simulate vocal production by lip-syncing to its preprogrammed vocal audio track, in addition to having the ability to engage in simulated exchanges with the audience. Though wholly dependent on semiotic mediation, the 'materialization' of the animated Vocaloid character in the shared space of co-presence with the viewer provides an additional phenomenic extension to the spectatorial consumption of the virtual idol.

Having introduced the dual nature of the Vocaloids as both musical instruments and as crowd-sourced fictional entities and presented the technological and cultural circumstances of their objectual development through a vast body of user, fan, and industry-sourced works and resources, all the while addressing the role played therein by the animation medium of which several of the uses have been introduced, we shall now turn towards an examination of the genre-defining animation practices to be found within the repertoire of Vocaloid music videos and adjoining semiotic practices engaged by users and fans. This account purports by no means to be exhaustive given the extensive range of observable videographic styles and semiotic functions realized therein, but rather seeks to provide a glimpse into the distinguishing features of the corpus and into how the latter may be semiotically approached.

4. Animation and the Vocaloid music video genre

As previously mentioned, independent artists and hobbyists produce the vastest proportion of Vocaloid-related content, thereby anchoring the greatest part of the resulting repertoire within *doujin*, or self-publishing, DIY culture. The most important source of Vocaloid-related animations in terms of volume of production is undoubtedly to be found in the music videos created to accompany audio tracks utilizing Vocaloid voicebanks and made available mainly through Niconico and/or YouTube, be it by

[25] See Stark (2018) who discusses the employment of this technique in various virtual idol performances.

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the original producers of the musical tracks or by other creatives making either cover versions of the songs (which may be voiced by other Vocaloids/UTAUs or by human singers) or simply new animation videos for preexisting Vocaloid audio tracks, at times developing additional narrative extensions through new roles to be played by the Vocaloid characters or even by other, non-Vocaloid characters they wish to see portray the roles laid out by the piece.[26]

As for the genre-defining preference that the Vocaloid music video and its derivatives exhibit for animation over live-action, it may be attributed to a variety of causes, the foremost of which most likely being the fictional nature of the Vocaloid characters and their association with standardized anime-style character designs, but also including economic and/or technical reasons tied to the independent, DIY, and often hobbyistic conditions of their production, due to the greater facility in relying on self-made or freely usable illustrations than on live actors. We may also identify (sub)cultural aesthetic dispositions, notably in the affinity for 2D representations[27] and character *moé*,[28] and, by no small measure, the ecological makeup of the subcultural sphere within which such artifacts are produced, notably the availability through the previously discussed art-sharing platforms of animation-ready mediatic components and the overarching cultural norms regarding the creative repurposing of peer-generated materials (be it in compliance with explicitly favorable copyright management regimes such as those provided for by Crypton's PCL and by the Creative Commons modular licenses, or by relying on an ethics of proper attribution or on principles of fair use).

It must also be noted that owing to the operation of the fandom-entrenched practices whereby a significant proportion of the media consumed by fans is produced by other fans within the same niche fandom, genre-identifying stylistic markers are often quick to develop upon attainment of a critical number of creatives among the fandom employing within their own productions mediatic components generated by their peers, potentially favoring the emergence of something of a closed-circuit, circular economy of artifact generation and normative reinforcement. Thus, from the abundant production resulting from the body of creative practices engaged by Vocaloid users and fans, we have witnessed the development of something of a style typical of Vocaloid music videos, firstly emerging from the Niconico platform and having eventually expanded to other ones such as YouTube, in the latter case notably under the impetus of the fandom's internationalization. When Vocaloid music videos do incorporate elements of actual footage or static photography (i.e., in mixed-media

[26] One example would be yu-kichi's 2009 remake animation video for OSTER project's *Trick And Treat* (2008), using characters from the mafia-themed anime *Katekyō Hitman Reborn* to play out the roles sung by the Vocaloids. Uploaded to: https://www.nicovideo.jp/watch/sm6237510

[27] See Murakami (2000).

[28] See Azuma (2009) and Galbraith (2014).

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Figure 7. Example of the subsumption of photographic components under the (limited) animation medium's syntax in the Vocaloid music video genre. higma (2021), https://www.youtube.com/watch?v=gkYod7bRkTg

videos), and though exceptions certainly exist, this will often be achieved according to a hierarchy of mediatic subsumption, that is, either conferring to the pictorially sourced animation components a more significant share of 'exposure' (in terms of screentime and/or surface area) and/or by treating the photographically sourced material as a resource for animation (e.g. using techniques of collage animation), thereby still upholding the genre's stylistic identity through the preferential reliance on the animation medium's syntax in the treatment of such photographically-sourced components (Figure 7).

The dominance of these recognizable stylistic markers characterizing the typical Vocaloid music video may also extend to adjacent spheres of cultural production, manifest, for instance, when considering the music videos for songs written by current or former Voca-Ps, not for Vocaloids, but for human singers, who may be themselves or other artists.[29] In these cases, the propensity for (usually limited) animation over footage may be seen as indicative of the adjacence of the resulting music video to Vocaloid user/fan culture within the self-publishing *doujin* sphere or, in some cases, as a purposeful means for incorporating it within, by displaying adherence to the fandom's distinguishing stylistic norms and subcultural identity markers.

[29] One may think, for example, of the videos for pieces such as syudou's *Usseewa* written for singer Ado (https://www.youtube.com/watch?v=Qp3b-RXtz4w) or of Jin's *Kimi no me wo* written for singer Soraru (https://www.nicovideo.jp/watch/sm18016289).

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It must be noted that the Niconico practitioners of *utattemita* (lit. 'tried to sing'), that is, the *utaite*, and, by extension, the *youtaite* of YouTube – often of whom a sizable proportion of the work will consist in engaging in the production of Vocaloid music covers – will, on a graphical level, more often than not, project their own artistic personas into the world of Vocaloid though 2D avatars, at times serving the additional purpose of ensuring their facial anonymity as they make public their musical creations by sharing them online.[30] In the animated music videos for their Vocaloid music covers, a significant number of *utaite* will therefore be seen to embed visual representations of their own virtualized artistic persona in the form of their 2D avatar, often substituting the figure of the original Vocaloid with their own and, in doing so, asserting through extra-acoustic means the paradigmatic substitutability within the medium of the human and machine-produced voice (Figure 8), while homogenizing to some extent their projected identity and virtualized corporeality with those of the Vocaloids alongside which they may be made to stand in audible and/or visual form.[31]



Figure 8. Example of a cover of Meddmia's *Kikkai Kettai* (initially created using Vocaloid Hatsune Miku and CeVIO voice synthesizer KAFU), deploying the 2D avatar of voice actor/singer Satō Hebi, performing the main character's role and choreography in human-voiced animated form. Satō Hebi (2023), https://www.youtube.com/watch?v=T3TWujGUQeE

[30] Concerning the culture of Niconico, it must also be noted that the relative preference of the platform's community for facial anonymity (foremost observable in singers, then musicians, and occasionally in dancers) will also often be supported by other means of facial concealment than the use of avatars, both across various media and in real-life settings. These means may include, for instance in the photographic medium, strategic cropping, blurring, the use of facemasks, interposed physical objects or digital filters to conceal one's face, or, during live performances, the avoidance of spotlights, allowing one's facial identity to remain in the shadow should one be performing maskless.

[31] See, for instance, *utaite* 96neko's cover duet with Vocaloid Kagamine Len, uploaded to: https://www.youtube.com/watch?v=ma-5MTrFWMg

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Conversely, for those human cover singers (*utaite*) of Vocaloid music who use actual footage of their own performing body in their videos, as are increasingly found on YouTube (*youtaite*) as the fandom evolves, strategies for underscoring the indexical link to the original video of the song covered may include the recourse to thematic cosplay, the overlaying of the original animation in transparency over the footage of their performing figure, or the incorporation of some of the original animation's mediatic or structural components, some of these being especially advantageous in the production of thumbnails for helping in the rapid identification of the song by viewers by emphasizing the hypotextual relation[32] between the cover and its original.[33]

In addition to the mediatic hierarchy of animation over footage in the Vocaloid music video genre, among its characteristic features, mention should be made of the place occupied by typographical animation and the aestheticization of the limited animation style. Concerning the former, while it may have been indicated that one of the significant factors of appeal that have led to the popularization of Vocaloid lies in the pursuit of character *moé*, it must be noted that not all Vocaloid music videos visually showcase any character whatsoever, be it a Vocaloid or otherwise, though video remakes for these same songs by other users or fans often will. As for the typographical animations frequently used in Vocaloid music videos, their semiotic function may at times keep to the mere display of the lyrics to improve their intelligibility (or, conversely, to stress their unspeakability through blurring or various forms of ostentatious 'self-censorship').[34] At the same time, their temporalized presentation is likely to produce rhythmic effects, which are often purposefully exploited by video makers.[35] It should also be mentioned, for readers who may be unfamiliar with the Niconico streaming platform, that the comments posted by users are time-synched to the video to which they are tied, not only accreting it with possibilities of infinite semantic expansion but also enhancing its visual rhythm, with commentators sometimes transmodally producing effects reminiscent of the fan chants[36] one may hear in a concert setting, but in text animation form and graphically sedimenting into cumulative traces of asynchronously programmed interjections, rather than constituting events having actually occurred synchronously in real-time (Figure 9).

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[32] In the sense of Genette (1997).

[33] The works of *utaite* such as Umi Kun (https://www.youtube.com/@UmiKun/videos) or Chogakusei (https://www.youtube.com/@ChogakuseiOfficial/videos) are exemplary in this respect.

[34] One will notice, for instance, that in the video for EZFG's *Hurting for a Very Hurtful Pain* (2012), voiced by Yamaha's VY1 and VY2 Vocaloids, the animated text displayed towards the beginning and end of the song loses its legibility while VY2's vocalizations are made less decipherable through the application of an acoustic filter. Uploaded to: https://www.nicovideo.jp/watch/sm16658127

[35] See, for instance, the rhythmic play underlying the typographic animations in Maretu's *Tool*, uploaded to: https://www.youtube.com/watch?v=7pirFsqx9H8

[36] That is, synchronized projective vocal interjections by the audience.

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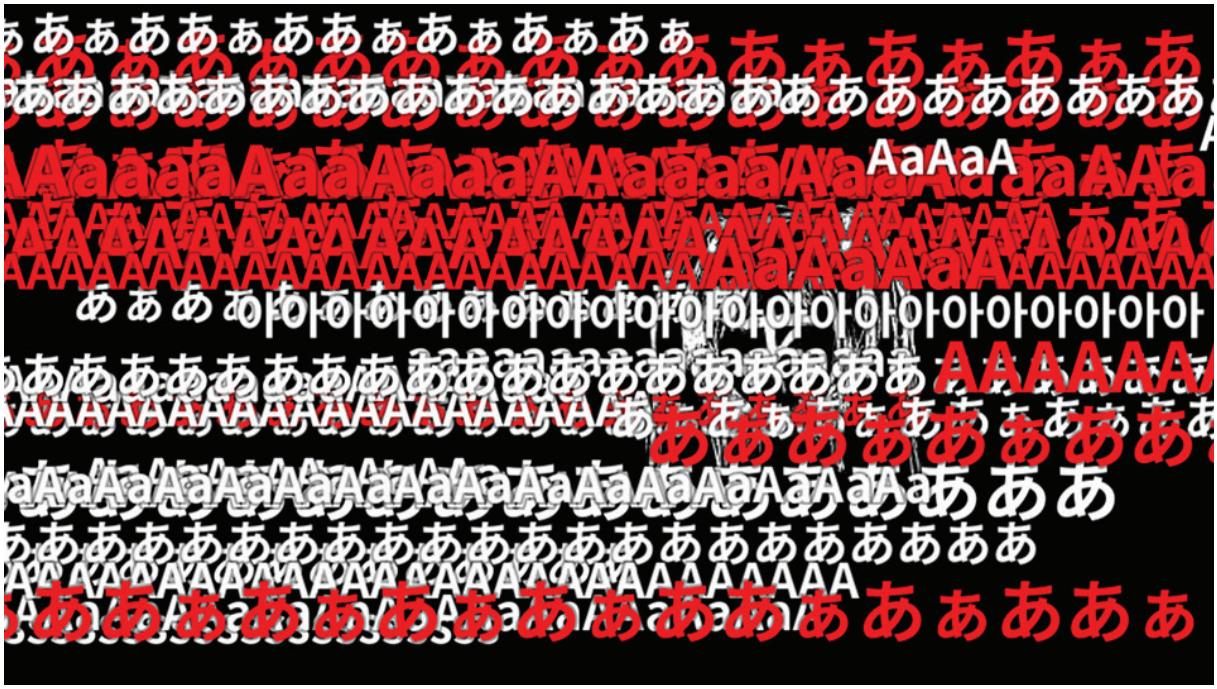


Figure 9. Cumulative traces of various users 'type-singing' along to the chorus of Nashimoto P's *AaAaAaAAaAaAAa* (2009). Captured on Apr 18, 2024, from https://www.nicovideo.jp/watch/sm6816232

Furthermore, while the graphical stylization of the text and its animation may indeed be exploited in music videos for its sole plastic qualities in and of themselves, such stylization will often be put to the service of the semantics of the narrative, including through iconographic resemblance or metaphorical analogy (e.g., the feelings of anxiety depicted in the dithery and at times suffusing movements of the animated script in Kikuo's *Aishite Aishite Aishite*),[37] and through elicitative functioning (e.g., the vertigo-inducing pulsating and spinning text of Masa's *Outburn Kamikaze*).[38] At other times, such videos may showcase textual elements that do not reproduce the actual lyrics of the track but are instead used as a supplementary semiotic layer through which to develop and convey the theme. One example of this may be seen in Maretu's *S.I.U.*,[39] with the first scrambled and then legible text spatially disposed to form a graphical figure tabularly conveying thematic elements in a usage that formally contrasts with the otherwise linear display of the text conveying the lyrics.

[37] https://www.youtube.com/watch?v=NTrm_idbhUk
[38] https://www.youtube.com/watch?v=mTgpfG3Myh0
[39] https://www.youtube.com/watch?v=LCOItseOsFE

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It was previously mentioned that the frequent recourse to limited animation, sometimes taken to the extreme, may also be viewed as a genre-defining, often highly aestheticized feature that sets apart the repertoire of *doujin* music videos – to which the bulk of Vocaloid music belongs – from what may be more typical of what can be found beyond, notably in industry-sourced mainstream animation. This is even when accounting for the fact that Japanese animation generally tends to display a proclivity for aestheticizing limited animation to a greater extent than the West.[40]

Though some critics may contend that limited animation represents a departure from what constitutes the essence of animation art, it may be argued that, in fact, due to its parsimonious employment of movement, the limited animation genre further convenes us to reflect upon the various modalities of movement within the medium beyond the production of mere illusions of naturalistic continuous object motions. For instance, it has been noted that the movements *between* images (using cuts) and their rhythms will acquire heightened salience in a context of limited animation (Lamarre 2009:191), which, in music videos, may undoubtedly contribute to enhancing the rhythmic structure of the musical stratum.[41] As for movements *over* images (e.g., the Ken Burns effect), though not necessarily productive of illusions of movement intrinsic to the individual objects within the frame, they may undoubtedly serve to instill dynamism while using only a minimum of pictorial source material. Thus, many Vocaloid animation music videos will be constituted of a single yet visually complex and semantically dense internally static image that may be used to support the whole narration of the song through the sole application of techniques of zooming and panning or by alternating, using cuts, between cropped areas conveying their own, discretized semantics forming part of the global visual narrative.[42]

Regarding movement *within* images, it is the feature most generally thought of when defining the art of animation. Concerning this type of movement, limited animation can designate, for instance, the reliance upon techniques such as two-frame animation.[43] In the Vocaloid music video genre, one particularly striking example of this is to be found in several of NayutalieN's videos,[44] which take this principle to the extreme combined with other limited animation features such as a minimal color palette, rendered in flat coloring, and the recurrent use of a cut-out character figure remaining perfectly immobile during most of the song, but sporadically breaking into a two-frame

[40] See Lamarre (2009).
[41] See, for instance, the video for Hachi's *Donut Hole*, uploaded to: https://www.nicovideo.jp/watch/sm22138447
[42] To cite but one example, in Momocashew's 2014 video for *Pumpkin Spice Dummy* utilizing PowerFX's Vocaloid Oliver, pannings over a single but visually dense illustration (by Nai) convey dynamism while cuts between cropped details support the narration. Uploaded to: https://www.youtube.com/watch?v=CnHtaYiTrVM
[43] I.e., the alternation between two key frames to suggest repetitive movement.
[44] See https://www.youtube.com/@officialnayutalien1318/videos

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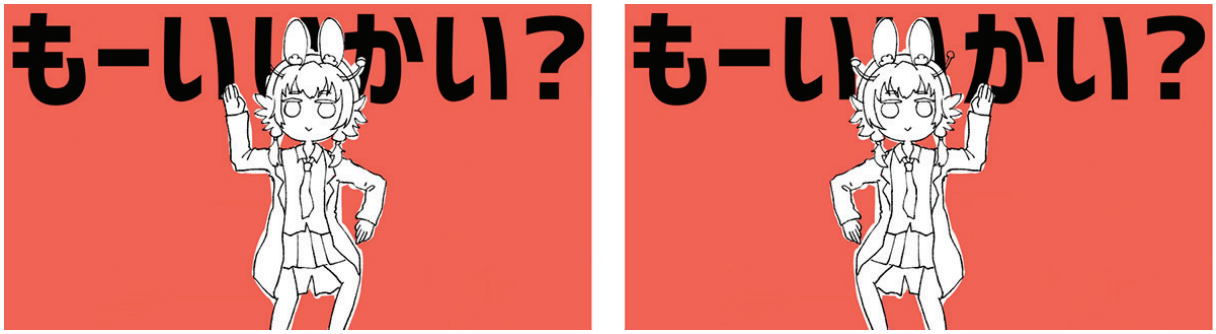


Figure 10. Two-frame dance move in vtuber Nemui Fuwari's cover of NayutalieN's *Dance Robot Dance*. Nemui Fuwari Juku (2021), https://www.youtube.com/watch?v=sywDMyxCXqo

animation dance (e.g., Figure 10). The hedonics of this aesthetics of limited animation is further underscored by the existence of a dance cover of NayutalieN's video for *Alien Alien* in cosplay[45] that reproduces the limited color palette and transmedially simulates the two-frame animation through human-executed choreographic means.

The notion of limited animation *within* images may also designate the circumscription of movement to restricted parts of the image, for instance, a moving character against a static background or a character of which only the lips and eyes are made to move. Such uses are widespread within the repertoire of Vocaloid music videos and also condition the gestures that will eventually be developed by cover dancers (*odorite*) for the song (see, for instance, the animation video for Hachi's *Matryoshka*[46] and the multiple dance covers it entailed),[47] which in many cases remain closely tied to the piece's kinetic identity.

The notion of limited animation may also designate the synchronic repetition of parts within the frame and the diachronic repetition of sequences of images, potentially forming cycles underscoring the piece's musical structure.[48] In extreme cases, limited animation may occur in the sole fluctuation of an image's coloring (or texturing) or in that of some of its parts. Although this sometimes produces apparent semantic effects (e.g., indicating a change in lighting, a change in the mental states portrayed, etc.), in other cases, it may be restricted to plastic functions of beautification and dynamism impartment. However, one may argue that in such cases, semantic content may also be identified in the rhythms and general ambiance conveyed and in the very

[45] Dance cover uploaded to: https://www.youtube.com/watch?v=KVrHMcCNPIM; original video URL: https://www.nicovideo.jp/watch/sm28576299
[46] Uploaded to: https://www.nicovideo.jp/watch/sm11809611
[47] One famous cover by Bouto (2010) to the *utattemita* version of the song by Zebra and Hashiyan may be viewed at: https://www.nicovideo.jp/watch/sm12784522
[48] One example that prominently features both types of repetition (synchronic and diachronic) would be Kikuo's *Dance of the Corpses* (2013), uploaded to: https://www.youtube.com/watch?v=O9eHRiaTuL4

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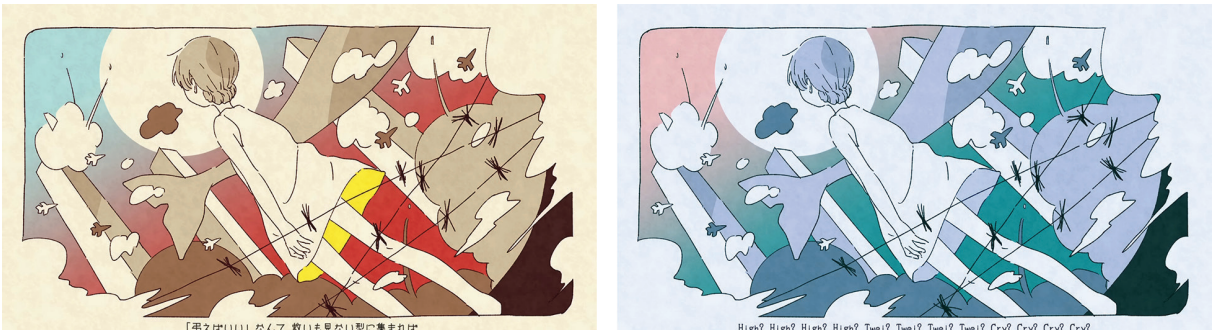


Figure 11. Challenging the notion of animation through its limitation to sparsely distributed chromatic shifts. seeeeecun (2018), with illustration work by Mitsuki Sanagi,
https://www.youtube.com/watch?v=2jPdLWJwVb8

sensations elicited by the textural or chromatic fluctuations. In the most extreme cases, the sole recourse to mere recoloring, be they full or partial, may challenge the notion of animation, especially when they are so sparsely distributed that they do not entail the formation of a kinetic Gestalt (Figure 11).

The last modality of limited animation to be inventoried here is the conveyance of movement through still image videography. In this respect, it must be stated that the repertoire of Vocaloid animation music videos certainly counts pieces aestheticizing the still frame's potential for movement narration to the point of even making it into a core aesthetic principle to apply in videographic art, sometimes even putting it to the service of the textual and/or musical semantics of the piece it accompanies. One exemplary piece that conveys a sense of movement without sustaining perceptual illusions of it is the video for r-906's *Manimani*,[49] in which frame changes (notwithstanding the display of the textual elements such as credits and lyrics) occur at an average rate closer to one image per twenty-four seconds than to the habitual twenty-four images per second, to a point where the illusion of perceived ongoing continuous motion is replaced by the inference of fulfilled motion through a series of jump cuts between positions of momentary immobility, breaking with the medium's habitual modality of movement conveyance and incidentally conferring a heightened sense of the careful control the portrayed character is itself construed to exert over its movements, following a rhythm that accentuates the piece's musical modulation of tension and release (Figure 12). As the video progresses and the musical tension accumulates, the cycle of the movements inferred from the discrete, discontinuously displayed positions takes on an accelerated pace. At the same time, a series of dramatic focusings propel the tensional build-up towards the ultimate graphical burst and its cooccurring musical climax.

[49] Uploaded to: https://www.youtube.com/watch?v=9O2VyUM5MlQ

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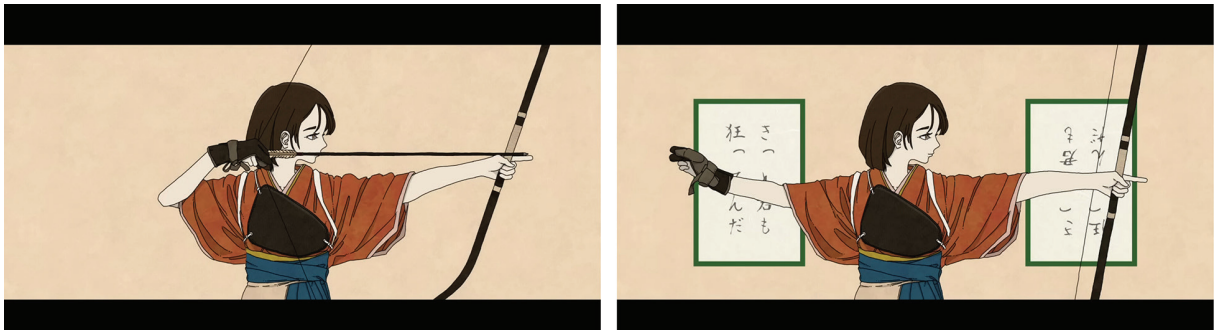


Figure 12. Fulfilled movement inferred between discretized postural states in this limited animation utilizing illustrations by Tsubasa Ueda replaces the medium's habitual perceived illusion of ongoing continuous movement. r-906 (2022), https://www.youtube.com/watch?v=9O2VyUM5MlQ

Although all the forms of limited animation non-exhaustively listed here may not, when taken individually, be viewed as being exclusively unique to Vocaloid music videos, the frequency and high consistency of their occurrence among the repertoire may undoubtedly form the basis upon which to speak of a videographic genre, replete with its own formal, stylistic, and aesthetic determinants tying it to a creative subculture of which it reflects both the conditions of production, history of development, and aesthetic inclinations.

5. Conclusion

This article examined through a semiotic lens the animation practices surrounding Vocaloid along three broad dimensions. Following a brief introduction to the inception of Vocaloid technology and its associated characters, we examined the role played by the animation medium in objectually developing the Vocaloid characters in their capacity as virtual idols themselves or as virtual performers of other characters through semiotic configurations of second-order fictionality. In addition to this, we examined the technological, gift-economical, and subcultural conditions underlying the collective labor through which the Vocaloid characters and their repertoire of mediatically diverse creations developed, with a special focus on the intertwining of this process with both the development of an array of Internet-based media-sharing platforms and the emergence of fandom-entrenched regimes of mediatic resource pooling, one that includes the incorporation of the performing human body as regards the transferral of digitizable kinetic scripts. Finally, we examined the role of animation in distinguishing the Vocaloid music video genre, focusing on its characteristically limited animation style and the latter's particular semiotic modalities of movement conveyance. While addressing these topics, account was taken of how

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the animation practices under study could configure the relationship between the participating human artists or hobbyists and machine-based virtual entities, be it through the substantial-cum-identitary continuity between the voicebank character and its human voice provider or through the user's own kinetic and/or symbolic interfacing with the character through various manners of animation-mediated play or artifact generation. Further research could expand upon several of the individual topics addressed herein, be it regarding the analysis of singular artifacts, the syncretic functioning of the diverse modal strata engaged by the animation practices surrounding Vocaloid, or the social semiotics underlying the production of these crowd-sourced, functionally dual entities.

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Shared cartoon style in CG animation to maximize empathy

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BY: **Marc Russo**

ABSTRACT

Major animation studios have found a way to enhance audience empathy through a more expressive character aesthetic, surpassing mere appeal. This new benchmark, the Pixar Peak, exists just before Uncanny Valley, where computer-generated (CG) animation can evoke a similar level of empathy as real humans. The shared expressive character aesthetics become apparent when comparing characters from various major studios. However, emotional connection with these characters is influenced by more than just their appearance. Factors such as character performance, cinematic techniques, and intricately designed 3D environments play a significant role. In recent releases, combining photorealistically rendered settings and stylized characters bolsters audience connection. The Pixar Peak is, therefore, not solely about character design but also about the interaction range of animation choices. This article examines the spectrum of character design, from iconic to realistic. It argues that the trend toward realistic environments, alongside cinematic choices and character performances, is essential in achieving the Pixar Peak. It will demonstrate how CG animation can enhance empathy for characters in two significant ways. First, we perceive these animated figures as representations of ideas; they are not just characters we observe but ones we can relate to and embody. Second, the realistic, immersive environments resemble our world, implying that these emotionally resonant characters exist within a familiar context.

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1. Introduction

Creating appealing characters in animated films is the goal of character design. According to Thomas and Johnston, the authors of *The Illusion of Life*, these drawings are pleasing to the eye and crucial for building character and the audience's ability to identify with the situations that the characters find themselves in (1995). Characters are fundamental to audiences' emotional engagement with a narrative and immerse us in the story (Smith 2020). The more we identify with a character, the more we empathize with a character's successes and struggles. Appealing protagonists are crucial to stories like *How to Train Your Dragon* (2010), *Frozen* (2011), or *Brave* (2012), so we immediately accept them as our guides.

Animators have changed and refined the concept of appeal since the early days of animation. Initially, it was something intuitive to artists and designers. The designers at Disney perfected this in their house style. They could sense it and feel it, but it was not quantifiable. Over time, the principle of appeal has been connected to quantifiable theories like Masahiro Mori's Uncanny Valley (1970) and, more recently, to Seyed Tabatabaei's Plausibility of 3D Characters (2018) and Malou van Rooij's Pixar Peak (2019).

Empathy for an animated character, its appeal, and relatability are directly related to a character's design. However, other aspects of these films affect the emotional connection between the audience and the characters. It is also how the character acts (Hook 2017), the cinematic techniques used, and the 3-D constructed worlds (van Rooij 2019).

This article explores the character spectrum from iconic to realistic by examining the feature films and shorts produced by Pixar.[1] It shows how the trend toward realism in the environment, their hand-crafted style of movement, and the cinematic choices (camera, editing, and lighting) are critical tools in creating the Pixar Peak. The paper further elaborates on how computer-generated animation (CG animation) increases empathy for characters in two ways. Firstly, we see these cartoons as representations of ideas. They are characters that we do not simply observe; we become them. Secondly, the realistic and immersive environment looks more like our world and suggests that these characters, representing emotional ideas, live in our world. The paper also proposes a set of design spectrums for future research to plot the design choices from an individual film to understand better how the balance of design choices adds to the audience's connection to a character.

[1] It is a calculated choice for this paper to look exclusively at Pixar Films. In no way am I suggesting that this is a complete analysis. I chose to look at Pixar films because this idea requires comparison from one film to another. There are less variables to contend with when limiting the data set of possible films to one studio. For instance, when looking at *The Incredibles*, it is easier to compare this film to *The Incredibles II* or even *Inside Out* rather than *How to Train Your Dragon* because more artistic choices remain constant. To fully explore this idea, one would need to extend outside of Pixar and start to compare and contrast films from Disney, Dreamworks, and beyond.

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2. Appealing characters

Appeal, the 12th and final principle of animation, was "...important from the very start" (Thomas and Johnston 1995: 68). Early on, artists at Disney discovered how critical an appealing character was to deliver a story. They recognized that the character was the audience's guide and how vital a guide was to the enjoyment of the story.

What made characters appealing was intuitive for the artists, "To us, [appeal] meant anything that a person likes to see, a quality of charm, pleasing design, simplicity, communication, and magnetism" (Thomas and Johnston 1995, 68).

Appeal, on the surface, is about what the character looks like, but story artists know that there is a lot more to building a character than what is on the surface. Appeal is also about the character's inner life or bio. It is about communicating the character's inner life through its design (Movshovitz 2017).

An example of this is Mr. Incredible's design from the first act of *The Incredibles* (2004). Mr. Incredible hunches over, his clothes don't fit well, and he is unkempt. All these design choices are an expression of his inner life. When we see him for the first time, we instantly feel he is uncomfortable. We can feel he is trying to fit into a world that is too small for him (which is a theme of the film) and has resigned himself to his current life.

Malou van Rooij, in her article *Carefully Constructed Yet Curiously Real: How Major American Animation Studios Generate Empathy Through a Shared Style of Character Design*, addresses the principle of appeal as applied to CG characters through the lens of the Uncanny Valley (Mori 1970) to create empathy for characters (2019). Thomas and Johnston did not mention empathy, but using van Rooij's Pixar Peak with appeal, one can see how studios maximize the emotional connection between the audience and the characters through a shared style.

The Disney animators developed the 12 principles for Disney's traditional animation production in the 1930s, and they remain critical tools, no matter the animation form artists are working in. CG animators use the 12 principles of animation to make characters believable with a few adjustments. Appeal in traditional or CG animation is how the designers and animators get the audience to care about a character. It is the principle that most closely addresses empathy.

Steve Lambert's article *"Disney's 12 Principles of Animation"* (2017) examines animation principles from a CG animator's perspective. Lambert adjusts one principle: appeal. According to him, appeal should now be "added appeal," "the x-factor that gets your audience caring about your characters" (2017). One of Pixar's pioneers, John Lasseter, modified the 12 principles of animation to make them applicable to 3D computer animation. He believed that appeal and personality are essential principles to consider while designing and animating a character. Lasseter's emphasis on these principles highlights the significance of a character's inner life and how it is conveyed through its design and movement (Lasseter 1987).

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The story is the driving force behind every storyboard and design decision made in a film. Those decisions include character design and performance. Performance is how we translate the still character to the screen; it is the visual representation of the personality (Thesen 2020). We can see how the look and the movement make the character appealing.

3. The Uncanny Valley

Van Rooij's paper focuses on CG animation and a shared style that maximizes empathy. She uses the definition of empathy put forth by Suzanne Keen: "what we believe to be the emotions of others" (Keen 2005, 5). The definition of appeal, according to van Rooij and *The Illusion of Life*, is when "[the] viewer believes he or she is feeling what the character feels by identifying and then simulating the identified emotion" (van Rooij 2019: 195). Even though Thomas and Johnston never use the word empathy, it seems clear that this is what they mean when discussing appeal.

Pixar attributes its success to its ability to create characters that audiences of all ages deeply care about. In the book *Pixar Storytelling*, the author David Movshovitz walks through the Pixar character development process for creating characters that go beyond the superficial. Pixar creates characters that audiences like on three levels. First, viewers like the characters because of their visual design. Second, we get to know the characters and understand their world and "positive traits." Finally, "you become personally invested in the world of someone else," and they "become a surrogate for the audience's hopes and fears" (Movshovitz 2017: 34). "This is also called empathy, and your character must evoke it in your audience" (ibid. 34).

According to Mori's Uncanny Valley theory, we can only feel completely familiar with a real human on a scale of lifelikeness and affinity[2] (Figure 1). While Mori uses the terms 'affinity,' 'familiarity,' and 'empathy' interchangeably when discussing Uncanny Valley, it's important to note that these terms are not interchangeable. Empathy provides the best definition if we are using Keen to understand Mori's Uncanny Valley (van Rooij 2019).

Based on the work of Pixar, Disney, and DreamWorks, van Rooij hypothesizes that these studios maximize empathy by creating an aesthetic that does not rely on pushing toward photographic realism. She explains that there is now another peak, the Pixar Peak, where audiences can empathize with animated characters similarly to real humans (Figure 2). It seems these studios have taken up Mori's recommendation to avoid trying to create photorealistic characters and lean into stylization (Bode 2019). To better understand this, we will discuss the cartoon, its use in character design, and its relationship to realism.

[2] Mori created the Uncanny Valley to describe our ability to empathize with robots based on their lifelikeness. However, it is often adopted for the visual design of CG characters (van Rooij 2019; Bode 2019) and animated movement or performance (Hooks 2017; Bode 2019).

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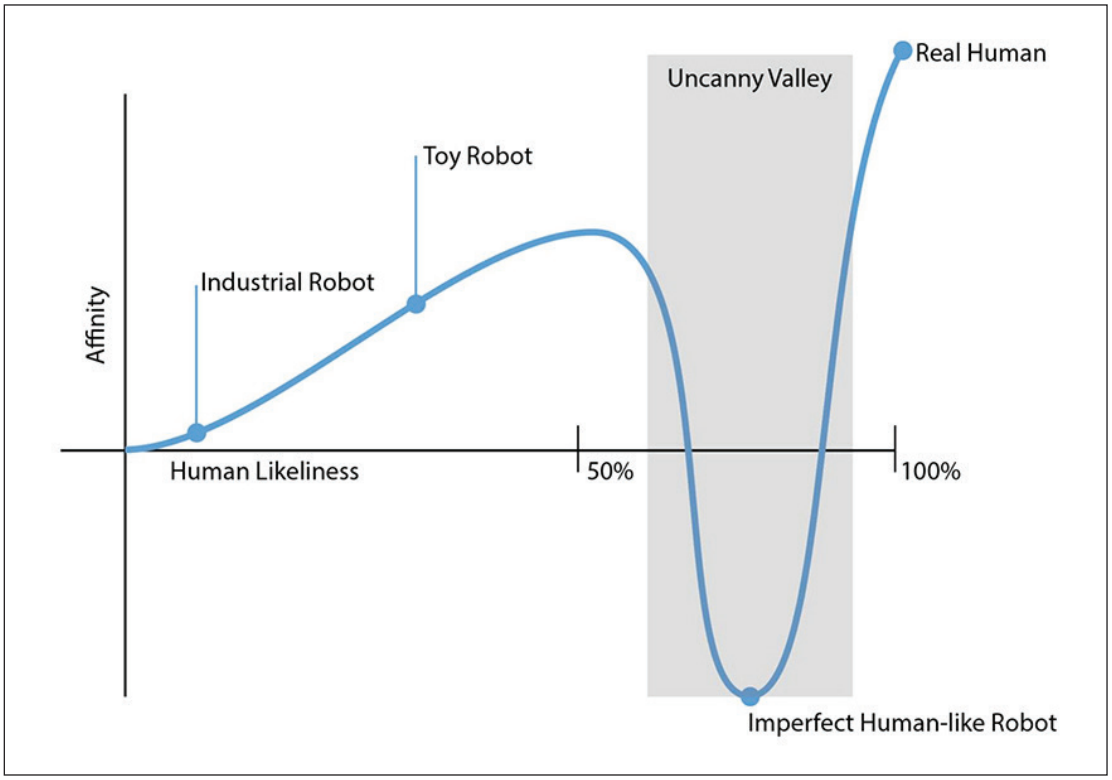


Figure 1. The Uncanny Valley

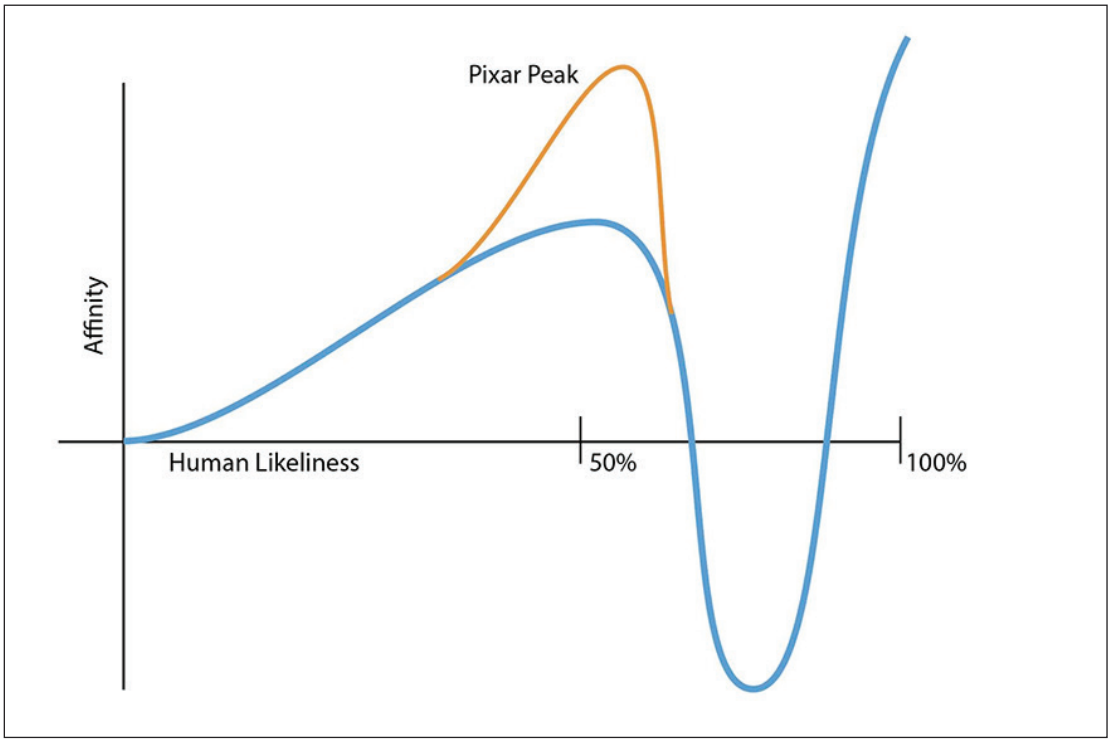


Figure 2. The Pixar Peak

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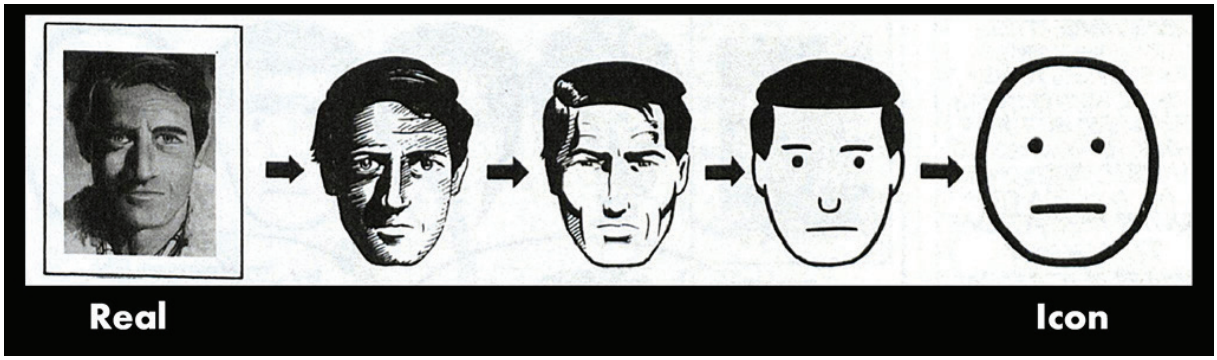


Figure 3. Real to Icon in comics (McCloud, 1993).

4. The spectrums of 3D rendering

The idea of the cartoon and its relationship to realism is vital to understanding appeal. The first duty of the cartoon is not to picture or duplicate real actions or events as they happen but to give caricature to life. "It is the exaggeration of the real for it to assist with the fantastic" (Thesen 2020: 278). In his book *Understanding Comics* (1993), Scott McCloud lays out a spectrum of rendering from realism to cartoon or from real to icon (Figure 3).

We do not remove details when we use cartooning to abstract an image. Instead, we emphasize specific details. By simplifying an image to its fundamental meaning, an artist can enhance its meaning beyond what realism can achieve. The cartoon's ability to focus our attention on an idea is what makes it distinctively powerful (McCloud 1993).

We do not need CG animation to connect the audience and the character. The simple cartoon does this. McCloud addresses the standard peak before the drop on the Uncanny Valley curve and the cartoon's ability to connect with us, "When we enter the world of the cartoon, we see ourselves" (McCloud 1993). There is a peak of identification on the curve of the Uncanny Valley without films like *Inside Out* (2015), *Moana* (2016), or *Shrek* (2001); it just did not reach the level that van Rooij is now hypothesizing.

This is supported by Butler and Joshko's comparison of the animated films *The Incredibles* (2004) and *Final Fantasy: The Spirits Within* (2001). The characters in *Final Fantasy* are photorealistic, while the characters in *The Incredibles* are heavily stylized (Figure 4). Butler and Joshko found that there was far more connection with the characters in the movie *The Incredibles* because the 'caricature' and 'abstraction' in the character design allowed the audience to use their imagination to see their own experiences in the characters. The 'frighteningly realistic' characters in *Final Fantasy* did not give enough space for the audience to imagine more than what was already being visually rendered (Bode 2019). The audience takes their time to add humanness to stylized characters because they know it needs to be added, and the form allows for augmentation. Characters are uncanny or lack audience connection at best when the viewers spend their time trying to discern their specific humanness (Bode 2019).

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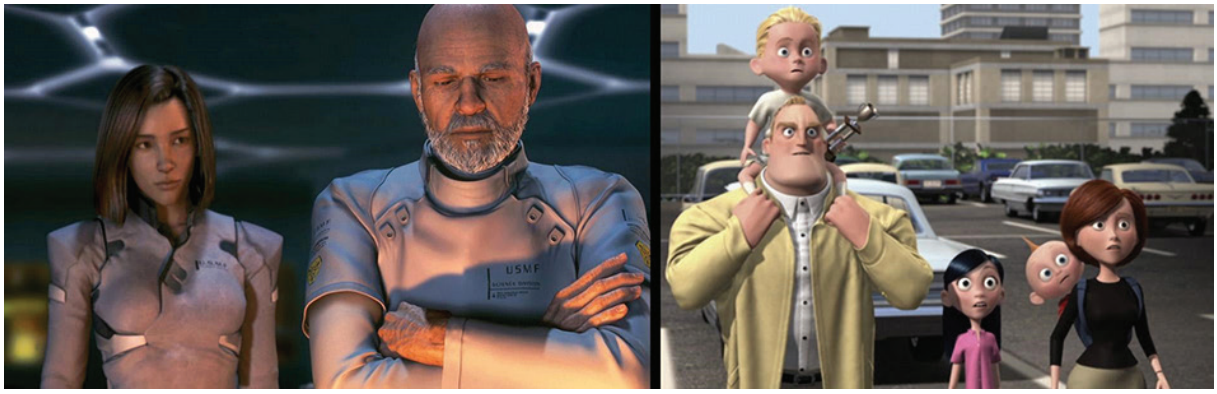


Figure 4. The characters from *Final Fantasy: The Spirits Within* compared to the characters from *The Incredibles* (2010).

CG animation has found a new power to elicit an empathetic response from the audience. We are more likely to cry, be deeply moved, and feel for the characters from Pixar, Disney, and DreamWorks that use CG animation (Sheldon 2019) (van Rooij 2019). An example is from *Toy Story 3* (2010), when Woody and the gang of Andi's toys were trapped in the incinerator (Figure 5). You might remember your feelings as the toys inched closer to the flames. The intense fear you might have felt only makes sense when you think about Woody, Buzz, and Jessie as real characters, not virtual CG animation.



Figure 5. Woody, Buzz, Jessie, and the whole band of toys in the incinerator toward the end of *Toy Story 3* (2010).

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Figure 6. A comparison of features and design of the 3D characters: Hiccup (*How to Train Your Dragon* 2011), Anna and Elsa (*Frozen* 2011), and Merida (*Brave* 2012).

Van Rooij attributes the increased appeal and our connection to the characters to the shared character design of these major studios. We all might intuitively know what the shared style is. When we compare the human characters created by different studios, we can see that they seem to have been designed by the same artists (Figure 6). However, it raises the question of whether the power of this shared style is simply a result of the character's design.

Significantly, there are exceptions, such as characters that do not share most of the attributes you see in Figure 5. Forky (*Toy Story 4* 2019) and Baymax (*Big Hero 6* 2014) (Figure 7) are very different from the characters in Figure 5, yet we still empathize with them. There must be more than just a shared character design. Van Rooij states that Baymax's minimal look seems to open several possible emotional states with which the viewer can empathize. If the new level of empathy came only from the shared character style, we might expect more empathy for Anna (*Frozen*, 2011) than Baymax (*Big Hero* 6, 2014).

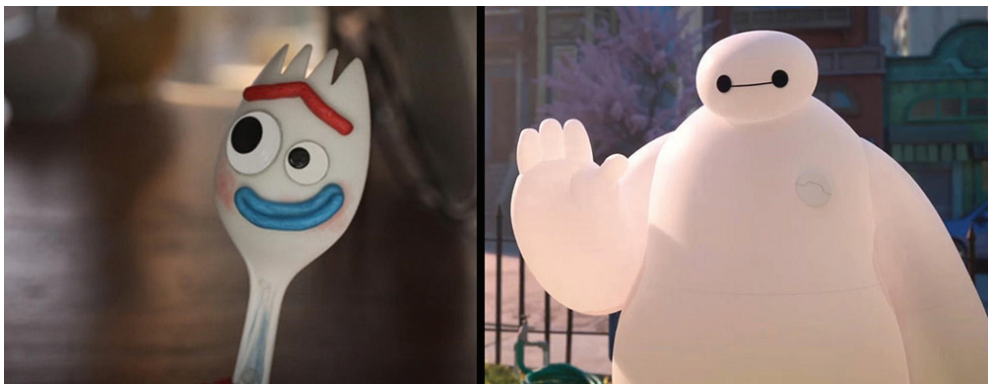


Figure 7. Forky (*Toy Story 3*, 2010) and Baymax (*Big Hero 6*, 2014).

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The increase in empathy in animated films is not solely due to the design of characters. Pixar's recent movies, *Luca* (2021) and *Turning Red* (2022), feature characters that are more exaggerated, cartoonish, and iconic than characters like Hiccup (*How to Train Your Dragon*, 2010), Anna (*Frozen,* 2011), and Merida (*Brave*, 2012). Pixar (Disney and Dreamworks) continues to use a Non-Photorealistic Render (NPR) for the characters in their films. However, despite their differences in appearance, the emotional impact of these new characters is just as strong. Although character design is important, it alone does not fully explain why audiences connect with these computer-generated characters. To better understand the appeal of these characters, we need to revisit the concept of appeal from the beginning.

Thomas and Johnston recognized the limitations of traditional animation and the form they were using. They felt there were problems in trying to communicate feelings through line drawings. When using traditional animation, the artist cannot render subtle shadow patterns on the face, and these details are critical to revealing shades of character in a person, which leads to misinterpretation of delicate expressions. The artist would try to add refinement but then over-render and create a feeling of restraint in the character's expression of emotions. The refinement would result in a lack of authenticity (Thomas and Johnston 1995). Hayao Miyazaki's observations about the limitations of cel animation were similar to those of Thomas and Johnston. In *Starting Point: 1979 - 1996*, Miyazaki says, "That cel animation images are simple and clear is another way of saying that they also lack much depth and sophistication" (Miyazaki 2022: 83).

Disney wanted to get closer to the character and use extreme close-ups, but the character's face would flatten out. So, to maintain appeal, they stuck with simple and direct drawings. The wisdom was never to get too close to the camera (Thomas and Johnston 1995).

In CG animation, the line is gone – unless we are talking about the recent trend in the Spider-verse franchise (Ramin Zahed, 2018), *Arcane* (2021), or *Watchmen* (2024) – allowing for extreme close-ups. Studios can move in close, so audiences feel like they are getting into the head of the character without the rendering becoming flat. There is detail to reveal on the outside, which suggests that there is detail to learn about the character on the inside. CG animation can now use the same film language as a Hollywood classic or modern blockbuster.

Thomas and Johnston relied on acting and story structure to increase appeal due to a problem with the medium. Lambert agrees that performance is the most important aspect of appeal or added appeal (2017). The character's performance is critical to animation, especially the subtleties, details, and imperfections (Roe 2019, Lambert 2017). Walt Disney himself agreed that the feeling[s] of the characters came from the movement (Culhane 1999). Empathy for a character from the audience is created by "endowing your character with a thinking and feeling brain" throughout the performance (Hooks 2017: 12).

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One might think that motion capture performance, like photographic realism, would then be the way to maximize empathy for a character through movement. Recreate the real world and have the character act like a real person. Even before motion capture, Thomas and Johnston knew you could not simply follow the live-action by just rotoscoping the reference. They noted that it was "impossible to be emotionally involved" with a character that was moving too realistically because they felt as though the audience knew the character was not "a real inhabitant of [the] fantasy world" (Thomas and Johnston 1995: 323). Moreover, in *The Illusion of Life*, they felt like a straight rotoscoped animation would be "tight and restricted." The animators need to emphasize the movement so that "what appears on screen is a simple, strong, direct statement that has clarity and vitality" (Thomas and Johnston 1995: 323).

But photographic realism has never been the ultimate goal for studios such as Pixar, which uses an NPR render for their characters. The goal of animation is not to copy life but to capture the essence (Stanchfield and Hahn 2009). Focusing on characterization, Pixar, Disney, and DreamWorks "share a certain simplified, more expressive aesthetic" (van Rooij 2019). The characters are stylized. "Stylization strategies are taken to let the viewer participate more actively in the meaning-making" (Tabatabaei 2018: 2).

Van Rooij does not focus on characterization through animation. As part of their 'simplified expressive style,' Pixar has resisted the trend toward using motion capture and relies on the animation artist to craft the performance. The character's performance "plays a significant role in the constitution of their realism more so than their visual design" (Tabatabaei 2018: 1). Animated movement breathes life into characters. The performance or the illusion of life is essential for creating an empathetic response from the audience for the character (Hooks 2017).

Pixar, Disney, and DreamWorks have not used all the technological advances of VFX studios. They have stuck to their already established expressive style. But they continue to make advancements in texture, lighting, and rendering. The style of a character is determined not only by their appearance but also by animation, cinematic techniques, and rendering. Thomas, Johnston, Lambert, Hook, and Tabatabaei support this idea.

The performance is important, but we should remember these characters do not live in a blank world. They live in a world constructed and rendered by the same computers and conventions that render the characters. "Computer animation's audio-visual experience and perceptual correspondences are facilitated by its use of both 3-D 'sets' and virtual cameras" (van Rooij 2017: 195). Cameras that can move freely in a virtual set can make the audience feel like they are in a real environment. This differs from traditionally animated films, with limited camera movement.

The multiplane camera used by Iwerks Studio and Disney and the stereoptical camera (or setback camera) used by Fleischer Studios brought depth, perspective,

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and the illusion of 3D space to each animated frame (Jaeger 2013). The more faithful representation of three-dimensional space was integral in creating the Disney house style that would hit a sweet spot between photorealism and exaggerated reality or 'hyper-realism,' as defined by Paul Wells (Mihailova 2019). While the environments in the early Disney and Fleischer films were beautiful and immersive, they were quite different from the 3-D sets used today.

Camera effects in 2D animation changed again with the release of the 1993 version of *Beauty and the Beast*. We see the emotional impact that a more realistic environment, as expressed by the camera's ability to move about freely, has on the audience. There are many moments in the film where one feels connected to Belle and the Beast, but the ballroom scene has an impact because of its 3-D environment. Most praise for *Beauty and the Beast* was for the ballroom scene, which was the first to use a CG-animated background in the final production. But it is also because when the camera starts to sweep up and around the ballroom, the characters, the world, and the story all come alive. The suggestion of the real 3-D world of the ballroom increases our connection and empathy with the main characters (Failes 2021).

Since the same rules for creating and building characters apply in building a world, it is possible to use a similar spectrum to the one used for characters. Environments can also range from real to iconic (Figure 8).

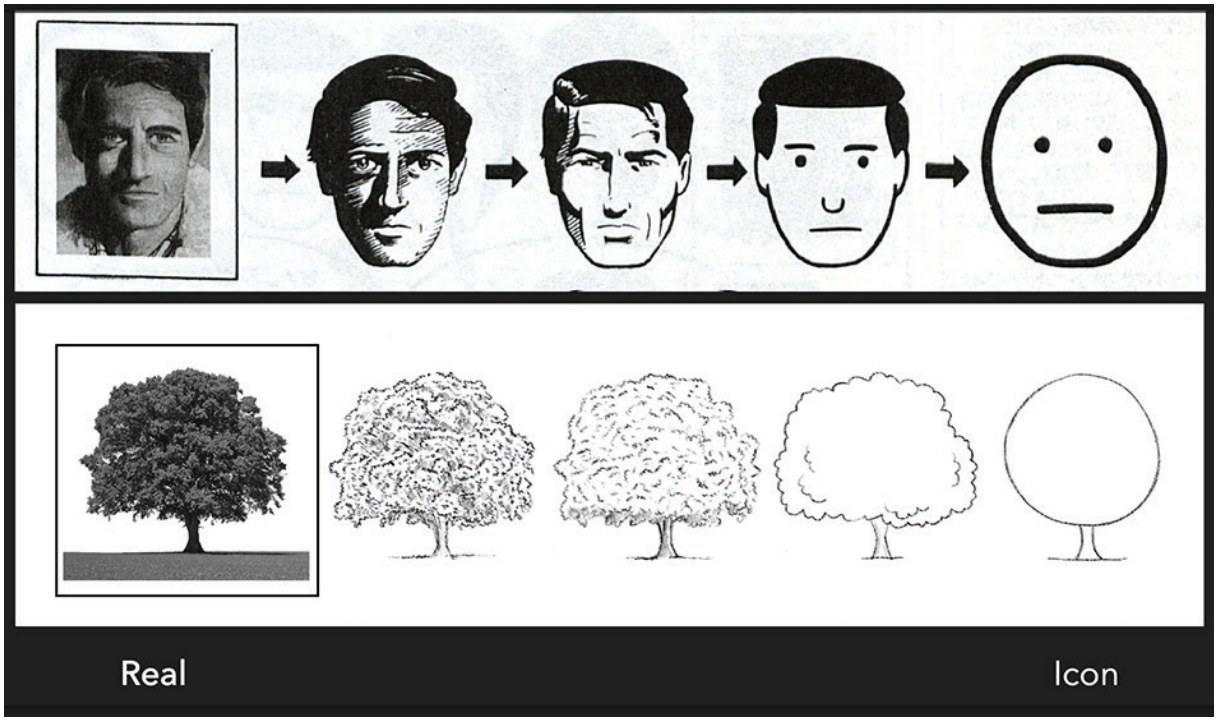


Figure 8. The Spectrum from real to iconic for environments lined up with McCloud's spectrum.

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For the environment, McCloud also describes a spectrum from iconic to realism, but most of his discussion focuses on objects. The example he uses to illustrate the spectrum is with a teacup (McCloud 1993). He does this to discuss the strengths of real versus icon visually and narratively. The iconic teacup "could get up and dance and we would not think it was out of place, but realism, in the context of the cartoon, is better able to portray the beauty and complexity of the physical world" (McCloud 1993: 41). While it would seem obvious to use the same rendering style (Non-Photographic Rendering) for the character as you do for the environment for consistency, there are reasons to mix one style with the other.

This idea of mixing and matching styles is not new. We can also find examples of animated characters inhabiting photographic environments in some of the Fleischer Studio shorts from the 1930s. Disney and Studio Ghibli offer a different example. They render their backgrounds without an outline to capture a wide range of colors and focus on light, shadow, textures, and intricate details. This intentional mixing of rending styles between the characters and the world is impactful, especially when we see the world as 'real' and not just 'more real' than the characters. However, in traditional animation, while the rendering of the backgrounds is more realistic, the camera is still not free to move through the environment.

McCloud briefly discusses the combination of rendering styles by pointing to *the clear-line* style of comics that combines iconic characters with realistic backgrounds. "This combination allows readers to mask themselves in a character and enter a sensually stimulating world. One set of lines to see. Another set to be" (McCloud 1993: 43). McCloud tells us that animation has used masking to help audiences enter fantastic worlds for 50 years. *Understanding Comics* was published in 1993, so McCloud refers to traditionally animated films. He was unaware of the changes that would come post-*Toy Story* (1995) and the potential that CG animation would bring to character identification and environment by taking a stylized character rendered in a Non-Photographic Render and putting them in an environment that is rendered in a Physically Based (realistic) Render (PBR).

Van Rooij states that the stylistic success formula for Disney, Pixar, and DreamWorks is hitting a 'sweet spot' on a spectrum from realistic to iconic to generate the highest levels of empathy from the audience. The article starts to bring together two ideas. The "more expressive characters seem to be accepted by the audiences as real and authentic, evoking empathy and amplifying meaning," and they use "digital sets, virtual cameras, and perceptual cues to create a believable, three-dimensional world in which [the characters] 'live'…" (van Rooij 2017: 203)

When we bring together iconic cartoon characters and place them in a world like ours, we accept these characters as authentic and their emotions and ideas as genuine or real. Unlike actors, these characters are not merely portraying emotions but embodying them. In CG productions, emotions and ideas can live and breathe in our world.

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5. Mixing spectrums to maximize empathy

We can see evidence of Pixar beginning to experiment with this idea of mixing renders as far back as 2013 with the release of the short *The Blue Umbrella*. When the short starts, viewers may initially struggle to differentiate whether this is a city street captured in photographic footage or animation. That confusion is understandable because 5-years before the release of *The Blue Umbrella*, Pixar had set a precedent of mixing live-action footage with animation in *Wall-E* (2008). However, in the case of *The Blue Umbrella*, it is all animated CG sets. Pixar also pushed the mixing of styles in the 2015 film *The Good Dinosaur*. The film shows a giant contrast between the caricatured dinosaurs and the realistic landscapes. At the end of the movie, we are shown computer-generated images of natural elements that resemble the work of a skilled landscape photographer.

Pixar is at the forefront of the trend of mixing renders and is currently exploring various techniques. In this regard, I would like to examine two examples from Pixar. However, this is not to suggest that other studios do not have films that may also be informative and interesting to study. Compared to other studios, Pixar has a consistent output of shorts and feature films that are easier to compare and contrast.

6. Film analysis

There are almost countless choices that the directors and animators are making in the process of creating modern CG productions. The choices related to appeal and characters are just as expansive. I propose looking at CG films along four different spectrums:

- The character design
- The environmental render
- The use of cinematic techniques
- And the character's performance

These four design choices in a movie can be plotted on various spectrums. The combination of where a movie falls on all those spectrums creates the unique cartoon style that characterizes Pixar Peak, as shown in Figure 9. To illustrate this point, let's use two examples of Pixar films: the short film *LOU* (2017) and the critically acclaimed feature film *Inside Out*.

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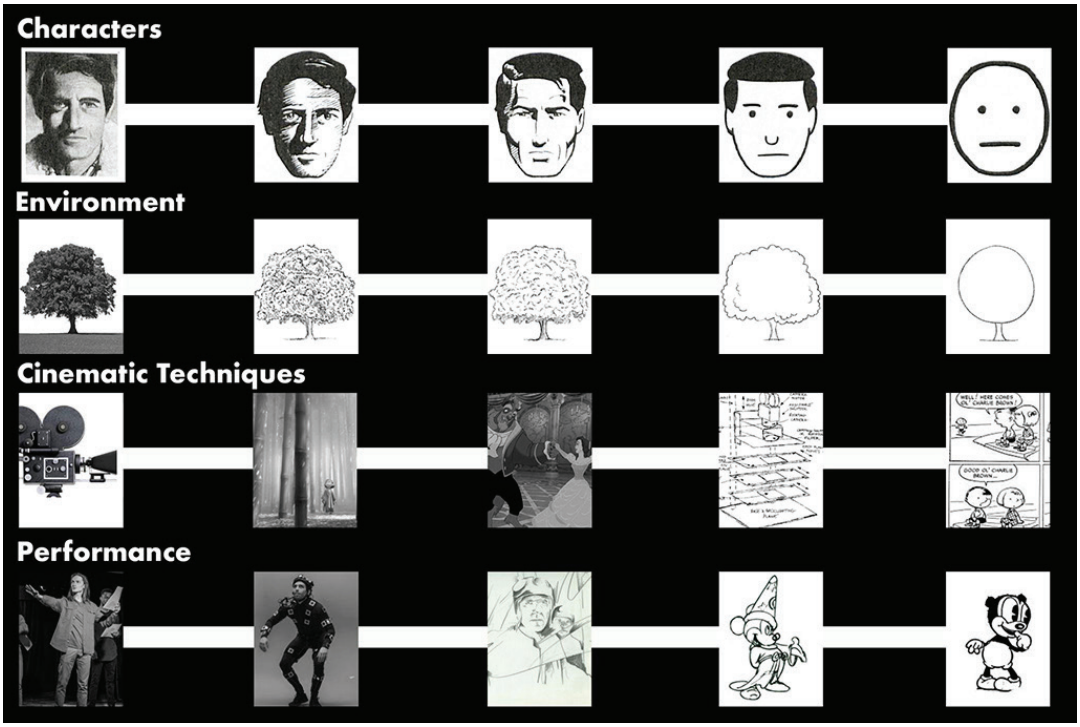


Figure 9. The spectrums of character, environment, cinematic techniques, and performance.

The spectrum of character design is taken from Scott McCloud's *Understanding Comics*. The spectrum of environment design was adapted directly from McCloud. The spectrum of Cinematic Techniques ranges from a real camera to a virtual camera in a CG environment with lens effects such as depth of field, a virtual camera with freedom of movement in a 3D space, a multiplane camera, and a fixed camera. For performance, the spectrum ranges from live or film actors, motion or performance capture, rotoscoped action, crafted keyframed animation performance, and straight-ahead animation performance.

In the short film *LOU*, which is about bullying, the opening scene takes place on a playground. Although we briefly see kids playing on the playground, we only view them from afar. After that, we zoom in on different aspects of the playground (Figure 10). The lighting, textures, and natural environment are all rendered realistically. These moments are intended to bring back our memories of playing on the playground as children or to make us feel like we are in the real world. The realistic render is meant to evoke the image of that perfect playground on which we used to play as kids.

We are then introduced to the main character, JJ. He is an idea, the classic schoolyard bully. If we consider the spectrums as a continuum rather than buckets, the environment of *LOU* is very close to realism on the spectrum, and JJ is much closer to iconic. The other children look a little more realistic than JJ (Figure 11).

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Figure 10. Selected images from the opening moments of *LOU*.

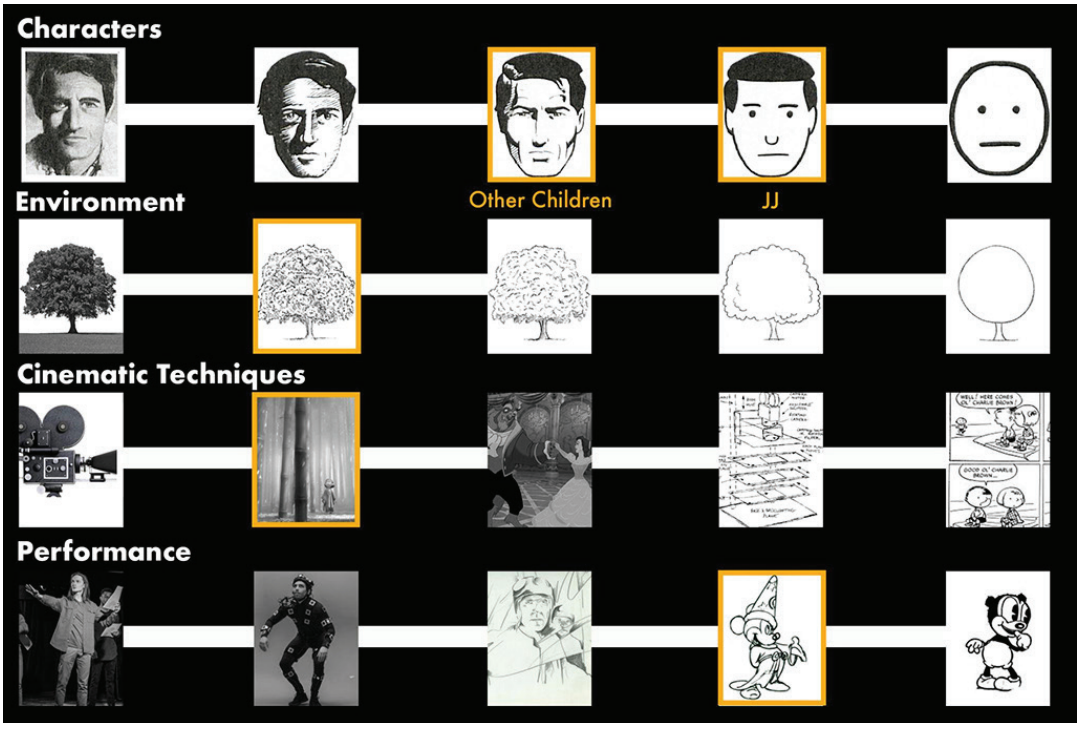


Figure 11. The spectrums of character, environment, cinematic techniques, and performance for *LOU*.

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JJ is designed to be more iconic than the other students because we are meant to see him as the idea of a bully. The realistic rendering of the environment places this idea of a bully on a very real playground. Since we can put ourselves in the environment and see this environment as realistic, the emotions and connections we have to the characters are more powerful. We empathize with the other students as JJ goes around and torments each of them.

Since JJ is iconic, we easily suspend disbelief when the lost-and-found box comes to life and grapples with him. JJ's iconic form also allows us to switch from disapproving of his actions to understanding his struggle and ultimately empathizing with him and his sadness. However, it is not just his cartoon form that helps make this connection; the environment that we recognize as our world increases identification.

LOU also uses classic cinematic techniques like rack focusing, slowly panning around objects, handheld camera shakes, and extreme close-ups. *LOU* uses the close-up to amplify the audience's connection with JJ because we can be intimate enough to see and feel his emotions.

The subtleties of the performance add to the appeal. It is reminiscent of Les Clark's animation process for Mickey Mouse in *The Sorcerer's Apprentice* (*Fantasia*, 1940). For *Fantasia*, Disney shot a live-action reference of a boy leading an imaginary broom. One would think that simply simulating that movement would be enough to capture the audience. But it is the additions and interpretations that Clark gave to the animation, the "jaunty little-boy determination as Mickey bowed, hopped downstairs, and flopped into a chair all with supreme self-confidence," that made Mickey feel like he is feeling and thinking and not just moving (Culhane and Walt Disney Productions 1999: 28). Thinking and feeling is the illusion of life. As Hooks states, "when you endow a character with the illusion of life, you set the stage for an empathetic connection with the audience" (13).

JJ is visually iconic, and so is his performance. Rather than the motion coming from one actor (live action or motion capture), his motion throughout the short fuses many performances and ideas and makes him an iconic character. We see animators bringing together many ideas and their own experiences to create an engaging and empathy-inducing performance (Roe 2019). Bukatman asserts in *The Poetics of Slumberland: Animated Spirits and the Animating Spirit* that these animated performances are more engaging to audiences because they are part of a studio pipeline and are the sum of many people's experiences (Roe 2019).

Inside Out introduces us to Riley, a young girl who moved from Minnesota to San Francisco with her family. Riley pushes closer to realism than JJ and the students from *LOU*, and so does the environment. Riley looks like the characters we looked at when

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we listed the features that make up the shared visual style: small, soft features with large eyes on a large round head, a realistic mouth, and subtle detailing (Figure 9).

When Riley enters her new school cafeteria, it is rendered realistically. The filmmakers aim to make the audience remember their own experience of looking for a friendly place to sit. Additionally, the camera movement through the cafeteria as we follow Riley reminds us that this is a 3D world. As van Rooij states, this visual cue tells us that this world is like ours (van Rooij 2017). Notice the dappled light, the subtle textures, and even the carefully placed garbage poking out of the waste bin. The construction of everything makes the world feel real (Figure 12).



Figure 12. The spectrums of character, environment, cinematic techniques, and performance for *LOU*.

When Riley ultimately sits by herself, we empathize with her. The animation focuses on her darting eyes as she uncomfortably navigates past a sea of unfamiliar and seemingly unfriendly faces to a place by herself. She sits and pulls inward as she points her knees and toes slightly toward each other. Finally, she takes a last deep breath and sighs in relief. Track yourself the next time you watch this scene. You might find yourself unconsciously taking that same breath.

Plotting the design choices for *Inside Out* on the list of spectrums would look like the chart in Figure 13.

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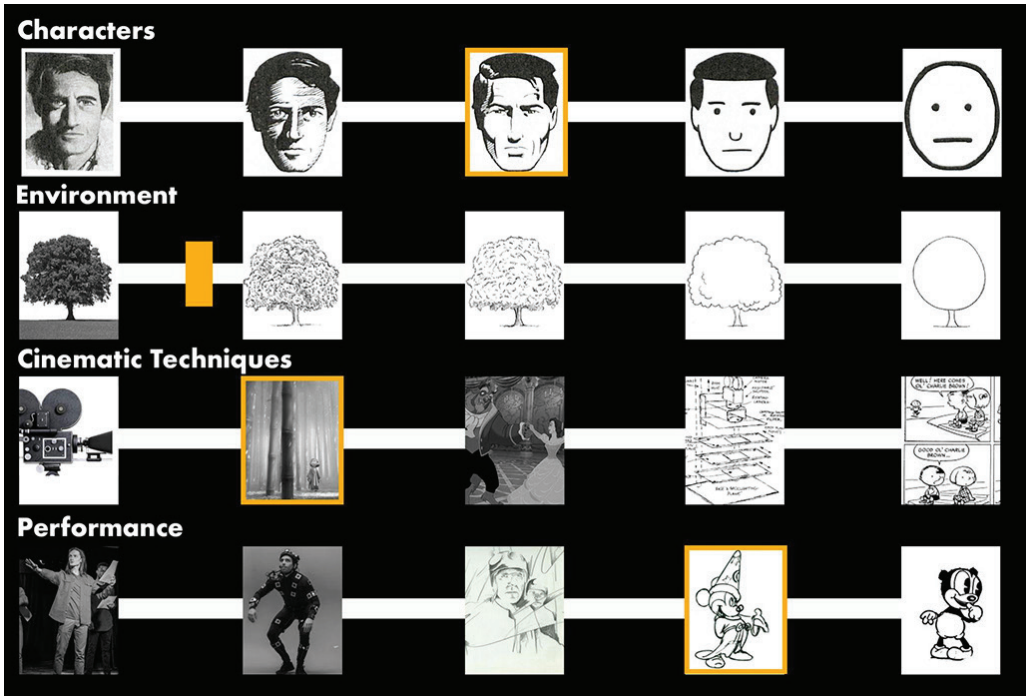


Figure 13. The spectrums of character, environment, cinematic techniques, and performance for *Inside Out*.

We can see a counterexample if we look at the characters from *The Incredibles* (2004). The characters occupy the same place on the spectrum as Riley, but we empathize with them less. If we look at the environment, there are many of the same clues that suggest a 3D world, but the forms and the textures in the environment are not nearly as realistic (Figure 14). This affects our recognition of the world and our identification with the characters.



Figure 14. Environment and characters from *The Incredibles*.



Figure 15. Selected images from the end of *Inside Out*.

The scene at the end of *Inside Out* when Riley is attempting to run away back to her home in Wisconsin is emotionally tense because Riley, the character, the idea of a vulnerable girl feeling homesick and alone, is running away not in a cartoon world, she is running away in a real world, our world. And we know how frightening and dangerous our world can be (Figure 15). Looking at this rendered world with its overpasses and highways, we start to imagine the frightening situations that we read in the news, like human trafficking showing up in the world of *Inside Out*.

7. Final thoughts

The features *Luca* and *Turning Red* (Figure 16) both chose to use a character style much closer to iconic. We know they are human, but their style lets us see the main characters, Julia, Luca, and Alberto in *Luca* and Meilin in *Turning Red* as the ideas they represent.[3]

[3] Elemental (2023), the more recent release from Pixar, pushes the character design even closer to the cartoon/iconic end of McCloud's spectrum from figure 3. The emotional connection with Ember and Wade from Elemental is no less than with characters from any of these other movies. This further supports the premise there is a balance of multiple spectrums that is creating the deeper connection between the characters and the audience.

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Figure 16. Characters from *Luca* and *Turning Red*.

The worlds in *Luca* and *Turning Red* move toward iconic. In both cases, the surrounding environments are not as realistic as the environments of *Inside Out* or *Soul* (2020). However, the filmmakers edit in simulated B-roll footage and small details to indicate that these animated worlds are real. In *Luca*, the film pauses from the main story for a few moments to show us some quiet ambient moments that seem very real, like the ocean waves lapping onto the shore (Figure 17). The film *Turning Red* captures reality in small details, such as the food that Meilin's father cooks (as shown in Figure 17). Despite the stylized worlds of the film, it reminds us of our world. Both films connect the characters' themes of friendship, secrecy, and a search for belonging to our world.

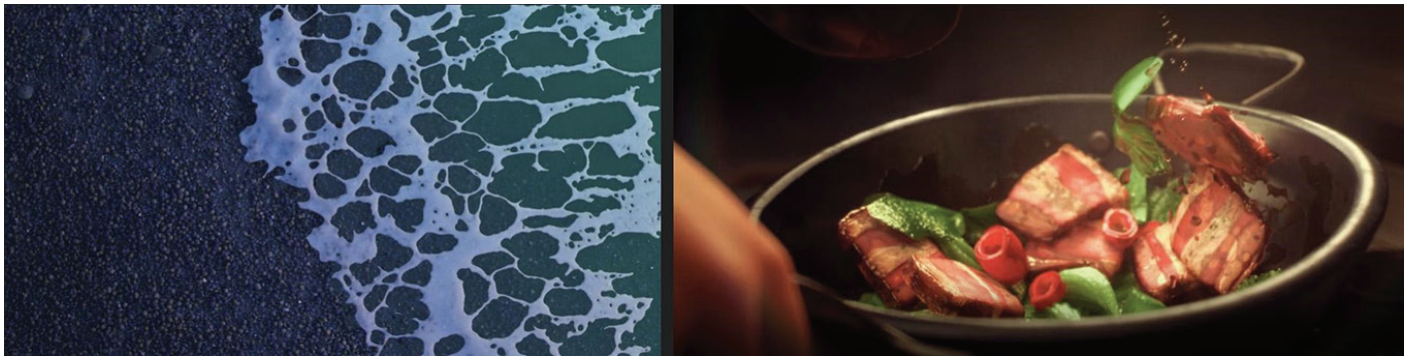


Figure 17. A moment of the ocean waves lapping onto the beach from *Luca* (2021). The food cooked by Meilin's father from *Turning Red*.

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Figure 18. An older woman sleeping in front of a TV playing *Big Deal on Madonna Street* (I Soliti Ignoti 1958) from *Luca*. *Wall-E* watching *Hello Dolly* (1968) in his bunker, from Wall-E.

Pixar makes a few other choices beyond performance, environment, and rendering to show us that their characters live in our world. In the movie Luca, there is a scene where Luca and Julia are running along the rooftops. During this scene, we glimpse them through the window of an older woman's apartment. The woman is sleeping in front of a TV, showing footage from the 1958 film *Big Deal on Madonna Street*. This is similar to the VHS version of *Hello Dolly* (1968), which plays multiple times in the movie *Wall-E* (Figure 18). Including these classic films from our world in the movies *Luca* and *Wall-E* helps make the worlds in these movies feel more relatable. As a result, viewers can empathize more with the characters in these films.

8. Conclusion

> "If a character lacks appeal, why would you care what happens to them?" (Lambert 2017).
>
> "Your job as an animator is to create in the audience a sense of empathy for your character." (Hooks 2017)

We need to care about the characters on a deep level if we are going to see the benefit of traveling on their journey. Pixar has spent three decades creating rich, detailed characters with whom we empathize. From Woody (*Toy Story* 1995) to Joe Gardner (*Soul* 2020) to Joy and Sadness (*Inside Out 2* 2024), Pixar has been able to take us beyond liking its characters (Movshovitz 2017). They have created characters with relatable inner lives, not just appealing outer shells.

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Pixar, Disney, and Dreamworks have discovered that CG animation gives them a unique opportunity to connect with the audience on a deeper level. Van Rooij has shown that these studios recognize that there is power in the cartoon and have not moved toward photographic realism. They developed a shared character design style that changes how we experience cartoon or animated characters in a film (2019). The shared style includes 3D sets, realistic lighting, character performance, and cinematic camera techniques are all part of this shared style. Now, audiences empathize with CG animated characters as they would with a human.

While these studios have maintained a more iconic style for their characters, they have also pushed toward realism in other parts of the film's design. In the shorts *LOU* and *The Blue Umbrella* and the feature films *Inside Out* and *Soul*, Pixar has chosen an environmental rendering style close to realism. Pixar understands that the animated characters or cartoons represent us in the film.

When animated characters are designed with more emphasis on their iconic representation rather than realism, we associate them with the ideas they represent. These characters are placed into a realistic world that we can relate to. This results in two outcomes for the audience. First, we can identify better with the characters and empathize with them because we can feel their emotions and relate to the struggles happening in our world. Second, we experience the world through McCloud's concept of masking, where we perceive the environment and become the character (McCloud 1993).

By plotting character design, environmental render, character performance, and the use of cinematic techniques on a set of spectrums inspired by Scott McCloud's spectrum of cartoon styles from real to iconic (McCloud 1993), we can better understand the choices made in CG animated films. These spectrums are certainly not the only ones that affect the audience. What are the other significant choices, and how do they interact with each other? This area needs more exploration. This mapping can help us better understand the shared style of Pixar, Disney, and Dreamworks. It makes it easier to see the similarities and differences between productions. It also makes it easier to see how mixing the design choices can affect the audience's ability to empathize with a character.

Pete Doctor, the director of *Inside Out* and *Soul*, has said, "what you're trying to do when you tell a story is to get the audience to have that same feeling" (Peters 2021). Creating a story that resonates requires great writing and well-developed characters. Supporting the story with thoughtful design choices can make it even more impactful. Using the spectrums discussed, we can maximize the audience's ability to empathize with the characters, making the story more meaningful and emotionally engaging.

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Full-bodied puppetry and bubblegum pop: US Saturday morning television and *Kellogg's Presents the Banana Splits Adventure Hour*

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BY: **Kevin Sandler**

ABSTRACT

The creation of full-bodied puppetry series like *Kellogg's Presents the Banana Splits Adventure Hour* (1968-1970) on Saturday morning in the United States provides an account of the efforts by production companies, network executives, and advertisers to replace its violent action-adventure programming with comedic fare during the moral panic of 1968. Its production history showcases how the re-introduction of puppetry on Saturday morning was bound up in contemporary cultural discourses involving not only media violence but also industrial strategies shaping children's programming around cross-media marketing, performative labor, and the bubblegum pop phenomenon.

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Hanna-Barbera
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1. Introduction

For nearly all of the twentieth century, the cel technique was the dominant animation mode for the film and television industries in the United States. Outside of George Pal's stop-motion Puppetoons, this hand-drawn technique was convenient and easily scalable for use by large theatrical studios like Warner Bros. and MGM during the Golden Age of Hollywood cinema (the mid-1920s to late-1950s), followed by its ubiquitous use on television until the emergence of computer animation in the 1990s.

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Although never mainstays of US children's television programming, puppetry and other non-cel animation techniques occasionally broke through on the small screen in the first few decades of television broadcasting. Live hand puppetry like *Howdy Doody* (1947-1960), *Kukla, Fran and Ollie* (1947-1957), and many locally hosted shows; pre-recorded puppetry like *The Bullwinkle Show* (1961-1962); and stop-motion puppetry like *The New Adventures of Pinocchio* (1960-1961) populated the airwaves from the late 1940s to the early 1960s. Stop-motion claymation like Art Clokey's *The Gumby Show* (1956-1968) and *Davey and Goliath* (1961-1964), as well as Syncro-Vox like Cambria's *Clutch Cargo* (1959-1960) and *Space Angel* (1962-1964) were also present during this time.[1] By 1965, cel-based cartoons once again saturated the market with the emergence of Saturday morning as the primary zone of new animated programming on US commercial television. For the next few years, almost all original children's programming produced for this time slot was cheap, limited-cel animation of the violent action-adventure variety that capitalized on the spy (*Secret Squirrel*, 1965-1967), outer space (*Space Ghost*, 1966-1968), and superhero (*The Adventures of Batman*, 1968-1969) crazes.

However, for a brief period from the late 1960s to mid-1970s, Saturday morning did feature puppetry – specifically, humans wearing full-bodied costumes produced mainly by the Sid and Marty Krofft factory – before returning almost exclusively to cel-based animation for the remainder of the decade. What accounts for this short resurrection of puppet animation? I believe that the era's renewed interest in puppetry resulted from efforts by production companies, network executives, and advertisers to replace its action-adventure programming amidst increasing criticism over media violence from watchdog groups followed by the assassination of Robert F. Kennedy, Jr. and the appointment of a National Commission on the Cause and Prevention of Violence from the Johnson Administration in June 1968. In its wake, a softer, gentler, and funnier Saturday morning emerged. Gone were perilous and terrifying fantasy stories, and in their places were new musical-comedies, mystery-comedies, and adventure-comedies. Most were cel-based cartoons like *Scooby-Doo, Where are You!* (1969-1971) but some featured full-bodied puppets. The animation/live-action hybrid *Kellogg's Presents the Banana Splits Adventure Hour* (1968-1970) – which Hanna-Barbera produced with Sid and Marty Krofft-designed costumes – served as a transitional series between the action-adventure and comedy formats. I posit that the *Banana Splits*'s production history showcases how the re-introduction of puppetry on Saturday morning was bound up in contemporary cultural discourses involving not only media violence but also industrial strategies shaping children's programming around cross-media marketing, performative labor, and the bubblegum pop phenomenon.

[1] Syncro-Vox was a process that superimposed a human actor's lips voicing scripted dialogue over an animated figure.

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2. Saturday morning and the action-adventure cartoon

By the end of the 1960s in the United States, Saturday morning television had become the principal home of newly produced and previously aired animation series as well as older, fully animated theatrical cartoons from the Hollywood studio era. Nearly all were cel-based animations aimed at the children's audience, establishing a kids-only generic category, states Jason Mittell (2004:77), known as "Saturday Morning Cartoons." He argues that several cultural assumptions linked to the cartoon genre fueled this industrial shift: that kids will gladly watch recycled and repeated programs, that kids cannot discern animation quality, that cartoons should not address "adult" subject matter, and that cartoons are "harmless entertainment."

The massive popularity in the fall of 1965 of King Features' *The Beatles* (ABC, 1965-1968) validated these assumptions and convinced the industry of the lucrativeness of the daypart for advertisers. The series, consisting of short, silly, animated adventures and sing-a-longs that visually illustrated the Fab Four's catalog of songs, was outsourced to five production studios across four countries (England, Australia, Canada, and Holland). It was produced for only $32,000 per half-hour in just four months' production time to capitalize on Beatlemania. With the hasty roll-out to meet the September 1965 airdate, the twenty-six first-season episodes of *The Beatles* had little artistic uniformity and numerous continuity mistakes (Axelrod 1999:65).[2] Similar cost-cutting decisions, whether the product of network indifference or studio negligence, would soon affect most Saturday morning cartoons. This seeming lack of attention certainly contributed to the sense by parents and advocates that children's programming was not getting the consideration it deserved.

In the wake of *The Beatles*' cartoon success, the 1966-67 season was a turning point in Saturday morning programming, as CBS, NBC, and ABC each launched ten new original series.[3] Except for the short-lived *Beatles* ripoff, *The Beagles* (1966-1967), the three networks deluged the timeslot with nine action-adventure series that capitalized on the James Bond craze, the space race, and the burgeoning fascination with superheroes. Of greatest significance that season was the establishment of an immensely successful three-hour block of action-adventure programming by CBS's new, twenty-seven-year-old director of daytime programming, Fred Silverman. He designed a block of action-adventure programming around his most successful character, the superhero Mighty Mouse, by acquiring the rights to Total Television's Underdog away from NBC. Silverman then produced a horde of new superhero cartoons that included Terrytoons'

[2] According to Al Brodax, the $32,000 did not include any fee for music rights, which were freely contributed by The Beatles and their agent Brian Epstein. See Al Brodax (2004:27).

[3] CBS also premiered *The Road Runner Show*; however, it was an anthology series compiled of old Looney Tunes and Merrie Melodies shorts produced by Warner Bros. and Depatie-Freleng.

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The Mighty Heroes (1966-1967), *Hanna-Barbera's Frankenstein Jr. and the Impossibles* (1966-1968) and *Space Ghost and Dino Boy* (1966-1968), Filmation's *The New Adventures of Superman* (1966-67, 1969-1970), and Format Films's *The Lone Ranger* (1966-1968). With major promotion in comic books – unprecedented at that time for Saturday morning – Silverman's gamble paid off with very high ratings. CBS catapulted from third to first place, with *Superman* earning a 60 audience share and *Space Ghost* posting a 55 percent share in the 10:30 am slot, besting *The Beatles* (Silverman in Barbera 2006:167).

Hanna-Barbera, who would produce the largest number of Saturday morning cartoons for the next two decades, supplied six of the ten new action-adventure cartoons blanketing the three broadcast networks in the 1967-68 Saturday morning season.[4] All of these series were superhero cartoons featuring the illustrative realism work of Alex Toth and all contained large doses of fantasy violence: *The Herculoids* (CBS, 1967-1969), *Birdman and the Galaxy Trio* (NBC, 1967-1968), *Moby Dick and Mighty Mightor* (CBS, 1967-1969), *Shazaan* (CBS, 1967-69), *Samson & Goliath/Young Samson* (NBC, 1967-1968) and *Fantastic Four* (ABC, 1967-1969) along with reruns of *Space Ghost and Dino Boy and Frankenstein Jr. and the Impossibles*. As it turned out, the *New York Times*'s Sam Blum discovered a year later, all three networks "had instructed its cartoon suppliers to turn out more of the same – in fact, to go 'stronger' – on the theory, which proved correct, that the more horror, the higher the Saturday morning ratings." Joe Barbera referred to this boldness as "out-of-this-world hard action" that the networks wanted for this new crop of action-adventure series (Blum 1968:32). "Not out of choice, you understand," he stipulated about Hanna-Barbera's lineup. "It's the only thing we can sell to the networks, and we have to stay in business" (Brown 1971:248).

Barbera's remarks about the predominance of action-adventure on Saturday morning at this time highlighted the immense authority now held by the broadcast networks in dictating the content of Saturday morning television. As Joseph Turow (1981) demonstrated in his study of the first three decades of network children's programming, *Entertainment, Education, and the Hard Sell*, the fading influence of government bodies and public pressure groups on children's programming in the mid-1960s enabled the networks to "rather uncompromisingly" serve their own commercial needs and those of their advertisers (Turow 1981:82). Two sets of hearings by the Senate Subcommittee to Investigate Juvenile Delinquency on crime and violence on television in 1961-1962 and 1964 had not led to any noticeable reduction in violent programming by the three broadcast networks. Additionally, the shift from sole sponsorship to magazine format (or participation) advertising gave the networks great, if not total, control over idea generation, script and storyboard oversight, and budgets (Turow 1981:53-55).

[4] The only new animated comedy – out of only four airing on the three networks from 9 am to noon that season – was Jay Ward's *George of the Jungle* (ABC, 1967-69). The other series were reruns of *The Flintstones, The Casper Cartoon Show*, and *The Atom Ant/Secret Squirrel Show.*

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Left relatively unencumbered to pursue profit-maximizing ways, the networks were largely responsible for shaping Saturday morning into a relatively homogenous block of action-adventure programming. In the run-up to what would turn out to be a tumultuous 1968-69 season, networks once again prepared for programming, as Louise Sweeney (1968) wrote, which provided "free sadism, deformity, and violence available to any child who can turn a TV dial on Saturday morning."

3. Puppetry and The Banana Splits

Enter the 1967-1968 Saturday morning season, where cartoony human and animal hijinks had been replaced by technological stories of fantasy and science fiction predominantly featuring realistically drawn human characters placed in perilous, violent situations. Out of this context rose the Hanna-Barbera series, *Kellogg's Presents the Banana Splits Adventure Hour*, and the re-emergence of puppetry on US children's television. The series began in late 1967 and early 1968 when the Leo Burnett advertising agency convinced their client Kellogg's to sponsor an entire hour of Saturday morning programming for the following season. Kellogg's had previously sponsored the first three half-hour Hanna-Barbera series in syndication – *The Huckleberry Hound Show* (1958-1961), *The Quick Draw McGraw Show* (1959-1961), and *The Yogi Bear Show* (1961-1962) – which plugged Kellogg's cereals during the commercials breaks as well as the opening and closing animated credits. Hanna-Barbera first became aware of this opportunity, recalled lead character-designer Iwao Takamoto, after Joe Barbera sent him to New York at the behest of CBS's Fred Silverman to meet with a "couple of idea men" (likely from the network) to sketch out some idea about "a one-hour show set in an amusement park." Silverman then pitched the idea back to Barbera, hoping that he would produce the series. However, as Takamoto (2009:116) notes, Barbera had a better idea: "put real performers into cartoonish-looking costumes." Barbera himself recounts the story a bit differently. In his version, he is at lunch with his agent, Sy Fisher, brainstorming ideas for Leo Burnett executive Lee Rich that would not be the run-of-the-mill cartoon. And it hits him. "Why don't we take the same characters that we ordinarily animate and do them live instead? We could design the characters, make the costumes, and put real people inside the costumes" (Barbera 2006:54).

From that point forward, the accounts from Barbera, Takamoto, and Hanna-Barbera character designer Jerry Eisenberg largely converge. Whether discussions lasted a few weeks or a few months is unclear, but Barbera struggled to convey the concept to the cereal maker and the networks of costumed human hosts performing comedy skits and musical numbers that served as wraparounds for several live-action and animated series. Ultimately, Eisenberg sealed the deal. Arriving by air in Chicago only six hours before company executives from Kellogg's and the now-attached NBC network

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heard the final pitch at the offices of Leo Burnett, Eisenberg waited in a bathroom stall. Then, as Barbera presented the series artwork, Eisenberg crashed the session dressed in a Yogi Bear costume and proceeded to perform, among other things, a soft shoe routine with Barbera. Their performance was intended to capture the essence of the then-called "Banana Bunch," and it worked. "It was almost like a light bulb would go over everybody's head, and they got it," Eisenberg said.[5]

NBC announced the still-untitled Kellogg's project as part of its fall lineup on March 21, 1968, helping to establish a rough timeline of the show's development as well as promoting the aforementioned accounts that full-bodied puppetry was a simple counterprogramming move on the part of Hanna-Barbera and NBC. In their praise of this "new concept" for "broadening areas in children's programming" and providing "something different and special," NBC executives intentionally glossed over these program changes as a response to the mounting criticism of excessive violence in children's programming by parents and educators (quoted in Laurent 1968a). Major newspapers like *The New York Times*, *Washington Post*, and *Broadcasting* did not, embedding in their reports that news of changes by all three broadcast networks came on the heels of two key announcements sparked by the massive oversaturation of the "supers" and other action-adventure cartoons on Saturday morning (see Laurent 1968b; Gent 1968:95; "Children's Hour Bought by Kellogg" 1968:39). First, the media watchdog group, the National Association for Better Broadcasting (NABB), declared children's television that year to be the "worst in the history of TV." With "a mass of indiscriminate entertainment," the NABB charged the broadcast industry with "gross negligence toward child welfare," airing "dozens" of children's programs that "use horror for its own sake, [that] are saturated with violence, and are deliberately designed to alarm child audiences" (Longstreet and Orme 1968:1). The absence, to say the least, of educational programming on the commercial broadcast networks, led to the second, more noteworthy announcement. The Carnegie Corporation and Ford Foundation, together with other private foundations and government agencies, awarded $8 million in funding to the Children's Television Workshop to develop fare for preschoolers on public broadcasting stations (Hellman 1987:50). Over the next two years, a team of educational advisors, professional researchers, and experienced television producers would develop what became *Sesame Street* (1969-present). The series would provide an alternative to the "wasteland" of options in children's programming, as co-creator Joan Ganz Cooney, echoing Newton Minow, called it, by emphasizing the opposite of the majority of Saturday morning: pro-socialness, diversity, and the elimination of violence

[5] "Jerry Eisenberg, Part Five, Bobe, Spence, and Lew's Deal," Yowp.com, March 16, 2011. https://yowpyowp.blogspot.com/2011/03/jerry-eisenberg-part-five-bobe-spence.html. As it turned out, Barbera still had to pitch the concept one more time, sans Yogi, at a Kellogg's corporate meeting a short time later. See Barbera (2006: 156-57).

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from conflict resolution (Cooney in Lesser 1975: xv-xxvii). "Aquaman vs. the Alphabet" stated the headline for Jack Gould's piece in the *New York Times* (Gould 1968:D29).

It is not an overreach to assume that the same contemporary cultural discourses on children's television, mainly concerns over media violence, led to the incorporation of full-bodied puppetry in *Sesame Street* and the "Banana Bunch." Sid and Marty Krofft transformed Takamoto's preliminary drawings into three-dimensional, full-bodied costumes. The Kroffts managed a puppet, marionette, and costume workshop in California's San Fernando Valley. "The Factory," as the workshop was known, supplied expensive costumes and related props to high-profile customers, including Six Flags and *The Dean Martin Show* (1965-1974) and would be responsible for costuming corporate mascots like the Sambo's Restaurant Tiger and the Kool-Aid Smiling Pitcher (Erickson 1998:14). For Kellogg's, the sponsorship of the hour for an estimated $5 million or $135,000 per episode – reportedly the most ever for a daytime hour show – served a dual function: puppetry was part of a creative solution to wield influence once more over program content and as a public relations move to improve their image. According to Barbera, the cereal company felt a heavy investment was necessary to salvage their reputation, somewhat tarnished by their myriad ad placements in the superhero cartoons (quoted in Beigel 1968:50; see also Gent 1968:95). NBC was also willing to take a big financial gamble on alternative forms like puppetry given the network then languished in last place after failing miserably with their own action-adventure series like *Super President and Spy Shadow* (1967-1968) and *Birdman and the Galaxy Trio* (1967-1968).

On September 7, 1968, *Kellogg's Presents the Banana Splits Adventure Hour* premiered. A Banana Splits Club meeting opened each show with the four costumed animal characters – Fleegle, Bingo, Drooper, and Snorky – performing slapstick routines in red marching band hats on a physical set. The Banana Splits also appeared on location at Six Flags Over Texas amusement park, driving in their "Banana Buggies" for a series of zany wraparounds for the other segments in the hour. In stark contrast, however, these "adventure" segments – the animated *Arabian Knights, Micro Ventures, The Three Musketeers,* and live-action *Danger Island* – were largely semi-serious, action-packed dramas with moments of peril punctuated by disquieting sound effects and underscore. As the title *Kellogg's Presents the Banana Splits Adventure Hour* makes clear, Kellogg's, NBC, and Hanna-Barbera, despite their investment in full-bodied puppets, were unwilling to abandon the still-popular action-adventure genre on Saturday morning completely. Nor did they have to. Production on the series had already begun in March 1968, right before the continuous television coverage of the Vietnam War, student protests, riots, and the assassinations of Martin Luther King, Jr. and Robert. F. Kennedy, Jr. catalyzed the government to force broadcast networks to develop new, non-violent cartoon formats that summer. Yet, the literary pedigree of two of these properties, the removal of superheroes from their mix, and the insertion of slapstick comedy into the action

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sequences suggest Kellogg's, NBC, and Hanna-Barbera, to some degree, scrutinized representations of violence for all the segments in *Kellogg's Presents the Banana Splits Adventure Hour.* Despite these adventure dramas, The Banana Splits remained the stars of the show, manufactured not only to be television hosts but also bubblegum pop sensations that hopefully would sell millions of records.

4. Puppetry and bubblegum pop

The convergence of bubblegum pop music and Saturday morning cartoons may seem peculiar, but it was not an accidental pairing. Produced roughly between 1967 and 1973, bubblegum pop music, according to music journalist Carl Cafarelli, was characterized by "sing-a-long choruses, seemingly childlike themes, and a contrived but beguiling innocence, occasionally combined with an undercurrent of sexual double entendre" (Cafarelli 2001:13). Legendary rock critic Lester Bangs described the basic bubblegum pop sound another way: "rock n'roll – minus the rage, fear, violence, and anomie that runs from Johnny Burnette to Sid Vicious" (Bangs quoted in Smay 2001:43). As upbeat pop music manufactured and marketed to appeal to pre-teens and teenagers, state Kim Cooper and David Smay in *Bubblegum Music is the Naked Truth*, the bubblegum sound was blatantly commercial, produced in an assembly-line process by record producers using contracted songwriters, faceless singers, and studio musicians occasionally fronting a television presence (Cooper and Smay 2001:1).

The inclusion of full-bodied puppetry in *Kellogg's Presents the Banana Splits Adventure Hour* can be directly connected to the massive cross-media popularity of The Monkees with children and teens and the band's subsequent embattlements with management. While not technically bubblegum, The Monkees – Davy Jones, Micky Dolenz, Peter Tork, and Michael Nesmith – were no less a manufactured music group than Ohio Express ("Yummy, Yummy, Yummy") or The 1910 Fruitgum Company ("Simon Says"). Plus, they had the added advantage of a weekly television series (NBC, 1966-1968) in which they played a fictional rock band struggling to make it big. Don Kirshner served as The Monkees's musical supervisor and the primary creative force in organizing the band into a marketable product by contracting songwriters, hiring studio musicians, and supervising the band's vocal tracks. Tommy Boyce and Bobby Hart wrote, produced, and recorded many of the songs from the group's self-titled debut album with their backing band, the Candy Store Prophets, during the summer of 1966. The Monkees themselves were largely relegated to a vocals-only role at this time as the band spent the first several months of their existence essentially filming their television series that debuted later that fall. Despite a successful series and three hit singles – "Last Train to Clarksville" from the first album, "I'm a Believer," and "(I'm Not Your) Steppin' Stone" from their follow-up, *More of the Monkees* – the band,

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particularly Nesmith and Tork, rebelled against management. Their demands to play their own instruments on their records, to record more of their own material, and to receive a larger share of the royalties – each Monkee received 1.5% of each recording while Kirshner got 15% – led to Kirshner's firing in early 1967 (Lipsitz 2007:23). The Monkees continued to record music until 1971, and their television series would begin reruns on CBS Saturday morning starting in fall 1969.

The networks quickly became hip to the fact that pre-packaged groups like The Monkees could earn a lot of money in both music *and* television, particularly on Saturday mornings. CBS pursued a cel-animated series inspired by The Monkees called *The Archie Show* for the fall of 1968. Fred Silverman hired the recently-fired Kirshner to musically supervise The Archies, a live-action bubblegum rock group with songs composed by Jeff Barry and Andy Kim with Ron Dante singing lead. Filmation produced *The Archie Show* (1968-70), a cartoon featuring the fictional antics of the teenage comic book gang (Archie, Jughead, Reggie, Betty, and Veronica) who sang these Barry-Kim songs as a band called The Archies. The concept was a smash hit, as The Archies's third single, "Sugar, Sugar," from their second album, became the biggest-selling single for all of 1969 in the United States and the United Kingdom (Smay 2001:42).[6]

NBC, on the other hand, jumped on the bubblegum pop bandwagon with puppetry. The series format was loosely inspired by NBC's recently launched variety show, *Rowan and Martin's Laugh-In* (1968-73), while Kellogg's was a major sponsor of *The Monkees* television series, which aired in the Monday time slot right before *Laugh-In*. The Banana Splits rock band was essentially The Monkees in puppet form: Fleegle (Davey) the beagle guitarist, Bingo (Micky) the gorilla drummer, Drooper (Mike) the lion guitarist, and Snorky (Peter) the elephant organist. Their Monkees-like musical romps were featured on three releases: two EPs originally sold as cereal premiums from Kellogg's and the Decca LP *We're the Banana Splits* (1968, DL 57075).[7] Musically directed by Aaron Schroeder and produced by David Mook, the Banana Splits songs featured a disparate collection of established journeyman musicians and studio singers, who, unlike The Archies, did not provide a unified sound. For example, Barry White wrote and sang the rhythm and blues dance number "Doin' the Banana Split," and Gene Pitney co-composed the ragtime number "Two Ton Tessie." Most of the songs, though, were bubblegum by session players like Joey Levine of "Yummy, Yummy, Yummy" fame and Mark Barkan and Ritchie Adams, who also co-wrote songs for The Archies (Porter 2001:207-210; Ehrbar 2015).

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[6] Jeff Barry was formerly a member of the songwriting-credit Barry-Greenwich ("Be My Baby," "Da Doo Ron Ron," "Leader of the Pack").

[7] The EPs were titled *Kellogg's Presents The Banana Splits Sing'n Play The Tra-La-La Song (One Banana, Two Banana)* (Hanna-Barbera Premium Division, #34578, 1969) and *Kellogg's Presents The Banana Splits Sing'n Play Doin' the Banana Split* (Hanna-Barbera Premium Division, #34579, 1969).

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This seamless convergence of bubblegum pop with cel animation and puppetry on Saturday morning also provided a solution for music executives to problems posed by potentially uncontrollable performers like The Monkees. By having Filmation and Hanna-Barbara create animated musicians, like those in *The Archies* and *The Banana Splits*, in place of hiring flesh-and-blood ones, Kirshner and Schroeder could enhance managerial control, reduce employee agency, and consolidate control of intellectual property rights in their respective fields (Stahl 2011:3-22). As Kirshner recalled about the formation of *The Archies*: "If I could give Archie, Jughead, and Veronica voices, I can wind up with a group that don't talk back, I don't have to take any nonsense, I will control whatever I put out, and do it my way." [8] The ensuing employment of what Matt Stahl terms "virtual labor"– performative labor that *appears* to be performed by an individual but that is actually the result of a division of labor incorporating creative and technical workers, intellectual property, and high-tech equipment – was possible between the two production systems because they already shared a similar division of creative labor to achieve managerial efficiency, stability, and predictability (Stahl 2011:4). The 'separation' of the organizational work of the music supervisor from the "execution" of artistic work of writers, arrangers, musicians, and engineers mirrored that between animation producer and the writers, story artists, animators, inbetweeners, ink and paint, camera, and other below-the-line laborers (Stahl 2011:9, 13). Both modes of production minimized the extent of bargaining power, remuneration, autonomy, and other forms of artistic agency by the human musicians of The Archies and The Banana Splits, who might have thwarted the ultimate objectives of these music impresarios and animation companies: making a financial killing with hit records and hit cartoons.

As it turned out, The Banana Splits pop band was not nearly as popular as The Banana Splits characters themselves. Only the series theme song, "The Tra La La Song (One Banana, Two Banana)," peaked at #96 on the Billboard Hot 100, negating the plan for several costumed touring companies to perform their music across the country (Evanier quoted in Cafarelli 2001:19). *Kellogg's Presents The Banana Splits Adventure Hour* also lasted just one additional season on NBC. As was customary for two-year contracts on Saturday morning, NBC aired each episode several times. Still, two changes were implemented for the second season: reruns of *The Hillbilly Bears* from *The Atom Ant/Secret Squirrel Show* (NBC, 1965-1968) replaced *The Three Musketeers*, and new live-action segments of the Banana Splits were filmed at Coney Island amusement park in Cincinnati, Ohio. The latter modification for the series was telling as Taft Broadcasting, the Cincinnati-based media conglomerate that purchased Hanna-Barbera in 1966 and then Coney Island in 1969, viewed its animated characters as synergistic opportunities to be exploited across

[8] This comes from the Modern Pop episode of *Popular Song: Soundtrack of the Century* that aired on the Ovation Network. Available at https://www.youtube.com/watch?v=VH0cBuOIkL4

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parallel entertainment industries such as television, film, music, and theme parks. *The Banana Splits*, along with *Fred Flintstone*, *Yogi Bear*, and *Scooby-Doo*, were a centerpiece of Taft's efforts, particularly with Kings Island, their $30 million amusement park that opened in May 1972 just north of Cincinnati. Hanna-Barbera even filmed the live-action sequences of *The Banana Splits* at Kings Island for the ABC Saturday Superstar Movie *The Banana Splits in Hocus Pocus Park* (1972), where they also appeared, for the first and only time, as cel-animated characters. So, although not a bubblegum musical sensation, the full-bodied puppets of *The Banana Splits* would remain a fixture for Hanna-Barbera merchandising and marketing in the next decade and have a lengthy life in off-network syndication under the name *The Banana Splits and Friends Show* (1971-1982), albeit in a shortened half-hour form and without the sponsorship of Kellogg's.

5. Conclusion

The story of *Kellogg's Presents the Banana Splits Adventure Hour* and the integration of full-bodied puppetry into the Saturday morning schedule in the late 1960s showcases how contemporary cultural discourses translate into actual practices that mold the way that stories get imagined and created by television executives, advertisers, and artists. *The Banana Splits* were an anomaly in the Saturday morning lineup for a 1968-1969 season still saturated by action-adventure cartoons; that would not be the case the following year. The assassination of Robert F. Kennedy, Jr. and the appointment of a National Commission on the Causes and Prevention of Violence in June 1968 led to several editorials and reports in major newspapers and magazines, which crystallized for authorities, reformers, and public opinion-makers several ongoing anxieties about the relationship between violent television and real-world violence, particularly Saturday morning's corruptive influence on child audiences. This moral panic would ultimately have its desired effect for the 1969-1970 season: no more action-adventure cartoons on Saturday mornings.

To replenish a schedule once inundated with cel-based action-adventure cartoons, the networks, cartoon producers, and advertisers turned elsewhere for new types of programming that offered less hard action in the form of fantasy and comedy. In no small order, they turned to the cross-promotional possibilities with bubblegum pop and Saturday Morning for their inspiration, drawing from the success of *The Archies* and *The Banana Splits* together with the wide popularity of *The Monkees* and later *The Partridge Family* with children and teens. In the first half of the 1970s, the networks infused their newly created animated and live-action series with a confectionary concoction of music in a variety of formats (mystery, comedy, variety, fantasy, adventure) and styles (psychedelic, glam, soul, rock, pop). The Fall 1970 Saturday morning lineup alone featured twelve series, some involving the presence of a music band, but all of which spawned their own soundtrack albums. They included the cel-animated *Sabrina and the Groovie*

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Goolies (1970-1971), *Harlem Globetrotters* (1970-1972), *Archie's Funhouse* (1970-1971), *The Hardy Boys* (1969-1971), *The Further Adventures of Dr. Dolittle* (1970-1971), and *Josie and the Pussycats* (1970-1971). Along with reruns of *The Monkees*, the live-action entries were *Lancelot Link, Secret Chimp* (1970-1971), *Here Comes the Double Deckers!* (1970-1971) as well as *H. R. Pufnstuf* (1969-1971) and *The Bugaloos* (1970-1971), produced by Sid and Marty Krofft, the team behind the full-bodied costumes of *The Banana Splits*.

Most likely, puppetry would not exist on Saturday morning in the 1970s without NBC offering Sid and Marty Krofft their own series after watching them design the costumes for The Banana Splits (Sid and Marty Krofft, Archive of American Television).[9] That series became *H. R. Pufnstuf* and exhibited the characteristics of what biographer David Martindale called the "Krofft Look": "programs that blended flesh-and-blood actors with life-size puppets, catchy musical numbers and psychedelic color schemes resulting in a unique brand of eye and ear candy never before presented in the form of children's television" (Martindale 1998:1-2). Actors within the full-bodied costumes, such as Robert Gamonet (H. R. Pufnstuf), Joyce Campbell (Orson Vulture and Cling), and Sharon Baird (Judy the Frog, Shirley Pufnstuf, and Lady Boyd), were billed as the "Krofft Puppeteers;" they were required to manipulate the characters' mouth and limb movements themselves, with Gamonet occasionally needing offscreen puppeteers and strings for more dynamic gestures and motions (Erickson 1998:20, 27). Executive Producer Si Rose recalled that "Robert used to have to use one of his arms inside to work the mouth, so Pufnstuf would always have one arm swinging, like a dead arm. Then, finally, they worked out a way to control the mouth so he could use both arms" (Martindale 1998:82). The Krofft Look also utilized puppetry as "living props" in their fantasy lands. In H. R. Pufnstuf, the pocket-sized Freddy Flute was both a stationary prop and an actual puppet operated by a lever mechanism, as were Bluebell the Sunflower and the Grapevine for their follow-up series, *The Bugaloos*. Sid and Marty Krofft would continue to employ these aesthetics in other Kellogg's sponsored series like Lidsville (1971-1973) and *Sigmund and the Sea Monsters* (1973-1975).

Other companies were not as successful with puppetry as Sid and Marty Krofft. *Curiosity Shop* (NBC, 1973), a commercial answer to *Sesame Street* created by Chuck Jones with puppets from Bob Baker, and *The Skatebirds* (1977-1978), Hanna-Barbera's attempt to duplicate the format of *The Banana Splits Adventure Hour* aired only a season. However, by the decade's end, puppetry had largely disappeared from Saturday morning. The efficiencies in runaway production for cel animation and the increased commercialization and deregulation of children's programming in the United States made puppetry both uneconomical and undesirable for 1980s television producers and child audiences.

[9] Sid and Marty Krofft interview, Archive of American Television. https://interviews.televisionacademy.com/interviews/sid-krofft

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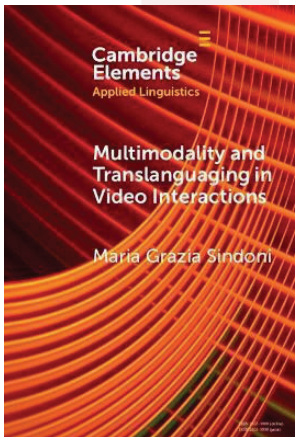
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What's gained and lost in video-mediated communication

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BY: **Jason Hawreliak**



Maria Grazia Sindoni

Multimodality and Translanguaging in Video Interactions

Cambridge University Press, 2023, 94 pages, $24.95 (pbk), ISBN 9781009286923

Video-mediated communication (VMC) has become ubiquitous since the start of the COVID-19 pandemic. During the height of the lockdown period, the use of platforms like Zoom, Teams, and Discord grew significantly, enabling us to continue teaching, learning, and staying connected to friends and family. While VMC technology and scholarship pre-dates the pandemic by decades (Isaacs & Tang 1994; Finn et al. 1997; Sindoni 2014), the need to maintain physical distance from each other spurred a massive shift in how we communicate, a shift that has remained post-lockdown. Amidst this backdrop, Maria Sindoni writes *Multimodality and Translanguaging in Video Interactions* (2023), part of the Cambridge Elements series, which publishes short books/long journal articles. It is a timely, thoughtful, and theoretically rich account of VMC, supplemented by close analyses of interactions in multiple contexts. Throughout the book, Sindoni recounts the results of a series of studies over a decade, which drew from over 900 video hours of conversation across communicative contexts – primarily educational settings and personal conversations – and on different VMC platforms. These conversations thoroughly ground the theoretical insights in the book and resonated very much with my own experiences using VMC.

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The book applies two distinct but – as Sindoni demonstrates – related semiotic theories to VMC: multimodality and translanguaging. Multimodality is the use of multiple semiotic modes (like writing, speech, and image) in a communicative event (Kress and van Leeuwen 1996, Jewitt 2009, Forcevile 2021), while translanguaging describes how multilingual individuals draw on multiple languages to communicate (Lu 2009, Garcia and Kleifgren 2019). In addition to its excellent contributions as a scholarly text, the book also includes several freely available resources for researchers and educators interested in VMC. The book is divided into six sections, each with its unique focus. Keeping in line with the series format, each section is more in-depth than the content under a typical article subheading but less discrete than a typical book chapter. This division works well, giving the Element a logical flow and making it very readable. In addition, the sections typically list their central research questions at their outset, which orients the reader to the subsequent discussions.

The first section serves as the introduction, setting the stage, providing a literature review, and defining key terms. It astutely draws parallels between multimodality and translanguaging, which, although having different origins, share a core value, i.e., they both understand meaning-making "as a semiotic act and choice" (9). In other words, both multimodality and translanguaging take as their starting points that communicators actively select from a pre-existing pool of resources (words, images, gestures, languages, etc.) within particular socio-cultural contexts, and it is in this selection that meaning is conveyed.

Section 2 looks at how VMC platforms allow users to switch modes and languages in ways distinct from face-to-face (F2F) communication. It notes that while synchronous VMC shares several communicative affordances with F2F communication (real-time speech, facial expressions, etc.), it differs in meaningful ways, such as adding a chat box for writing. The chat box is a key area of focus in much of the Element as it provides additional semiotic resources compared to typical F2F communication (e.g., writing, emojis, GIFs, etc.). These additional resources grant users increased freedom to communicate based on the context. For example, an interviewee mentioned they felt more comfortable contributing to a class discussion via chat than sharing something on camera within a large group. This likely resonates with any educator who has led a class via VMC. The section also describes how communicative choices differ depending on the context: communication within educational settings tends to be more 'neutral,' while personal conversations tend to be more free-flowing and emotive. While this is not surprising, it nevertheless foregrounds the importance of social norms and contextual factors when drawing from pools of semiotic resources. The section includes a close analysis of a VMC on the platform Camfrog. Before reading the book, I was unaware of this platform so I would have appreciated an image of the entire user interface (UI). We get a picture of the chat box, but it would have been helpful to see how the platform configures its components, given the attention to UI.

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Section 3 looks specifically at translanguaging, providing a more in-depth overview of the concept than in Section 1. Rather than viewing translanguaging as a binary "switching" between languages, Sindoni notes that it is a fluid, dynamic process, "a more complex and finely interwoven orchestration" (33). Using one language over another can be due to a particular language's affordances, audience, or simply because one feels right to use it. Like Section 2, Sindoni draws on several captured conversations and transcription tables to demonstrate how multilingual users seamlessly move from one language to another and why they choose to communicate in one language over another. Much of the research into translanguaging

Section 4 looks at how gaze is navigated in VMC. I found this section especially compelling as eye contact, gestures, and other components of body language are essential aspects of meaning-making (Rossano 2013, Aiello 2020) but difficult to navigate in VMC. For example, deciding where to direct one's gaze is often awkward and has significant implications for meaning-making. By looking directly at a camera – typically located above the monitor – we give the illusion of eye contact, which usually signifies attentiveness to a conversation (among other things). However, looking directly into the camera also means we are not looking at the screen, which can be uncomfortable for several reasons: we are not seeing the other individual(s) on screen, we may feel we are missing information (e.g., chat, emojis, a raised hand, etc.), and as Sindoni recounts in her interview data, we can become self-conscious since we can look at ourselves in a way that is not typically available in F2F communication (i.e., "self-looking"). This section does an excellent job of describing the importance of non-linguistic signifiers and how interviewees navigate them in VMC. In turn, it highlights how vital these semiotic resources are in F2F communication, which we often take for granted and employ without much thought.

Section 5 flows seamlessly from Section 4, also focusing on non-verbal cues, i.e., gesture and proximity, or "kinesics and proxemics." Like gaze, these semiotic resources must be handled differently in VMC than in F2F communication. For starters, only a portion of an individual is typically available in VMC (usually from the shoulders up). This means we do not have access to the information we would F2F, leading to a "contrived sense of fragmentation" and what one interview participant called "obstructed visibility" (71). Furthermore, the very act of being in close, physical proximity to another person is, of course, lost in VMC; this can lead to feelings of "scarce attention or detachment" (74), which again were identified by interview participants. Taken together, Sections 4 and 5 constitute the strongest portion of the book in my view, as they provide an excellent mix of theoretical grounding and empirical data to demonstrate what is a) lost in VMC, b) how communicators attempt to compensate for this loss, and c) just how vital non-linguistic, unconscious signifiers are in communication.

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Section 6 is the concluding chapter and neatly summarizes the preceding content. That said, it felt much more like a recount than something more forward-looking, and it was a bit abrupt. It could have been an opportunity to note what might be included in a longer work on the subject or propose directions this research could lead to; it certainly gave me ideas for my own work. This, I suspect, is primarily due to the format of the Cambridge Elements series. At around 80 pages, it is not possible to include everything. In the case of this book, the condensed format is at once a strength and weakness. On the one hand, the format offers a theoretically rich treatment of its subject matter in an easy-to-digest package; Sindoni's prose is also to be commended, as she expertly breaks down semiotic and linguistic terms with ease, making the book useful to scholars working in multiple disciplines. Its length, educational resources, and straightforward research questions make this ideal for an upper-year or graduate-level course.

On the other hand, my most significant complaint about the book is simply that I wanted more of it. Applying either multimodality or translanguaging to VMC could warrant its own Element, if not a full-length monograph. For example, the "staging" of one's background is semiotically rich, and we only get a few mentions. Likewise, a key advantage of VMC is accessibility: its multimodal affordances (like chat) can help individuals with a wide range of disabilities communicate more readily. These are core aspects of VMC, and it would have been nice to have seen them discussed in detail here. Again, this is part of the give-and-take of the format rather than a critique of the author, and ultimately it is a minor complaint. The book is an excellent contribution to an increasingly important part of our contemporary communication landscape. VMC is here to stay, and Sindoni's book achieves its goal of helping us better understand its role in communication.

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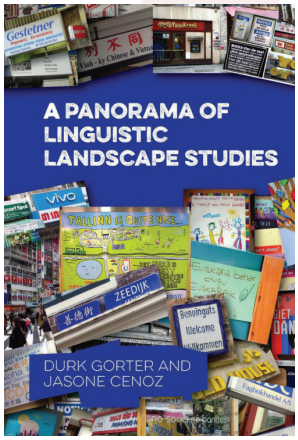
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Linguistic Landscapes: What we have learned and where we are headed

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BY: **Christopher Lees**



Durk Gorter and Jasone Cenoz

A Panorama of Linguistic Landscape Studies

Bristol: Multilingual Matters (xv+452pp), 2024 ISBN 9781800417144 (hbk), 9781800417137 (pbk), 9781800417168 (epub), Open Access

This book is both a timely and highly useful addition to the literature on linguistic landscapes: Timely, because it comes at a significant moment in the development of the field, when more wide-reaching and extensive ethnographic studies are being carried out in various areas of the world and valuable because three decades after research into linguistic landscapes began to flourish, we are at a place where we can look back at what we have discovered and learned from the field and think about how we want to move forward in the future. In those three decades, a substantial amount of change has taken place. For instance, earlier studies in linguistic landscapes primarily used quantitative methods to ascertain the types of signs visible and their presence in the landscape. However, in what has become known as second-wave linguistic landscape research, studies have turned to qualitative and ethnographic methods in an attempt to flesh out sociolinguistic aspects of language use in public spaces, such as identity, ideology, and social (in)equalities that cannot be explained through quantitative accounts alone. Since then, an increasing number of studies and accounts of linguistic landscapes have been written in conjunction with a variety of topics including, but not limited to, semiotics (Jaworski and Thurlow 2010), superdiversity (Blommaert 2013, Blommaert and Maly 2014), education (Malinowski 2019, Shohamy 2019, Gorter and Cenoz 2022), and translation (Backhaus 2006, Lees 2024).

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Another aspect of this book that makes it especially useful is that it has been written by two authors who have significantly contributed to contemporary linguistic landscape research. This includes their work on minority languages (2006), the use of linguistic landscapes in education (2022), and Gorter's early edited volume (2006) on linguistic landscapes as an emerging field for the study of multilingualism. This background has enabled the authors to observe the development of the field and affords them a unique perspective to offer a detailed account of how the field began, where it is now, and how it may evolve in the future.

The book is divided into twelve chapters, each dealing with a separate aspect of linguistic landscape studies. Chapter 1 provides an overview of the history of linguistic landscape studies and how it has expanded, as well as the key definitions that have been used to describe the field, from Landry and Bourhis's earliest definition (1997) focusing on the visibility and salience of language on signs in a given area to more sociological definitions which see linguistic landscapes as symbolic constructions of social space (cf. Ben-Rafael and Ben-Rafael 2019). It also refers to more recent – perhaps controversial – approaches to looking beyond the text and examining aspects of multimodality. Related to this is a helpful discussion of the – often interchangeably used – terms *linguistic* and *semiotic landscapes* (see Jaworsky & Thurlow 2010), which is pointed out. However, the former would appear to focus more on language and the latter on broader aspects of multimodality; both terms refer to the same concepts with a significant degree of overlap, meaning that, in essence, the two terms refer to the same field.

Chapter 2 provides more details on the field's history and how it has emerged into a highly productive and interdisciplinary area of study. The chapter begins with a historical overview of how linguistic landscape studies started in the late 20th century. One of the advantages of the author's approach to this is that it tells the story by looking at significant studies that were carried out in various regions, such as Israel, Belgium, and Japan, both before the field was established and had a name through to studies in the first decade of the new millennium which defined the field. Examples include Backhaus's (2006) study on language contact and multilingualism in Tokyo, Cenoz and Gorter's (2006) article on bilingual and multilingual signs in the Basque Country and Friesland, and the development of a scientific journal, *Linguistic Landscape*, in 2015 with three issues per year. As opposed to a mere summary of these studies and developments, the authors provide a detailed analysis by commenting on the data used and demonstrating how these contribute to the progression and expansion of the field. The chapter concludes with a valuable account of the various waves and turns used to refer to multiple phases of linguistic landscape studies, including first and second-wave LLS, the first referring to earlier quantitative approaches and the latter to the more prevalent qualitative-focused research we see today.

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The outcomes and merits of quantitative and qualitative approaches used in LLS are detailed in Chapter 4. The chapter also provides an overview of research combining the two approaches, providing a tentative answer to Canakis's (2017) question of whether the field may see a combination of methods in future research. This discussion is preceded by an in-depth discussion of the various perspectives adopted in both quantitative and qualitative studies, including language and space, sociology, and pragmatics. The book then moves on, in Chapter 5, to a discussion of how data collection is conducted in linguistic landscape research. As can be expected, photography is referred to as the most prevalent method of collecting data (cf. Blommaert 2013). However, more recent data collection methods are discussed, such as video analysis and eye tracking, which monitor the types of signs people notice and pay attention to in the landscape. As the authors stress, although this method has been used for some time in other disciplines, it only appears in a minority of recent linguistic landscape studies (see Seifi 2015, Vingron et al. 2017). It is usefully pointed out that while such research helps determine what people notice, it does not say much about how they process the texts in question. As the authors note (151), "To figure that out, a second step is needed, for example, by questioning participants during the experiment or retrospectively about which signs they read and in which language(s)." One way of doing this is through interviews conducted during walking tours. As mentioned by the authors (144), "during walking tours, the researcher can observe how the participants interact with the environment and what their relationships are to certain places." In referring to such studies (e.g., Michalovich et al. 2021), the authors point out (144) that participants can also include the owners of businesses where signs are visible. As I have argued in my research (Lees 2021), such an approach enables the researcher to obtain valuable information on signs that would not otherwise always be obvious to the researcher.

Chapters 6 and 7 then discuss how LLS fleshes out aspects of multilingualism in the various landscapes under study and the visibility and status of minority languages. Chapter 6 provides an overview of new trends in multilingualism, including translanguaging, and then presents the application of multilingualism in LLS and the challenges of researching signs that display more than one language. The main reason for these challenges is that the languages present on a sign sometimes refer to different entities. One of the most valuable solutions presented to overcome difficulties of this kind is the typologies suggested by eminent researchers, such as Reh's classic typology (2004), and approaches proposed by other researchers, such as Sebba (2013) and Cook (2013). Chapter 7 provides a sound theoretical discussion on the study of minority languages in general and makes the point that the visibility of minority languages mirrors the (in)equality experienced by minority groups in various regions. As the authors state (180), "official state languages commonly have an all-round presence in public spaces, and their presence and visibility are taken for granted, whereas for minority

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languages, often an extra effort has to be made." This is an important observation, as the lack of visibility and representation of minority languages is a characteristic of the urban landscape (Gorter 2021). The chapter then discussed some indicative studies on well-known minority languages such as Catalan, Irish, and Galician. Following this, the authors provide an informative comparative overview of studies looking at Chinatowns in various cities where Chinese is a minority language, concluding that it is the most obvious language in the linguistic landscapes under study and that the Chinese script contributes to what has effectively become a tourist attraction in many cities. In this sense, the status of Chinese differs from other languages.

The context of minority languages is then widened by looking at policies and how these influence the languages visible in the linguistic landscape in Chapter 8 and the ubiquitous presence of the English language in Chapter 9. More specifically, Chapter 8 provides the context of language policy and planning and then discusses prominent cases where significant LLS research has taken place, such as the case of English and French in Canada and French and Flemish in Brussels. Chapter 9 then discusses English's role in linguistic landscapes worldwide in the context of globalization and language hierarchy. It uses the framework of Kachru's (1992) circle model, according to which the inner circle represents countries where English is spoken as the first language of its inhabitants, such as the United Kingdom; the outer circle refers to countries that adopted English as a result of colonial expansion, such as African nations, and the expanding circle which represents countries where English was never an official or colonial language, but where English is widely taught and used, such as Greece, where English enjoys a privileged social status (cf. Boklund-Lagopoulou 2003). The chapter then proceeds with an in-depth discussion of several linguistic landscape studies that have been conducted throughout the world, leading the authors to conclude that English is the predominant language observed on signs throughout the world, either because it is taken for granted in the inner circle or because of globalized trends in the expanding circle. Moreover, the valid point is also made that the prolific use of English can intensify inequality for other languages that may be used in a particular area but are not represented in the linguistic landscape (308).

One of the most essential parts of the book is Chapter 10, which is dedicated to the relationship between LLS and education. Indeed, how linguistic landscapes can be used for educational purposes has become a prominent area of research in LLS, especially about language learning and literacy (see Dagenais et al. 2009, Shohamy and Waksman 2009, Gorter 2018, Malinowski 2019, among others). At the heart of these studies is the premise that linguistic landscapes provide both teachers and learners with authentic data which can stimulate discussion not just on the languages visible in each landscape and how they are used but also on related social implications, which have already been discussed in the book, such as language (in)equality and

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multilingual identities. In short, examining linguistic landscapes in the classroom compels learners to think about the languages visible in their own areas (cf. Dargenais et al. 2009). As the authors point out (354), "the task of schools is to prepare students for the real world, and today this implies that students have to reflect a multilingual reality that surrounds them in the places where they live and go to school. The linguistic landscape items in public spaces offer relevant and useful possibilities for educational activities in the classroom and the community." The validity of this point is demonstrated throughout the chapter, both in its discussion of previous relevant research and in its dedicated section on schoolscapes, which have become an increasingly prevalent area of LLS and education since they look to examine how the linguistic landscapes that can be found in and beyond educational establishments can be used for learning purposes.

The final chapters of the book deal with the use of names in linguistic landscapes in Chapter 11 and note what the future of LLS may look like in Chapter 12. Chapter 11 discusses the significance of names to LLS, mainly because they convey essential historical and social aspects of a place, including the value attached to specific names, which may reflect social identities and ideologies. Moreover, as the authors note (357), "place names and street names can provide visible proof of a language policy." In this context, the chapter provides an interesting discussion on how street and place names can reflect social change; for example, how a bilingual sign denoting the town of Dingle in Ireland was changed to a monolingual Irish sign, thus signifying a development in language ideology (Moriarty 2012).

In Chapter 12, the book ends with a reflective account of what the field of linguistic landscapes has achieved and its future directions. As the authors state (369), the relatively new field of LLS has generated groundbreaking research on the visibility of language and how it is used in public spaces, meaning that "the studies have increased our knowledge of how languages are displayed in mainly urban contexts and the practices of different groups of language users, while they have enabled researchers to enhance our understanding of a range of social issues." It is recognized that the field will continue to evolve in the future, but it falls within disciplines of linguistics such as sociolinguistics and applied linguistics rather than a subdiscipline in its own right. The chapter discusses findings from some of the well-researched topics in LLS, such as gender and sexuality, gentrification, and graffiti. It points towards factors and trends that could affect the field's future. For instance, using technology such as Google Street View to collect data and QR codes as digital signs are just some instances of inquiry that may become more prevalent in the future. Another area noted by the authors is the increasing level of uniformity in many linguistic landscapes worldwide due to globalization. The authors note that the signs observed globally during the COVID-19 pandemic demonstrated considerable similarities between countries

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regarding messages, the language used, and sign design. Moreover, the existence of globalized high streets worldwide means that the signs visible in the center of New York, for instance, do not show considerable differences from the signs in Paris.

The factors mentioned above must undoubtedly be considered while also recognizing the critical social aspects LLS can still uncover, not least about social inequality and social change. This will necessitate more extensive diachronic studies in various areas with systematic and methodological approaches, which the authors correctly observe is currently lacking in the field (396). In this book, the authors provide a remarkably comprehensive discussion of the entire history of LLS by using authentic data from prominent and less-known international studies that have contributed to shaping the field. At the same time, the authors have produced a highly perceptive and well-presented account of the directions in which the field is likely to go and outline what it will need to do this successfully. In this sense, the book is a must-read for both the initiated researcher in LLS, who can benefit from an organized presentation and analysis of all the major trends in the field, and also for students or those with no or little experience in LLS who can use the authors' work as a textbook on a burgeoning area of linguistics, anthropology, and semiotics. In short, Gorter and Cenoz's book is an exciting contribution to our field, showing us where we have been and where linguistic landscape research may take us in the future.

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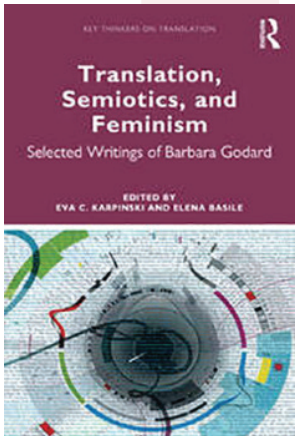
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In, Across, and Beyond *Translation, Semiotics, and Feminism*

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BY: **Vasiliki Misiou**



Eva C. Karpinski and Elena Basile

Translation, Semiotics, and Feminism. Selected Writings of Barbara Godard

London & New York: Routledge, 2022, 262 pp., ISBN: 9780367502706

"At Last! At Last!" These are the very first words Kathy Mezei wrote in her endorsement for Eva C. Karpinski and Elena Basile's edited collection of essays on translation by Barbara Godard. The relief and satisfaction expressed by Kathy Mezei is palpable. Godard, an influential critic, translator, editor, and one of the leading figures in feminist translation theories, taught at York University, Toronto, from 1971 until 2010. She authored several articles, book chapters, and reviews and edited and translated a dozen books, among others. Yet, she never published a single-authored monograph, not even in the field of feminist translation studies she had helped develop. Godard's two former students thus decided to put together a collection that spotlights her numerous and diverse contributions to several areas in translation studies, illustrating its complex and interweaving interaction with other fields of study.

The collection comprises 16 essays written by Godard, among which are two previously unpublished essays and two essays that have been written and published in French. Between the 1980s and her untimely death in 2010, Godard widened and deepened her thinking, sharing her pioneering ideas about gender and translation, semiotics and translation, the intersections between Deleuzian philosophy and translation studies,

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and translation in the context of settler colonialism in the Americas. As Karpinski and Basile stress, "these are just a few directions of Godard's far-reaching and dynamic investigations. […] Her writing challenges the ideological neutrality of translation, expands its conceptual paradigms and cultivates a deep awareness of the social relations of address that orient meaning in translation" (2021: 1.13-1.42).

These 16 representative texts range from academic essays, conference papers, and prefaces to excerpts from Godard's translator's journal. Karpinski and Basile divided the collection into four thematic parts, which cover feminist theories, comparative cultural studies, semiotics, ethics, and the embodied praxis of translation, with a wide range of topics being discussed and investigated. The two editors provide an introduction to help readers navigate this maze of insightful and intriguing ideas. This eloquent and critical piece gives an insider's glimpse into Godard's conversation with conceptual and methodological explorations, key ideas, and original thinking. Additionally, they offered guiding introductory essays to each part, elucidating the material presented in each section. Their decision to preface the 16 essays with one-paragraph synopses reveals their goal to ensure that Godard's influence and her theoretically and methodologically innovative contributions will be fully understood and appreciated by readers. These introductory texts set the tone for the papers featured therein and, at the same time, highlight interconnections between them.

Part 1, 'Theory and praxis of feminist translation studies,' consists of four chapters that examine Godard's take on feminism, feminist theories of language and writing, and her very own practice as a translator of Quebec women writers such as Nicole Brossard, France Théoret, and Anto¬nine Maillet. In Chapter 1 (pp. 5-10), 'The translator as She: The relationship between writer and translator (1983),' Godard shares her views on the "puzzling" nature of translation and invites readers to explore what she sees as main challenges in translation – that is, a) the multiple systems in which translation takes place, all inextricably linked to production and reception, b) the relationship between writer and translator which is both "respectful and subversive," and c) the incessant process of "translation/creation/invention." Gendering the translator as "she" and speaking from this standpoint, Godard redefines translation as "creative transposition," as "an act of reading and interpretation that entails multiple pleasures" (p. 5). In Chapter 2 (pp. 1-18), 'Language and sexual difference: The case of translation (1984),' Godard draws readers' attention to the need for new linguistic means, styles, and aesthetics that will be able to "convey the realities of the female body," women's experiences and their relation to language (p. 15). Focusing on the challenges encountered in translating women's and, in particular, feminist writing and drawing from her experience as translator of Nicole Brossard's *L'Amèr*, Godard points to issues raised when it comes to translation and sexual difference and calls for further research in the "contested terrain of the genders of language" (p. 15).

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Following up on the topic of gender, language, feminist writing, and translation, in Chapter 3 (pp. 19-27), 'Theorizing feminist discourse/translation (1989),' which remains one of her most seminal papers, Godard delves into her theory of feminist translation as feminist poetics. She encourages readers to view translation as "production, not reproduction" (23), as a form of rewriting that enables the multiple possibilities and interpretations of the text to reveal themselves and the genesis of meaning through the transformation taking place – a transformation performed by the feminist translator who actively engages in the creation of meaning. Favoring the "womanhandling" of the text by feminist translators who, through creative interventions, reinstate difference and claim visibility, thus celebrating agency and their authority as co-creators, Godard urges toward politically and ethically conscious practices of translating that will facilitate the creation and traveling of new knowledge. In the last paper of this part (pp. 28-49), 'Translating (with) the speculum (1991),' Godard explores further the overlapping systems of gender and translation, which she sees as relational and operating within economies of exchange. Inspired by Luce Irigaray's critique of male-dominated systems of sign exchange and sharing with her the vision of an "alternative economy of signification," as Karpinski and Basile note (p. 28), Godard investigates the pragmatics and ethics of translators' choices underlining the importance of centering attention on "who is speaking to whom and under what conditions" (p. 43).

Part 2, '"At an oblique angle": Figures and vectors of translation across continents,' engages readers in Godard's journey of addressing different modalities of translation, this time zeroing in on various "topoi" and vectors of translation that mold its role(s) and function(s) across time and space shaping in turn the cultural exchange occurred. In Chapter 5 (pp. 55-81), 'Writing between cultures (1997),' Godard directly shares her wish to explore "systematic interferences between languages in Canada" (p. 55) at two different historical periods in Canadian culture that reflect the genesis of two diametrically opposed modes of translation, colonial and decolonial. Through her study of the 17th-century writings of Marie de la Incarnation and a thorough reading of the contemporary play *Almighty Voice and His Wife* by Daniel Moses, Godard shows that the former trope of translation operates as "con/version" (p. 58), whereas the latter as "re/version" (p. 59), raising questions about the possibility and role of decolonial translation within a context marked by settler-colonial hegemony. As the collection's editors underline, this paper strongly indicates that "the passage between languages is always situated in a particular history and is shaped by specific 'linguistic and cultural interference'" (p. 55). From her analysis of forms of translation in colonial Canada, readers follow Godard to her investigation of carriers of cultural production and exchange in the Americas in Chapter 6 (pp. 82-103), 'Relational logics: Of linguistics and other transactions in the Americas (2005).' Here, Godard explores forms of violence and resistance within the complex interplay of language and space in the Brazilian,

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Canadian, and Quebec contexts. Drawing from the work of visual artists, directors, and writers who subvert settler narratives in these contexts and seeing translation as "borderland" (p. 89), Godard expands on three significant topoi of translation that circulate therein: a) the myth of Babel, b) the myth of the Border, and c) the cannibalizing trope of Anthropophagy, pointing to the capacity of different tropes of translation to "enact different logics of cultural contact" (p. 82).

Focusing on translation as subversive – of norms, institutions, and cultural fields – in Chapter 7 (pp. 104-124), 'Translation as reception: Quebec women writers in English Canada (2002),' one of the two essays in this collection previously available only in French, Godard investigates the decisions made about translated literature from Quebec in English Canada in the 1980s. She maintains that despite the transformative potential of experimental feminist writings by Brossard and Théoret, no impact was felt, and the English Canadian literature remains unaltered. By focusing on the dialogues between Anglo- and fran¬cophone feminists, Godard asks readers to consider the "dynamism of interre¬lated cultural fields and […] translation as a logic of relationships" (p. 120). Drawing from Brossard, she too believes that translation is not about the creation of a new text by eliminating another but rather about "augmenting the text by including its variants," contributing to meaning-making and enhancing "discursive relationships" (p. 120), which despite their complexity allow for the articulation of new values from a feminist perspective. The last paper (pp. 125-136) in this section, 'Millennial musings on translation (2000),' starts with Godard wondering how to think of translation and language at the turn of the new millennium: "Will translation be a keyword for the 21st century? And if so, in what semantic networks? Will translation's salience … create continuity between past and present, or effect radical change?" (p. 125). By outlining major conceptualizations of translation in the Western tradition – translation as *confusion*, *transmission*, and *production* – she investigates forces of linguistic homogenization/diversification and the role of translation practices and poetics in fostering contingencies, cultural and historical, in any encounter between languages against the "cosmopolitan ideal of universal beauty" and "the postulates of transparency and rationality" (p. 135) of language engineering with the use of computers. Yet, as Godard contends, "whether translation is a process of enfolding an outside, or of unfolding to an outside in a movement of expansion" (p. 135) is a question yet to be answered.

Part 3, 'Semiotics and ethics of translation,' comprises essays that mirror Godard's interest in different philosophies and theories of language and culture. Engaging with the poststructuralist theories of Judith Butler and Jacques Derrida, Antoine Berman's ethical approach to alterity, and Gilles Deleuze's philosophy of the event, Godard examines them from the perspective of translation, which she sees as sign production, pointing to their potentials and limitations, calling for ethical response

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to an address of "new relations" (p. 148) that emerge in various fields of everyday life, and shedding light on future paths to research. Chapter 9 (pp. 141-165), 'Between performative and performance: Translation and theatre in the Canadian/Quebec context (2000),' further reflects Godard's view of translation as semiosis beyond meaning-making. Reading with Butler, Derrida, and J. L. Austin, Godard investigates translation as "the third term" (p. 143), drawing links between performance as translation and the performativity of translation. By questioning the emphasis placed on the power within the language and discursive constructs and drawing attention to speech act theory and the use of language in volatile social contexts, she emphasizes the perlocutionary or performative power of translation when a theatre text is staged. The intended audience perceives language and national identity in a certain, distinct way. Drawing on examples from translations of theatre texts from Quebec into the Anglo-Canadian context, she shows that ideology and certain sociopolitical and historical constraints affect the economy of the cultural exchange performed. In her analysis, thus, she moves toward the relationalities of translation, maintaining that it "orients itself towards neither source nor target […] but cuts across them in unpredictable combinations" (p. 150). That is, Godard perceives translation as part of a cluster of semiotic systems capable of effecting social change. Her essay on Berman (pp. 166-185) that follows, 'The ethics of translating: Antoine Berman and the "ethical turn" in translation (2011),' available in English for the first time, studies his theorizing of the ethics of translating. Despite agreeing with him on the crucial role of translation in responding ethically to the call of the other, Godard sheds light on those aspects of his theory and approach to translation that are considered as addressing the other only to return to the self. Thus, reading with Anthony Pym and conversing with Henri Meschonnic, Lawrence Venuti, and Gayatri Spivak, she calls readers' attention to the act of translation and its ideological, social, and historical situatedness. Throughout the essay, Godard stresses the need for an "ethics of difference" and a politics of translation, "resituating the ethics of translation within the sociopolitical field" and sharing her own "ethics of translation" (p. 166).

In Chapter 11 (pp. 186-213), 'Deleuze and translation (2000),' Godard discusses her philosophical encounter with Deleuze while translating Brossard's *L' Amèr* and explains why she decided to explore his "implicit theory of translation as a creative swerve" (p. 187) and engage in conversation with this pragmatic thinking about language. She borrows his concept of the *fold* as it enables her to foster her conceptualization of translation and the development of a new vocabulary for translation, thus seeing it as less concerned with "being" and as more open to "becoming" and to the formation of "new assemblages" (p. 186). Inspired by Deleuze, Godard expands her translation theory, pointing out its openness to "infinite semiosis, proliferation, and creative becomings" (p. 138).

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The final essay of this section (pp. 214-224), 'Bodies for examination, or not diagnosed yet (2009),' explores embodiment. Published for the first time, it is a talk Godard gave just over a year before her death. Although she has previously shared her views on the relationship between translation and embodiment, this time, she revisited *diagnostics*, wishing to "examine ways of reading physiological changes and of producing bodies as texts within the different interpretive possibilities determined by various technologies for representing symptoms" (p. 215). Informed by biosemiotics, Godard explores the body, both translated and translating, as an object of examination and as a site of knowledge production, with meaning being made through the interpretation of signs and codes. She emphasizes the ethical problems of diagnosis and raises "the issue of epistemological challenges of translating between the biomedical model of body-as-machine and the psychosomatic or ecological model of body-as-process" (p. 138). Drawing on views on corporeality – Peircean semiotics, Foucauldian archaeology, and genealogy, critical disability studies, and cultural studies on medical imaging – she explores the body as "a cultural surface" onto which "social expectations and ideological meanings" (p. 138) can easily be discerned calling for "resistance and reclaiming" against the medical industry which denies patients, and in particular female patients, "the possibility of other corporeal becomings" (p. 139).

Part 4, 'The translator as subject/the subject of translation,' casts light on Godard's views as a practicing translator. It consists of an unpublished conference paper on translation paratexts, two translator prefaces, and some journal entries. All four texts allow Godard to share her feminist "interdiscursive" and "interanimating" theories of translation while engaged with translating Quebec's experimental feminist writings. Chapter 13 (pp. 229-232), 'Hors d'Oeuvre: The translator's preface (1987),' offers insights into Godard's ideas regarding paratextual elements. Drawing on Gérard Genette's concept of peritext, she reminds readers of the importance of prefaces, which act "between the text and the extra-textual" enacting "movements in cultural conventions" (p. 230). This also enables her to expand on her views of the translator-function in the text, seeing it as related to the presence or absence of the translator's signature through the prefaces appended to translations. Therefore, the lack of a preface, Godard maintains, reflects "a poetics of transparency […] an attempt to naturalize the translation into the target culture." In contrast, its presence "grounds the meaning of the translation in its transformation," with translation thus being seen as "part of a complex system of meaning" (p. 230). By exploring French-English and English-French translations of literary texts from Canada, she concludes her essay by centering attention on the "nuanced differences among […] prefatorial types, especially, when they coexist" (pp. 231-232). She asks readers to regard "every text [as] a pre-text," considering that "[t]here is nothing outside the work" (p. 231).

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Chapter 14 (pp. 233-237), 'Pref¬ace to Lovhers (1980),' concerns Godard's reflections on feminist translation poetics. Still considered one of the most influential texts on the (feminist) translator as a subject actively participating in meaning-making, it invites readers to follow Godard in her "historical adventure" as a "subject" of translation (pp. 233-234) and her trajectory that has shaped her theoretical approach to feminist translation. Seeing translation as "a practice of reading/writing" (p. 233), she offers a self-reflexive meta-text on her translation of Brossard's *Amantes*, focusing on the challenges encountered in translating from French into English, critically analyzing the text and outlining its patterns and feminist intertextuality, and situating this key work within Brossard's oeuvre.

Continuing with her reflexive pieces on translating, Chapter 15 (pp. 238-247), 'A Translator's Journal (1995),' hosts Godard's journal entries produced while she was working on the novel *Picture Theory* by Brossard. These entries mirror her approach to translation as this was molded by her feminist praxis of translation and her encounters with semiotic, linguistic, and psychoanalytic theories. From "I" (writer) to "you" (readers) to "third person" (the translator), all positions, Godard suggests, can be "reconfigured" when the work of translation is perceived as rewriting, as dialogic research. In this vein, she underlines that the translating subject is always "a subject of transfer and transformation" and that the final version of the text is never "realizable" (p. 247). As she claims, there "are only approximations to be actualized within the conditions of different enunciative exchanges," with translation being "an art of approach" (p. 247).

Similarly, in Chapter 16 (pp. 248-257), 'The Moving Intimacy of Language (2004),' Godard highlights that "texts do not reflect but pro¬duce subjects through their socio-linguistic mediation" (p. 250). She asserts that translation, as writing and rewriting, engages in a dynamic process that is both "corporeal" and "discursive," enabling "one to get outside the self" (p. 250). Hence, Brossard of a particular year meets Brossard of other years with multiple identities comprising the self. All parts of the subject are "functions of thought, emotion, and lived experience" (p. 248) and all related to language. Citing Brossard (p. 20), Godard contends that "[t]o be translated is to be interrogated not only in what one believes oneself to be but in one's way of thinking in a language, and of being thought by the same language" (p. 252). As a form of reading and rewriting, translation thus "actualizes" the virtuality of reading and the "infinite potentiality" of language to perform acts of representation and produce a "redistribution of linguistic value" (p. 252).

The present collection encompasses writings that reflect Godard's thought-provoking, wide-ranging, and transformative voice, and this is one of its most outstanding merits. Although Karpinski and Basile have not provided the reasoning behind the selection of the specific 16 essays mentioned above, the volume bears testimony

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to the diversity, expansion, and flexibility of Godard's "holographic" thinking (p. xiv), reflecting the multiple perspectives she sees at once and making readers engage with new, diverse angles of perception. The four sections help editors in their attempt to present Godard as a key thinker of translation as they invite readers to participate in what Sherry Simon calls in the foreword that prefaces the collection "two decades of creative ferment, as translation becomes a powerful intellectual and creative practice" (x). Godard has contributed to expanding theorizing in translation studies, a field in open dialogue with semiotics, feminism, and other fields, and to proliferating conversations with several theories and philosophies. The remarkable coverage and variety of methodological and theoretical approaches discussed, negotiated, de- and re-constructed, as well as the investigation of Godard's translation criticism and practice reflective of her very own critical and ideological articulations of the process of translation, makes this volume mandatory reading for anyone interested in translation studies and its inextricable intertwinement with semiotics and feminism. The volume celebrates Godard's eclectic and exciting range of thinking that mirrors her critical encounters, resounding impact, and immense contribution.

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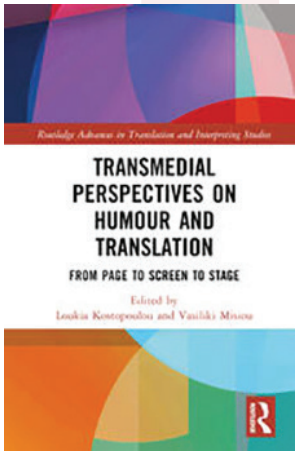
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Watching humor traveling across languages, cultures, and media

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BY: **Villy Tsakona**



Loukia Kostopoulou and Vasiliki Misiou

Transmedial Perspectives on Humor and Translation

New York: Routledge, 2024, 264 pp. £ 104.00 (hbk, ISBN 9781032328713), £ 31.19 (ebook, ISBN 9781003317104)

One of the most conspicuous changes in humorous discourse during the past few decades concerns the ways it is created and disseminated: the (online) media have radically modified what we consider to be humorous genres, their content, and the ways they spread across languages and cultures (see among others Chiaro 2018; Attardo 2023). Especially social media and the easily accessible and usable software circulating online nowadays allow individuals, whether professionals or amateurs, to transform texts from one genre to another, as well as to translate and thus disseminate material that would otherwise be accessible to a limited part of the audience, thus resulting in a plethora of humorous texts connected through intertextuality (Fairclough 1992; Tsakona 2020). In this context, Loukia Kostopoulou and Vasiliki Misiou offer a fascinating kaleidoscopic view of what such changes entail for the translation of humorous discourse and simultaneously for its transference from one medium to another.

The volume under review begins with an introduction by the editors, which refers to two of the main theories of humor (incongruity and superiority/aggression) and, most importantly, to the changes digital technology and media have brought to the creation, dissemination, and perception of humor. As Kostopoulou and Misiou clearly state,

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> important questions that are addressed and debated in this book are how different media/media formats trigger different audience reactions, how humor is interpreted across media and, finally, which translational transformations take place during the 'migration' of humor across various media and genres. (p. 3)

Hence, the concept of *transmediality* (Jenkins 2006) enters the picture. It is used to account for diverse practices that transform humorous texts into suitable media.

The discussion of the interplay among transmediality, translation, and humor opens with a chapter by Patrick Zabalbeascoa and Salvatore Attardo on "Humor translation theories and strategies" offering an overview of theories of translation and focusing on those that emphasize contextual parameters, such as the purpose of the target text, the humor taste of the targeted audience, the ideology about the in/appropriateness of humor, and the established social norms concerning translation practices in a particular sociocultural community. Based on an example of a joke built on culture-specific scripts that are not necessarily available in the target language(s), they discuss how Zabalbeascoa's *priorities and restrictions model* (1993) and *binary branching* one (2018) offer potential solutions to translation problems. Furthermore, they discuss how and why the *General Theory of Verbal Humor* (Attardo 2001), here reframed as the *General Theory of Semiotic Humor* (p. 23), could account for issues arising from transmedia and multimodal adaptations of humor.

Nicola M. Dusi and Greta Donati elaborate on "Parody, pastiche, and remix in film and TV series." Following Genette's (1997[1982]) distinction between *transformation* (including parody and travesty) and *imitation* (including caricature and pastiche), the authors examine film adaptations of novels and their parodies as well as parodic remixes and web series of TV series produced chiefly by fans. Even though the initial texts provide the material for the transmedial and resemiotized ones in all the cases, new meanings, and semiotic resources are generated in the latter. This enhances the content and semiotic gap between initial and derivative texts and simultaneously offers new, alternative perspectives on pre-existing semiotic material. The authors underline the significance of humorous or ironic purpose for achieving all this: "the lucid and satirical regimes, together with the ironic and the humorous, are active functions in audiovisual hypertextual practices, which play a key role in the creations" (p. 48).

Cross-cultural differences and cross-linguistic inequivalences are the focus of Jeroen Vandaele's chapter titled "Translating literary humor: Aspects of detection and analogy making." The author claims two main problems when translating literary humor: the detection of literary humor and *analogy making*, which refers to coming up with translation solutions and reproducing similar or equivalent humorous effects in

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the target text. In the former case, the translator must be able, first and foremost, to trace the humor of the source text by retrieving the necessary background knowledge, which is not always easy or even achieved in practice. In addition, translators may miss subtle ironic cues (e.g., repetition and register shifts) and thus not reproduce the irony in the target text. In the case of analogy making, translators need to anticipate and allude to the background knowledge available to their targeted audience and recreate the humorous effects produced through wordplay or diverse (usually) nonstandard or obsolete varieties appearing in the source text. At the same time, they are expected to consider restrictions concerning what kind of humor is socially permitted and not potentially offensive in the target culture and language.

In his chapter titled "From the page to the screen. Superlópez: Fun superheroes and transmedia," Juan José Martínez Sierra examines the case of humorous transmedia storytelling with the Spanish superhero *Superlópez* as a protagonist. This character was designed as a parody of the well-known *Superman* in Spanish comic books since 1973. Recently, in 2018, he became the main character in a Spanish film. Martínez Sierra exploits an elaborate analytical model including a taxonomy of signifying codes (linguistic, paralinguistic, musical and special effects, sound arrangement, iconographic, photographic, planning, mobility, graphic, and syntactic codes; see Chaume 2004) and a taxonomy of humorous elements (referential, preferential, linguistic, paralinguistic, visual, graphic, acoustic, and non-marked humorous elements; see Martínez Sierra 2018) to account for the transmedia adaptation of the humorous mechanisms originally attested in the comic books to reproduce humor in the film. According to his findings, the same humorous mechanisms are employed in both genres despite their semiotic differences.

In her chapter on "Rewriting and redirection of the comedy and humor in Camilleri's Montalbano series: Gains and shifts in translation and adaptation," Brigid Maher investigates how humor is reproduced in the translations of Andrea Camilleri's crime book series featuring Inspector Salvo Montalbano, and is recreated in the TV series based on the crime novels. The Montalbano crime novels are famous, among other things, for their humor, which is, to a significant extent, based on the fictional vitagese dialect of Italian, but also on caricature and slapstick, situational humor, political and cultural satire, swearing and malapropisms, and self-irony. Through several well-chosen and fascinating examples, the author demonstrates how, even in cases where verbal humor may be lost in translation, the endnotes provided by the translators and the situational humor of the novels (e.g., slapstick or incongruous chains of events) help translators to explain or maintain the humorous effect in the target text, respectively. In the TV adaptation, the actors' physical traits and comic performances, as well as the (comical) musical soundtracks, contribute to the same effect, thus compensating for the loss of verbal humor. The author concludes that

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> the vivid theatrical and filmic features of Camilleri's writing add to the multilayered and multimodal quality of the humor. This means it lends itself well to translation or adaptation, because even if some aspects of the humor prove difficult to carry across or have a reduced effect, there are usually other humorous features in place simultaneously that allow the work to retain much of its verve. (p. 104)

In "A grinning bite: Ilana Zeffren's translation of the news into comics," Ayelet Kohn and Rachel Weissbrod concentrate on the work of the Israeli journalist and comics artist Ilana Zeffren. Zeffren has created an idiosyncratic code allowing her to comment on sociopolitical issues: she combines *mini texts*[1] referring to current sociopolitical events with comics featuring her cats as protagonists and animators (in Goffman's 1981 sense) of her critical thoughts and stances. This results in a series of transformation/ transmedial moves: "from a mini text to a full-fledged, detailed one, though condensed into one page; from a serious to a humorous treatment of the subject matter; and from the human world to the world of animals" (pp. 124-125). The data analyzed are fascinating, and the author convincingly shows how this multimodal genre she has devised allows her to draw unexpected analogies between politics and the 'cat world,' to point to thought-provoking incongruities, and eventually to demonstrate how multimodality and transmediality can yield multiple meanings and perspectives on sociopolitical affairs.

The case study analyzed by Vicky Manteli in "Exploring theater transmediality and humor translation in Aris Biniaris' *Animal Farm*" offers a glimpse of what an extended transmedial analysis can involve. Manteli does not restrict the data examined to the source text by George Orwell and its theatrical adaptation and simultaneously translation into Greek, but includes in her dataset all the material stemming from, surrounding, and promoting the theatrical performance: its official video trailer, the theater program and memorabilia, the playtexts, the songs, the music, and the dance, all contributing to enhancing the political satire and humor of the source text. By adopting such an extended and compelling definition of transmediality, the author sheds light on the mechanisms through which classical novels such as *Animal Farm* are reinterpreted and recreated to appeal to contemporary audiences who may not be familiar with traditional narrative modes but may appreciate a piece of political satire adapted to their sociocultural context and exploiting familiar genres, such as comics and rap songs. Manteli's study confirms Straumann's (2015:352) observation that "adaptations represent reinterpretations so that viewers are offered a new perspective and experience with each adaptation. It is possible, therefore, to discuss adaptations and appropriations of much earlier texts as transmedia phenomena" (p. 139).

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[1] Following Nir (2006), Kohn and Weissbrod define *mini texts* as "short, semantically independent verbal sequence[s], which may be classified under a variety of genres, including news headlines, definitions, advertisements, proverbs, slogans, placards, graffiti, and more. Mini texts can be informative or argumentative." (p. 109)

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In the next chapter on "Postfeminist humor from page to stage to screen and translation: *Fleabag* as a case in point," Margherita Dore examines how what started as a standup comedy monolog involving postfeminist humor was transformed into a TV series and then translated from English to Italian as part of the dubbing process of the TV series. In particular, she focuses on Phoebe Waller-Bridge's *Fleabag* performance and TV show, where a young woman narrates her experiences in a (post)feminist, humorous, and often self-deprecating manner. Following Shifman and Lemish's (2010) approach, postfeminist humor is defined as

> Humor based on gender differences [which] does not attempt to constantly challenge the idea that 'men are superior to women,' which is normally instilled by sexist humor. Rather, it sees both men and women as equal but different. Consequently, both men and women can become targets of humor. (p. 158)

Through several well-chosen examples, Dore demonstrates how what was monological narration in the stage version becomes scenes featuring the narrator/protagonist and other characters, simultaneously rendering the latter "more absurd" (p. 164). The narrator's humorous perspective is no longer exclusively conveyed directly (i.e., through her monolog) but also enacted in humorous scenes featuring her interacting with others. When it comes to the Italian dubbed version of the TV series, it seems that the taboo, which is part of the narrator's postfeminist humor, is more often than not downplayed or even omitted, thus resulting in the "ideological manipulation" of the Italian target text (p. 165; see also Díaz-Cintas 2012).

A recently emerging and most interesting case of transmediality, translation, and humor is explored by Jan Chovanec in his chapter titled "Lest the jokes fail: Trans-cultural transfer in humor fan-subtitling." Chovanec opts for the under-researched topic of fan translations, namely translations by non-professional, untrained individuals, who appear not to limit their efforts to rendering the source text from one language to another but also provide relevant background information aimed at facilitating understanding and sometimes even convey their stances towards the source text. The case study examined here involves the opening monolog of the British comedian Ricky Gervais at the 2020 Golden Globes ceremony, which was translated into Czech and uploaded to YouTube. The author highlights the intricacies of humorous discourse addressing a broad audience, which led the non-professional translator to exploit the affordances of the medium by adding either metacomments on the source text into the body of subtitles or explanatory notes on the screen, thus enhancing the ways translators assist their recipients in grasping the humor of the source text. As Chovanec aptly remarks,

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> [w]ithin this transmedial environment, users can perform a large number of acts: evaluate the quality of the translation; offer alternative translation solutions; discuss the indexicality of translation errors; invoke and enforce (standard) language ideologies; share metapragmatic stereotypes about the acceptability of the source text […]; interpret the assumed intended meaning; set the translated artefact into new interpretative contexts, etc. (p. 196)

Delia Chiaro's chapter on "Humor in a multilingual world: Tacit translation in the age of the reel" focuses on three types of reels, whose humor is based on linguistic and cultural differences, usually between English and other languages, and the implicit translation processes highlighting such differences. The examples and analyses provided bring to the surface online participants' evaluations of language variation, the unequal relationships between different languages, and eventually, how the social prestige of English as a dominant lingua franca may be confirmed or undermined by speakers whose first languages are different from English. Chiaro argues that tacit translation from English into other languages, and vice versa, underlies such humorous reels and becomes a means of comparing various language-specific rules and idioms as well as cultural particularities. She thus invites us to think in more depth and perhaps in a more critical manner (cross)linguistic humor, which points to linguacultural particularities and may perpetuate and naturalize sociolinguistic inequality and discrimination.

The final chapter of the volume is titled "The multimodal rendering of 'otherness' in the humorous discourse of image-macro memes." The author Pietro Luigi Iaia also explores the topic of sociolinguistic discrimination and inequality but rather from a different perspective. In particular, he presents the various stages and tasks in a university workshop, where students were asked to translate memes and recreate their humor to address recipients from different linguacultural communities. The memes analyzed and translated involved scripts reproducing derogatory stereotypes about the inhabitants of Southern Italy, associating them with mafia, criminality, poor education, and provocative behavior. Emphasis was placed on cultivating students' awareness of the difficulties entailed in translators' work and sensitizing them to the stereotypes and discriminatory values that may be disseminated through seemingly innocuous humorous texts such as memes. At the conclusion of the study, the author notes that

> from a transmedial viewpoint […] it would be worth exploring the translation strategies making the stereotypical and culture-bound humorous discourse available as social media short clips – the text types that are labeled as 'reel.' The passage from combining pictures and verbal descriptions to merging images, acoustic score, verbal description and even the actors' or authors' voices would raise some intriguing questions. (p. 234)

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All in all, the chapters of the volume manage to explore an impressive variety of genres (novels, films, theatrical plays, TV series, video clips, jokes, cartoons, memes, comic books, and reels). The detailed and compelling analyses provided could be classified as a continuum ranging from those concentrating more on the translation of humor to those exploring more extended and complex cases of transmedia transference of an original humorous text. In this sense, the volume will appeal to scholars and students from a wide range of fields, including, but not limited to, cultural studies, translation studies, media studies, film and theater studies, social semiotics, linguistics, and literary studies. All these different topics and datasets examined by the contributors shed light on various definitions and dimensions of transmediality, which is an essential contribution of the volume since, as already mentioned, transmediality appears to be an under-researched concept. What, however, seems to need to be added to the introduction to the volume is an elaborate overview of the main theoretical and analytical approaches to transmediality, as well as a summary of the aspects of transmediality that are explored (or not explored) in the volume. The editors appear to take for granted that potential readers are already familiar with the concept and the relevant literature, which may not necessarily be true.

As underlined by most (if not all) of the chapters of the volume, more studies are welcome on the interplay among transmediality, translation, and humor. Given that the present collection has concentrated on the production side of transmediality and translation processes, it could be interesting to investigate how all the mechanisms and strategies exploited to transform the source texts into target texts are perceived and evaluated by their recipients. Audience perception studies would tell us more about how recipients of the target texts make sense of the changes from the source to the target texts and whether, how, and to what extent humor is successfully maintained or recreated therein. Considering Loukia Kostopoulou's and Vasiliki Misiou's unrelenting enthusiasm and remarkable dedication to research, this could be an inspiration for their next endeavor.

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