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

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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,

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.

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)

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

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.

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.

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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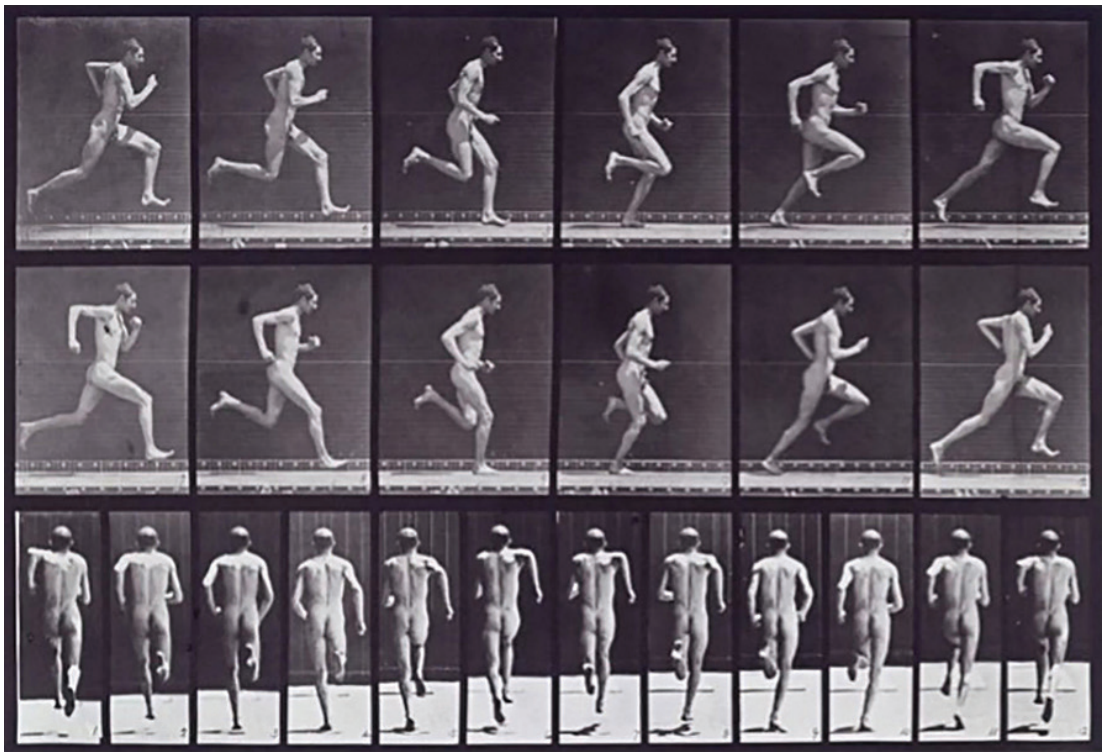

Figure 7. Eadweard Muybridge, *Running at full speed*, 1872–1885.

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).

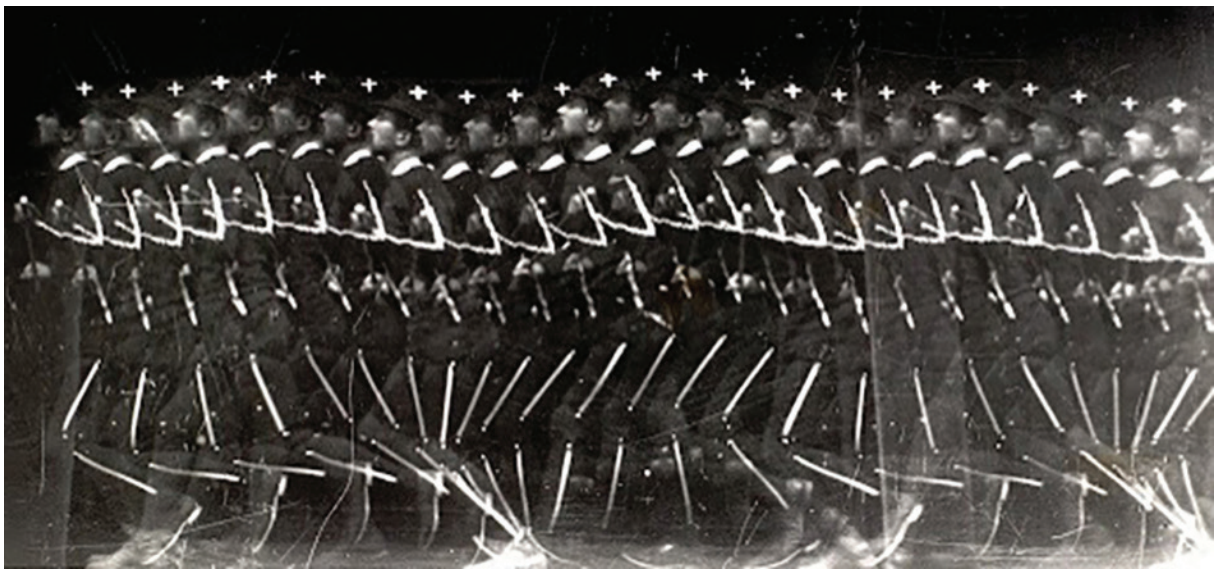

Figure 8. Étienne-Jules Marey, geometric chronophotography of 24 images, on a fixed plate, of a man running, 1886.

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).

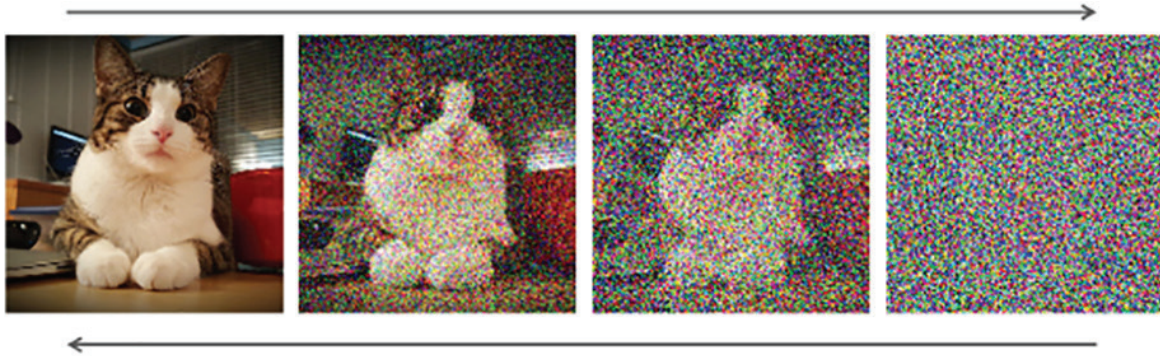

Figure 9. A visualization of the learning phase of a visual generative AI.

[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).

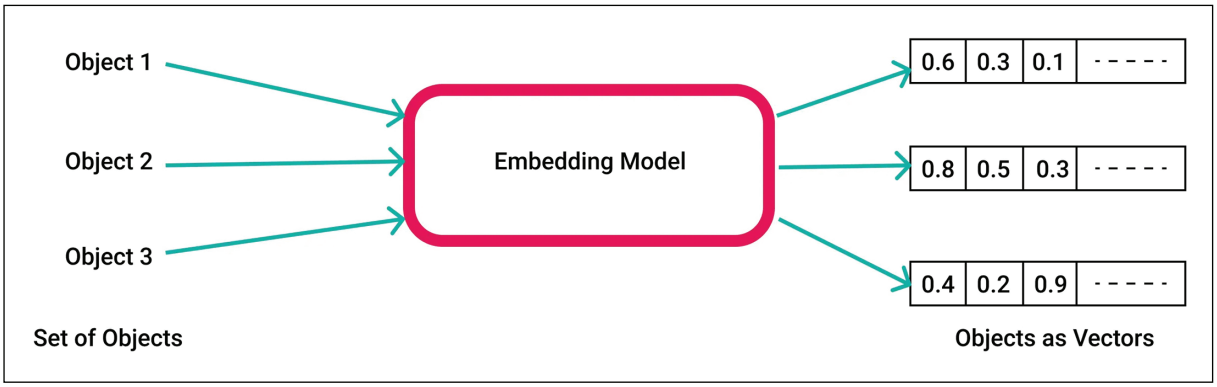

Figure 10. A diagram showing the functioning of embeddings.

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).

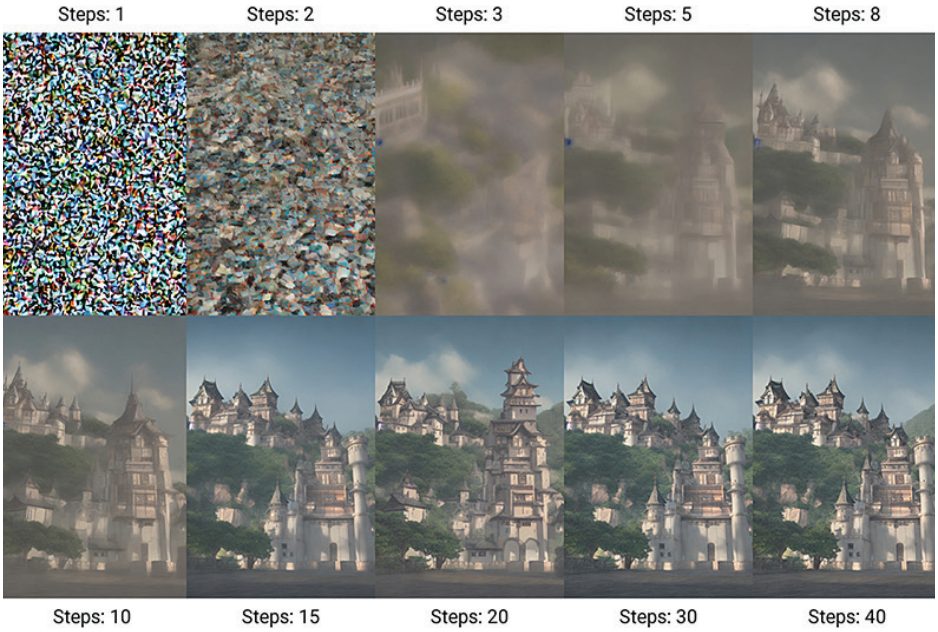

Figure 11. A visualization of the computational generation of images by Stable Diffusion.

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,

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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