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EVERY NEW MACHINE SEES DIFFERENTLY: HISTORICAL CINEMATOGRAPHY THEORIES AND THE AI TURN

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Abstract

In this paper, we examine the emergence of artificial intelligence as a transformative force in cinematographic practice and theory, situating it within a lineage of past technological ruptures in film history, including the transitions from silent to sound cinema, black-and-white to color, and analog to digital. Drawing on historical responses by key theorists such as Eisenstein, Bazin, and Manovich, we analyze whether AI represents a continuity in cinema's evolutionary arc or a qualitative rupture that demands a redefinition of cinematic ontology, authorship, and realism. We argue that while many contemporary debates around AI echo earlier anxieties about technological change, generative AI introduces a distinct shift in the logic of image-making—moving from indexical capture to algorithmic synthesis. Through comparative analysis, we explore whether AI is better understood as akin to the invention of montage—a new logic of combination—or to the arrival of synchronized sound—a new dimension added to the cinematic apparatus. Ultimately, we contend that AI both continues and disrupts cinema's technological trajectory, inaugurating a new visual regime whose implications demand renewed theoretical frameworks.

Keywords: cinematography, artificial intelligence, film theory, montage, sound cinema, indexicality, digital cinema, generative imagery, realism, cinematic ontology

Introduction

Technological upheavals have periodically reshaped the art and language of cinema. From the advent of synchronized sound to the arrival of color film, and from the analog celluloid era to digital imagery, each innovation has been greeted with both excitement and anxiety. Filmmakers and theorists have long observed that every new machine "sees" the world differently, altering how images are captured and experienced on screen. Dziga Vertov's *Kino-Eye* concept in the 1920s famously extolled the camera as a new mechanical eye that perceives reality unlike the human eye, inaugurating a lineage of thought that every major technology in cinema introduces its own vision of the world. Today, the rise of artificial intelligence (AI) promises yet another rupture in this lineage – an "AI turn" in cinematography that some argue is as transformative as any prior revolution in film history. This paper examines the historical responses to earlier technological shifts in cinematography (silent-to-sound, black-and-white-to-color, analog-to-digital) and compares them to contemporary debates on AI. By drawing on classical film theory texts and modern analyses, we ask: is the incorporation of AI into image-making just another evolutionary step in cinema (a continuity), or does it mark a qualitatively new regime that breaks fundamentally with the past (a discontinuity)? In particular, we explore whether AI is better understood as analogous to the invention of montage (a new logic of combination within the medium) or to the introduction of sound (a new dimension added to the cinematic experience). Through a historical-comparative approach, we argue that while the discourse surrounding AI echoes many familiar patterns from past transitions, the AI turn also presents unprecedented challenges to cinema's ontology and language – suggesting both continuity with and divergence from previous technological ruptures.

Silent to Sound: The First Technological Rupture

The transition from silent film to synchronized sound at the end of the 1920s represents one of the earliest and most disruptive technological upheavals in cinema. Overnight, the fundamental nature of film changed from a purely visual art – reliant on images, editing, and intertitles – to an audiovisual medium integrating spoken

dialogue, music, and diegetic sound. The reactions of filmmakers and theorists of the era reveal a mix of optimism for new creative possibilities and fear that the essence of cinema might be undermined.

Early Soviet montage theorists responded to the coming of sound with caution and theoretical rigor. In 1928, Sergei Eisenstein, Vsevolod Pudovkin, and Grigori Alexandrov published their influential "Statement on Sound," which acknowledged the "cherished dream" of talking cinema but warned that its use in a straightforward, naturalistic manner could *"threaten to destroy all [the cinema's] present formal achievements"* (Eisenstein et al., 1929). These filmmakers – champions of montage as the pillar of cinematic art – feared that synchronized dialogue and realistic sound effects would encourage a mere "photographed performance of a theatrical sort" (Eisenstein et al., 1929), reducing cinema to filmed theater and "destroy[ing] the culture of montage" by binding images too tightly to literal sound. They argued that the power of silent film lay in the *purely visual language* perfected in the 1920s, where editing (montage) was the primary means of expression and meaning. As their statement put it, *"the basic (and only) means that has brought the cinema to such a powerfully effective strength is MONTAGE"* (Eisenstein et al., 1929). By 1928, montage was, in their view, an "indisputable axiom" of film art on which the worldwide cinematic language was built. Consequently, Eisenstein and colleagues advocated for a "*contrapuntal use of sound*", urging filmmakers to experiment with asynchronous sound or counterpoint (e.g. sound that does not simply duplicate the image) so as to *"afford a new potentiality of montage development"* rather than supplant it (Eisenstein et al., 1929). In essence, they treated sound as a dangerous but powerful new element – one that should be harnessed in a non-literal way to expand the cinematic language (by adding an aural counterpoint to montage) rather than to replace or diminish the visual montage-based language that had evolved in the silent era.

Not all voices were pessimistic about sound's impact. Over the next decades, film theorists would reassess whether the introduction of sound constituted a true aesthetic revolution or merely a technical augmentation. André Bazin, writing in the 1950s, took a more historical and reconciliatory view. Bazin observed that *"by 1928, the art of the silent film was at its height,"* and many directors understandably mourned the end of what they saw as an "exquisite unnaturalness" of pure visual storytelling. Early skeptics believed *"the realism of sound was bound to upset"* the hard-won artistry of silent cinema. However, Bazin argues that sound, rather than annihilating the silent art, ultimately "brought it to fulfillment" (Bazin, 1958). In his essay "The Evolution of the Language of Cinema," Bazin famously questioned whether 1928–1930 truly birthed a "new cinema" at all. He notes that historically *"the way a film is put together"* did not exhibit as sharp a break as one might expect; many cinematic qualities and styles carried over the divide of 1930. Filmmakers like Chaplin and others initially resisted sound, but within a few years cinema had absorbed the new dimension without jettisoning the visual techniques of the silent era. Bazin identifies a continuity of film language, citing affinities between silent-era masters and early sound-era directors (for example, he compares the visual styles of Stroheim in the 1920s with Renoir or Welles in the 1930s) to illustrate that *"the dividing line of 1930 was no barrier"*. In Bazin's analysis, synchronized sound was a technical revolution but not an abrupt aesthetic revolution: it introduced new creative tools (dialogue, sound effects, music integration) while many fundamentals of cinematic form (editing rhythms, mise-en-scène, visual composition) evolved rather than disappeared (Bazin, 1958). Sound added a new dimension – the aural – but cinema's language adapted and expanded to accommodate it, rather than becoming a wholly different art form (Bazin et al., 2005).

History vindicated both perspectives to some degree. In the early sound years, there was indeed a period of adjustment when cameras grew static and visuals were subordinated to clunky audio recording setups – fulfilling the fears of "filmed theater." Yet innovators soon learned to marry sound with visual dynamism (e.g. expressive use of sound montage, musical scores, etc.), restoring and even enhancing cinematic artistry. Sound ultimately enabled entirely new genres like the musical and new realist aesthetics (audible dialogue and ambient sound enriching the diegetic world), confirming Eisenstein's hope that if used in a *creative, contrapuntal* way, sound could elevate cinema. At the same time, the essence of film language did not undergo a wholesale replacement; silent techniques such as montage and expressive lighting continued to be crucial, as Bazin highlighted. The silent-to-sound transition thus offers a nuanced lesson: it was a rupture in the medium's sensory completeness (adding the dimension of sound to vision) but also a continuity in that filmmakers adapted old principles to a new toolkit. Sound expanded cinema's palette, much as future technologies would, provoking debates about purity of the art versus the gains of realism and audience engagement.

From Black-and-White to Color: Adding a New Palette

If sound added an auditory dimension to cinema, the introduction of color added a new visual dimension – a transformed palette and realism to the image itself. Early cinema was predominantly monochrome (black-and-white), which filmmakers and critics often regarded as aesthetically sufficient or even preferable for certain artistic expressions. As color processes (like Technicolor) emerged in the 1930s, they were initially used sparingly – often reserved for spectacle (musicals, fantasies) or applied in limited sequences. The full adoption of color as the

industry standard took decades, and it was accompanied by its own set of theoretical debates about realism, artistry, and the "essence" of cinematic imagery.

Some early critics and filmmakers were ambivalent or skeptical about color. Monochrome film had, by necessity, developed a rich visual language using light, shadow, and tonality; its very abstraction from reality (the absence of color) was considered by some to be part of cinema's artistic power. For instance, certain directors continued to choose black-and-white for years after color was available, for stylistic or thematic reasons (e.g. Alfred Hitchcock's *Psycho* (1960) or Stanley Kubrick's *Dr. Strangelove* (1964), long after color film was commonplace). The hesitation stemmed from a belief that color could appear garish or distract from the composition and lighting, or that black-and-white was more "poetic" and universal in its abstraction. However, others saw color as the logical next step in cinema's march toward realism. The great critic André Bazin, a champion of cinematic realism, saw the addition of color in an almost teleological light. In his 1951 essay "The Birth of Colour," Bazin heralded a film that, in his view, proved the artistic maturity of color cinematography: Jean Renoir's *The River* (1951). Bazin declared, *"Colour film is finally born! True colour film!"* and predicted that with this achievement, *"in one fell swoop, it erases even our memory of black-and-white film, as sound-film did to silent images." (Bazin, 1951)*. This remarkable statement reflects Bazin's belief that once color photography fully attained artistic legitimacy, it would so *completely supersede* the earlier monochrome standard that the old form would feel obsolete – just as talking pictures made the silent cinema feel like ancient history for mainstream audiences. Bazin's enthusiasm underscores his realism-oriented theory: each new technical step (sound, color, later widescreen or 3D) brought cinema closer to an integral reproduction of reality's sensory richness. For him, color was not a threat but the fulfillment of cinema's realist vocation – an expansion of the window onto the world.

The actual transition to color was gradual. Technicolor's saturated hues in films like *The Wizard of Oz* (1939) and *Gone with the Wind* (1939) dazzled audiences and proved that color could be a powerful storytelling device. Yet limitations in early color technology, and its expense, meant black-and-white coexisted for many years. Only by the 1960s did color become the default for most commercial cinema. During this transition, discourse around color touched on aesthetic questions: Does color increase the *realism* of film by closer imitating the real world's look? Or does it potentially reduce artistry by making images too literal, losing the expressive play of light and shadow in monochrome? Bazin's stance was clearly that color increased realism and could even make audiences forget the charms of monochrome once they became habituated to full-color images. Others pointed out that color needed to be aesthetically controlled – early color cinematography often involved meticulous art direction to manage the boldness of hues. By the time color was ubiquitous, however, the debate largely subsided: filmmakers mastered color as a tool, and black-and-white retreated into a niche for specific artistic projects or nostalgia. In hindsight, the black-and-white to color shift appears as a continuous evolution in cinematic art: it added a new visual dimension (hue and saturation) much as sound added the aural dimension, thereby enriching the representational capabilities of film. But it did not fundamentally alter the grammar of cinema – editing, framing, acting, etc., all continued with the new palette. The words of Bazin encapsulate the historical trajectory: once the novelty and technical hurdles were overcome, color came to be seen as a natural progression, "erasing" the previous limitations just as sound had done for silence (Bazin, 1951).

For our purposes, the silent/sound and b/w/color transitions collectively illustrate a pattern: new technologies often triggered *fears of artistic decline* from purists, yet in time they became assimilated and even celebrated as enhancements to cinema. Sound was first seen as a threat to pure visual storytelling until filmmakers learned to integrate it artfully; color was seen by some as vulgar or distracting until cinematographers unlocked its aesthetic potential. In both cases, continuity eventually won out over rupture – the core identity of cinema adapted and arguably strengthened. However, as we shall see, later technological shifts (and the current AI revolution) complicate this pattern, raising deeper questions about what it means for an image to be cinematic or real.

Analog to Digital: The Photochemical to the Digital Image

The late 20th century brought another profound shift: the move from analog, photochemical film to digital technologies. This transition unfolded on multiple fronts – from film to video (i.e. electronic analog video and eventually digital video cameras replacing celluloid cameras) and from practical photography to computer-generated imagery (CGI) and digital post-production. Unlike the sudden jolt of a single year (as with sound in 1927–30), the analog-to-digital revolution in cinema was more gradual, spreading over the 1980s, 1990s, and 2000s. Its ramifications, however, were arguably farther-reaching in the long run, because they altered not just the sensory dimensions of cinema but the very ontology of the cinematic image and the production process (Abbott, 2006). Film theorists and practitioners in this era engaged in extensive debates over whether digital technology

constituted a seamless continuation of cinema's evolution or a radical break – a debate strikingly relevant to understanding the current AI turn.

One key aspect was the arrival of digital cinematography – using electronic sensors to capture moving images instead of film stock. Early experiments with analog video (in the 1970s and 1980s) and later digital video (1990s onward) initially produced images of noticeably lower resolution and different texture compared to 35mm film. This led to an aesthetic divide: "film" was associated with a certain richness (color depth, grain structure, dynamic range) and prestige, whereas "video" looked cheaper, harsh, or overly crisp. In response, some artists embraced the unique qualities of video as a new medium (video art often foregrounded its electronic distortions or real-time feedback look), while mainstream narrative filmmakers largely treated video technology as inferior until it improved. By the early 2000s, high-definition digital cameras began to rival 35mm film quality. Notably, Hollywood's adoption of digital accelerated when George Lucas shot *Star Wars: Episode II – Attack of the Clones* (2002) entirely on digital HD cameras, and by the mid-2000s many directors (David Fincher, Michael Mann, Danny Boyle, etc.) were using digital for its practical advantages.

The reactions in the film community ranged from enthusiastic embrace of new creative flexibility to staunch defense of the "look" of celluloid. Some cinematographers and directors championed digital cameras for their ability to shoot in low-light conditions, their smaller size and agility, and the cost savings and immediacy of workflow. Director Michael Mann, for instance, argued that shooting digitally enabled an unprecedented "photo-real" image in nighttime urban scenes – *"in the nightscapes in Collateral, you're seeing buildings a mile away… On film that would all just be black"*, he noted, emphasizing that digital sensors could capture detail in low light that film could not. This underscores the notion that each new machine "sees differently": the digital camera's eye had a different sensitivity and visual character than the film camera, revealing aspects of reality (such as dark cityscapes or deep focus in low light) that previous technology left unseen (Daly, 2009). On the other hand, purists like Christopher Nolan or Quentin Tarantino (in the 2010s) argued that celluloid's organic grain structure and color response were integral to the cinematic experience, and some fought to keep film stock alive even as the industry shifted to digital projection and streaming.

Film theorists analyzing this shift often focused on the concept of indexicality – the idea (stemming from scholars like Siegfried Kracauer and André Bazin) that a photograph or film image is an "index" of reality, a physical imprint of light from the profilmic event (much like a footprint is an index of a foot (Gazi, 2016). Digital imaging complicated this foundational concept. Because digital cameras convert light into binary data (pixels), the ontological bond between image and reality is perceived as more tenuous or abstract. A digital image can be altered pixel-by-pixel without detection, composited from multiple sources, or even wholly synthesized, thereby undermining the naive trust that "the camera never lies." As one scholarly discussion put it, *"the necessary indexicality of the analog image is lost with digital and computer technologies where light [is] converted to bits"*, meaning the direct physical link is severed or becomes optional (Daly, 2009). This gave rise to what some called the "indexical crisis" in the early 2000s – a debate whether cinema in the digital age had fundamentally moved away from recording reality toward constructing images.

Many theorists, however, noted that early digital cinema largely strove to emulate the look of film, suggesting a strong continuity in aims and aesthetics even as the underlying process changed. Film scholar John Belton famously dubbed digital cinema a "false revolution", arguing that *"unlike the introduction of sound, color and widescreen, the introduction of digital technologies has been… largely imperceptible [to audiences] on the level of visual representation." (Belton, 2002)* . In other words, a viewer might not even know whether a movie was shot on 35mm film or a digital camera unless told – the images were deliberately made to look "film-like." Belton cautioned that while there were economic and practical differences, one shouldn't *"assume that [digital] constitutes a new aesthetics"* simply because the tool changed. Indeed, throughout the 1990s and early 2000s, digital tools were used in a way that preserved continuity with the classical cinematic look: filmmakers added film grain to digital footage, constrained digital cameras to mimic film's color response, and used CGI mainly to supplement live-action rather than replace it. The mindset was, as one contemporary article noted, *"as soon as digital looks as good as film… then [it can fully take over]."* (Daly, 2009). This implies that the goal was not to create a new visual language but to seamlessly integrate into the existing one.

However, as digital technology matured, new aesthetic possibilities did emerge, gradually vindicating the view that digital would change cinema's language in time. Media theorist Lev Manovich pointed out a key shift in visual logic: whereas 20th-century cinema's dominant principle was montage (temporal sequencing of shots), digital cinema introduced the dominance of compositing (spatial layering within the frame). In digital post-production, live-action footage became *"raw material for further compositing, animating and morphing"* (Manovich, 1995). Techniques that were once rare (like combining multiple image layers, integrating animation with live actors, or extensive manipulation of what is recorded) became common and defining for blockbuster films. Manovich

observed that *"increasingly, manipulating movies and compositing within the frame is becoming as common… as montage between frames" (Manovich, 2001)*. This indicates a subtle but significant evolution in film language: the locus of creativity expanded from how shots are joined (editing) to what each individual frame can contain (multiple blended realities, CGI elements, etc.). In effect, digital cinema made animation and visual effects integral to mainstream filmmaking, elevating what had been "marginal" techniques to the core of production. As Manovich wrote, *"with the shift to digital media, these marginalized techniques [from early cinema and animation] move to the center" (Manovich, 1995)*. For example, a film like *The Matrix* (1999) used digital compositing to achieve "bullet time" sequences that could not be done with in-camera effects alone; by the 2010s, Marvel superhero films were routinely employing wholly digital characters and backgrounds while still being marketed as live-action films.

Thus, the analog-to-digital shift contains a dual lesson. On one hand, it was continuous – audiences and many creators treated digital cameras and CGI as new tools to achieve the same ends (tell compelling stories, create convincing images), often disguising the digital nature to look analog. The narrative grammar of cinema (continuity editing, classical storytelling) persisted. On the other hand, in retrospect the shift was also discontinuous in that it opened the door for fundamentally new practices: fully synthetic characters (Gollum in *The Lord of the Rings*, 2001–03), virtual cinematography (the impossible camera moves in CG-heavy films), and eventually the decoupling of the image from any real reference (e.g. photorealistic scenes created entirely in a computer) (Denson & Leyda, 2016). By the 2010s, the "indexical bond" was deeply eroded – not in every film, but in the collective awareness that images could be faked or manufactured with great fidelity. The classic epistemology of film (the idea that a film image testifies to something that took place before a camera) had been permanently altered by digital capabilities. Mary Ann Doane and other scholars noted that we might seek new concepts of "trace" or authenticity in a digital era where the physical index is optional (Doane, 2007b, 2007a). Even as mainstream cinema largely maintained its traditional form, the philosophical underpinning of what a film image *is* had shifted.

D.N. Rodowick grappled with the loss of the physical substrate of film. He argued that the digital image is "never wholly present in either space or time" but exists in a "constant state of reconstruction" (Rodowick, 2007). He suggested that digital media makes the image more like language than photography, a symbolic code processed by a machine. The AI Turn validates Rodowick's philosophical anxiety. If the digital image was "like language," the AI image is literally generated by language. The text prompt is the DNA from which the image is reconstructed (Rodowick, 2017). Rodowick's concept of the "digital event", the processing of code, has replaced the "cinematic event", the recording of time (Krzych, 2010).

In summary, the analog-to-digital revolution was a drawn-out retooling of cinema that illustrated both continuity and innovation. Continuity was seen in how quickly digital technology was bent toward existing cinematic norms (Belton's "false revolution" – a new means to the same end) (Belton, 2002). Innovation was seen in how, gradually, digital tools engendered new aesthetics and techniques (compositing, non-linear workflows, high-frame-rate shooting, etc.) that had few precedents in the analog era. Importantly, issues that are front-and-center in today's AI debates – such as the authenticity of images, the role of human skill vs. automation, and the definition of cinema's connection to reality – began to surface in the digital transition. When James Cameron's *Avatar* (2009) delivered an entire believable world of computer-generated imagery, or when *The Irishman* (2019) used AI-driven de-aging on actors, one can see the culmination of trends from the digital revolution. Yet, as we will argue, the emerging AI turn may press these issues even further, to the point that it is considered a qualitatively new shift beyond what digitalization already accomplished.

The AI Turn: Artificial Intelligence in Cinematic Imagery

As we enter the mid-2020s, artificial intelligence is increasingly woven into the fabric of image creation and cinematic production. AI's role ranges from behind-the-scenes tools (e.g. smart editing software, color grading assistants, upscaling algorithms) to generating content that ends up on screen (AI-generated faces, deepfake performers, entirely synthesized images or even video) (Denson, 2023). In broad terms, AI in cinematography can be seen in three domains: how images are captured, how they are processed/enhanced, and how they are generated or composed. It is the third domain – generative AI that creates images or scenes algorithmically – that represents the most radical departure from past practice and has sparked intense debate in both industry and academia.

Current uses of AI in film production often build on the digital processes established in the early 21st century. For instance, AI-based software now assists with many "mundane" tasks in post-production: automatic transcription of footage, intelligent search of hours of video for specific shots or faces, automated synchronization of sound and image, and so on. These applications are largely viewed as extensions of the editing and management toolkit – speeding up workflow rather than altering the artistic core. As one technologist described, *"we're using*

AI to do the mundane tasks… so that we can do the creative stuff faster." (Daoud, 2024). Such tools, while game-changing for efficiency, do not in themselves challenge the language of cinema; they operate *in service of* human editors and cinematographers, taking over laborious chores (like cataloging footage or denoising images) and thereby liberating more time for creative decision-making. In this sense, AI is behaving as just another tool in the filmmaker's arsenal – analogous to past innovations like computer-based non-linear editing, which transformed workflows in the 1990s but was quickly normalized.

However, the frontier that is causing both excitement and anxiety is AI-generated imagery: the ability of machine learning models (such as generative adversarial networks or diffusion models) to create realistic images or even moving images from prompts, without a one-to-one correspondence to a real-world photographed event. We have already seen the rise of "deepfakes," where an AI can replace an actor's face with another's in footage with striking realism, or generate a synthetic actor from scratch. AI can produce photographs of people who never existed, or imagine fantastical scenes by sampling patterns from millions of real images in its training data. This capability is qualitatively different from prior digital effects. Traditional CGI, while not indexical, still required explicit design by artists (modeling, animating, rendering) – it was a form of manual creation using software (Jeong, 2011). By contrast, modern generative AI can autonomously synthesize images following a high-level prompt (e.g. "generate a shot of a 1920s city street in the rain"), drawing on its statistical "knowledge" of what things look like. In essence, the machine can now *"imagine"* new images by recombining and extrapolating from patterns in huge image datasets, rather than simply processing or compositing known source images (Bajohr, 2022).

The implications of this for cinematography are profound (White, 2025). Film and photography have always dealt in images of reality or constructions thereof – but until now, even the wildest CGI-heavy blockbuster ultimately had *some* grounding in photographed reality (often via motion capture, or plates of real environments onto which CGI was added). With generative AI, it is conceivable to create convincing cinematic sequences with no direct photographed element at all (Manovich & Arielli, 2024). As film scholar Joni Gutierrez observes, *"digital technologies complicated [cinema's] foundation, but they did not erase it… A digital camera, like a film camera, recorded light from the world… maintaining continuity with indexical realism. Artificial intelligence, however, marks a more profound rupture. When an AI generates an image, it does not begin with light bouncing off the world."* (Gutierrez, 2025). In other words, AI severs the causal link between the pro-filmic reality and the image. The AI's "synthetic image" is *"not a record of 'what has been,' but a synthesis of what could be made to appear." (Daoud, 2024)*. This marks a potential break with how cinematography has been conceptualized since its birth. Instead of using a camera to capture, we can use an algorithm to create – treating reality as optional or as just one resource among many (Tsiavos & Kitsios, 2025).

Contemporary debates on AI in film often center on this ontological break. What happens to cinema's claim of realism or truth when images can be wholly fabricated by a machine? Bazin's classical notion that film's power lies in its *"imprint of the real"* faces a direct challenge: AI images have no imprint, no physical trace of a moment in time – they are conjured from data. From one perspective, this is simply an extension of a trend that began with digital effects. We already learned to distrust the literal truth of images when Photoshop and CGI became ubiquitous; audiences today are aware that what they see on screen (from de-aged actors to impossible stunts) may be digitally manipulated. Yet, there is a psychological and ethical threshold being crossed with AI generation. It is now possible to generate a completely fictitious actor – an AI "performance" – that to the viewer may appear as genuine as a flesh-and-blood actor. Some experimental short films have used AI-generated actors and settings; music videos and advertising have eagerly adopted AI tools to produce visuals that would be expensive or impossible to stage in reality. Even major studios have dabbled: for instance, in 2023, a Marvel television series (*Secret Invasion*) used AI-generated imagery in its title sequence, stirring controversy about the replacement of human artists (Masi et al., 2025).

This incursion of AI raises labor and authorship concerns unprecedented in cinema's history (Gutierrez, 2025). If an AI can do the work of a cinematographer, a matte painter, or even an actor's on-screen presence, what remains the role of the human creator? Film industries are grappling with these questions: recent guild negotiations (such as the 2023 Writers' and Actors' strikes in Hollywood) explicitly addressed the need to regulate AI's use, to protect creative jobs from automation and to ensure consent for use of one's likeness via AI. In academic terms, the "author function" in film is challenged – is the author the human who prompts the AI, the AI model itself, or the myriad artists whose work trained the AI? These questions have led many to argue that AI is not *just* another technology but a potential paradigm shift in media production.

Yet, not everyone views the AI turn as apocalyptic or wholly unprecedented. Some industry professionals stress that AI, at its current stage, remains a tool that requires creative guidance. Noah Kadner, a virtual production expert, commented that *"a lot of people have the fear that AI is gonna steal their job… but what I'm seeing is, it's ultimately becoming one more tool in the toolbox, and [those who] leverage it well are going to do very well in the*

biz."(Daoud, 2024). This perspective – call it the *continuist* perspective – essentially echoes how past technologies like sound or digital editing were eventually seen: as tools that could enhance storytelling when used appropriately. From this vantage, AI might automate tedious tasks (as discussed) or offer new creative options (like quickly visualizing ideas via text-to-image generation for storyboarding, or creating synthetic crowds for a scene), but it does not change the fundamental need for human vision, storytelling sense, and artistic judgment. Indeed, current AI image models have notable limitations: they may produce glitches, lack the consistent control needed for narrative filmmaking (e.g. keeping a character's appearance identical across shots), or require extensive curation and tweaking by artists to be truly useful. As one post-production expert noted in 2023, fully AI-generated films remain challenging due to issues of "character consistency and control", and so in the near term AI's biggest impact might be in *"utility"* functions rather than outright content creation. This suggests that – in practice – AI may integrate into the filmmaking process incrementally, augmenting rather than replacing the human-driven creative pipeline, even if there might be significant improvements (Lin et al., 2024).

In summary, the AI turn in cinematography sits at the intersection of excitement and fear. On one side, it holds the promise of *"impossible images"* – anything one can imagine can potentially be realized on screen without location constraints or astronomical budgets. It might democratize some aspects of filmmaking, allowing small creators to generate epic visuals via AI assistance. On the other side, it challenges long-standing assumptions about the nature of cinematic images (as records of reality or intentional creations of an artist) and about the security of creative labor. The key question we now turn to is how this current rupture compares to those of the past – and whether we should regard AI as simply the next chapter in cinema's ongoing evolution or as a radical departure requiring a reconceptualization of film theory and practice.

Continuities: Echoes of Past Debates

Despite the novel features of AI, many elements of the current discourse mirror historical debates from earlier cinematic upheavals. A strong case can be made that we have seen this movie before – that is, whenever a new machine arrived, filmmakers initially fretted about the death of artistry, only to later embrace the tool and integrate it into a continuity of cinematic language. By examining parallels, we gain perspective on whether AI might ultimately follow a similar assimilative path.

Fear of Losing the "Old Art": Each major innovation prompted laments that something pure was being lost. In the late 1920s, artists like Chaplin and Eisenstein feared sound would ruin the purity of visual storytelling (Bazin, 1958; Eisenstein et al., 1929). In the 1930s–40s, some cinematographers felt that garish Technicolor might undermine the moody artistry of black-and-white cinematography. In the 1990s, film die-hards believed that digital's clean, sharp image lacked the soulful grain of film and predicted audiences would reject it as "too plastic." Today, one hears similar sentimental critiques of AI: that AI-generated images lack the "soul" or intentionality of human-created images, or that using AI is a form of cheating that will make films feel hollow. The rhetoric of loss recurs. For example, just as purists once insisted "talkies" were a step backward for the art of cinema, some now claim that if a scene is generated by an AI rather than captured by a cinematographer's camera, it loses an ineffable human quality. Historically, these gloomy predictions have been tempered by time. Silent film's artistry was not lost but transformed; black-and-white cinematography remained valued for decades; film aesthetics survived the digital turn (with many viewers barely noting whether a movie is shot on film or digital). This historical pattern suggests that initial fears often overestimate the negative impact on artistry.

Concerns about Commercialization vs Art: New tech often enters via spectacle or gimmickry. The first sound films were often static stagey showcases for talking or singing, more a commercial trick than an artistic leap. Early color films were sometimes marketed on the novelty of color rather than on narrative quality. Likewise, some of the first uses of AI in media have been gimmicks or marketing stunts (e.g. an AI "directed" short film, or flashy use of deepfake tech to draw online buzz). Theorist Walter Benjamin noted in 1936 that with mechanical reproduction, art could become trivialized by mass consumption – each new tech can be used in a superficial way initially (Benjamin, 2009). The Soviet 1928 sound manifesto even predicted this: *"the first period [of sound] will be one of sensations… [exploiting] the most salable merchandise"* (talking people, novel auditory illusions) (Eisenstein et al., 1929), before hopefully a more mature artistic use follows. We see an analogue today: the "first period" of AI in film has indeed been full of eye-catching experiments and commercial uses (e.g. de-aging famous actors to revive franchises, or AI-driven VFX to cut costs) that sometimes prioritize novelty over depth (Ervik, 2024). Historically, after the novelty wears off, creators find more profound uses for the technology – for instance, sound was eventually used in sophisticated ways beyond mere dialogue (consider the inventive sound design of Orson Welles or Alfred Hitchcock), and color was eventually wielded with great artistry (as in the films of Powell & Pressburger or the modern color grading craft). If AI follows the pattern, today's gimmicks could give way to AI being used in

truly meaningful artistic ways once the dust settles. In other words, initial commercialization does not preclude eventual artistic integration.

"Just Another Tool" Mindset: As noted, many professionals eventually come to view new technology as an extension of their creative toolbox rather than a usurper of their art. The quoted view of Noah Kadner – that AI will be one more tool and those who learn it will thrive – is strikingly similar to what one might imagine a forward-thinking filmmaker saying in the 1930s about sound (*"we must learn to use it as one more tool"*) or a cinematographer in the 2010s about digital cameras. Indeed, after initial resistance, consensus often shifts to a pragmatic acceptance: sound was here to stay, color became standard, digital workflows became unavoidable. Similarly, many filmmakers now are experimenting with AI to see how it can serve them. For example, some use text-to-image generators to quickly create concept art or storyboards, treating AI like a faster sketching tool. Others use AI to pre-visualize scenes or to achieve effects (like removing unwanted objects from footage automatically). These uses frame AI as a helper that saves time or enables what was previously too costly or difficult – much like digital compositing enabled complex fantasy scenes that practical effects alone could not. The continuity argument holds that human creativity remains central, with AI as a subordinate means to realize the artist's vision. In this view, the director or cinematographer still controls the result, guiding the AI outputs or curating them, not unlike how they directed actors or editors in the past.

Audiences Adjusting their Expectations: Another continuity is that audiences historically acclimate to new forms and even come to prefer them. In the early sound era, some silent film purists (including certain critics) thought audiences would tire of "talkies" and return to purely visual films – that never happened. With color, one could imagine viewers might have found it too realistic and missed the dreamlike black-and-white – but in reality, audiences embraced color wholeheartedly for most genres. With digital, despite some early complaints about the hyper-real clarity or high frame rates, most viewers now accept digitally-shot films as equally "cinematic." One reason is that conventions evolved to make new technology feel familiar: e.g. early digital video looked harsh, but soon color grading tools made digital footage resemble the warm tones of film. By analogy, even if AI images initially strike us as eerie or "uncanny," audience expectations and creative conventions might shift such that AI-assisted imagery becomes normal. Already, younger viewers steeped in digital effects don't necessarily interrogate every image's provenance; a well-crafted deepfake or AI-synthesized shot, if convincing in context, will be processed by the audience no differently than a traditional shot. This suggests a continuity in spectatorial adaptation – we adjust our threshold of belief and our aesthetic criteria with each technological wave. The phenomenon of *"phenomenological continuity in spite of ontological rupture"* has been noted: AI images, though made differently, can be *perceived and emotionally experienced by viewers as real* (Gutierrez, 2025). As long as the illusion is maintained, audiences might not care if a scene was captured by a camera or generated by code. This echoes how audiences quickly got used to dubbed dialogue or colorized scenery in earlier transitions.

In sum, the continuity perspective on AI suggests that while the tools and techniques change, the underlying *project of cinema* – to craft audio-visual stories that engage viewers – continues. Each wave of innovation provoked familiar debates about authenticity and artifice, yet ultimately cinema proved resilient and capable of incorporating the new into its language. AI could follow this trajectory, becoming simply part of "how movies are made" in the 2030s, just as digital editing or computer animation are now inseparable from modern filmmaking. From this vantage, AI might not be a revolution that breaks cinema, but rather an evolution that extends it – perhaps the latest step toward what Bazin called cinema's myth of total reality (a convergence of all technologies to perfectly simulate the world) (Bazin, 1951). If sound and color brought film closer to reproducing the full human sensorium, and digital brought film into the realm of unlimited manipulability, then AI could be viewed as extending these trajectories: enabling moving images to be produced with even greater flexibility, personalized to audience or context, and liberated from the confines of real-time filming.

However, this is only one side of the coin. To fully answer whether the AI turn is "just another step," we must also examine the compelling arguments that AI heralds a discontinuity – a break so significant that it constitutes a new regime in cinematic representation.

Discontinuities: A New Paradigm of Vision

While historical parallels are illuminating, many scholars and filmmakers argue that AI introduces differences in *kind*, not just degree, when compared to earlier shifts. The term "paradigm shift" is often invoked: a change not only in the tools used, but in the conceptual underpinnings of the medium. Here we outline the ways in which AI diverges from prior technologies, potentially marking a discontinuity that suggests cinema is entering uncharted theoretical and artistic territory.

Table 1. Comparative Analysis of Technological Ruptures in Film Theory

Feature	Silent Era (Arnheim)	Sound Era (Bazin)	Digital Era (Rodowick)	AI Era (Manovich/Denson)
Technological Basis	Photochemical / Optical	Audio-Visual / Optical	Electronic / Code	Neural / Statistical
Dominant Theory	**Formalism:** Art through limitation.	**Realism:** Myth of Total Cinema.	**Virtual Life:** Image as information.	**Artificial Aesthetics:** Image as prediction.
Relationship to Reality	**Divergence:** Abstraction from reality.	**Asymptote:** Approaching reality.	**Simulation:** Modeling reality.	**Hallucination:** Discorrelated from reality.
Ontology of Image	**Trace:** Physical imprint.	**Trace + Sound:** Enhanced presence.	**Sample:** Discrete data.	**Prediction:** Probabilistic forecast.
Key Mechanism	**Montage:** Collision of shots.	**Deep Focus:** Continuity of space.	**Compositing:** Layering of pixels.	**Generation:** Latent space navigation.
Viewer Status	**Interpreter:** Decoding visual signs.	**Witness:** Observing reality.	**User:** Interacting with interface.	**Metabolic:** Entangled with algorithm.

Severing of the Indexical Bond: Perhaps the most cited fundamental difference is the one already touched on – the loss (or transformation) of indexicality. As Joni Gutierrez writes, *"whereas the move from celluloid to digital… did not fundamentally sever the connection between the image and the world… AI breaks this chain. Generative models do not need to point a lens at the world to create an image."* (Gutierrez, 2025). This is a categorical shift. All previous cinematic technologies – even the most fantastical CGI – operated with the camera (or a rendering engine programmed by animators) as an observational or compositional tool bound by either physical reality or by explicit artistic input encoding a semblance of reality. AI, however, can *originate* images from algorithmic inference. The "camera" in AI is not a physical device but a statistical model synthesizing imagery. From an ontological perspective, this means that a core identity of film – as something that in Bazin's words was *"molded by light"* off the real world – is replaced by an image that is *"computed by data"*. The resulting ontological rupture is often described in terms of reality and simulation. For Bazin and Kracauer, cinema's credibility and unique aesthetic rested on its indexical nature (photographs are, as Kracauer said, the footprint of reality) (Kracauer, 1960). AI images are footprints of *other images*, not of reality itself. They are simulations learned from reality but not tied to a specific moment in time.

This discontinuity is greater than the introduction of sound or color, which added dimensions to an indexical base, or the introduction of digital cameras, which changed the recording mechanism but still captured photons from real scenes. It is even greater than most CGI use, which typically started from either photographic plates or from artists' explicit designs. AI introduces a mode of image generation ex nihilo (from nothing but learned patterns). For theorists concerned with the epistemology of film, this is a watershed moment: the "truth value" of cinematic images, already eroded by digital effects, could be fundamentally undermined. In future, not only will we question if what we see in a film was physically staged, we might doubt whether *anything* we see has ever existed at all. This complicates the audience's relationship with the image. It demands, as Gutierrez suggests, a rethinking of *"film theory's central categories: index, image, realism, illusion, truth"* (Gutierrez, 2025), because those concepts were built in an era when images at least had some anchoring in reality, however mediated. In short, if AI images become prevalent, cinema may need a new ontology – one that accepts "synthetic realism" as a baseline.

Autonomy and Agency of the Machine: AI's emergence blurs the line between tool and creator. Past technologies were inanimate tools – a camera does nothing without a person operating it; film stock does not decide how to render a scene on its own. AI systems, by contrast, exhibit a form of agency or pseudo-creativity. They can yield outputs that surprise even their users, due to the complexity of their training data and internal networks. When an AI edits a sequence or generates a design, it is not following a deterministic user script; it's applying a learned model that can produce novel combinations. This semi-autonomous nature has no real precedent. Montage and sound did not introduce a *non-human decision-maker* into filmmaking; they were new languages and elements but still firmly under human control. AI introduces the prospect of an algorithmic collaborator or even "co-author." Some experiments have billed AI as a co-director – for example, feeding scripts into AI to generate storyboards, or using AI to choose the best takes and assemble a rough cut. A recent case is a short film edited by a generative AI, advertised as probing whether an AI can mimic Eisenstein's montage logic.

Such experiments raise the question: if a machine can make creative decisions (like how to cut a scene) based on learned patterns of successful editing, is the creative process fundamentally altered (Caballero, 2023)?

Theorists might say this is akin to giving the camera a brain. In classical film theory, the camera was often anthropomorphized (e.g., Vertov's *Man with a Movie Camera* portrayed the camera as having its own eye), but now that metaphor inches closer to literal truth. The intelligence behind the image could be non-human. This is a discontinuity in authorship. It challenges Romantic notions of the film author (director or cinematographer as sole creative visionaries) more than any prior tech. Sound or color didn't take away authorship; they simply demanded new expertise (sound designers, colorists alongside directors). AI potentially *diffuses* authorship: who is responsible for the creative choices made by an AI's output? The one who set the parameters, the team who trained the model, or the model itself as an extension of collective human art it was trained on? No prior development raised this kind of question so sharply. It parallels debates in other arts (like AI-generated visual art or music), but in film – a collaborative art already – it further complicates attribution and creative control.

Qualitatively New Aesthetic Possibilities: Another argument for discontinuity is that AI could enable forms of cinematic expression that were not conceivable before, not merely incremental improvements. Montage allowed new storytelling grammar; sound allowed stories with dialogue and sonic atmosphere; color allowed visual symbolism with hues. AI might allow, for instance, dynamic or personalized cinematography – movies that can change their visuals on the fly via AI to suit different contexts or even viewer interactions. Consider interactive narratives where an AI generates scenes based on audience input (blurring cinema and games), or adaptive special effects that are created in real-time rather than fixed on release. The logic of AI is algorithmic and generative; it might usher in what some call "algorithmic cinema", where the film is not a static authored text but an evolving algorithmic process. This is speculative but within sight as AI gets integrated with real-time engines.

Additionally, the aesthetics of AI imagery have a distinctive character: often described as having an uncanny or dreamlike quality when not fully perfected. Entirely AI-generated films might develop a new stylistic mode – akin to how early sound cinema had a unique staginess or how early digital video had a "video look." But unlike those, which eventually converged toward classical style, AI's aesthetic might branch off. For instance, AI's ability to seamlessly morph images suggests a cinema less bound by physical continuity – scenes could fluidly transform in ways that earlier special effects only crudely achieved. Montage, historically, breaks reality into pieces and reassembles them; AI could take that to another level by blending images in the frame (not just cutting between them). It has been suggested that AI filmmaking might move from montage to "morph" as a guiding principle, with continuity not enforced by hard cuts but by AI-driven metamorphosis of scenes (Hirsch et al., 2021). If so, that's a genuinely new aesthetic logic.

Ethical and Viewer-Trust Crisis: With AI, the "seeing is believing" credo of cinema is potentially irreversibly broken. Already deepfakes have raised alarms about misinformation – what happens when moving images can be faked as easily as text? While this affects society broadly, in the context of cinema it means viewers may approach films with a new skepticism or, conversely, an indifference to what's real. Documentary film, for example, faces a looming crisis: if AI-generated characters or events become indistinguishable, the credibility of documentary footage could suffer unless new verification methods arise. No prior technology so directly threatened the integrity of photographic evidence. Even doctored photos in the analog era required skill and usually left some trace; AI can fabricate high-resolution, authentic-looking footage of events that never happened. This is a discontinuity not just in cinema as art but in the role of cinematic media in culture and journalism.

Montage Theory Revisited: Historically, Eisenstein's montage theory celebrated the idea that new meaning arises from the *collision* of images – two shots cut together produce an idea not present in either alone. AI-generated cinema might revive this at an exponential scale: since an AI can be trained on vast datasets of images and film sequences, it might generate collisions and combinations far outside the bounds of human imagination, potentially uncovering new "montage ideas." However, these combinations wouldn't be manually assembled by a human editor with intent, but by statistical associations. Some argue this is a step change – montage with intent (Eisenstein's dialectical montage) vs montage by algorithm could yield very different affects and meanings, possibly ones the filmmaker did not explicitly encode. This challenges the notion of the film as a deliberate communication from author to audience, marking another fundamental shift.

Ultimately, the discontinuity viewpoint posits that AI is not just another tool because it fundamentally alters the relationship between reality, image, and author. As Gutierrez succinctly puts it, *"Montage, sound, color, widescreen, and digital cinematography each expanded cinema's expressive range, but they remained tethered to recorded reality. AI alters the very ground of that tether. It introduces a new mode of realism — one no longer bound to the indexical trace but to algorithmic synthesis."*(Gutierrez, 2025). In other words, all earlier innovations, no matter how radical, extended from the root of photographing reality (even if heavily manipulated later). AI pulls images out of an entirely different root: computation divorced from direct perception. If we accept that, then

AI is not a continuation but a rupture that may herald a new category of moving image. It might be akin to how photography itself was a rupture from painting: painting was handmade and could only allude to reality through an artist's vision, while photography was a mechanical imprint of light. Now AI imaging is a further rupture: an image that is neither a manual artwork in the traditional sense nor a direct imprint of reality, but something generated by *machine learning*, which complicates the dichotomy of artifice and reality.

From this perspective, the "AI turn" might indeed deserve its own name (some have started calling it "AI cinema" or "synthetic cinema") to distinguish it from what came before. It suggests that film theory, production practices, and audience literacy will all need to adapt in more profound ways than they did for prior innovations. The continuity vs discontinuity debate thus hinges on how much weight we give these fundamental changes. Even if, on the surface, AI-made films may look like any other film to a viewer, the *underlying process and ontology* could be fundamentally different, and that has far-reaching consequences.

To further clarify AI's place in historical context, it is useful to address directly the analogies posed in our initial question: is AI more like the invention of montage or the invention of sound?

Montage or Sound? Historical Analogies for AI

One way to frame the nature of the AI revolution in cinema is by analogy to earlier revolutionary moments in film form. Two possibilities have been suggested: the invention of montage (editing) in the 1910s–1920s, which gave cinema a new *logic of combination*, versus the incorporation of sound, which added a whole new *dimension* to the medium. Each analogy captures a different aspect of what AI might represent.

AI as a New Montage (A New Logic of Combination): Montage, especially as theorized by Eisenstein and the Soviet filmmakers, was not just a technique but the discovery of cinema's unique language – the idea that juxtaposing images can generate new meaning (the famous Kuleshov Effect, where viewers infer a character's emotion from alternating a neutral face with other shots). Montage was a leap from seeing film as recording reality to understanding film as *constructing* reality through edits. In a similar spirit, one could argue AI is an evolutionary leap in how images are constructed. Generative AI in essence works by combining and interpolating features from countless source images. It is a kind of high-dimensional collage or montage, though happening not in linear time through splicing, but in the latent space of a neural network. For instance, an AI might generate a new face by statistically combining traits from thousands of faces – a form of "visual montage" at the pixel or feature level. Likewise, if an AI edits a film by analyzing patterns from many edited sequences, it's performing a kind of meta-montage, piecing together shots based on learned rhythmic or narrative logics.

Moreover, AI can blend imagery within a single frame in ways traditional montage (sequential cuts) could not. It has been noted that digital media shifted emphasis from temporal montage to spatial compositing; AI can extend spatial montage even further by synthesizing seamless blends (for example, in an AI-generated video, one scene could morph into another without a cut, achieving what's known as "continuous montage" or a montage within a shot). This resonates with Eisenstein's more experimental ideas of montage where he imagined even color, texture, and shapes could collide to produce intellectual and emotional effects – AI might literally do that by merging visual elements algorithmically. In this sense, AI could be seen as a new logic of combination: just as montage allowed filmmakers to connect disjointed images to form meaning, AI allows the combination of disparate visual data to create coherent new images or sequences. It expands the notion of what can be juxtaposed: not only two shots on film, but potentially the entire visual culture (since AI draws from vast datasets) collapsed into new synthetic images.

If AI is a new montage, it might represent an internal advance in cinematic language. Montage was cinema's own invention (photography had no equivalent until multiple exposure or collage techniques came along), and it set film apart as an art form. Similarly, AI could become an intrinsic part of cinematic language – for example, future filmmakers might routinely design scenes by specifying what they want and having AI render them, then artistically arranging those renders. The result might be a film that feels like a montage of imagined scenes rather than photographed ones – a kind of "dream logic" cinema. Some experimental AI films already have this quality, where the narrative flow is more associative and fluid than traditional films, reminiscent of the avant-garde uses of montage (e.g. surrealist films that followed a dreamlike logic of images). Thus, the montage analogy emphasizes how AI can recombine elements to yield meaning and how it might revolutionize film form from within, by offering infinite plasticity in assembly of imagery.

AI as a New Sound (A New Dimension Added): Alternatively, consider AI as analogous to sound – a foreign element that enters cinema and adds a whole new dimension or layer to it. Sound was external to the visual nature of film but, once integrated, it transformed the viewing experience by engaging another sense and adding realism, dialogue, and music. For AI, one might say it adds a new dimension in terms of intelligence or generativity. That is, beyond the traditional dimensions of image and sound, we now have a dimension of *algorithmic computation*

occurring within the creation of each frame or sequence. From the audience's perspective, this dimension isn't directly perceptible like sound was, but its traces might be in the form of visuals that could not have been achieved before or possibly new interactive/viewer-specific facets of a film.

Another way to interpret the sound analogy is the idea of *automation of creation* as a new dimension. Just as adding sound required new production roles and considerations (microphones, sound editing, etc.), adding AI introduces a new layer to production: the trained model. We could say an AI model is analogous to a new "sensory channel" – not a sensory one like hearing, but a channel of content generation. A film could be envisioned as having a third track (besides picture and audio): an AI-driven track that can alter the other two on the fly. For example, consider a film that is partly improvised by an AI responding to live data (something not far-fetched in interactive or VR storytelling). In that scenario, AI acts almost like an *actor* or *world-generating dimension* that joins image and sound in contributing to what unfolds.

The invention of sound also initially met resistance because it was feared that the *silent art* of cinema would be diluted. Similarly, some fear that the *vision* of cinema (its visual purity) might be diluted by AI "hallucinations" or that storytelling might be taken over by formulaic AI decisions. Over time, sound proved to be not an enemy but a necessary complement; perhaps AI, if analogous, will prove to be a complementary dimension that filmmakers harness for greater immersion or new forms of narrative (like branching stories shaped by AI).

To push the analogy further: sound's introduction necessitated merging two different representational regimes (the photographic image and the phonographic recording). AI could be seen as merging the regime of film with the regime of data-driven computation. It's a more abstract "dimension" than sound, but if sound gave characters voices, one could poetically say *AI gives the film a "brain."* It allows the film (or the process) to compute and make choices. That is a new aspect of the medium: previously, all choices were human; now some can be machine-made. This indeed is a new dimension of authorship and function.

Which analogy is more apt? The answer may be that AI straddles both but ultimately exceeds them. Montage was an internal development of cinematic language, and AI certainly involves new means of combining and constructing images (hence akin to montage). Sound was an external addition expanding the medium's scope, and AI likewise brings in an external force – the computer algorithm – expanding what cinema can encompass. But neither analogy is perfect. The montage analogy captures the constructive power of AI but might understate the ontological shift (montage still uses real images). The sound analogy captures the sense of adding something fundamentally new, but sound didn't break the indexical nature of film or its authorship model.

One might argue AI is more akin to montage in its creative mechanism (combining pieces to create new meanings), but more akin to sound in its impact (ushering a new era that some see as the end of an old era, and requiring filmmakers to master a whole new facet of the medium). Eisenstein's circle might appreciate AI as a continuum of montage thinking – after all, Eisenstein himself was fascinated by the idea of a "montage of attractions" and even wrote about how future technology might create montage within the frame. On the other hand, a Bazinian thinker might see AI as akin to sound – the next step toward a "total cinema" that can manufacture reality wholesale, albeit at the cost of breaking the old realist contract.

Perhaps the best conclusion is that AI is unique enough that historical analogies are only partially illuminating. It combines aspects of prior shifts yet introduces something unprecedented. It may well be a category of its own – as significant as the introduction of sound, color, or montage, but not reducible to any one of them. In the evolution of cinematic technology, AI stands out because it is not just a new tool for capturing (like a color camera or sound recorder) or a new technique of assembling (like editing), but a new agent in creation and a new origin of images. Thus, historical analogies help frame it, but the AI turn might need its own theoretical framework.

The AI Turn is a Discontinuity. While it remediates the styles of cinema (continuity, montage, narrative), it destroys the ontology that defined cinema for its first century. It replaces the "pencil of nature" (Fox Talbot's term for photography) with the "probability of data.". AI is not merely a new form of montage; it is the establishment of a Generative Dimension—a probabilistic volume where images are not recorded or cut, but summoned. In this dimension, the Bazin "myth" of a total simulation is achieved visually but betrayed ontologically. The cinema of the future is not a window onto the world; it is a window onto the latent dreams of a machine, steered by the language of its users. The "ghost in the machine" is no longer a metaphor; it is the algorithm itself, predicting the next frame of a movie that never happened. The rupture is total. The machine does not just see differently; it hallucinates a world where the distinction between the image and the object is finally, irrevocably lost

Conclusion

History shows that each major technological innovation in cinema – be it the movie camera itself, the sound recorder, the color film stock, or the digital computer – brought forth a new way of seeing and representing reality. Filmmakers and theorists responded to these ruptures with a mix of trepidation and creativity, engaging in debates

that often pitted *continuity* against *discontinuity*. The introduction of sound was decried as the death of pure cinema yet eventually celebrated for enriching the art. The arrival of color was cautiously managed by artists but ultimately embraced as essential to modern filmmaking. The digital revolution challenged the ontology of the photographic image but largely integrated into the cinematic tradition, even as it laid the groundwork for new possibilities. These episodes taught us that cinema is an adaptable, elastic medium – one that has managed to absorb new machines into its language, sometimes by transforming itself in the process.

Now, with artificial intelligence at the doorstep of filmmaking, we find both echoes of the past and signs of the entirely new. On one hand, the *current debates around AI uncannily echo earlier debates* – the fear of losing artistry, the moral panic over "machine-made" art, the wonder at new possibilities, and the pragmatic voices urging that AI is *"ultimately just another tool in the toolbox."* History provides numerous examples of technologies initially seen as threats that turned out to be boons to cinematic expression or at least became standard practice. This suggests a measure of continuity: in time, AI might simply be part of how films are made, no more nor less controversial than digital editing or green-screen effects. The basic institution of cinema – storytelling through moving images and sound – could remain intact, with AI-driven techniques working under the creative supervision of filmmakers. In this optimistic continuity scenario, AI would be a powerful new set of brushes and paints for the filmmaker, enabling fresh kinds of images (just as CGI did) and automating drudgery, while human creativity and vision remain at the center. The lessons of sound, color, and digital reassure us that the medium can evolve without losing its identity.

On the other hand, our exploration has also uncovered *credible arguments that AI represents a qualitative break* – one that might even dwarf prior shifts in its implications. Unlike any technology before, AI challenges the very definition of a cinematic image as something rooted in reality and human authorship. It creates a situation where, as Gutierrez writes, *"AI cannot simply be slotted into the lineage of cinema as 'just another tool.'"* The continuity of cinema's lineage was that images, however manipulated, started from light hitting reality and an artist's design. AI introduces images that start from other images and algorithms; it introduces an element of non-human agency in creation. This could herald what we might call an "AI regime" of representation, in which the paradigms of indexicality, authenticity, and even narrative might shift. If this is so, then the AI turn is not merely another chapter in film history – it is a new book altogether, one that might be to traditional cinema what photography was to painting or what digital media were to print.

We are also witnessing the birth of the "Prompt Auteur." Just as the "Director" emerged as the author figure in the 20th century, the "Prompt Engineer" emerges in the 21st (Ding et al., 2025). Their skill lies not in managing actors or cameras, but in managing the language that controls the latent space (Gretzky & Dishon, 2025) .

Our investigation suggests that both continuity and discontinuity are at play. In practice, as AI tools become integrated, many aspects of filmmaking will continue familiarly (actors will act, cameras – virtual or real – will frame scenes, audiences will seek engaging stories). But underlying those practices, the logic by which images are produced and the assumptions we can make about them may change fundamentally. It is a bit like a ship that has the same appearance and carries on sailing, but its internal engine has been replaced with a radically different mechanism – from wind sails to a steam engine, to use an analogy. To the passenger, the voyage feels similar, but the machinery driving it is utterly new.

Whether AI is "just another step" or a "new regime" is not an either/or verdict to be given hastily; rather, it will be determined by how creators use AI and how audiences accept it in the coming years. If filmmakers use AI sparingly and invisibly (as just a cost-saving VFX aid, for example), the continuity view will hold sway – AI will be one more invisible pillar holding up the cinematic illusion. But if filmmakers (or new sorts of creators) push AI to generate entire films, new aesthetics, or interactive experiences beyond the traditional format, we may witness the birth of a new audiovisual art form adjacent to what we traditionally call cinema. It is conceivable that a distinction will emerge between "photographic cinema" and "AI-generated cinema" in scholarly discourse, if their methods and effects diverge sufficiently.

One clear conclusion is that revisiting historical theories proves invaluable for navigating the AI turn. The writings of past theorists like Eisenstein, Arnheim, Bazin, and others do more than provide historical trivia – they offer conceptual frameworks and cautionary tales that can guide contemporary thinking (Arnheim, 2007). For instance, Eisenstein's insistence on preserving the dialectical interplay of elements might inform how we approach AI: rather than let AI outputs blandly dictate images (analogous to letting sound film become filmed theater), creatives might use AI in a contrapuntal way, to juxtapose the AI "vision" with human perspective, yielding a new cinematic counterpoint. Bazin's faith in realism and continuity encourages us to find what remains continuous – perhaps the *experience* of an engrossing cinematic reality can survive even if that reality is synthetically generated, as long as our perceptual and emotional engagement remains the same. The challenge, as Gutierrez notes, is to

develop new theoretical tools to address AI's impact – to rethink concepts of realism as not tied to indexical truth but to experiential credibility, for example (Gutierrez, 2025).

In closing, we are reminded that technological change is neither wholly destructive nor purely additive; it reconfigures the artistic vision. AI sees the world through data and patterns, not optics – a different sight indeed. The question is whether that new way of seeing can be integrated into the cinematic art in harmony with human creativity, or whether it will spawn an entirely new art that challenges the old. Historically, cinema has shown a remarkable ability to encompass new machines and still be called cinema. AI may well continue that lineage – but if it does, it will do so by transforming the medium in ways we are only beginning to understand. The continuity of cinema has always been its discontinuous evolution, and in that paradox, the AI turn may just be the next scene in the grand montage of film history, or the first scene of a bold new reel. Only hindsight, and the works created in the coming decade, will reveal the balance of continuity and rupture that AI brings to the art of the moving image.

AI Usage

Artificial intelligence tools (including ChatGPT and Google Gemini) were used during this project to support literature exploration, clarify technical concepts, and assist with writing and editing. All analysis, interpretations, and final conclusions are the authors' own.

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Data Availability Statement

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Conflicts of Interest

The authors declare no conflicts of interest.

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