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The representation of artificial intelligence in world cinema; A comparative study of the pre-1990 and post-2010 periods

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ABSTRACT

Previous studies have predominantly examined the representation of artificial intelligence in fictional literature, revealing a notable gap in analyzing cinema as an influential medium. The period before 1990 marked the onset of fundamental shifts in communication technologies and the public's perception of technology, while the era after 2010 witnessed artificial intelligence becoming widely integrated into everyday life. These two historical ruptures have generated significant semantic transformations in cinematic portrayals that demand precise comparative and theoretical analysisThis study aims to conduct a comparative analysis of the "representation of artificial intelligence" in world cinema during the periods before 1990 and after 2010. Its central research question investigates the conceptual, narrative, character-development, and cultural-discourse differences and similarities surrounding artificial intelligence across these two eras. Twenty films (ten from each period) were selected based on their global acclaim and the centrality of artificial intelligence in their narratives. These films were analyzed using Saussurean–Peircean semiotics alongside Stuart Hall's constructivist approach. The findings indicate that pre-1990 cinema predominantly focused on the "threat of technology" and the "human–machine war," whereas post-2010 works emphasize "ethical crises," "human–machine emotional relationships," and "responsible coexistence." Nevertheless, in both periods, artificial intelligence consistently functions as a "challenging Other," perceived both as a threat and as a mirror reflecting humanity's desires, hopes, and fears. The results underscore the necessity of rethinking the cultural-communication discourse surrounding technology and the shared future of humans and machines.

INTRODUCTION

In a world where artificial intelligence (hereafter AI) plays an increasingly significant role in human life each day, fundamental questions concerning the boundaries between humanity, technology, and ethics have become more of a public concern than ever before. AI's entry into domains such as healthcare, the military, education, the economy, and especially culture and the arts, is not limited to technological development alone; it also brings with it a redefinition of concepts such as humanity, identity, consciousness, and agency (Russell & Norvig, 2020). Moreover, recent systematic reviews have shown that AI is not only redefining identity and agency in critical sectors like healthcare and military applications, but is also profoundly

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reshaping consumer experiences and ethical frameworks in industries such as beauty and personal care through personalization, predictive analytics, and immersive simulation technologies (Toosi et al., 2024). In this context, cinema—as an art form that both reflects and shapes the collective imagination—plays a prominent role in how AI is represented and understood by the public (Kaplan, 2004). Scholarly research confirms that these representations engage with authentic technological paradoxes—where breakthroughs in autonomous systems consistently collide with enduring questions of ethics and human agency (Rahmatian & Sharajsharifi, 2022). Studying the ways in which AI is portrayed on screen is, therefore, tantamount to examining the cultural, ideological, and philosophical attitudes of an era toward a scientific and technological phenomenon.

In communication theory, representation is not merely a passive mirror of reality but a complex, meaningful process of constructing reality; from Stuart Hall's perspective, it is governed by the dominant discourses and ideologies of each age (Hall, 1997). These constructions become particularly charged when representing artificial intelligence—a domain where extraordinary predictive capabilities coexist with profound ethical uncertainties (Sakhaei et al., 2024), and where technological promise is perpetually shadowed by existential questions. Cinematic representations of AI are thus not merely reflections of scientific facts but also mirrors of the fears, hopes, anxieties, and cultural desires of societies at different historical moments. These representations engage with fundamental technological paradoxes—where systems designed to empower human flourishing simultaneously provoke anxieties about autonomy, ethics, and the erosion of human agency (Toosi et al., 2025). As Jean Baudrillard argues, the media—and cinema in particular—not only represent "reality" but often create "simulacra" that are themselves experienced as reality (Baudrillard, 1981). Hence, examining cinematic portrayals of AI is, in effect, an investigation of versions of cultural reality that audiences experience as scientific, social, and ethical truths. Similar dynamics are evident in contemporary perceptions of AI beyond cinema, where it is increasingly seen as a symbolic force that reconfigures narratives of power, identity, and sovereignty—indicating that artificial intelligence functions not just as technology, but as a site of global cultural and ideological negotiation (Rahmatian, 2025).

Since the early decades of the twentieth century, cinema has visualized humanity's imagination of artificial intelligence. From Fritz Lang's Metropolis (1927), which introduced the first humanoid robot, to Ridley Scott's Blade Runner (1982), which challenged the very notions of consciousness and the boundary between human and machine, and on to films such as Her (2013), Ex Machina (2014), and Transcendence (2014), which offer profound reflections on love, embodiment, ethics, and awareness in relation to machines (Kakoudaki, 2014). Moreover, numerous science-fiction stories—both on screen and in print—have accurately predicted many of the technologies we enjoy today, paving the way for their eventual realization. For example, the American inventor Robert Goddard, who built the first liquid-fueled rocket, drew inspiration from H. G. Wells's 1898 novel The War of the Worlds. More recent instances include the three-dimensional gesture-based user interface used by Tom Cruise's character in Minority Report (2002)—now commonplace on touchscreens—and Microsoft's Kinect motion sensor. Likewise, the tablet first appeared in Stanley Kubrick's 2001: A Space Odyssey (1968), and the personal communicator—what we now call the mobile phone—was first wielded by Captain Kirk in Star Trek (1966).

Does this mean that reality aligns with science fiction? In cases such as the technologies depicted in Minority Report and 2001: A Space Odyssey, the predictions were hardly coincidental: directors Steven Spielberg and Stanley Kubrick consulted industrial designers, futurists, and advertising experts to help them envision plausible futures. Yet there are many other films—like The Terminator (1984)—whose visions remain far removed from our present-day realities. When it comes to cinema, the portrayal of artificial intelligence may diverge significantly from current scientific and technological truths. In cinema, AI ceases to be merely a tool or an algorithm and instead becomes a character—one that can bear a face, generate a voice, communicate, fall in love, rebel, or even drive the world to the brink of destruction. Such representation demands a different set of interpretive frameworks: to craft drama, film must

engage with concepts like suspense, moral conflict, the human–machine relationship, identity, power, and failure. As a result, AI is often characterized in ways that may diverge markedly from its underlying scientific function.

Moreover, cinematic representations of AI cannot be confined solely to scientific concepts; many scholars link them to structures of power, gender, race, and more. In her seminal essay “A Cyborg Manifesto” (1985), Donna Haraway introduces the cyborg as an actor that transcends the human/machine and male/female binaries, arguing that information technologies and visual representations have created a new arena for the redefinition of the subject (Haraway, 1985). These reconfigurations occur within asymmetrical power structures—where AI systems simultaneously enable new forms of collective agency while reinforcing existing hierarchies of control and data commodification (Sharifi Poor Bgheshmi & Sharajsharifi, 2025a). The ethical tensions inherent in these systems—such as biases embedded in algorithmic decision-making—further expose how AI mediates power while demanding critical engagement with its societal implications (Hosseini et al., 2021). From this perspective, AI on film serves not only as a symbol of technological futures but also as an allegory for contemporary identity, gender, and ethical crises (Hills, 1999).

This study aims to examine the semantic, cultural, and discursive differences and transformations in the representation of artificial intelligence (AI) in global cinema during two distinct periods: before 1990 and after 2010. Why these two dates? Before 1990, coinciding with the digital revolution and the commercialization of the internet, marked the beginning of fundamental changes in communication technologies and the public perception of technology (Castells, 1996). After 2010, it was a period when AI technology became publicly integrated into everyday life, from smartphones to machine learning algorithms and advanced chatbots. These two historical breaks have led to significant semantic transformations in cinematic representations, which require a comparative and theoretical analysis.

RESEARCH QUESTIONS

Based on the aforementioned context, the central research question is: What differences and similarities do cinematic representations of artificial intelligence in the two periods—before 1990 and after 2010—have in terms of concepts, narratives, characterizations, and cultural discourses? What transformations in cultural attitudes toward technology, identity, consciousness, and power can be traced through these representations? What assumptions about the future relationship between humans and artificial intelligence were prevalent in past science fiction films? How do recent films' depictions of our future relationship with AI relate to the assumptions presented in past science fiction films?

THEORETICAL FRAMEWORK

Hall analyzes the concept of "representation" within the framework of the "circuit of culture" and in interaction with the concepts of production, consumption, identity, and regulation. In this context, the stability and coherence of meaning-making systems become crucial; studies have shown that when institutional frameworks fail to uphold consistency or predictability, the symbolic order they generate can lose cultural traction—eroding public confidence in the very structures meant to produce meaning and regulation (Moein, Ghadiri, & Salehi, 2023). In his basic definition, he considers representation as "a process through which meaning is constructed and exchanged by means of language and signs within a cultural context" (Hall, 1997). According to Hall, this process is not merely a simple reflection of reality, but "an active practice that organizes and interprets the social world" (ibid.).

From Hall’s point of view, representation is a mechanism through which mental concepts are transformed into linguistic signs (words, images, symbols) in order to create and communicate meaning. More precisely, "representation is a bridge between the world of objects and people on the one hand, and the world of concepts and meanings on the other" (Hall, 1997). This process is based on two key principles: the conceptual structure, which refers to the classification of objects and phenomena in the mind (for example, the distinction between "airplane" and "bird"), and the linguistic structure, which refers to the conversion of these concepts into shareable signs (words, images) in order to generate collective understanding (Hall, 1997). Recent research further supports this constructivist view by showing that cultural perceptions of artificial intelligence are shaped not merely by individual experiences but through broader institutional

narratives, ethical debates, and systemic readiness to engage with emerging technologies (Rahmatian & Sharajsharifi, 2021).

Hall, emphasizing the central role of language in representation, defines it as "a multifaceted system including writing, speech, visual images, clothing, and even food" that "constructs meaning not passively, but through cultural discourses" (Hall, 1997). These discourses now extend to algorithmic societies, where critical AI literacy—encompassing awareness of bias, data privacy, and ethical engagement—becomes essential to decode how meaning is constructed and contested within AI-mediated systems (Khodabin et al., 2024). In line with this, recent work on media literacy underscores how strategic engagement with media systems—particularly within organizational and institutional contexts—can significantly influence how individuals and groups construct meaning, assess credibility, and shape collective perception through mediated symbols (Arsalani, Rahmatian & Hosseini, 2025). From this perspective, language is not merely a tool for conveying meaning, but "a system of signs through which we not only describe reality, but also construct it" (ibid.). To explain the relationship between representation and meaning, Hall identifies three main approaches: the reflective approach, which considers language as a passive mirror that reflects pre-existing meanings in the objective world (such as the concept of "mimesis" in Greek philosophy); the intentional approach, which sees meaning as the result of the individual intentions of agents (writer, artist); and the constructivist approach, which views meaning as social constructions formed through the interaction of signs within discourse (Hall, 1997).

Hall, by criticizing the first two approaches, develops the constructivist theory based on Saussure's semiotics and Foucault's discourse analysis. He argues that "meaning is not in the essence of objects, but is constructed in systems of representation" (Hall, 1997). For example, "the word 'rose' or its image is not equivalent to the material reality of the flower, but without these signs, thinking about the flower itself is also impossible" (ibid.). In parallel, recent perspectives highlight how educational systems serve as structured environments for cultivating the symbolic competencies and ethical awareness necessary to navigate and construct meaning within increasingly complex technological and organizational contexts (Zamani et al., 2024). Building on this, recent cultural analysis reveals that optimism surrounding AI's societal potential is frequently accompanied by ethical ambiguity and a sense of institutional unpreparedness—underscoring the role of meaning-making systems in mediating how technological futures are imagined and managed (Tomraee, Toosi, & Arsalani, 2024).

In the same vein, Mirzoeff also emphasizes that visual representations, including in cinema, are not passive reflections, but a form of intervention in the experience of the world. According to him, "visual culture is a set of ways of seeing that makes the world visible to us in a specific way" (Mirzoeff, 2011). In fact, looking at an image is always a historical, social, and ideological process. Mirzoeff believes that seeing is not neutral but a kind of social action and a sign of power. This view is connected to Hall's constructivist perspective. Mirzoeff also reinforces this role by introducing the concept of "visual culture". He states that we never understand images in a vacuum, but rather comprehend them within cultural, historical, and institutional systems. Mirzoeff explains that "images are not self-explanatory, but only gain meaning when interpreted within a framework of knowledge, ideology, history, and power" (Mirzoeff, 2011). Recent sociological research supports this view, revealing that even the capacity to perceive, interpret, and engage with symbolic forms—such as art or visual media—is shaped by broader social variables like educational background, political ideology, and citizenship status, which influence cognitive access to cultural meaning (Mohammadi, Piriyaei, & Sabbar, 2025). A parallel logic is found in research on media literacy and childhood development, where visual representations of health, body ideals, and lifestyle are shown to carry ideological weight, shaping children's perceptions and behaviors unless challenged through intentional frameworks of critical engagement and parental mediation (Hosseini, Nosraty, & Tomraee, 2025). This is what can be called "visual discourse", a concept that Mirzoeff presents as the analytical core of visual culture. From his point of view, cinematic images operate within a system of representation that determines what is visible and who has the right to see it (ibid.). The ideological influence of visual media extends beyond cultural entertainment into domains of real-world risk, where scholars argue

that the glamorization of high-risk behaviors—especially on image-based platforms—constructs dangerous narratives that reshape workplace conduct and necessitate new forms of visual and media literacy to interpret and resist these representational pressures (Soroori Sarabi, Arsalani, & Toosi, 2020).

Regarding representation in cinema, one must also inevitably consider film theories, and those film theories that explore and examine the relationship between reality and cinema can provide a suitable foundation for the present study.

Hugo Münsterberg considers the understanding of cinema's aesthetic power to be dependent on the mechanism through which film affects the viewer's mind (Kellman, 2014). From his perspective, the reality that is formed in the aesthetic interaction between the film and the mind is based on what is present in the film as form, and thus becomes meaningful. This view aligns with a tradition that seeks the realization of any reality in its possibility of appearing within the subjective human mind. Based on this, moving images in film are not merely representations of the world, but rather "a way through which the mind gives meaning to reality" (Dudley, 2018 [1397]). In this regard, Münsterberg writes: "The remarkable manipulation of time and space in the photoplay is its natural way of storytelling; it takes us to the past (memory) and the future (imagination), and freely and creatively disrupts the space-time continuum" (Münsterberg, 2013).

This connection between mind and reality is more moderately formulated in the thought of Rudolf Arnheim. From his point of view, cinema is not a reflection or imitation of reality, but creates its own unique reality (Elsaesser & Hagener, 2015). Arnheim attributed an active role to the mind in structuring and organizing sensory data. He states: "The creative power of the artist can only manifest where there is no complete congruence between reality and the medium of representation" (Arnheim, 2006).

The role of the mind in the connection between reality and film acquires a new meaning in the thought of Sergei Eisenstein: from Eisenstein's perspective, the connection between film and reality lies primarily in the method of montage of shots. He rejected the naturalistic view of film that regarded it as a reflection of the external world and instead saw film as a method for presenting a reality that is reconstructed by the viewer, and it is through this very process that it becomes understood and enlightening. Eisenstein wrote: "This reality is truthful... the juxtaposition of two shots, by linking them together, is not the same as the simple sum of one shot and another" (Eisenstein, 1957). "This connection seeks to construct a meaning that arises once more in the viewer's mind. The images designed by the writer, director, and actor... are once again joined together in the viewer's perception. This is the ultimate goal of every artist's creative endeavor" (ibid.).

Regarding the distinction between external reality and cinematic reality, Béla Balázs emphasized the importance of form and the raw material of cinema. In his view, the filmmaker plays a crucial role in reorganizing the raw visual material, since they are equipped with a technique that enables cinema's media function. Reality, in light of this media function and through cinema's high capacity to employ specific techniques, finds its meaning in relation to human consciousness. This ability is what the Formalists refer to as defamiliarization. Balázs, quoting Baudelaire, stresses that what lacks form is not comprehensible. Accordingly, objects become visible only through transformation of form or defamiliarization (Balázs, 1970). From Balázs's perspective, the gathering of fragments of reality, joined together through cinematic technique, is a way of engaging with truth: "Such fragments of reality can only be placed side by side within a context in which truth is present; the director selects these fragments in order to represent it through their meaning" (ibid.).

On the other hand, a number of film theorists propose a different approach to analyzing the relationship between film and external reality. Siegfried Kracauer sees the fundamental and original trait of cinema in its photographic nature. He agrees with formalism in cinema only insofar as this formalism serves that photographic quality. On this basis, any attempt to place photography or cinema in the realm of art—if such a placement undermines their essential function—is questionable, because such an approach distorts the primary task of photography and cinema: representing their denotative connection to physical reality (Kracauer, 1997). From his perspective, the ultimate goal of cinema is nothing other than adherence to the being of the world, a world that gains meaning in the form

of visual details and can now be recorded through cinematic tools. This adherence connects cinematic realism to the material world and its cultural context, and in turn, seeks stable signs to establish reality within the film (ibid.).

In film theory, the validation of representing reality goes so far that from André Bazin's viewpoint, reality in cinema must be examined from its ontological position. According to Bazin, it is reality itself that, due to cinema's specific media features, imposes itself on film—and the filmmaker, at best, merely serves as a conduit for the presence of this reality in the film. He likens the recording of reality in cinema to mummifying the dead, and even beyond that, to keeping them alive. From Bazin's perspective, cinema is fundamentally dependent on reality, and this dependency enables it to draw creative nourishment from the elements of reality (Bazin, 2004).

Cinema, and before it photography, due to their use of mechanical tools and the absence of direct human intervention, allow reality to appear in the work with minimal manipulation. Bazin believes that mechanical tools, because of their passive nature, minimize interference with reality. He argues that nature carries multiple meanings and maintains an ambiguous relationship with humans. Preserving this ambiguity in cinema allows it to reflect a reality that emerges from the mutual interaction between humans and things—in other words, to depict the effect of that reality. For this reason, Bazin praises deep focus and long takes, as they preserve the capacity to explore the hidden mysteries within reality. The superiority of this filming method, at least on one level, stands in opposition to subjectivism that seeks cinematic reality only within the mind. This kind of realism defines the limits of cinema's artistic nature and sets it apart from other arts (Bazin, 2004).

Based on what has been said, the theoretical foundation for examining the representation of artificial intelligence in global cinema in this study is based on the constructivist approach and visual culture. This approach emphasizes the idea that nothing inherently carries meaning, but rather, we construct meaning through representational systems (signs and concepts). Accordingly, representation is understood as the production of meaning through language (Kobli, 2009 [1388]). Recent studies show that even AI literacy is shaped by global discourses and unequal epistemic structures, making it a contested cultural construct rather than a neutral educational goal (Khodabin & Arsalani, 2025). This discursive function of representation is equally visible in contemporary analyses of artificial intelligence, where algorithmic systems are shown to reshape not only infrastructures and governance models, but also the very concepts of authority, legitimacy, and sovereignty—requiring us to understand AI as both a technological and symbolic force within global ideological frameworks (Sharifi Poor Bgheshmi & Sharajsharifi, 2025b).

METHODOLOGY

In Hall's view, representation is the production of meaning through conceptual and discursive frameworks. Industry studies validate this semiotic approach, revealing how AI systems themselves function as meaning-making systems that encode cultural values through their design choices and operational parameters (Nosraty et al., 2025), much like cinematic representations. In fact, meaning is generated through signs. Therefore, alongside the theory of representation, the theory of semiotics must also be employed to uncover media meanings. Accordingly, the theoretical foundation of this research is constructivist representation, and its analytical basis is semiotic analysis. Based on this, the use of Ferdinand de Saussure's linguistic semiotics theory serves as an appropriate starting point. Saussure regarded the sign as consisting of two components: the signifier and the signified. According to him, the signifier is the phonetic or visual aspect of the sign, while the signified is the concept it refers to. Within this framework, cinematic images of artificial intelligence are not merely technological reflections but signifiers that carry signifieds such as fear, hope, power, consciousness, and identity within the cultural discourse of each historical period. For example, in the film Terminator (1984), the image of the destructive robot functions as a signifier that generates signifieds such as domination, technological alienation, and the threat to human existence.

On the other hand, Charles Sanders Peirce, by offering a triadic semiotic system, provides a more complex framework for analyzing representation. He

defined the sign as composed of three elements: the icon, the index, and the symbol. The icon refers to the resemblance between the sign and its referent; the index has a causal or temporal relationship with its referent; and the symbol derives its meaning from cultural conventions. These semiotic distinctions reflect the broader principle that meaning-making systems—whether cinematic, legal, or institutional—often rely on gradated, layered logics in which classification, proportionality, and cultural norms converge to shape symbolic understanding (Siahpour, Bahmanpouri, & Salehi, 2024). In AI cinema, characters like Ava in the film Ex Machina (2014) embody Peirce's triad: the icon through her human-like appearance, the index through her interactions with other characters, and the symbol through the cultural meaning produced by the figure of the "seductive robotic woman." As a result, visual and narrative signs in cinema function as meaning-making structures that viewers do not merely see, but actively interpret. A similar logic applies to how people learn about AI in broader society, where recent studies emphasize that public understanding is shaped not by technology alone but through diverse and often inconsistent pedagogical, ethical, and cultural frameworks that influence how AI is interpreted and engaged with (Khodabin et al., 2022). Similarly, recent work on AI shows that meaning-making processes extend into high-stakes contexts, where perceptions of artificial intelligence are shaped by concerns over ethics, transparency, and institutional trust—highlighting that AI's role is actively negotiated, not passively received (Tomraee, Hosseini, & Toosi, 2022).

With this explanation, it becomes clear that all three types of signs in Peirce's framework can be found in a cinematic work. The next question, then, is: what kinds of signs can be found in a cinematic work? Semiotic theorists argue that six semiotic systems exist in cinema:

1. The system of visual signs, which primarily refers to the function of iconic signs.

2. The system of movement signs, which includes camera movements, cuts, and editing.

3. The system of spoken linguistic signs, which covers dialogue, speech, and external narration.

4. The system of written linguistic signs, encompassing all uses of writing in cinema—from title sequences and subtitles to textual elements within the film's structure.

5. The system of non-linguistic sound signs, referring to various sound effects and the use of natural sounds in cinema.

6. The system of musical signs, including background scores, soundtrack music, and any music present in the film. (Ahmadi, 2004 [1383])

In the present study, films are analyzed and interpreted based on the principles outlined above. It is important to note that the application of these semiotic systems in the analysis of a cinematic work is situational and goal-dependent (ibid.). This means that, depending on the portion of the film being examined, some of these systems may not be used.

1. Research Background

Previous studies in this field have generally focused on the analysis of individual films or discursive comparisons between two or three works. For example, in a study by Kaplan (2004), AI cinema is analyzed as a reflection of social and economic transformations in the United States, concluding that the rise of AI in films corresponds with changes in capitalist structures and a crisis of individual identity. Kakoudaki (2014), in her comparative study of AI characters in films from the 2010s, emphasizes that AI is no longer merely a tool, but assumes the role of an agent, capable of emotional, rational, and even sexual interaction. Despite the diversity of existing studies, there is a clear lack of comparative and historical research between the periods before 1990 and after 2010.

2. Selected Samples:

The selected film samples in this study are those that possess the necessary characteristics to achieve the research objectives. Therefore, purposeful sampling was used, which is one of the main sampling methods in qualitative research. Considering the comparative analysis of the two periods—before 1990 and after 2010—ten films from each period were purposefully selected, based on clearly distinguishable features relevant to the topic.

The selection of these films was based on the following criteria:

- Global recognition
- The central role of AI in the storyline
- Cultural impact

- Genre diversity

This selection was intended to yield a meaningful comparative analysis.

3. Data Collection:

The research data were collected through complete viewing of the original versions of the selected films. Each film was watched in its entirety and in high-quality format. All narrative, visual, auditory, and linguistic elements were carefully noted and categorized. No scene selection or reliance solely on online summaries or archived sources was employed.

Each film was viewed in two stages:

1. **General Viewing:** To understand the narrative structure, atmosphere, and main plotline.

2. **Analytical Viewing:** With a focus on extracting visual, auditory, linguistic, and musical signs, by precisely documenting key scenes, dialogues, shot compositions, camera movements, and the behaviors of both human and non-human agents.

A table follows this section, detailing the selected films and the specific reasons for their inclusion.

Table 1. Selected Films Before 1990

No.	Film Title	Year	Director	Type of AI	Reason for Selection
1	Metropolis	1927	Fritz Lang	Humanoid robot (Maria)	First representation of AI as a female robot; theme of fear from industrialization
2	2001: A Space Odyssey	1968	Stanley Kubrick	Controlling AI (HAL9000)	First representation of AI with self-awareness and independent decision-making
3	Westworld	1973	Michael Crichton	Theme park robots	Machine rebellion against humans; prototype of AI in entertainment
4	Demon Seed	1977	Donald Cammell	Dominating male AI	Sexuality, power, and control by AI; portrayal of dominating masculine AI
5	Star Wars: Episode IV	1977	George Lucas	Servant robots (C-3PO & R2-D2)	Benevolent and loyal AI; formation of a technological companion archetype
6	Alien	1979	Ridley Scott	Treacherous AI (Ash)	Critique of corporate power and distrust in AI in enclosed spaces
7	Blade Runner	1982	Ridley Scott	Artificial humans (Replicants)	Blurred boundary between human/machine; philosophy of consciousness, ethics, memory
8	WarGames	1983	John Badham	Military AI	Cold War critique and risk of machine decision-making in nuclear affairs
9	The Terminator	1984	James Cameron	Killer machine (T-800)	AI as existential threat; fear of a destructive intelligent future
10	RoboCop	1987	Paul Verhoeven	Human-machine	Identity crisis; embodiment at the boundary of human and machine; military–police AI

Table 2. Selected Films After 2010

No.	Film Title	Year	Director	Type of AI	Reason for Selection
1	Her	2013	Spike Jonze	Romantic operating system	Representation of emotional relationship with AI; discourse of disembodiment and loneliness
2	Ex Machina	2014	Alex Garland	Humanoid robot (Ava)	Ethical, gender, and autonomy questions in AI; seductive female body
3	Transcendence	2014	Wally Pfister	Consciousness transfer to AI	Boundary between human and AI; absolute technological power
4	Chappie	2015	Neill Blomkamp	Childlike AI	Representation of learning and AI upbringing; AI ethics and socialization
5	Avengers: Age of	2015	Joss Whedon	Destructive AI	Self-aware AI with annihilative tendencies;

No.	Film Title	Year	Director	Type of AI	Reason for Selection
	Ultron			(Ultron)	myth of the creator's downfall
6	Blade Runner 2049	2017	Denis Villeneuve	Romantic AI, sex partner	Continuation of consciousness, gender, and identity issues in virtual beings
7	Ghost in the Shell	2017	Rupert Sanders	Digital mind	Representation of cyborg; disembodiment and digital identity crisis
8	Tau	2018	Federico D'Alessandro	Controlling AI in smart home	AI prison; peer–controlling AI
9	I Am Mother	2019	Grant Sputore	Mother robot	Educational relationship between AI and human; bioethics and maternal AI authority
10	The Creator	2023	Gareth Edwards	War between humans and AI	Political interpretation of AI; metaphorical view of colonialism and resistance

4. A Full Sample Analysis:

Metropolis (1927)

Director: Fritz Lang / Country: Germany / Genre: Science Fiction

4-1. Complete Synopsis.

The film is set in a dystopian future where the great and advanced city of "Metropolis" is divided into two social classes: the ruling and elite class who live above, and the working class who live underground in inhumane conditions, operating massive machines. Freder, the only son of "Joh Fredersen," the ruler of Metropolis, lives a blissful life in the upper gardens until one day he follows a girl named "Maria" into the depths of the city and discovers the disastrous conditions of the workers.

Maria, who is a peaceful, prophet-like character, tries to encourage the workers to seek patience and dialogue instead of rebellion. Joh Fredersen, to maintain the class order and neutralize Maria's influence, commissions a reclusive scientist named "Rotwang" to build a robot that looks like Maria. A humanoid robot identical in appearance to Maria is created, who, instead of advocating peace, incites the workers to revolt and violence.

As the uprising begins, Metropolis's infrastructure is threatened and parts of it are destroyed. Workers' children become trapped in the underground flood. Freder and the real Maria try to rescue them. Meanwhile, the identity of the robot Maria is revealed and she is burned by the enraged people.

4-2. How Artificial Intelligence is Represented in the Film

In *Metropolis*, the robot Maria is the first cinematic representation of artificial intelligence in the form of a female humanoid body. This representation is clearly influenced by the industrial and class anxieties of the modern era. The robot not only lacks an independent mind and will but is transformed into a complete tool in the hands of power. In this film, AI is discursively embodied as a "threatening alien" that adopts the appearance of a human but internally carries instability, seduction, and chaos.

The film, through the duality of the humanistic woman and the seductive robot, offers a misogynistic representation of AI. AI, in the form of a woman, embodies both sexual desire and the drive to destroy social order. This robot–woman–chaos combination is deeply sexual and ideological. In fact, AI here is not merely machine intelligence or logic, but a "threatening female body" that, instead of logic and calculation, brings rebellion and sedition.

4-3. Saussurean Semiotics (Two-Part Sign)

- **Signifier:** Shiny metallic body of the robot, dance-like movements in the cabaret, glowing and staring eyes.
- **Signified:** Technological seduction, the deceptive power of machine order, internal collapse of traditional morality.

4-4. Peircean Semiotics (Triadic Sign)

- **Icon:** The fully human-like appearance of Maria that deceives the audience; the robot is built to resemble a human.
- **Index:** The provocative dance in the cabaret scene which leads to chaos; a causal relationship between AI's body/behavior and social reaction.
- **Symbol:** AI as a metaphor for capitalist machinery, repressed sexual desire, and class control.

4-5. Cinematic Semiotic Systems

Visual System:

- Expressionist set design inspired by Gothic and industrial architecture, including the Tower of Babel where Joh Fredersen resides (a symbol of absolute power).
- The contrast of light and shadow in the underground and upper classes to distinguish class spaces.
- The robot Maria's face with wide-open eyes and low-angle lighting in close-up, conveying a sense of evil and threat.

Movement System:

- Fast, erratic, and spiraling movements of robot Maria in the dance scene that gradually becomes a social trance.
- Rapid editing in the workers' riot scenes, with quick cuts between faces, machines, and screams.

Spoken Language System:

- Since the film is silent, spoken language is directly absent, but dialogues are conveyed through intertitles with expressionist fonts. For example: "She is not a woman, she is a machine!"

Written Language System:

- Use of intertitles such as "Between the brain and the hands must be the heart" as the film's moral message.
- Digital panels in the control room and switchboards as indices of technological power.

Non-Linguistic Sound System:

- In the restored version by Giorgio Moroder (1984), industrial sound effects, steam noises, electric sparks, and machinery sounds are used for auditory spatialization of the city.

Musical System:

- Tense orchestral music during the robot's creation scene and simultaneous synchronization of Maria and the machine.
- Use of harmonic melodies in the final scene to convey peace and reconciliation.

FINDINGS

All the films were carefully analyzed as exemplified above, and due to the article's volume limitations, a detailed description of all of them was not included. Nevertheless, the complete results are categorized as follows based on the research questions:

1) What are the differences and similarities in the cinematic representations of artificial intelligence in the two periods before 1990 and after 2010 in terms of concepts, narratives, characterizations, and cultural discourses?

Table 3. Differences and similarities in concepts and narratives

Aspect	Before 1990	After 2010	Similarity
AI Concept	Obedient or rebellious machines (tool/threatening alien)	Complex self-aware AIs (companion, threat, parent)	Duality of "tool/agent"
Narrative Design	Focus on "human–machine war" and crisis of trust in technology	Interpersonal narratives (love for AI, virtual family) and ethical crisis	"Fear" and "hope" at the core of both period narratives
Setting	Industrial or military spaces (*Metropolis*, *Hidden Power*)	Smart homes, social networks, future cities	Metaphorical highlighting of power structures
Story Rhythm	Fast-paced, event-driven (rebellion, global destruction)	Combination of psychological drama and action-comedy in the plot	Continuous tension around control and agency

Table 4. Differences and similarities in characterizations

Type	Before 1990	After 2010	Similarity
AI Hero/Antihero	HAL 9000 and T-800: Logical antiheroes without emotion	Ava (Ex Machina) and Samantha (Her): Multi-layered characters with moral and emotional motives	In both periods, the AI character acts as a "challenging alien" to the human hero—both a threat and a mirror of hopes and fears
Human Heroes	Solely survivalist fighters (Ripley, Bowman)	Heroes in mutual relationships with AI, sometimes accomplice or lover (Theodore in Her, the mother in I Am Mother)	-
Role of Institutions	State and military control over AI	Private corporations and digital networks as central players	-

2) What transformations in cultural perspectives

on technology, identity, consciousness, and power are traceable through these representations?

Table 5. Transformation in Cultural Discourses

Concept	Before 1990	After 2010
Technology	Technology as a potential enemy; external threat (machine uprising)	Technology as both tool of comfort and internal threat; moral doubt about "machine ethics"
Identity	Stability of human identity versus the machine	Fluid identity; AI may be more self-aware and emotional than humans
Consciousness	Questioning machine self-awareness as a threatening error	Machine consciousness as a livable and philosophical experience (Transcendence)
Power	Power monopolized by state/military elites	Power situated within tech corporations and algorithms

3) What assumptions about our future relationship with artificial intelligence were common in past science fiction films?

Table 6. Transformation of Assumptions about the Future of Human–AI Relationships

Period	Dominant Assumption	Probable Future Depiction
Before 1990	"AI will ultimately rebel" and human survival depends on resistance	Cold war of human–machine, emotionless domination of life by machines
After 2010	"AI can be both companion and threatening"; emotional and cooperative relationships are possible	Coexistence with ethical and identity challenges; need for regulation and dialogue

Relation with the Past:

What was portrayed in the 1970s–1980s as fear of machine rebellion has now evolved into ethical and psychological concerns; old anxieties are redefined in new forms (love story with AI, raising a machine).

4) How is our future relationship with artificial intelligence in recent films related to the assumptions of past science fiction films?

In contemporary works, the future relationship between humans and artificial intelligence is still overshadowed by past fears but is reinterpreted in innovative ways. What was once presented in pre-1990 films as assumptions about "machine rebellion" and "the final battle of man versus technology" is now accepted as a starting point, out of which more complex narratives of "coexistence" and "partnership" emerge. For instance, if in *Blade Runner* and *The Terminator* the central question was "how to prevent machines from achieving self-awareness," in *Her* and *I Am Mother*, the question is reversed: "how can we build relationships of respect, care, and even love with artificial intelligence?"

Thus, contemporary cultural perspectives have moved beyond the notion of "obedient or rebellious machine" toward "AI as a posthuman partner." Nonetheless, modern films do not completely distance themselves from foundational assumptions formed in the past; rather, they treat them as a backdrop and add new questions: shared rights and responsibilities, the limits of machine ethics, and the reciprocal influence of human and artificial life. In fact, contemporary cinema, while maintaining the core of fear and doubt toward technology, advances the possibility of dialogue between human and machine and shows that our future with artificial intelligence will be a combination of enduring old fears and the creation of new discourses around "responsible coexistence."

CONCLUSION

The findings show that the cinematic representation of artificial intelligence in the two periods before 1990 and after 2010 has undergone fundamental transformations in terms of concepts, narratives, character development, and cultural discourses, while also containing shared elements. In the first period, intelligent machines were mostly portrayed as external threats that, through rebellion or logical error, plunged social order into crisis. Narratives like *Metropolis* emphasized the aggressive and militant aspects of technology and portrayed AI as the sole agent of rebellion and collapse. Characters like *HAL 9000* or the *Terminator* turned their machine self-awareness into something emotionless and destructive, targeting human trust in its own tools.

However, in the contemporary period, cinema presents a more multifaceted face of AI, which, despite its destructive potential, also contains the capacity for ethical and emotional reflection. In works like *Her* and *I Am Mother*, artificial intelligence is represented as an entity with the ability for love or virtual caregiving—something unprecedented in earlier decades. Psychological studies confirm that humans instinctively project relational expectations onto entities displaying

emotional intelligence (Toosi, 2025), explaining why these AI portrayals resonate so deeply. The narratives are now less confined to "machine rebellion" and more focused on fundamental questions about identity and consciousness, especially in films like *Blade Runner* and *Transcendence*. The human protagonist in this new generation of works no longer fights only for survival, but for coexistence and mutual understanding.

AI character development has also shifted from a "purely dangerous alien" to a "complex and multilayered alien." In the earlier period, machines generally lacked narrative depth and did nothing beyond executing programmed commands; but today, Ava in *Ex Machina* and Ultron in *Avengers: Age of Ultron* have become characters with inner motivations, ethical conflicts, and even the possibility of emotional transformation. This change reflects a new discourse that not only portrays fear of technology, but also highlights its capacity for reflection and empathy. This evolving discourse resonates with broader cultural analyses that frame technological advancement as inherently dual-sided—offering transformative potential while simultaneously generating new layers of uncertainty, vulnerability, and systemic disruption that require strategic reflection and continuous adaptation (Soroori Sarabi et al., 2023).

Nonetheless, one point remains constant across both periods: AI is always portrayed as a "challenging alien" to the human protagonist. In every era, this alien is seen both as a threat and as a mirror that can reflect human desires, hopes, and fears. Similar dynamics are increasingly visible in global sociotechnical debates, where AI is interpreted not merely as an innovation, but as a cultural symbol of ethical struggle, access, and systemic transformation—highlighting that its societal impact is shaped as much by discourse and governance as by technical design (Toosi, Nosraty, & Tomraee, 2025). Ultimately, it can be said that science fiction cinema—from the "cold war of man and machine" to "falling in love with an intelligent system"—has always served as a medium for the reproduction and rethinking of cultural discourse surrounding technology, identity, and power.

CONFLICT OF INTEREST

No conflict of Interest declared by the author(s).

REFERENCES

Ahmadi, B. (2004). [From pictorial signs to text]. Tehran, Iran: Nashr-e Markaz.

Cobley, P. (2009). *The communication theory reader* (S. R. Ameli, Trans.). Tehran, Iran: Institute for Cultural and Social Studies.

Andrew, D. (2009). *The major film theories* (M. Madani, Trans.). Tehran, Iran: Rahrovan Poyesh.

Munsterberg, H. (2023). *The photoplay: A psychological study* (A. Motamedi, Trans.). Tehran, Iran: Hermes.

Arnheim, R. (2006). *Film as Art*. Univ of California Press.

Arsalani, A., Rahmatian, F. and Hosseini, S. H. (2025). Media literacy for business personnel: A strategic approach for better efficiency. *Code, Cognition & Society, 1*(1), 1-28. https://doi.org/10.22034/ccsr.2025.526844.1000

Balázs, B. (1970). *Theory of the film: Character and growth of a new art* (E. Bone, Trans.). Dover Publications.

Baudrillard, J. (1983). *Simulacra and Simulation* (P. Foss, P. Batton, & P. Beitchman, Trans.). New York, NY: Semiotext(e).

Bazin, A. (2004). *What is Cinema?. California*: University of California Press.

Castells, M. (1996). *The rise of the network society* (Vol. 1). Blackwell Publishers.

Colman, F. (2014). *Film, theory and philosophy*: the key thinkers. Routledge.

Eisenstein, S. (1957). *Film form [and]: The film sense*; two complete and unabridged works. Meridian Books.

Elsaesser, T., & Hagener, M. (2015). *Film theory*: An introduction through the senses. Routledge.

Hall, S. (1997). *Representation: Cultural Representations and Signifying Practices*

Haraway, D. (1985). A cyborg manifesto: Science, technology and socialist-feminism in the late twentieth century. *Socialist Review*, 80, 65–108.

Hayles, N. K. (1999). *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics*.

Hosseini, S. H. , Khodabin, M. , Soroori Sarabi, A. and Sharifi Poor Bgheshmi, M. S. (2021). Artificial intelligence and disaster risk management: A need for continuous education. *Socio-Spatial Studies, 5*(1), 13-29. https://doi.org/10.22034/soc.2021.219422

Hosseini, S. H., Nosraty, N. and Tomraee, S. (2025). Children, Healthy Lifestyle and Media Literacy. *Journal of Cyberspace Studies, 9*(1), 1-23. https://doi.org/10.22059/jcss.2024.387609.1120

Kakoudaki, D. (2014). *Anatomy of a Robot*: Literature, Cinema, and the Cultural Work of Artificial People.

Kaplan, E. A. (2004). *Digital Dispatches: The Real World of Virtual Reality*.

Khodabin, M., Sharifi Poor Bgheshmi, M. S., & Movahedzadeh, F. (2024). Critical AI Literacy: Preparing Learners for Algorithmic Societies. *Journal of Cyberspace Studies, 8*(2), 371-397. https://doi.org/10.22059/jcss.2024.102582

Khodabin, M., & Arsalani, A. (2025). Artificial intelligence literacy as national strategy: A systematic review of policy, equity, and capacity building across the Global South. *Journal of World Sociopolitical Studies, 9*(4).

Khodabin, M., Sharifi Poor Bgheshmi, M. S., Piriyaei, F., & Zibaei, F. (2022). Mapping the landscape of AI literacy: An integrative review. *Socio-Spatial Studies, 6*(1). https://doi.org/10.22034/soc.2022.223715

Kracauer, S. (1997). *Theory of film*: *The redemption of physical reality*. Princeton University Press.

Mirzoeff, N. (2011). *An introduction to visual culture* (2nd ed.). Routledge.

Moein, S., Ghadiri, R., & Salehi, K. (2023). Social pathology, preliminary research based on the principle of certainty and certainty. *Political Sociology of Iran, 5*(11), 6797-6814.

Mohammadi, S., Piriyaei, F., & Sabbar, S. (2025). Art consumption and internet use in the US. *International Journal of Advanced Multidisciplinary Research and Studies, 5*(3), 1066–1075. https://doi.org/10.62225/2583049X.2025.5.3.4421

Nosraty, N., Soroori Sarabi, A., Arsalani, A., Toosi, R., & Sharajsharifi, M. (2025). Artificial intelligence for disaster risk management in the beauty industry. *International Journal of Advanced Multidisciplinary Research and Studies, 5*(3), 1076-1086. https://doi.org/10.62225/2583049X.2025.5.3.4422

Rahmatian, F. (2025). From silicon to sovereignty: MBA students' views on AI's disruption of global power dynamics. *Journal of World Sociopolitical Studies, 9*(4).

Rahmatian, F., & Sharajsharifi, M. (2021). Artificial intelligence in MBA education: Perceptions, ethics, and readiness among Iranian graduates. *Socio-Spatial Studies, 5*(1). https://doi.org/10.22034/soc.2021.223600

Rahmatian, F., & Sharajsharifi, M. (2022). Reimagining MBA education in the age of artificial intelligence: A meta-synthesis. *Socio-Spatial Studies, 6*(1). https://doi.org/10.22034/soc.2022.223610

Russell, S., & Norvig, P. (2020). *Artificial Intelligence: A Modern Approach*

Sakhaei, S., Soroori Sarabi, A., Tomraee, S., Khodabin, M., & Sharajsharifi, M. (2024). Disaster risk management and AI: A grounded theory approach to epidemic response. *International Journal of Advanced Multidisciplinary Research and Studies, 4*(3), 1699-1708. https://doi.org/10.62225/2583049X.2024.4.3.4420

Sharifi Poor Bgheshmi, M. S., & Sharajsharifi, M. (2025a). Between exploitation and resilience: Reconciling AI's role in surveillance capitalism and disaster risk management. Journal of Cyberspace Studies, 9(2).

Sharifi Poor Bgheshmi, M. S., & Sharajsharifi, M. (2025b). Managing the crisis: AI and the demise of national sovereignty? *Journal of World Sociopolitical Studies, 9*(4).

Siahpour, M., Bahmanpouri, A., & Salehi, K. (2024). The background, foundations and principles governing the grading of punishments in Iran's legal system. *Culmination of Law, 9*(4), 249-285. https://doi.org/10.22034/thdad.2023.1973865.2302

Soroori Sarabi, A., Arsalani, A., & Toosi, R. (2020). Risk management at hazardous jobs: A new media literacy?. *Socio-Spatial Studies, 4*(1), 13-25. https://doi.org/10.22034/soc.2020.212126

Soroori Sarabi, A., Zamani, M., Ranjbar, S., & Rahmatian, F. (2023). Innovation – But with Risk: The Strategic Role of IT in Business Risk Management. *Journal of Cyberspace Studies, 7*(2), 253-275. https://doi.org/10.22059/jcss.2023.101605

Tomraee, S. , Toosi, R. and Arsalani, A. (2024). Perspectives of Iranian Clinical Interns on the Future of AI in Healthcare. *Journal of Cyberspace Studies, 8*(2), 347-370. https://doi.org/10.22059/jcss.2024.101610

Tomraee, S., Hosseini, S. H., & Toosi, R. (2022). Doctors for AI? A systematic review. *Socio-Spatial Studies, 6*(1), 13-26. https://doi.org/10.22034/soc.2022.219431

Toosi, R. (2025). A survey examination of psychological support in the workplace. *Journal of Cyberspace Studies, 9*(2).

Toosi, R., Hosseini, S. H., Nosraty, N., & Rahmatian, F. (2024). Artificial intelligence, health, and the beauty industry. *International Journal of Advanced Multidisciplinary Research and Studies, 4*(3), 1689-1698. https://doi.org/10.62225/2583049X.2024.4.3.4419

Toosi, R., Nosraty, N., & Tomraee, S. (2025). Using AI to enhance health: A global perspective. *Journal of World Sociopolitical Studies, 9*(4).

Toosi, R., Tomraee, S., Khodabin, M. and Sakhaei, S. (2025). Telemedicine: An AI solution, at last?. *Code, Cognition & Society, 1*(1), 59-87. https://doi.org/10.22034/ccsr.2025.526987.1002

Zamani, M., Hosseini, S. H. and Rahmatian, F. (2024). The Role of Education in Successful Business Management. *Journal of Cyberspace Studies, 8*(2), 317-346. https://doi.org/10.22059/jcss.2024.101609