

Is Dream Still Unconscious?

Imaginary Immersivity and Dream Machines in Contemporary Visual Episteme

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Abstract

The article assumes the existence of a mutual cultural influence between the technologies circulating in a given context, the forms and strategies by which dreaming is visually and narratively encoded in the media, and contemporary scientific theories of dreaming. From this perspective, I investigate an epistemological fracture that emerges in contemporary cognitive theories of dreaming: one that sees the dream no longer as unconscious, but as a conscious model of the world acting offline rather than online. In these theories, the conscious character of the dream experience is exemplified precisely by the idea of a “virtual reality” acting inside the brain, capable of optimizing our relationship with the world through a precise training that takes place in a safe space. From this acknowledgment, the influences of these theories are considered in the complex narrative structures (often related to the puzzle movie form) that characterize contemporary films centered on the hybridization between dream and virtual reality. These are often exemplified by the idea of a “dream machine” that allows multiple users to access a single dream space, as happens in *Paprika* (Satoshi Kon, 2006), a film centered on an imaginary device that allows psychotherapists to enter the dreams of their patients.

Keywords: contemporary dream theory, immersive media, complex narratives, virtual reality

Rewatching a dream

Investigator Kunakawa and Paprika, a young psychoanalyst with undoubtedly original methods, are reviewing on a laptop computer resting on the bed several sequences from a dream “made” by the investigator. A hook-shaped device equipped with four mechanical fingers worn on the head of both patient and therapist during the former’s sleep, the DCmini, allows Paprika not only to access the dream content but also to actively participate in it. In the dream, we see Kunakawa engaged in a manhunt, which is, however, hindered by a continuous transformation of the setting: from the initial circus we move to a jungle in which the investigator and Paprika dangle like Tarzan and Jane, then to a speeding train in which Kunakawa is in danger of being strangled by a hitman, after to a photo shoot,

and finally to a hotel corridor in which a mysterious murder is witnessed. The chase ends with the liquefaction of any space to stand on and the plummeting toward awakening.

The DCmini is defined by Paprika as the scientific key to access dreams; a program similar to digital editing software allows one to rewind its content, linger on details that had escaped, and interrogate its meaning. The dream itself requires this precisely because of its narrative complexity: we are immersed *in medias res* within a layered and unstable narrative world in which the focus of attention is compromised and almost absent. A dream machine makes it possible to consciously interrogate every detail: Paprika herself freezes the image of a magician who appeared in the first scene, interrogating his identity.

If we consider the features of this imaginary medium,¹ we can see how it adheres to the body, and how it positions the viewer at the center of an environmental image rather than in front of a two-dimensional surface. It is ultimately a virtual reality device: immersive, interactive, embedded and wearable. The dream narrative to which the device provides access is not unlike the experience the viewer is called upon to have vis-à-vis a film such as *Paprika* (Satoshi Kon): a postmodern complex narrative, or to use the terminology inaugurated by Warren Buckland, a *puzzle film* in which one must piece together scattered and fragmentary information by relying on unstable or unreliable points of view. As Jason Mittell has noted in relation to the complex storytelling of American contemporary television, this is a narrative form made possible precisely by new technological revolutions such as the advent of first VHS and then DVD, which allow one to dwell on details and rewind the flow of the story just as Paprika and Konakawa do in the film, as well as by new spectatorial practices such as binge watching.

The imaginary medium thus shows us the possibility of full conscious access to the dream world, which, however, remains intricate and enigmatic. But how can the visual repre-

¹ Archaeological media investigation of imaginary media found in literature and visual arts is the focus of Kluitenberg, *The Book of Imaginary Media*.

sensation of the dream truly resemble its real referent? Dream is an experience enshrined in the secret inner world of each individual; yet, in the history of cinema and the visual arts there have been no shortages of representations that we identify as dreamlike. A series of visual and narrative codes thus make this recognition possible; by analyzing them, we can also understand how the dream itself, as Walter Benjamin first noted in the short essay “*Dream Kitsch*”, possesses a historicity, that is, it is affected in its collective conceptualization by the cultural and technological horizon in which it is thought.

If we consider our initial example, the conscious and narratively complex dream of Satoshi Kon’s film exemplified by a wearable and immersive device, one may wonder how it is affected by contemporary conceptions of dreaming, and even how these conceptions are related to the increasing commercialization of virtual reality devices.

Indeed, if we consider other historical junctures, we can see how the technologies and media which circulate in a specific historical horizon have always influenced the conception of dreaming in some way: the nineteenth century rudimentary pre-Freudian researches of Alfred Maury and Hervey de Saint-Denys described dreaming through the exemplifications of the moving panorama and of the phantasmagoria; Bergson also takes up the metaphor of the moving panorama in a 1901 conference on dreaming, but uses it together with that of the newly invented cinematograph. Virtual reality, by virtue of its power of simulation, is a trope that can be found in several neuroscientific and neuro-phenomenological theories spread from the 1980s onwards. These are theories of dreaming that radically cut ties with the psychoanalytic conception that dominated the episteme of the twentieth century, questioning above all the function of dreaming in an evolutionary sense, considering the dream state as aiming to develop useful cognitive abilities during wakefulness. I will analyze some of these theories, asking what ruptures the exemplification of virtual reality introduces into the conception of the dream compared to the past and how this new conception also influences con-

temporary cinematic representation of the dream itself. In doing so, I will consider theories of dreaming as opaque objects, discursive formations to be interrogated not so much as revealing an ontological truth about the reality of dreaming, but as symptoms of the way in which the entanglement between mind and media technologies is configured today. It will thus be a matter of carrying out an archaeological investigation, aimed at identifying the emergence of a new conception of the dreaming self within a radical epistemological rupture, but with the contemporary horizon as the field of analysis rather than the past.

Brain simulators

The greatest rift in contemporary theories of dreaming fundamentally concerns its relationship to the unconscious. If, in Freud's canonical theory, dreams represent an expression of the contents removed in the unconscious and translated by dreamwork, for several contemporary neuroscientific and neuro-phenomenological theories dreams would rather represent peculiar forms of consciousness. According to John Allan Hobson, among the most influential scholars of dreaming from a neurophysiological perspective, consciousness consists of the ability to create models of the world and produce inferences. From this point of view, waking and dream consciousness would not be so different: in both cases there is no direct contact with the world, but with virtual realities that serve as generative or predictive models of the world. The real difference would consist in the fact that dreaming "reveals consciousness in a very special, pure, and isolated form" (Hobson et al. 1), since it would free it from the need to be constantly updated by information picked up by the senses. From Hobson's perspective, the virtual reality experienced in the dream constitutes a proto-consciousness, where the subject perceives him or herself as an agent and preserves his or her individuality in a protected and preparatory space with respect to the impact of the outside world (Hobson). If we consider these virtual realities produced by the brain – both in sleep and wakefulness –

in the form of generative and predictive models, their main characteristic is complexity. That is, “complexity reflects the degrees of freedom – or numbers of parameters – that are required to provide an accurate prediction of sensory data” (Hobson et al. 6). It should be noted that the concept of *degrees of freedom* also constitutes one of the central elements related to virtual reality experiences (see Chandrasekera et al.). The concept denotes the user’s ability to move and orient within a three-dimensional space: three degrees of freedom correspond to horizontal and vertical translation and the ability to rotate around one’s own axis; six degrees of freedom allow for both translation and rotation along three perpendicular axes. Hobson’s use of this concept to define the virtual reality of consciousness, on the other hand, implies an idea of narrative complexity, related to a model’s ability to predict the occurrence of events based on probability criteria contained within it. Dreams that take place during the REM (Rapid Eye Movement) phase, precisely because they are not constantly updated by contact with the outside world, would serve to minimize this complexity, reducing synaptic connections and allowing for both greater statistical efficiency in predictions and less energy consumption in the organism. Practically, the function of dream consciousness is that of a psychophysiological Occam’s razor: “Technically speaking, complexity is measured as the difference between prior beliefs (expressed as a probability distribution) and posterior beliefs – after the prior beliefs have been updated on observing sensory outcomes.” (Hobson et al. 7) It remains to be understood why the dream remains so bizarre, characterized as it is by continuous jumps of scenery (well exemplified by *Paprika* as sudden changes of film genre). Hobson’s answer is that complexity constitutes a feature of the model, not of the inferences provided by the model. The model is complex when, through a process of reduction of synaptic connections, it “enables efficient inferences about a greater diversity of sensory scenarios – scenarios that may be rehearsed during dreaming.” (7)

The idea of the dream as a conscious experience is exemplified through the analogy with the medium of virtual reality. From a neurophenomenological perspective, Jennifer Windt and Thomas Metzinger wonder by what criteria a dream may or may not be considered a conscious experience. In this perspective, they equate a minimal notion of consciousness with a metaphoric model corresponding to a virtual reality system that satisfies three main criteria: *globality*, since it activates a global model of reality; *presentationality*, or integration of this model within a virtual window of presence; and *transparency*, which is given when this model of reality is not recognized as an unreal by the subject but experienced as an immediate datum of reality. These criteria are as valid for dreaming as for waking; according to the two philosophers, “dreams usually integrate several different types of imagery into a complex, multimodal, and sequentially organized model of the world” (Windt and Metzinger 195). The only difference is that in the case of waking this virtual reality is activated online, receiving input and producing output about the external world. In contrast, the dream acts as an offline virtual reality, taking shape in a separate and disconnected space. Although some external sensory input may be integrated within the dream narrative – typically the sound of the alarm clock – these instances represent exceptions of a general functioning based on the isolation of the dreaming subject.

However, it again becomes important to understand why dream consciousness remains so bizarre, characterized by “discontinuous jumps in the dream narrative.” (206). The question is about the possibility of finding a meaning starting from the scattered and random character of dream images; but the old idea of the interpretation of dreams is approached in a new epistemological paradigm that integrates neuroscientific experiments – unabashedly, for Metzinger and Windt “the epistemological status of psychoanalysis resembles that of religion.” (207). The solution found by the two scholars concerns the idea of a complex narrative structure unfolding within the virtual model:

In a way, dreams can be regarded as high-dimensional Rorschach tests, during the course of which the dreaming self assembles self-generated, random figures in a complex narrative, transforming them into an “internal fairytale.” This fairytale, as a chain of concrete subjective experiences, is constrained both by the current configuration of the system, continuously trying to settle into a stable state, and by its history, the way in which it usually interprets the world. (Metzinger and Windt 207)

This narrative is thus partly meaningless, since it consists of internal neurodynamics, and partly related to a process of self-representation, since these selfsame internal inputs are interpreted on the basis of past experiences and memories.

Finally, the idea of the dream as an offline virtual reality capable of handling the complexity of the existing one/reality in a predictive sense is at the center of some of the theories advanced by neuroscientist Antti Revonsuo, who identifies the dream with a simulator which enhances abilities and skills. Together with Katja Valli, Revonsuo first elaborated the *threat simulation theory*, which views dreaming as specifically oriented toward the simulation of potentially threatening events and the refinement of survival skills (Valli and Revonsuo), and later the *social simulation theory*, which considers the interactions taking place in dreams as a rehearsal of social perception and recognition (Revonsuo et al.). In this latter paradigm, the technological metaphor of virtual reality focuses primarily on the concept of the avatar, defined as a virtual character which embodies the role of an existing subject within the simulated reality of the dream. The dream is then configured as an artificial universe geared toward managing complexity and achieving success in the real world.

Postmodern imagery and the dream machine

The epistemological rupture exemplified, in the history of dream theories, by the recurrence of the metaphor of virtual reality thus leads one to consider a parallelism between,

on the one hand, the new conception of the dream and that of media in general, and, on the other hand, the dream narrative and the narrative complexity that characterizes dream-centered film narratives. In the first case, it is a matter of considering the dream as a media device capable of handling the complexity of the real in a separate and safe space; in the second case, we can consider this same complexity as a key to understanding a rupture present as much in the history of the theoretical interpretation of dreams as in that of contemporary and postmodern cinema.

Regarding the ability that the dream exhibits in managing complexity in an offline model, I think of how this current idea in dream epistemology adheres to a structural feature of different media exemplified by Francesco Casetti in the concept of the “projection/protection complex”. Casetti contrasts the McLuhanian conception of media as “extensions of man” with the idea of a protective function of media, characterized by a double movement. On the one hand, it is essential to manage and reduce the complexity of the world in a separate techno-aesthetic space, whose optical-spatial dimension can be found in devices belonging to different epistemes, from the 19th century Phantasmagoria to the 20th century cinema halls to, nowadays, digital bubbles such as the teleconferencing platforms spread during the Covid19 Pandemic. On the other hand, in these devices the subject can reconnect with the world, if in a safe, immunized, and controlled space. From my point of view, the idea of dream as a virtual reality simulator which acts offline to make the relationship with reality more efficient adheres completely to this projective/protective conception of media devices analyzed by Casetti.

Instead, let me consider narrative complexity and its serving as a pivotal element of both today’s neuroscientific theories of dreaming and narratological analyses of postmodern cinema. In several movies, this complexity is exemplified by the recurrence of a precise element, of which one declination is the DCmini in Satoshi Kon’s *Paprika*. It is the dream

machine. It is a device that serves as the driving force behind several narratives in postmodern cinema centered on the relationship between dreams and technology. The dream machine can record the dream content, externalize it in the form of a collectively experienceable image, or allow access to the dream narrative as if it were a concrete, inhabitable space. The dream machine evokes the tradition of the cyberpunk imagery inaugurated by science fiction writer William Gibson in *Neuromancer*, in which virtual space is represented in the psychic and simulacral terms of “a consensual hallucination experienced daily by billions of legitimate operators”, although it does not present a one-size-fits-all aspect. In Wim Wender’s *Until the End of the World* it takes the form of a silver metal mask that does not relay images but rather records them; in David Cronenberg’s *eXistenZ* it is a pulsing, organic mouse to be introduced to a bioport surgically opened on the user’s back; in Christopher Nolan’s *Inception* it becomes a briefcase with timers to which several users connect – not to mention *Paprika*’s DCmini described earlier. Despite such a variety of representations, one point that unites all these machines is the immediacy with which the user finds himself immersed in the dream world. It is a situation in which the protagonist discovers himself, *in medias res*, surrounded by a simulation of which he or she knows neither the beginning nor the way out (see Kilroe). Identifying the surrounding world as a dream then becomes the start of a complex process of narrative reconstruction.

The user of the dream machine reflects the idea of a new condition of spectatorship and interpretation of the narrative content. The spread of this representation coincides with the emergence since the 1990s of the aforementioned paradigm of narrative complexity in cinema and television seriality (see Grishakova and Poulaki). This pattern applies to narratives that require the viewer to play an active role in reconstructing the course of events, presented in a nonlinear form, and interwoven in deliberately intricate and even inextricable ways. Not infrequently, the reconstruction of the diegesis is further complicated by

identification with the point of view of alienated or cognitively impaired characters (hallucinated, toxic, insane, or, indeed, dreamers).

The dream machine then presents itself as a device whose place in the narrative is hopelessly ambiguous: while it appears as an object internal to the complex diegesis, it also represents the cause of its explosion, elusiveness, and entanglement. The editing is disrupted and reorganized by its presence, with temporalities that take on the nonlinear form of dreaming – as in Alejandro Amenabar’s *Abre los Ojos*, where the course of events can only be reconstructed through the identification of a suture between the real time of life and the otherworldly, phantasmatic time of an artificial post-mortem dream – or they lose all logic by transmuting into pure optical and sonic streams – as is the case with the low-definition dreams of *Until the End of the World*.

This narrative disruption may also be related to the tension that runs through postmodern cinema itself toward forms of entertainment inferred from the advent of new media. This can be found in visual and aural gimmicks that Laurent Jullier has identified as “figures of immersion”, such as the use of the camera *travelling*, apt to transform fruition into the pyrotechnics of a sensory bath; the demand for spectator’s interactivity in the reconstruction of the plot; the production of new intensities through the reorganization of the sensible in an affective sense (see Shaviro).

In visual narratives configured in this way, the dream universe itself appears to be inhabited by external technological grafts, as was already evident in Ridley Scott’s *Blade Runner* Final Cut, in which the correspondence between the dream vision of a unicorn and its external fabrication in the form of origami suggests the presence of a programmed, posthuman mind (see Landsberg). Other dream grafts are the prosthetic memories designed for blind people in *Until the End of the World*, and, in an even more articulate form, the *post-mortem* simulation of *Obre los Ojos* (and its American remake *Vanilla Sky*), where the

cryogenized corpses of Life Extension agency clients can experience an idealized and designed eternity in the form of a programmed dream. An inverted version of *Blade Runner*, in which the humanity of free will is grafted into machine consciousness in the form of a *rêverie*, is represented by the television series *Westworld*, inspired by Michael Chrichton's film of the same name, and dedicated to a simulacral amusement park devoted to the Old West where visitors can unleash their baser instincts on robots totally indistinguishable from humans (see Erwin). In an article about *Inception*, Mark Fisher points out how the multi-layered space of the dream, partly designed by the architect Ariadne, is visualized in the film as an "unconscious without surrealism", whose aesthetics approximate "a Powerpoint presentation of a love affair", (40) as well as the subterranean of a mind that appears largely colonized by economic and military relationships. This process of colonization also echoes the idea advanced by Jonathan Crary that sleep time constitutes the last fortress whose conquest capitalism has claimed and achieved, transforming even the dream into a mediatized environment inhabited by job efficiency and financial exchanges.

It is possible then to identify the reasons why in both today's theories of dreaming and the narratological theories concerning puzzle films (often centered on the functions of a dream machine), the same pattern imposes itself. Contemporary neuroscientific theories, by identifying the dream with a virtual device aimed at managing and reducing complexity or handling unpredictability, appear as the product of a late-capitalist society in which strategies of power have become increasingly pervasive and uncontrollable, and where it becomes urgent to assume new survival skills. This training function appears completely analogous to that immunization power that Walter Benjamin recognized in cinema precisely as the collective externalization of the previously exclusively individual dimensions of dream and hallucination. For the German philosopher, media, while leading to mass psychosis, are also its remedy, "by means of certain films in which the forced development

of sadistic fantasies or masochistic delusions can prevent their natural and dangerous maturation in the masses” (*The Work of Art* 38). In his latest work, Thomas Elsaesser has considered puzzle movies themselves, which he has called “mind-game films” by virtue of their experiential contiguity with video-game structures, in the same way as a “pharmakon” (in the ambiguous sense of both poison and remedy) that allows on the one hand to develop a not exclusively individual but distributed idea of agency, and on the other hand to train new survival skills to deal with the complexities of today’s “control societies” (Elsaesser follows Foucault and Deleuze on this term). Among the tools employed to reach this goal, a quite peculiar role is played by “productive pathologies” (the altered states of consciousness of schizophrenics, paranoids, hallucinated, that drive the narrative path) which “in mind-game films often have an enabling and empowering function, precisely because they can sustain contradiction” (286).

The neuroscientific theories of Hobson, Revonsuo and Valli, Windt and Metzinger not only identify the most common and universal of altered states of consciousness, the dream, with a new media device (no longer cinema but virtual reality) but reiterate how the dream function for them is no longer a way of accessing the unconscious, but mostly a constructed separate space in which to simulate various training processes in the most effective and conscious way. This idea of the dream-state, however, shows an inherent ambiguity: while the training that takes place within it offers the opportunity to develop functional strategies of resistance, it is also clear that late capitalism has also left its deepest imprint on an idea of subjectivity that is called upon to be efficient and productive during dreams in the same way as in the waking life. We can no longer relax even when we sleep.

Works Cited

- Benjamin, Walter. "Dream Kitsch" [1927]. Translated by R. Linvingstone. *Walter Benjamin: Selected Writings, 2: 1927-1934*, edited by Michael W. Jennings et al. Harvard University Press, 1999, pp. 3-5.
- . "The Work of Art in the Age of its Technological Reproducibility: Second Version" [1936]. Translated by Edmund Jephcott and Harry Zohn. *The Work of Art in the Age of its Technological Reproducibility and Other Writings on Media*, edited by Michael W. Jennings et al. Harvard University Press, 2008, pp. 19-55.
- Bergson, Henri. *Le Rêve* [1901]. Payot, 2018.
- Buckland, Warren, editor. *Puzzle Films. Complex Storytelling in Contemporary Cinema*. John Wiley and sons, 2009.
- Casetti, Francesco. *Screening Fears. On Protective Media*. Zone Books, 2023.
- Chandrasekera, Tilanka, et al. "Effect of Degrees of Freedom on the Sense of Presence Generated by Virtual Reality (VR) Head-mounted Display Systems: A Case Study on the Use of VR in Early Design Studios." *Journal of Educational Technology Systems*, vol. 47, no. 4, 2019, pp. 513-522.
- Crary, Jonathan. *24/7: Late Capitalism and the Ends of Sleep*. Verso Books, 2013.
- Elsaesser, Thomas. *The Mind-game Film: Distributed Agency, Time Travel, and Productive Pathology*. Routledge, 2021.
- Erwin, Carol. "The Frontier Myth of Memory, Dreams, and Trauma in *Westworld*." *Reading Westworld*, edited by A. Goody and A. McKay. Palgrave MacMillan, 2019, pp. 119-139.
- Fisher, Mark. "The Lost Unconscious: Delusions and Dreams in *Inception*." *Film Quarterly*, vol. 64, no. 3, 2011, pp. 37-45.

- Grishakova, Marina, and Maria Poulaki, editors. *Narrative Complexity: Cognition, Embodiment, Evolution*. University of Nebraska Press, 2019.
- de Saint-Denys, Léon Hervey. *Les Rêves et les Moyens de les Diriger. Observations Pratiques*. Amyot, 1867.
- Hobson, J. Allan. "REM Sleep and Dreaming: Toward a Theory of Protoconsciousness." *Nature Reviews Neuroscience*, vol. 10, no. 11, 2009, pp. 803-813.
- Hobson, John Alan, et al. "Virtual Reality and Consciousness Inference in Dreaming." *Frontiers in Psychology*, vol. 5, 2014, 113003. doi: 10.3389/fpsyg.2014.01133.
- Jullier, Laurent. *L'Écran Post-moderne: Un Cinéma de l'Allusion et du Feu d'Artifice*. L'Harmattan, 1997.
- Kilroe, Patricia A. "The Dream as Text, The Dream as Narrative." *Dreaming*, vol. 10, 2000, pp. 125-137, <https://doi.org/10.1023/A:1009456906277>.
- Kluitenberg, Erik, editor. *The Book of Imaginary Media. Excavating the Dream of the Ultimate Communication Medium*. NAI Publishers, 2006.
- Landsberg, Alison. "Prosthetic Memory: *Total Recall* and *Blade Runner*." *Body & Society*, vol. 1, no. 3-4, 1995, pp. 175-189.
- Maury, Alfred. *Le Sommeil et les Rêves: Études Psychologiques sur ces Phénomènes et les Divers États qui s'y Rattachent; Suivies de Recherches sur le Développement de l'Instinct et de l'Intelligence dans leur Rapport avec le Phénomène du Sommeil*. Didier, 1861.
- Mittell, Jason. "Narrative Complexity in Contemporary American Television." *The Velvet Light Trap*, vol. 58, no. 1, 2006, pp. 29-40.
- Revonsuo, Antti. *Inner Presence: Consciousness as a Biological Phenomenon*. MIT Press, 2006.

- Revonsuo, Antti, et al. "The Avatars in the Machine: Dreaming as a Simulation of Social Reality." *Open MIND: Philosophy and the Mind Sciences in the 21st Century*, edited by T. Metzinger and J. Windt. MIT Press, 2016, <https://doi.org/10.7551/mitpress/10603.003.0097>.
- Shaviro, Steven. *Post Cinematic Affect*. Zero Books, 2010.
- Valli, Katja, and Antti Revonsuo. "The Threat Simulation Theory in Light of Recent Empirical Evidence: A Review." *The American Journal of Psychology*, vol. 122, no. 1, 2009, pp. 17-38.
- Windt, Jennifer and Thomas Metzinger. "The Philosophy of Dreaming and Self-consciousness: What Happens to the Experiential Subject During the Dream State?" *The New Science of Dreaming Vol. 3: Cultural and Theoretical Perspectives*, edited by D. Barrett and P. McNamara. Greenwood, 2007, pp. 193-247.

Films and series cited

- Abre los Ojos*. Directed by Alejandro Amenábar, Sogepaq, 1997.
- Blade Runner*, final cut. Directed by Ridley Scott, Warner Bros., 2007 [1982].
- eXistenZ*. Directed by David Cronenberg, Alliance Atlantis, Momentum Pictures, 1999.
- Inception*. Directed by Christopher Nolan, Warner Bros., 2010.
- Paprika*. Directed by Satoshi Kon, Sony Pictures Classics, 2006.
- Until the End of the World*. Directed by Wim Wenders, Warner Bros., 1991.
- Vanilla Sky*. Directed by Cameron Crowe, Paramount Pictures, 2001.
- Westworld*. Created by Jonathan Nolan and Lisa Joy, HBO, 2016-2022.
- Westworld*. Directed by Michael Crichton, Metro-Goldwyn-Mayer, 1973.