

CHAPTER 14

Embodied Interaction and Immersive Film Experiences on Smartphones

Kata Szita

Introduction

Smartphone use is set around a device that has almost its entire surface covered by a screen. This screen visualizes still or moving images providing a window to various functions and visual stimuli. Smartphones can fittingly be described as *pocket technospaces* (Richardson, 2007): they allow millions of people to go about their businesses with pocket diaries, pocket messengers, pocket computers, pocket concert halls, and, not least, pocket cinemas.

Spectatorship¹ on smartphones is influenced by the continuous reinterpretation of the cinematic spectacle. The immersive quality and sonic and visual fidelity that the latest smartphone models afford approximate that of cinema or television. Besides, smartphones engage users in watching familiar audiovisual content with effortless physical involvement, whether that entails a motionless seated position or active bodily engagement

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

similar to operating a game controller. Still, the key factors that induce a smartphone-specific viewer behavior are the touch screen control and the physical properties of the device—most notably its size and weight that allows it to be at hand at any time. Regarding the fusion of familiarity and novelty in smartphone spectatorship, the following questions arise: what factors are responsible for enabling immersive experiences with fictional audiovisual narratives and how do smartphone users engage with these narratives in such a multisensory setup?

To reflect on immersive and multisensory narrative experiences, in this essay, I introduce the basic components of what connects, but, at the same time, distances smartphone spectatorship from stationary screen-based viewing, such as cinema. I argue that these components primarily concern two major features smartphones hold. On one hand, the multisensory nature of spectatorship involves vision, sound, touch, and kinesthetic engagement. On the other, a viewer's embodied involvement affords a specific form of interactive film experiences.

Exploring multisensory and embodied viewing, my goal is to reflect on audiovisual *storytelling* and *story-receiving* on smartphones. This distinction is key: while in my analysis a moving-image narration may be loyal to cinematic formulas, smartphone viewing involves spontaneous customizations, where narrative experiences become defined by a viewer's individual choices and bodily engagement.

This analysis of the peculiarities of watching moving-image content on smartphones and other types of handheld devices departs from the questions that allocate attention between storytelling and receiving: hapticity and the modes in which a viewer may tamper with the presentation of a movie narrative through bodily control. Thus, interactivity here points beyond forced-choice interactions. It entails the momentary customization of viewing parameters like screen position, playback speed, or sound volume. The result is individual and customized encounters with movies; that is, tailor-made narrative experiences that are built upon a viewer's sensory engagement, the momentary disposition of her² body in relation to the screen, and the mental processing of narrative events. In other words, viewing involves a viewer's illusion of ownership of the content (Atkinson, 2014).

Following the presentation of this distinctive constellation of interactive viewing, I will turn to a specific case of immersive film experiences: 360-degree screenings. Watching 360-degree movies and videos on smartphones differ from other immersive technologies, such as virtual

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

reality CAVES (where immersive content is projected on the walls of an enclosed space) or head-mounted displays (where one's point of view defines the sensory scope). The differences are to be sought for in the dynamic peephole navigation (Mehra et al., 2006) that portable devices afford while held in one's hands. The viewer moves the screen to gain access to visual details. Whereas this form of immersive viewing experiences is based on the same technological solutions that head-mounted displays employ (and smartphones can be attached to headsets like Google Cardboard or Samsung Gear VR to mimic standalone head-mounted displays), I will observe it through the lens of handheld use and focus on 360-degree viewing that involves manual control.

Mobile 360 (or mobile cinematic VR; Schleser, 2020) encompasses 360-degree animated or live-action film and video content. It delimits other virtual reality technologies' scope of navigation and affords access to moving-image content on two-dimensional screens. As the content is captured from a single vantage point, viewer interaction is confined to changing the segment of a spherical space momentarily visible on the screen. Interactions indicate moving the screen within three degrees of freedom (pitch, yaw, and roll) by which one can explore the depicted diegetic environment and follow characters and objects. A great deal of power is given to viewers to observe narrative events, but content makers apply a wide range of storytelling techniques so that attention is directed to the key storytelling elements rather than wandering within the space. For instance, in *Back to the Moon* (Goby & Leroux, 2018), the variation of dark and illuminated segments of the space indicates the points of interest, and the story is discontinued until the relevant areas are within the scope of the mobile screen. In other films, such as *A Little Negro Boy's Prayer* (Adelheim, 2018), visual—the protagonist's animated body—and *Interwoven: Veganism, Ethics, and Economics* (Ramirez, 2018), auditory cues direct attention within the space.³

Multisensory Encounters

Audiovisual experiences are subjective: sociocultural elements, screening environments, and technologies, as well as viewers' personalities, knowledge, and momentary state of mind affect the intake of film narratives. Yet, smartphones and other portable screening devices allow for a specific degree of personalization. Viewers can accommodate viewing experiences according to their wills or needs at any moment employing smartphones'

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

handheld design and touchscreen navigation. It is a viewer's body and its connection to the device which determines the spheres of interactions.

Mobile devices are not only objects defined by their portability. The fact that their small size and weight enables handheld control is just as fundamental to their constitution. Haptic interaction plays a significant role in defining the appearance of the sensory scope that a smartphone user has access to during media experiences. For instance, changing the position of the smartphone changes the proportion of mediated content to the surrounding environment: on-screen visual information or sound will take less of the sensory scope compared to the physical surroundings when moving the device away from one's body (Casetti & Sampietro, 2012). This embodied link between a user/viewer and the smartphone creates the possibility of sensory fluctuation that influences the perception of information originating from the physical world and the device.

Smartphone use involves haptic, visual, and sonic features, which may cause dissonances between sensory input and output. As a primarily image- and sound-producing appliance, a smartphone accurately projects visual and sonic information. But when it comes to touch control, haptic information gathered by holding the device (e.g., its size, surface, or weight that can be sensed through tactile and kinesthetic means) fails to correspond to other sensory modalities communicated by the interface. That is, haptic information has little correlation with what one can see or hear. When a face is displayed on the screen, information gained through touch will not correlate with the texture, temperature, or other attributes of human faces.

It follows that haptic control has other functions than only sensing. While information is gathered through vision, hearing, and haptic feedback, such as vibration, responses are primarily executed through manual interaction. Through touch and hand movements, smartphones enable bidirectional and dynamic interactions through which one can individualize the sensory and even the structural outline of moving-image contents. This turns spectatorship from the phenomenological experience of witnessing a screen into physical contact, into tactile visibility, where the authority of muscles and receptors is minor (Atkinson, 2014; Marks, 2002).

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

Touch Interaction

While they are not touchable in reality, the visual representation of bodies, objects, and surfaces on a smartphone screen may evoke haptic memories, which complete the missing information about texture, temperature, and the like. Interaction with a touchscreen evokes a particular alliance of the screen and a user's body, involving physical touch that elicits virtual actions manifested in sensory responses, like animations, sound effects, or vibrations.

As stated above, actual haptic connections to objects supply tactile and kinesthetic information, but in the case of smartphone spectatorship, this process is rather abstract. What the smartphone does is mediating: it integrates the sensations of physical touch with virtual image and sound. And although tactile sensing in spectatorship is often attributed to the function of remembering (as explained by Barker, 2009; Huhtamo, 2007; Marks, 2000; Verhoeff, 2012), in the smartphone's case, we encounter a more complex effect that has to be analyzed through the links between physical motion and mediated representation.

A touchscreen functions through registering the presence or absence of physical conjunction: response is prompted when an operational gesture (touch, swipe, etc.) activates sensors in the screen. The touch-sensitive surface meets the flexible skin of a fingertip, the mechanical deformation of which against the rigid surface activates neural processes that signal haptic action. In response to an action of a human body, the smartphone generates feedback in the form of sensory stimuli.

Studies discussing usability and interactions with mediated and even computerized interfaces (some mentioned above) begin by correlating physical touch with virtual responses to make epistemological deductions and draw conclusions about user experiences. Heidi Rae Cooley (2004) follows this method while focusing on the *physique*, more precisely the structure of a user's hands, to examine what she calls the *mobile screenic device*. Her insights are especially valuable to this discussion of the biomechanical aspects of touching and holding a mobile device: Cooley labels the intersection of image and touch as *screenic screening* and claims it to be the result of an automatic process during which a user memorizes the area of touch and is thus able to focus on the result, which is perhaps the most notable in the case of gaming.

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

Although her focus is on palpable instruments such as buttons, knobs, and slides, Cooley's reasoning can serve as a basis for comprehending tactile spectatorship on touch-screened smartphones. However, full comprehension requires my return to the questions of memory and cognitive processing. "Touching" moving images through commands a video player application affords introduces similar dissonances to those in video gameplay that divide physical input and virtual output. Physical gestures and tactile sensing are detached from a sensed object, which exists in a different spatial construction—in the diegetic space. This means that one touches the surface of the smartphone screen to interact with (touch, move, enlarge, etc.) a visually represented object.

To resolve this ambiguity, a combination of cognitive and cultural approaches is necessary, similar to what Laura Marks (2000; see also Marks, 2002) uses in her book, *The Skin of the Film*, to define tactile sensations in connection to the visual imagery of movies. This solution foregrounds the correspondence of mediation and sensory modalities, notably the way textures and other palpable, haptic qualities represented on-screen stand in reference to haptic memories. Visual (or sonic) representation, accordingly, evokes memories of bodily experiences, which, in the case of smartphones, is extended by the physical sensation of touch.

While being exposed to (audio)visual content, a smartphone viewer typically maintains constant physical and perceptual contact with the device, which enables touching and interacting with the virtual platform. The screen serves as a medium between the skin and diegetic objects. Marks' (2000, 2002) multisensory understanding of cinema suggests that film narratives, however abstract their presentation is, are understood through associations and references to earlier physical encounters with corresponding objects. Marks illustrates this with the haptic qualities that artworks presented on film evoke. Functional correlations between objects and mental images (i.e., memories) refer to earlier haptic inputs and memories of objects' physical properties. Marks (2000) claims that the sensory understanding of narratives goes well beyond the technical capacities of any screening apparatus; the process can evoke memories of touch, smell, or even taste. "The eyes themselves function like organs of touch" (Marks, 2000, p. 162), she argues.

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

Interactive Spectatorship

The hardware design of modern mobile devices diminished—and in many cases eliminated—button control and replaced it with a touchpad built into a high-resolution screen. Through touchscreen control, a user is continually involved in shaping the content on the platform upon which it is visually represented. But what prompted the popularity of watching films and videos on smartphones is perhaps the two most apparent specifications, namely, their size and weight, which enable portability and a viewer's corporal involvement. Compared to stationary screening apparatuses, such as cinema screens or television sets, on a smartphone, a viewer can more freely revise the spatial dimensions and adjust the synthesis of film and physical stimuli and immerse herself into an interactive experience. Following the discussion of the multisensory bases of smartphone spectatorship, in the upcoming sections, I turn my attention to the ways in which interactions define individual and customized narrative film experiences.

In the case of smartphones, bodily engagement characterizes spectatorship. Interactions range from changes in the position of the screen and the firmness and stability of that position to subsequent manipulations of image and sound presentation. Smartphones afford a threefold mode of interactivity (see also, Szita, 2020). First, by analog interactions, a viewer may define the proportion of moving-image stimuli in relation to the physical world by establishing the distance between the screen and her sensory organs and performing adjustments of this distance to reach the desired position. Second, she can determine stimulus intensity using the device's built-in functions to adjust volume, luminance, or image size. Third, smartphones allow for interactions with a screened footage that change the flow of narrative presentation: one can, for instance, jump between scenes, freeze or pause the footage, or alter the speed at which it plays.

Instead of the sole dominance of external control of narrative experiences by instruments such as film editing, lighting, and framing, smartphone viewing involves explorative activities. Thus, storytelling becomes secondary to story-receiving: perception, engagement, and interaction. To illustrate how receiving takes over the role of storytelling, I briefly compare a smartphone viewer's capacities to those attached to other forms of audiovisual narratives. This comparison is based on the following factors: a viewer's influence on the narrative presentation and storytelling

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

by manual interactions, the type, time, and amount of these interactions, as well as the mechanical and contextual elements viewers interact with.

Cinematic, televised, and other similar screen-based moving-image experiences involve an *observant*, where a story is told irrespective of the attention—or in many cases, even presence—of a viewer. Interactions are minimal in these types of experiences. A viewer is engaged with a story by immersing in a diegetic world that includes environments, characters, objects, actions, and narrative events. Subjectivity, in these cases, is based on one's perception of and emotional reactions to these elements.

A sub-genre of cinema and the fusion of cinema and video games is the interactive film, which involves forced-choice-type interactions at pre-defined times. Interactive films, such as the *Kinoautomat* (Činčera, 1967), the more recent *Black Mirror: Bandersnatch* (Slade, 2018), or *Late Shift* (Weber, 2016), that was specifically made for smart devices, define and direct viewers' choices both mechanically and contextually. First of all, moments of interaction happen at clearly pronounced times following a specific narrative design. This means that these moments are set to narrative tipping points and announced by moderators, intertitles, or similar ways. Decisions are made in a forced-choice manner, where two or more alternatives are offered to viewers to decide upon a character's next action or a situation's outcome. Second, in connection to the forced-choice method, it is the arranger or director of screening or film who determines the range of possible outcomes during the process of constructing a "network" of narrative events. This implies that viewers have a *structural* influence on a narrative by choosing one of the available storylines at each point of interaction.

Smartphone spectatorship is akin to video gameplay in that they both involve spontaneous interactions executed by physical (mostly manual) gestures with effects on the narrative flow. However, whereas in video games these actions induce changes within the diegetic world (e.g., by a player character's course of actions or motion), in smartphone spectatorship, only the sensory presentation of a narrative will be impacted. Thus, while a video game player has an evident *participatory* role in influencing a narrative (see Dolan & Parets, 2016), a smartphone viewer's role is more complex and less clearly defined.

As in the case of cinematic spectatorship, a smartphone viewer has an observant role: a story being played unfolds irrespective of her attention. This means that the visual and auditory outline of a moving-image narrative remains unchanged. Yet, her *access* to visual and auditory information

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

may be affected. This point can be illustrated by sensory adjustments enabled by smartphones. For instance, smartphones and a wide range of video player applications afford zooming in on an image even if it is in motion. This action will enlarge some visual elements of the image, while others that fall outside of the displayed area will be inaccessible to the viewer. Due to the temporal outline of moving images, narrative events unfold once without repetition. Therefore, narrative information that is momentarily inaccessible due to changes in stimulus intensity, such as image size or volume, will not be redeemed.

The temporal structure of narrative films notwithstanding, however, a smartphone viewer may have a structural influence on a narration—similar to viewers of interactive films. Even in the lack of intertitles or announced moments of interaction, a viewer can execute changes that affect the overall narrative structure of the footage being played. These changes can manifest themselves in the form of jumping between scenes, playing at a different speed, or rewinding the footage. Rearranging a narrative structure in this way has cognitive consequences—something that differentiates interactive smartphone spectatorship from interactive film screenings: a viewer gains access to narrative information in a customized way, differently than what was intended by content producers.

Following the discussion in the earlier sections of this essay, a viewer's bodily involvement plays a significant role in momentary interactions during smartphone spectatorship: the manual control of the device enables a *reflexive* viewing experience. Reflexive viewing entails interactions with a screened footage through hand gestures and muscle movements at any time. As I explain elsewhere, these interactions are prompted either by external factors (for instance, noise from the surrounding space or a task) or internal motivations (curiosity or personal preferences) (Szita, 2020). In addition, a movie's storytelling formulas may also catalyze interactions. Thus, based on incoming information and internal motivations, a viewer makes conscious or unconscious decisions about whether and how to shape a screening by changing sensory connection with the content.

Reflexive viewing is most clearly outlined in mobile 360-degree content. Therefore, in the concluding part of this essay, I will turn to the cognitive and phenomenological grounds of engaging with 360-degree movies and videos on smartphones.

Immersive Narrative Experiences on Smartphones

The combination of narrative and bodily dimensions links a smartphone viewer's physical and diegetic presence using memories, haptic engagement, and contextual information. The viewer contextualizes incoming information and assembles a logically coherent meaning out of the semantic system of narrative formulas. This is precisely the setting that provides the considerable plasticity of spectatorship and allows for and motivates interactions in the form of touch control or kinesthetic operations. The interactive potentials of smartphone spectatorship place narrative information into a subjective contextual frame.

Immersive viewing on smartphones is based on two main levels of mediated characteristics: the immersive qualities of a movie narrative and a viewer's embodied involvement and interactions. To demonstrate narrative immersion, I borrow the *fun house* analogy that Janet Murray introduces in her 1997 book, *Hamlet on the Holodeck*. Murray argues: "The fun house has an entrance and an exit that mark the beginning and end of the story. As the visitor progresses on a moving platform, the dramatic tension builds from small surprises and hints of danger; then there are thrills and a mounting sense of threat or terror, which culminates in a big finish such as a free fall or an attacking beast" (p. 105). Alison Griffiths (2008) follows a corresponding notion when discussing immersion, but adds corporeality as a factor of immersive experiences. She associates immersion in fictional narratives with a beholder's (for instance, a viewer's) identification with and sense of presence in an environment that masks sensory and cognitive access to the physical world.

Combining Murray and Griffiths's models, one can claim that a movie narrative engages viewers' minds and senses by "walking" them through a system of fictional events. As these events unfold, viewers acquaint themselves with characters, their relationships, actions, and surroundings, which transports them into a sphere where their corporeality is replaced by sensory experiences. But although it would be suitable for the *fun house* analogy, narratives in these models of immersive experiences are treated as temporal constructs, rather than spatial ones, that begin with the start of the movie and close with its end. The spatial dimension is disregarded on account of the camera's defined position of observation. Even though a movie's visual language provides a walk-through in various fictional environments, viewers cannot freely explore all their dimensions: the point of observation is anchored to the "fourth wall" of diegetic spaces.

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

Movies presented in 360 degrees challenge this setup. In these cases, a full 360-degree space is available, although not all at once. It is the viewer's task to navigate and delineate her perspective. The viewing perspective is adjusted by bodily motions, that is, one has to change one's position to gain access to the different segments of the surrounding fictional space. When using head-mounted displays, this movement and changes of perspective happen through the head or full-body motions as one turns around to observe different parts of the space. In the case of handheld smartphones, however, the changes are induced by moving the screen. This means that, rather than enabling interactions through natural-like bodily movements of turning and looking around as standalone fully immersive virtual reality headsets do, the smartphone screen serves as a window over the 360-degree diegetic space, and access to narrative information is based on the position of this window. This distinction is not least crucial because head-mounted displays are designed to obscure physical reality, as in Griffiths's immersion theory, whereas the screen of a smartphone presents an alternative reality embedded into the physical world. The diegetic space is shown on the screen while the physical space is still sensed; the balance of these two is defined by the screen's distance from the viewer's eyes—as it was addressed earlier.

The window analogy is pertinent in screen studies. A screen may serve as something that delineates the frame of mediation and divides physical reality from a fictional space (see, Bruno, 2014; Friedberg, 2006). It is also a tool for storytelling: it outlines the visual scope of the diegetic space and directs attention to elements that hold essential narrative information (Grodal, 1997). Yet, the window in mobile 360-degree spectatorship is tied less to storytelling instruments, such as directing or the *mise-en-scène*. Instead, I argue, it must be approached as a means of story-receiving.

Narrative experiences through the window of the smartphone screen immerse viewers into a new type of fun house. One proceeds through the imaginary rooms with the opportunity to look around and perceive objects and characters being placed and moving around in relation to one's body. Some of these objects and characters are within reach; their impact is perceived as stronger than that of those that are further away. For instance, characters approaching the viewer's point of view increase in size and gain stronger relevance which evokes stronger reactions with every step. Yet, the viewer cannot touch or move them, neither can she control her distance from them. Stepping away from a stressful situation

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

caused by a character's or object's proximity is not possible, one can only move the screen away.

This proprioceptive quality of mobile 360-degree spectatorship appears in a particular setting in which physical and mediated spaces are perceivable simultaneously. While in cinema, a viewer's body is small relative to the screened content which fills a significant proportion of the visual scope, it feels large compared to objects depicted on a smartphone screen held in one's hands. Biologically, proprioception is responsible for adjusting the body's position to avoid collision, for instance, when an object is flying toward the beholder. When seen on a screen or in the physical world, such objects might evoke a flight response manifested as ducking or cocking one's head. Being aware of the kinesthetic power over a handheld screen (that its position can be adjusted by muscle movements), these reactions are less likely when a potential threat is seen on the small screen. There, a more feasible reaction would be moving the screen farther away from the body. But moving the screen holds two consequences: on one hand, it changes the sensory scope of the 360-degree narrative space, on the other, it draws attention to the viewer's bodily presence.

This body awareness is the one that evokes the sensation of corporeal presence in a diegetic space that is observed through hand movements. The smartphone viewer moves the screen to define the segments of the space to be visually available and the proportion thereof in relation to the physical world. This spatial freedom is an essential component of the sensation of embodied immersion, the physical experience of motion, and hapticity that is involved in holding and touching a smartphone.

But can this complex multisensory experience that involves the visual, sonic, and haptic senses and motor engagement enhance narrative immersion? Hapticity couples with mediated images and sounds, which—according to the earlier discussion of the integration of sensory modalities—would enhance a viewer's engagement with diegetic objects, characters, and spaces. Additionally, viewing 360-degree films on smartphones promises immersion, a simulated presence: one can explore distant landscapes, planets, or even imaginary places in 360 degrees. However, this sensation operates with the mind and the body on different levels. A viewer is to unite with narrative worlds while her body is occupied by operating the means of access to the physical world.

Embodiment is a crucial component of immersive film experiences. According to Vittorio Gallese and Michele Guerra's (2012) thesis of

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

embodied simulation, viewers can only be fully transported into a diegetic world if they lose conscious control or awareness of their bodies. In other words, truly immersive experiences with audiovisual narratives require a viewer's bodily stillness. In the case of 360-degree viewing on smartphones, the body is engaged in touching, holding, and moving the device, while the mind is busy computing the directions of interest within the diegetic space and coordinating movement and cognitive processes.

Conclusion

Perceiving a three-dimensional space projected on a two-dimensional surface that is located in another three-dimensional space induces a peculiar spatial and affective experience, caused by the illusion that one is inside and outside the projected 360-degree environment simultaneously. Being one of the most fundamental characteristics of spectatorship, this is the eternal clash that accompanies the study of narrative experiences in terms of moving images. What, however, is propelled by technological innovations of mobile screens is that engagement is no longer restricted to mental and emotional devotion but linked to tangible bodily involvement too.

When operating smartphones, users interact concurrently with physical and virtual objects. Gestures are defined by the device's properties and laws of physics, whereas interactions with user interfaces follow the principles of a constructed, programmed sphere. Users' fingers move over a blank, smooth surface that nevertheless induces complex plots. Interaction with a smartphone's interface goes hand in hand with the abstraction of this uncanny relationship that connects a user or viewer with content through multisensory involvement.

In smartphone and mobile 360-degree viewing, two major factors define experiences: first, the malleability of sensory and narrative information, that originates from the smartphone's interactive capacity, and second, the viewer's bodily presence through haptic (manual) control. Thus, perception is circumscribed by the outline of visible elements, which include the composed filmic mise-en-scene, the screen, and the surrounding environment. This outline changes when the viewer adjusts the screen's position, visual angle, or other sensory characteristics. Bodily (haptic and kinesthetic) control manifests in nonce configurations of stimulus sources and sensory organs, on one hand, and in phenomenological contact with content, on the other. These affect narrative experiences as

K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

viewers execute changes to the attributes of image, sound, and narrative flow that, for instance, alter engagement or immersive effect.

Smartphone spectatorship involves a complex system of mental and physical processes that define interactive viewing and a viewer's observant, structural, and reflexive engagement with moving-image narratives. This requires the embodied presence of the viewer, who, besides perceiving audiovisual content in connection to a story being told, defines both the material and contextual framework of the screening.

Notes

1. Spectatorship in this work is understood as an act of watching (animated or live-action) moving-image content and comprehending audiovisual information through narrative contexts (Bordwell, 1985; Münsterberg, 1916/2014). The specific case of smartphone spectatorship refers to multisensory experiences in which audio and visual information are extended by haptic engagement.
2. The pronoun refers to a hypothetical user or viewer throughout the text, while the author acknowledges that a user/viewer can be of any genders.
3. For more film examples and a detailed review of storytelling techniques, see Mateer (2017) and Schleser (2020).

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K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie

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K. Szita

Trinity Long Room Hub, Trinity College Dublin, Dublin, Ireland e-mail: szitak@tcd.ie