

Modular narratives and visual digital culture in contemporary cinema. The case of *Open Windows* (Nacho Vigalondo, 2014)

Narrativas modulares y cultura visual digital en el cine contemporáneo. El caso de Open Windows (Nacho Vigalondo, 2014)



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Abstract:

In the present day, digital visual and convergence culture permeate the modes of production, circulation, and consumption of audiovisual representations, following the postulates of authors such as A. Darley or H. Jenkins. In this context, A. Cameron defines modular narratives as those in which classical narrative causality is replaced by a database aesthetic, dividing the narrative into discrete elements subject to manipulations of order, frequency, and duration. Focusing on the case of *Open Windows* (Nacho Vigalondo, 2014), this study aims to explore the imprints of digital visual culture on contemporary Spanish cinema incorporating modular narratives. The methodology employs an analysis model adapted to this narrative and aesthetic specificity within the framework of Computational Media Aesthetics. The film's mechanisms of representation are scrutinized through a multi-screen interface, where simultaneous events are juxtaposed within the same visual field, alongside an examination of the significance bestowed upon the software when utilized as a narrative scaffold. Finally, the discussion encompasses the necessity of applying such models to the analysis of audiovisual content associated with digital visual culture, as well as their potential utility for future research.

Keywords:

Database; contemporary cinema; visual digital culture; post-media aesthetics; modular narratives; split-screen narratives.

Resumen:

*La cultura visual digital y de la convergencia permea actualmente en los modos de producción, circulación y consumo de las representaciones audiovisuales, siguiendo los postulados de autores como A. Darley o H. Jenkins. En este contexto, A. Cameron define las narrativas modulares como aquellas en las que la causalidad narrativa clásica es sustituida por una estética de base de datos, en la que la narración es dividida en elementos discretos sujetos a manipulaciones de orden, frecuencia y duración. Poniendo el foco en el caso de *Open Windows* (Nacho Vigalondo, 2014), se pretende explorar las huellas de la cultura visual digital en el cine español contemporáneo que incorpora narrativas modulares. La metodología diseñada incorpora un modelo de análisis adaptado a esta especificidad narrativa y estética, en el marco de la denominada Computational Media Aesthetics. Se analizan los mecanismos de representación fílmica que la película incorpora a través de una interfaz multipantalla en la que los acontecimientos simultáneos se juxtaponen en el mismo campo visual, así como el significado que adquiere el software cuando es utilizado como soporte narrativo. Finalmente, se discute sobre la necesidad de aplicar esta tipología de modelos al análisis de manifestaciones audiovisuales vinculadas con la cultura visual digital, así como su aplicabilidad para futuras investigaciones.*

Palabras clave:

Bases de datos; cine contemporáneo; cultura visual digital; estética post-media; narrativas modulares; relato multipantalla.

1. Introduction

Digital and convergent visual culture permeate today the modes of production, circulation, and consumption of audiovisual representations (Darley, 2002; Jenkins, 2006; Jenkins and Deuze, 2008). The widespread adoption and acceptance of digital technologies and media by user/viewer communities have significantly altered sensory experiences and the fundamental cognitive experience of being in the world (Everett and Caldwell, 2003). Similarly, the introduction of new visual and auditory codes associated with digital technologies necessitates novel approaches to seek hermeneutic responses tailored to their specificity (Manovich, 2001).

With these considerations in mind, the primary aim of this research is to examine the influence of digital visual culture on film production, with a specific focus on modular narratives. Following the taxonomy proposed by Allan Cameron (2008) to categorize different subcategories within this concept (anachronic, forking paths, episodic, and split-screen), all of these narratives construct the story in a modular manner through a logic akin to a database. This approach entails a rupture of narrative causality, replaced by a juxtaposition of segments. In this regard, the singularity of the split-screen modular narrative

structure is rooted in its alignment with the modes of production and consumption prevalent in contemporary digital visual culture (Landow, 2006: 255; Cameron, 2008: 15). This modality reaches its pinnacle when the interface of electronic devices serves as the central narrative support for articulating such modularity. Hence, this study will delve into split-screen narratives, exemplified through the case study of *Open Windows* (Nacho Vigalondo, 2014).

This film has been selected due to its paradigmatic status within the more commercially-oriented Spanish film industry, as well as its pioneering use of these narrative techniques (Rajas, 2014). At the same time, this choice aligns with the trends observed in contemporary Spanish cinema (Palacio and Rodríguez Ortega, 2020: 15), as it is characterized by its clear transnationality (indeed, it is a co-production with the United States), where the “hybrid, interchangeable, and flexible” subject is “delocalized in a global scenario” (Ibáñez, 2016: 139-140). Consequently, it is considered a significant case study for understanding the characteristics of split-screen modular narratives, which can be applicable to other similar global productions, such as *Unfriended* (Levan Gabriadze, 2015) or *Searching* (Aneesh Chaganty, 2018). Using this film as a reference, we seek to propose an analytical model that is appropriate for modular narratives, following a structural logic of database mapping, similar to the one proposed by Mamber (2002; 2003).

1.1. Modular narratives and digital visual culture

Allan Cameron (2008) characterizes modular narratives as those where traditional narrative causality is supplanted by a database aesthetic, dividing the narrative into discrete elements that can be manipulated in terms of order, frequency, and duration. These manipulations blur the distinctions between the present, past, and future, thereby altering the relationship between story and plot and inducing a sense of uncertainty in the viewer (1-3). More recent analyses have incorporated this phenomenon within the broader category of complex narratives (Simons, 2014), a classification that encompasses narratives that eschew linear and unambiguous storytelling (Walsh and Stepney, 2018; Brüttsch, 2021), along with other established typologies such as mind-game films (Elsaesser, 2021) or puzzle films (Buckland, 2014; Kiss, 2017). This trend has been evident since the 1990s, being manifested across varied contexts from Hollywood to independent European cinema (Cameron, 2008; Kiss, 2023). Brüttsch (2018: 135) emphasizes that while complex narrative structures are not novel in the history of cinema, they have experienced a notable surge in popularity over the past 25 years, both commercially and independently. It is noteworthy, in this context, that authors such as Manovich (2014) identify a simultaneous transformation during this period: a shift in the means of production, storage, and distribution from mass media to digital technology, as well as the adoption of these technological innovations by individual visual artists. Consequently, traditional distinctions regarding the material conditions of reception and perception are now significantly altered (36). Moreover, Manovich characterizes the relationship between humans and interfaces as inherently interactive, and from an aesthetic standpoint, underscores how the multimedia integration of the web (comprising visual, textual, graphic, and sound elements) has become a standard mode of communication.

Fernández Castrillo (2015) also highlights the technological impact of digital change on individual worldviews through various formulations of visual metaphors, including the incorporation of connectivism and rhizomatic thinking evident in the *Matrix* trilogy (*The Matrix*, Lilly and Lana Wachowski, 1999). These perceptual alterations form the basis of a modular conception of time, wherein time is viewed as a divisible element composed of multiple segments that allow for complex articulations. Hence, database narratives (Cameron employs this term interchangeably with modular narratives) establish a relationship

between the fragmented temporality of the story and the sequencing of its narration (Kinder, 2002: 12; Cameron, 2008: 183). Manovich (2001) and Kinder (2002) concur in emphasizing the significant influence of digital databases on contemporary narrative understanding. Modularity is defined as the “fractal structure of the new media” (Manovich, 2001: 75). The concept of post-media aesthetics is even proposed to delve into the different forms derived from the processes associated with the digital revolution, which would consist of the emergence of a new aesthetic model adjusted to the characteristics of the software and its possibilities of interaction with users (Manovich, 2013: 17; 2014: 37-38). In fact, in the very notion of interface, the components of interaction with a given computer are emphasized, and include both the physical video and audio inputs (monitor, keyboard and mouse) and the visual metaphors and schemes used to carry out a grouping of computer data. Hudson and Zimmermann (2015) highlight this circumstance, as digital media ecologies are increasingly based on the exploration of code and user interface, as well as the examination of files and databases.

To properly understand the concept of modular narratives, it is essential to engage with the theoretical frameworks pertaining to digital visual culture. Database narratives are intrinsically connected to the way in which culture is understood, shaped by the perceptual conceptual structure that users have adopted following the widespread use of the Internet and new Information and Communication Technologies (Stam, 2008: 359). Digital theory, as well as the post-cinema framework proposed by authors like Stam (2008), advocate for the examination of film phenomenology within a cultural context whose logic is grounded in the database formula, which represents the world as an arrangement of elements without a specific order. The intimate relationship between the database aesthetics employed in the construction of cinematic representations (a foundational element of modular narratives) and digital visual culture is thus apparent. The frame of reference established for this latter concept has been delineated based on the principles articulated by Andrew Darley in his work *Digital Visual Culture: Surface Play and Spectacle in New Media Genres* (2002). The term encompasses a set of cultural phenomena that include forms of mass entertainment, such as digital films (spectacle cinema), video games, virtual reality experiences and computer animation (Darley, 2002: 15).

Regarding their aesthetic specificity, the actual manifestations of visual culture reveal an electronic intertextuality, with each indebted to “a very different historical moment, a moment that has become possible and has been stimulated by new technological developments” (Darley, 2002: 17). As subsequently highlighted by Marzal Felici and Casero Ripollés, Darley’s approach links digital cultural practices with postmodernity, focusing on appearance, form, and sensations, where artifice and technological prowess are central (Marzal Felici and Casero Ripollés, 2016: 13). This artifice and the technological component connect with another singularity present in the new forms of digital visual culture: their relationship with the past, maintaining in some way the earlier tradition of involving spectators through various digital tools aimed at generating sensations in audiences (Darley, 2002: 17; Marzal Felici and Casero Ripollés, 2016: 13-15). Today this approach has been updated, incorporating critical perspectives related to the digital visual culture of social networks (see Knochel, 2013), particularly *Instagram* (Borges-Rey, 2015; Leaver, 2020), and *TikTok* (Jerasa and Boffone, 2021). As Catalá (2005) and Brea (2005) argue, the study of digital visuality should not be subjected to reductionist postulates, and its complexity should be addressed in order to establish analytical perspectives that recognize its status as a cultural construction (Brea, 2005: 9).

Due to the exploratory and fundamentally descriptive nature of this research, the approach to the object of study aims to connect the operating logics of various technical devices offered by the interface of a given software (a common activity within user communities engaged in digital culture worldwide) with the narrative modularity articulated in split-screen narratives that explicitly utilize the interface itself as the central narrative support. Explicitly visualizing the (im)materiality of a virtual desktop and the different metaphors that organize computer data (windows and icons distributed in a fractal and hypertextual structure) allows us to understand the dimension they assume when used as substitute vectors for the traditional linear narrative. Additionally, as Darley (2002) suggests, it is possible to trace the remnants of an earlier tradition in terms of cinematographic montage mechanisms.

Although Cameron presents a diverse taxonomy of modular narratives, this analysis will focus on the split-screen narratives for the proposed case study, necessitating a detailed definition of their unique features. In this context, modularity is expressed primarily through spatial rather than temporal lines. Events are juxtaposed within the simultaneity of the same visual field, devoid of the typical montage interruption that serves narrative causality. Instead, a multiscreen narrative is employed, where different viewpoints are interwoven (Cameron, 2008: 15; Jang and Moon, 2017). As modular narratives explore diverse representations of time, this article aims to approach this operation analytically by utilizing the juxtaposition and temporal contingency of the virtual interface that mirrors a computer desktop. To a certain extent, the spatial modularity of these split-screen narratives enables exploration of temporal themes such as memory and simultaneity (Cameron, 2008: 15-17). It should also be noted that split-screen modular narratives have a long history in experimental films, as exemplified by *Time Code* (Mike Figgis, 2000), but have seen limited development in narrative cinema until relatively recently.

Later studies, such as the one conducted by Bešlagić (2019), also allow us to associate this trend with the documentary field, introducing the concept of desktop documentary to describe a post-media practice. This practice is positioned as an interdisciplinary variant of the recently emerged essay film, characterized by its independence from the film medium (51). Instead, it is a hybridization occurring entirely within the digital environment, where a combination of pre-existing materials from various contexts is utilized, and the potential of digital artifacts and tools is harnessed (52-54). Beyond experimental and non-fiction cinema, often confined to specific festival circuits, there has been a significant rise in the use of the visual desktop interface to construct split-screen narratives in mainstream film, particularly within the horror and psychological thriller genres in recent years. Among the films with the widest global circulation, the cinematic series *Unfriended* (Levan Gabriadze, 2015) and *Unfriended: Dark Web* (Stephen Susco, 2018) stand out, alongside later releases like *Searching* (Aneesh Chaganty, 2018) and its independent sequel *Missing* (Nicholas D. JoYson, Will Merrick, 2023). Put differently, the ambivalence arising from the forced virtual experiences during the Covid-19 quarantine, where digital devices were used to maintain contact between user communities, has also found its way into cinema with films such as *Safer at Home* (Will Wernick, 2021). Novikov (2017) explores the use of desktop films for split-screen narratives, where a computer interface explicitly intervenes, questioning to what extent technology, through a different visual aesthetic, alters the perception of human existence when transposed into a virtual reality environment.

1.2. Research objectives and hypothesis

The overall objective of this study is to examine the influence of digital visual culture on filmic representation mechanisms. Based on this aim, the following specific objectives can be delineated:

SO1. To establish a connection between digital visual culture and modular narratives, with a focus on split-screen narratives.

SO2. To define the characteristics of contemporary split-screen narratives in cinema, using the film *Open Windows* as a paradigmatic and pioneering example within the Spanish production context regarding the use of these complex narratives.

SO3. To explore the utilization of an alternative film analysis model tailored to the specificity of these audiovisual manifestations.

The working hypothesis of this study posits that if digital culture permeates audiovisual representation modes, cinematographic manifestations have not remained unaffected by the digital revolution. On the contrary, the contemporary understanding of narrative forms has been altered, as pointed out by Cameron and other established theoretical frameworks. Following this argument, it is plausible to connect the notion of digital visual culture with the proliferation of split-screen modular narratives.

2. Method

The search for an analytical method based on database mapping for this typology of representations comes from the need to explore alternative models adapted to the audiovisual codes of the digital environment (Everett and Caldwell, 2003: 11). In order to introduce a model of analysis that allows us to achieve the proposed objectives, it is necessary to think of a spatial and temporal conception of film that refers to the idea of digitality. This is the same approach that led Stephen Mamber to explore different ways of conceiving film analysis from the point of view of databases. His text *Space-Time Mappings as Database Browsing Tools* (2002) is thus of vital importance for methodological design. This author establishes certain parameters that transform a filmic sequencing into a database that is manageable and navigable around the different segments of the film. If a visual database is composed of different thumbnails, the Cartesian grid model is the convenient option on which to place the sequencing of images. The grid allows a vast number of thumbnails to be inserted and facilitates linear reading from left to right, so that the narrative sense and the hierarchical succession of thumbnails do not subvert the order of the original sequences. Likewise, the grid view makes it easier to recognize patterns for visual and narrative analysis at a glance.

Once the Cartesian grid model has been established, a second methodological operation consists of defining the unit of measurement into which the film must be systematically segmented for an accurate narrative map. Coinciding with Mamber, the minimum unit generally understood and accepted for such segmentation is the shot. Thus, it is considered that the first frame of each shot respects the spatio-temporal narrative relationships inherent to filmic works and allows the user to easily recognize the different scenes and sequences (hierarchically superior units). In short, the structure of the film as a whole can be reconstructed.

Table 1. Hierarchical relationship of the possible segmentation units

SEGMENTATION UNITS	
SPATIAL	TIME
Sequence	Minutes
Scene	Seconds
Shot	Frames

Source: prepared by the authors based on Mamber (2002)

In principle, the multi-screen nature of *Open Windows* would seem to complicate the selection process, since planning acquires a different dimension when approaching these types of narratives in terms of composition. The main screen, defined as the virtual desktop interface being used by the main character, in turn displays the screens of each of the pop-up windows (the webcam, the security cameras, etc.). The modular logic of the implemented narrative operation (a juxtaposition of different shots in the same visual field) requires specifying the sampling procedure. The most usual point of view throughout the film is the desktop interface itself, which conveys the development of the dramatic action.

A preliminary analysis allows us to conclude that, in this particular case, the notion of framing/reframing replaces that of shot, because through formal procedures such as zoom in/zoom out, the hierarchization of specific elements in the interface is constantly modified, focusing on one sub-screen or another. This operation is what produces a narrative progression of a particular scene. By using the proposed segmentation criterion, always in accordance with the outlined model (Mamber, 2003: 145), 470 units (thumbnails) arranged in a 32x32 grid are extracted. The visual and narrative patterns allow us to identify the three sequences of greatest interest for the proposed object of study. They convey the film at the narrative level and establish the most paradigmatic segments for a detailed analysis of split-screen narratives and their correlation with digital visual culture: 1) the initial sequence, in which the different elements of the interface are placed and the spatial and temporal interrelationships between them are established; 2) the destabilizing event, where the acousmatic voice blackmails the protagonist in the first action scene; 3) the chase scene that ends the drama, the plot's climax in which the spatial and temporal modularity inherent to this narrative formula reaches its greatest deployment. For reasons of space, during the extraction of the segments shown in the results section, the grid has been rescaled on each occasion to illustrate the analysis as clearly as possible.

3. Results

Plot-wise, the psychological thriller *Open Windows* is divided into two different parts: in the first one, Nick (Elijah Wood), owner of a web portal dedicated to uploading photographs of the famous actress Jill Goddard (Sasha Grey), is staying at a luxurious hotel waiting to receive his prize from an online contest that consists of dinner with the actress. The main character then discovers, after a video conference call, that he has been set up. At that point, the second part begins when he is blackmailed by his interlocutor (whose face is not revealed until the end of the film) and must get the help of a group of French hacktivists to

prevent the murder of the actress and escape from the police persecution to which he is being subjected. The film's plot reflects upon mass phenomena and, in particular, the Internet distribution channels inherent to digital culture. It is no wonder that some of the film's reviews highlight that it "can be read as a dark parable about our addiction to electronic fantasies" (Ceballos, 2013).

Consequently, the advantages derived from fan groups, online communities and internet forums, as well as the possibility of multiplatform and simultaneous communication, are seen as irrevocably related to notions of extortion and digital anxiety that are linked to so-called surveillance capitalism, in which "people's experiences are unilaterally claimed by private companies and converted into proprietary data streams" (Zuboff, 2020: 7). The access to the actress's telephone provided by the voice controlling the interface underlines the extent to which the set of experiences belonging to the user's intimate and private sphere are transposed into binary code and made available to the servers supporting the device. Likewise, the police and the hotel's security system servers, which at certain moments of the plot are used as windows to display the chase sequences within the computer screen, reveal the impossibility of escaping the system and the degree of control to which the user is subconsciously subjected. All of the foregoing are thematic links of enormous interest within contemporary fictions, film and television alike. Other related topics that need to be explored are the anxiety that stems from the ethical boundary between sentient beings and digital objects posed by *Black Mirror* (Charlie Brooker, 2011) or *Westworld* (Jonathan Nolan, 2011), the idea of a global and interconnected village that, almost like a fable, creates the universe of *Sense8* (Lilly and Lana Wachowski, 2015) or survival in the intransigent and closely-monitored class society of *Snowpiercer* (Josh Friedman and Graeme Manson, 2020).

3.1. *The (in)materiality of the interface in modular narratives*

Once the specific topics of the film have been established, what is relevant for the delimited object of study is how these are shaped in its formal proposal. At the narrative level, none of the events narrated follow a causal logic through a fragmentation of shots using the different possibilities of montage, but instead the entire film takes place on the desktop interface of the protagonist's computer screen. The software itself becomes another character, Nick's true antagonist, materialized in the voice of the kidnapper who executes the different programs from a remote location to move the action forward. This resource, to a certain extent, has already been seen in other works prior to the digital era, as is the case with HAL 9000, the proto-computer system of the spaceship in *2001: A Space Odyssey* (Stanley Kubrick, 1968), whose programmatic design is reminiscent of a human being who mediates between the different parties.

In the case of *Open Windows*, it is the software itself, one of a post-digital aesthetic, which shapes and builds the links between the different characters through a succession of split screens juxtaposed simultaneously throughout the story. For example, while Nick is fleeing from the police in his car with the laptop camera in the passenger seat pointed at him, a series of maps indicating the location of the patrol cars pursuing him are observed. Another screen displays a three-dimensional reconstruction of the kidnapper's trunk, where the protagonist uses a series of data in binary code to guide Jill and help her escape. At the same time, another screen contains direct access to the actress's cell phone, which the acousmatic voice gives to the main character, urging him to collect all the available visual material (also providing an additional shot of the device's camera). Finally, the device interface also contains the screen shot of the video call with the French hacktivist group.

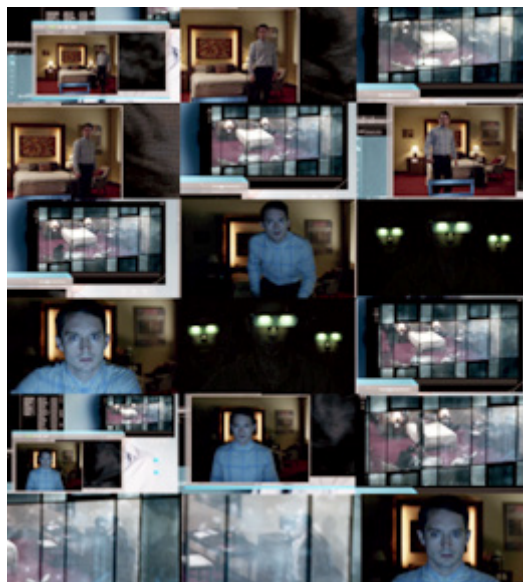
This profusion of screens enhances the plot's frenetic pace, fulfilling the requisites established by Cameron (2008) for split-screen narratives. Different and simultaneous temporal segments are overlapped within a split-screen spatial montage, following the logic of addition and coexistence, by keeping all of them visible in the spatial montage composed of the desktop interface tabs. In the framework of this user interface, the narrative takes place in the form of a temporal continuum in which the duration of the story matches that of the plot, without interruptions. In this case, moreover, the modular narrative not only reconfigures the temporal relationships, but the very (in)materiality of the interface creates a mysterious space that serves the dramatic structure of the psychological thriller: from an everyday environment in contemporary digital visual culture such as a computer desktop, a series of unusual elements are introduced that, from the virtuality of the network, progressively unleash a series of devastating offline effects on the characters.

3.2. Approach to a film segmentation model

The fact that *Open Windows* is based, both plot-wise and in form, on split-screen narratives and notions of modularity makes it an ideal case for application of Mamber's (2002) method of database sequencing analysis. As indicated in the methodology section, the entire film has been fragmented by choosing the first frame of each shot, and the resulting thumbnails displayed on a Cartesian grid. The first aspect worth mentioning when observing the thumbnails on the grid is the obvious organization of the images by visual patterns. Besides the fact that all the thumbnails making up the grid share a similar visual style, which would have to do with the photographic image of the film, the clear formation of patterns or subgroups allows us, firstly, to identify certain repetitions in order, and secondly, to propose a model of filmic analysis from them. Next, we proceed to the analysis of the three sequences of greatest narrative relevance (following the chronological order of the film) using Mamber's sequencing method.

Figure 1 shows an excerpt from one of the opening scenes of the film. An acousmatic voice asks the protagonist to position one of the cameras to focus on the hotel located just across the street. In that other room, some of the plot's main characters, Jill and her lover, will appear. In the resulting grid, at least three visual patterns stand out in terms of colorimetry, lighting and types of shots. The first of these is made up of the frames formed by the webcam that records the protagonist. The warm light of the room frames the bluish-tinted face of Nick (Elija Wood), which is illuminated by the reflection of his computer screen. He is seen first in a medium long shot, then in a close-up. The second pattern is made up of thumbnails in which the hotel room is observed through a somewhat opaque window. In this case, the predominant color is white. The third pattern, which is only represented in two miniatures, is that of the group of hackers whose glasses are barely identifiable in electric green.

Figure 1. Initial sequence of the film



Source: prepared by the authors

These patterns allow us to underline three aspects: first, the correct identification of the scenarios or locations in which the scene takes place. The hotel in the opening sequence where Nick is staying, the apartment he spies on at the other end of the street, and the hackers' room are all perfectly differentiated by the style and colors used in their representation. Secondly, the grid makes it possible to clearly distinguish between the three groups of characters that are linked to the spaces: that is, the protagonist, the actress, and the hackers. Finally, the patterns make it easier to recognize the means of depiction or visual methods used for the recording of the screens in the film. That is, more than 12 different cameras are used for each shot: the webcam of the protagonist and the French group, and the video camera that focuses on the hotel window.

In the same way, the grid allows us to track the narrative progression of the sequence. As mentioned, as the film unfolds the actions alternate and overlap on the different (multi)screens. At times there is only access to the protagonist's camera; in certain parts the viewer must decide which of the different simultaneous screens to pay attention to, as the parallel montage of the action progresses on each one at the same time. Such a sensory experience of events belonging to different timelines happening in simultaneous visual fields on the interface can lead to a sense of estrangement and uncertainty in the viewer. The digital image is characterized by its virtuality and intangibility, as well as by its ability to be captured and reproduced in the multiplicity of electronic media available (Oltra Navarro and Alcalá Mellado, 2008). These properties are used in the film to confuse the viewer and intentionally show actions that belong to previous recordings of the plot on the same desktop where

the events are taking place in real time, creating the tension that the film depicts until the main character's identity is finally revealed.

In summary, with the sequencing in thumbnails in the grid it is possible to identify the characters that are linked to the spaces and the modes of visual representation that connect them, as well as the complex narratives articulated on each of the sub-screens that make up the interface separately. Looking at the thumbnails displayed on the grid, if one focuses attention only on the frames in which Nick appears, for example, it is possible to observe his sequence of actions: how he approaches the webcam and reacts to what the antagonist's voice says on his computer. The same would be true if just the thumbnails showing the hotel room across the street were taken into account, since the timeline of the actions taking place there could be reconstructed. In this case it is easy because the original editing of the film favors sequential editing over parallel editing. That is, by zooming in and out, the camera approaches each of the frames or subscreens, so that the multiscreen effect is almost nonexistent. However, if we were to take as a reference a sequence (Fig. 2) in which the parallel montage takes place in its complexity using the multiscreen, its display on the Cartesian grid would also allow us to reconstruct the linear time progression of each of the screens.

Figure 2. Escape sequence in the hotel



Source: prepared by the authors

This reading through visual patterns facilitated by the grid is repeated throughout the film. There are sequences in which the difference that allows us to distinguish the characters associated with their cameras, the spaces and the narrative progression becomes even more evident, as is the case of the car chase scene (Fig. 3). In it, the villain has kidnapped the actress, who is locked in the trunk of his car. Some cameras that he keeps in his vehicle allows a 3D model to be generated that helps Nick and

the hackers to guide the actress so that she can escape, although Jill has an alternative plan in mind. When the sequence is displayed on the grid (Fig. 4), three distinct patterns or groups of thumbnails are clearly visible: in blue, the image of the protagonist driving the car at night, recorded with the webcam resting on the passenger seat. In green, the French group of hackers, from their usual shelter. And in red, in a simulated 3D image, the kidnapped actress inside the trunk of the kidnapper's car. The grid allows each space and character to be clearly differentiated and distinguished from one other by highlighting the visual style used in each representation. At the same time, the narrative progression of each space/character pairing can be easily traced. If we place each image, one after the other, selected by visual style patterns, we would obtain the succession of each of the sequences that take place in each camera of the multiscreen (Fig. 5). The grid functions, thus, as a tool for analysis that helps to perfectly reconstruct and trace the action that takes place in the parallel and abrupt montage within the film.

Figure 3. Car chase scene



Source: prepared by the authors

Figure 4. Patterns of the car chase scene



Source: prepared by the authors

Figure 5. Rearrangement of the scene by visual patterns



Source: prepared by the authors

4. Discussion and conclusions

Based on the fieldwork conducted, it has been possible to validate the proposed hypothesis and achieve the research objectives. Through analysis of this film, it has been confirmed that the interactivity facilitated by the software of an interface (virtual desktop) can indeed be utilized in the articulation of modular narratives. When this interactivity is employed as a central

narrative support, as is the case in *Open Windows*, it assumes a set of distinctive characteristics. These singularities clearly demonstrate the close relationship between digital visual culture and the database aesthetics intrinsic to narrative modularity articulated through the interface. This connection is well-aligned with the principles espoused by Manovich (2001; 2013), Kinder (2002), and Cameron (2008).

Similarly, in terms of spectacle, the audiovisual representation under study further underscores the validity of the specificities outlined by Darley (2002) regarding the concept of digital visual culture. Tecñical artifices such as 3D animation and other visual codes inherent to the digital environment of the interface (webcams, groupings of computer data such as desktop windows, interactive infographics, etc.) are utilized to evoke particular sensations in the viewer (within the framework of the psychological thriller film genre it seeks to align with). Additionally, operations such as zoom-in/out suggest the presence, to some extent, of elements from an earlier tradition concerning cinematographic mise-en-scène, framing, and editing. The convergence between electronic intertextuality and formal procedures commonly employed in cinematographic art invites reflection on the concept of remediation that is intrinsic to this entire process.

On the other hand, one of the functionalities derived from applying the proposed analytical model to a work reliant on the concepts of digital interface and split-screen is the clear identification of visual patterns. By presenting the thumbnails, which arrange each shot on a Cartesian grid, a visual analysis can be formulated that enables separation and grouping of images by spaces, characters, and the visual style or register employed. In addition, by observing the thumbnails that display similar patterns, it becomes possible to trace the linear progression of each plot associated with each space-character pairing. In the face of the frenetic and simultaneous rhythm characteristic of the multiscreen that defines the film, the grid allows the action of each of the sub-screens to be reconstructed without relinquishing the narrative origin of the plot.

The possibilities for analyzing such complex narratives are vast and will undoubtedly necessitate future research to augment this proposal. As Mamber (2002; 2003) draws a parallel between the established model and the logic of DVD scene menus, the thumbnails comprising a digital database could serve as access points for various interactions. These interactions might include quickly accessing content by clicking on the grids, playing only the selected segmented sequence, or displaying additional material (such as parts of the script, drawings, sketches, statistics, or other data). In essence, representing a film as a database through a Cartesian approach would offer diverse visual pathways to access the film's contents or any other content linked through metadata.

In a different vein, it has been observed how the formal split-screen approach has been utilized at the thematic level to articulate reflections on the various ways in which the digital revolution has introduced new problems and fears now permeating the collective imagination. In the case study analysis, distinct conceptual connections have been identified where the participatory culture inherent to the internet, the democratization of access to a large volume of data, and cultural expressions (Himmelbach, 2003; Bustamante, 2008; Zittrain, 2014) contrast with fears and anxieties expressed in contemporary public debate, such as digital dictatorships arising from the massive collection of users' personal information on a global scale through big data algorithms, as articulated by authors like Harari (2018), surveillance capitalism (Zuboff, 2020), or the promotion of fragmented or volatile identities by new media (Rueda Laffond et al., 2014).

The postmodern notion of fragmented identities is also closely linked to the virtuality of digital space, where authenticity becomes a flexible and contingent element (Valderrama Barragán, 2017). The fragmentation inherent in the modular narrative's development within the split-screen typology in the film thus accentuates this aspect further. One of the central elements that runs throughout the entire analyzed story supports the thesis that the internet is an ambivalent space where constant aporia is maintained: the level of control and systematization in data collection contrasts with the ease of manipulating that data for the benefit of individuals who possess specific knowledge far beyond that of the average user. Consequently, a debate arises regarding the reliability of information circulating on online channels, and the democratizing potential inherent in the apparent horizontality of the internet is brought into question. In this regard, as a future research direction, applying a more critical approach with greater interpretative depth in the analysis of this film typology is proposed, once the applicability of the outlined analytical model has been validated.

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Discussion and conclusions	Luis Cemillán Casis and Francisco Jiménez Alcarria
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7. Conflict of interest

The authors declare that there is no conflict of interest contained in this article.

8. Bibliographic references

- Bešlagić, L. (2019). Computer Interface as Film: Post-Media Aesthetics of Desktop Documentary. *AM Journal for Art and Media Studies*, 20, 51-60. <https://doi.org/10.25038/am.v0i20.323>
- Borges-Rey, E. (2015). News Images on Instagram. *The paradox of authenticity in hyperreal photo reportage. Digital Journalism*, 3(4), 571-593. <https://doi.org/10.1080/21670811.2015.1034526>
- Brea, J. L. (2005). *Estudios visuales: la epistemología de la visualidad en la era de la globalización*. Akal.
- Brütsch, M. (2018). Complex Narration in Film: Reflections on the Interplay of Deception, Distancing and Empuzzlement. En: S. Schlickers y V. Toro (Eds.), *Narratological Studies on Deception, Paradox and Empuzzlement* (pp. 135- 154). Universität Bremen.
- Brütsch, M. (2021). Loop Structures in Film (and Literature): Experiments with Time Between the Poles of Classical and Complex Narration. *Panoptikum*, 26(33), 83-107. <https://doi.org/10.5167/uzh-213772>
- Buckland, W. (2014). *Hollywood puzzle films*. Routledge.
- Bustamante, E. (2008). *Comunicación y cultura en la era digital. Industrias, mercados y diversidad en España*. Gedisa.
- Cameron, A. (2008). *Modular narratives in Contemporary Cinema*. Palgrave Macmillan.
- Català, J. M. (2005). *La imagen compleja. La fenomenología de las imágenes en la era de la cultura visual*. Servei de Publicacions de la Universitat Autònoma de Barcelona.
- Ceballos, N. (2013). "Open Windows". *Fotogramas*. <http://tinyurl.com/5dc6rcyp>
- Darley, A. (2002). *Cultura visual digital. Espectáculo y nuevos géneros en los medios de comunicación*. Paidós.
- Elsaesser, T. (2021). *The mind-game film. In The Mind-Game Film*. Routledge.
- Everett, A. y Caldwell, J. T. (2003). *New Media. Theories and Practices of Digitextuality*. Routledge.
- Fernández Castrillo, C. (2015). La saga Matrix como epítome de la condición digital. *El Genio Maligno. Revista de Humanidades y Ciencias Sociales*, 17.
- Harari, Y. N. (2018). *21 lecciones para el siglo XXI*. Editorial Debate.
- Himmelsbach, S. (2003). The Interactive Potential of Distributed Networks. Immersion and Participation in Films and Computer Games. En: J. Shaw y P. Weibel (Eds.), *Future Cinema. The Cinematic Imaginary after Film* (pp. 530-535). The MIT Press.
- Hudson, D. y Zimmermann, P.R. (2015). *Thinking Through Digital Media. Transnational Environments and Locative Places*. Palgrave Macmillan.
- Ibáñez, J. C. (2016). *Cine, televisión y cambio social en España*. Síntesis
- Jang, M-H. y Moon, J-C. (2017). The Characteristics of Spectacularity and Narrative in Digital Fiction Film Split Screen. *The Journal of the Korea Contents Association*, 17(1), 193-200. <https://doi.org/10.5392/JKCA.2017.17.01.193>
- Jenkins, H. (2006). *Convergence Culture: Where Old and New Media Collide*. New York University Press.

- Jenkins, H., y Deuze, M. (2008). Editorial: Convergence Culture. *The International Journal of Research into New Media TecYologies*, 14(1), 5-12. <https://doi.org/10.1177/135485650708441>
- Jerasa, S., y Boffone, T. (2021). BookTok 101: Tiktok, Digital Literacies, and Out-of-School Reading Practices. *Journal of Adolescent & Adult Literacy*, 65(3). Newark y Philadelphia: International Literacy Association, 219-226. <https://doi.org/10.1002/jaal.1199>
- Kinder, M. (2002). Hot spots, Avatars, and Narrative Fields Forever: Buñuel's Legacy for New Digital Media and Interactive Database Narrative. *Film Quarterly*, 55(4), 2-15. <https://doi.org/10.1525/fq.2002.55.4.2>
- Kiss, M. (2017). *Impossible puzzle films: A cognitive approach to contemporary complex cinema*. Edinburgh University Press.
- Kiss, M. (2023). Complex Film Narratives Diegetic Fictionalization in Christopher Nolan's Fantastical Puzzle Film Cycle. En: P. Taberham y C. Iricinschi (Eds.), *Introduction to Screen Narrative. Perspectives on Story Production and Comprehension* (pp. 71-92) Routledge.
- Knochel, A. (2013). Assembling Visuality: Social Media, Everyday Imaging, and Critical Thinking in Digital Visual Culture. *Visual Arts Research*, 39(2), 13-27. DOI: <https://doi.org/10.5406/visuartsrese.39.2.0013>
- Landow, G. P. (2006). *Hypertext 3.0. Critical Theory and New Media in an Era of Globalization*. The Joÿs Hopkins University Press.
- Leaver, T., Highfield, T., y Abidin, C. (2020). *Instagram: Visual social media cultures*. Polity Press.
- Mamber, S. (2002). Space-Time Mappings as Database Browsing Tools. En: C. Dorai y S. Venkatesh (Eds.), *Media Computing. Computational Media Aesthetics* (pp. 39-55). Springer Science + Business Media.
- Mamber, S. (2003). Narrative mapping. En: A. Everett y J. T. Caldwell (Eds.), *New Media. Theories and Practices of Digitextuality* (pp. 145-159). Routledge.
- Manovich, L. (2000). Database as a Genre of New Media. *Ai & society*, 14, 176-183. <https://doi.org/10.1007/BF01205448>
- Manovich, L. (2001). *El lenguaje de los nuevos medios de comunicación*. Paidós.
- Manovich, L. (2013). Media after software. *Journal of Visual Culture*, 12(1), 30-37. <https://doi.org/10.1177/1470412912470237>
- Manovich, L. (2014). Postmedia aesthetics. En: M. Kinder y T. McPherson (Eds.), *Transmedia Frictions: The Digital, the Arts, and the Humanities* (pp. 34-44). University of California Press.
- Marzal-Felici, J. y Casero Ripollés, A. (2016). El compromiso con la cultura visual digital y con el estudio de la comunicación. *AdCo-munica. Revista Científica de Estrategias, Tendencias e Innovación en Comunicación*, 12, 11-19. <https://doi.org/10.6035/2174-0992.2016.12.1>
- Novikov, V. N. (2017). Desktop Films. To Read or to Watch? *Vestnik VGIK I Journal of Film Arts and Film Studies*, 9(2), 102-112. <https://doi.org/10.17816/VGIK92102-112>
- Oltra Navarro, G., y Alcalá Mellado, J.R. (2008). *Una introducción a la imagen digital y su tratamiento*. Universidad de Castilla La Mancha.
- Palacio, M. y Rodríguez Ortega, V. (eds.) (2020). *Cine y cultura popular en los 90: España - Latinoamérica*. Peter Lang.

- Rajas, M. (2014). Open Windows. Múltiples interfaces para contar una historia. *Cameraman: Revista técnica cinematográfica*, 76, 6-15.
- Rueda Laffond, J.C., Galán Fajardo, E., y Rubio Moraga, A. L. (2014). *Historia de los medios de comunicación*. Alianza Editorial.
- Simons, J. (2014). Complex narratives. En: W. Buckland (Ed.), *Hollywood Puzzle Films* (pp. 17-34). Routledge.
- Stam, R. (2008). *Teorías del cine. Una introducción*. Paidós Comunicación.
- Valderrama Barragán, M. (2017). El devenir de la identidad digital: del yo proteico al yo identificado. *PAAKAT: revista de tecnología y sociedad*, 6(11).
- Walsh, R. y Stepney, S. (2018). *Narrating Complexity*. Springer.
- Zittrain, J. L. (2014). Reflections on Internet Culture. *Journal of Visual Culture*, 13(3), 388-394.
<https://doi.org/10.1177/1470412914544540>
- Zuboff, S. (2020). Capitalismo de la vigilancia. *Política exterior*, 34(194), 7-12.