THE ISOLATED STILL FRAME AS SUBLIMINAL AGENT: ANALYSIS AND CATEGORISATION

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0. INTRODUCTION

There are various ways that a film spectator can be influenced without being aware of it. In all cases, the spectator processes certain stimuli at the neural level, but those stimuli do not reach the threshold of the supraliminal (conscious) level, as they are stored entirely on the subliminal (unconscious) level.

The move from subliminal to supraliminal is determined by neural correlates of consciousness (NCC), which constitute the smallest neural processes that need to occur for a stimulus to be consciously perceived (Crick & Koch, 1990). It is believed that after an initial low-level processing of stimuli, the brain decides not to complete certain processes, and thus the stimuli that triggered those processes do not reach the conscious level. Far from constituting a limitation, this is a preventive mechanism that vests the human cognitive system with a protection from the threat of

hypersensitivity and even perceptual saturation (Wang *et al.*, 2019).

Among the possible options to design subliminal stimuli in the cinematographic environment (García Matilla, 1990; Molina, 2012, 2013), such as masked fades (Sanz-Aznar y Caballero-Molina, 2021) applied in *Psycho* (Alfred Hitchcock, 1960) or in *The Exorcist* (William Friedkin, 1975), one of the possible options for designing subliminal stimuli that has attracted the most attention is the technique of embedding a single still frame[1] in a place where it doesn't belong, so that although it goes unnoticed, it can condition the subsequent perception of the film by spectators, who are never made aware of the manipulation that they have been subjected to.

The effectiveness of this technique should be assessed with caution. The fact that the subliminal stimulus is so fleeting and is immediately followed by a series of supraliminal stimuli has led many theorists to conclude that the potential for

manipulation offered by such stimuli is quite limited (Broyles, 2006). Nevertheless, that such stimuli have the potential to affect spectators is beyond scientific dispute, as it is agreed that they initiate low-level neural processes that can influence the processing of subsequent stimuli (Pan *et al.*, 2017). However, it should be noted that there are no scientific publications on quantitative experiments that prove the effectiveness of subliminal stimulation within the cinematographic medium.

The operation of these subliminal stimuli, which constitutes the object of this study, depends on the fact that before the series of neural processes necessary for conscious perception (NCC) can occur, the visual input is replaced by another input that inhibits those neural processes because the cognitive system is required to initiate the processes associated with the new stimulus. This prevents the spectator from becoming aware of any stimuli displayed for an insufficient amount of time. Yet although they are not consciously perceived, these subliminal still frames trigger neural processes that influence the development of subsequent neural processes (Berkovitch & Dehaene, 2019). Various experiments have demonstrated that by inhibiting neural processes before the NCC are completed, subliminal stimuli effectively alter the processing of subsequent stimuli (Liu *et al.*, 2020; Berkovitch & Dehaene, 2019).

In short, the impact of the subliminal still frame on the spectator does not consist of the communicative transmission of a message, but of an attack on the spectator's cognitive system. How this happens and the different manifestations of this phenomenon is the object of this study.

1. THE ISOLATED STILL FRAME AS SUBLIMINAL STIMULUS

In an experiment on subliminal stimuli containing information of importance for the completion of a task without reaching the conscious level due to the lack of time they appear on screen, partici-

pants were asked to count red stars appearing on a black screen (Liu *et al.*, 2020). The level of difficulty of the test varied, as anything between 5 and 19 stars could appear over a span of 1200 milliseconds (ms). During this time, the study subjects might or might not be exposed to subliminal audiovisual or exclusively auditory stimuli. The auditory stimuli consisted of a voice beneath the threshold of hearing stating the number of stars that appeared on the screen, while for the audiovisual stimuli the appearance of the number of stars shown on the screen was added for 5 ms. The results of the experiment demonstrated that when participants had to say how many stars had appeared on the screen, the perceptual error in the task was slightly lower when they had received the subliminal stimuli, thus confirming the effectiveness of such stimuli on the perception of supraliminal stimuli.

The aggressive film editing technique involving the compression of the viewing time afforded to the spectator so that a visual stimulus will fall into the subliminal range requires an understanding of the concepts of *objective threshold* and *subjective threshold* (Cheesman & Merikle, 1984). These two concepts refer to the amount of time necessary to trigger the neural processes without reaching the conscious level. The objective threshold must be exceeded in order to initiate low-level cognitive processes without activating the processes that would make the subject conscious of the triggering event. Below this objective threshold, the stimulus does not affect the individual in any way. Meanwhile, the subjective threshold is the level at which the processes required for the NCC occur, at which point the stimulus enters the subject's consciousness. This means that in order for an event to be unconsciously perceived, it must fall somewhere between the objective threshold and the subjective threshold. Consequently, the term "subliminal" can be attributed to any image that the perceiver is unable to report after it has been displayed for a span of time that is too short for conscious perception but long enough to

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trigger low-level neural processes that could influence subsequent stimuli.

The subjective threshold is estimated to be between 30ms and 50ms slower than the objective threshold (Cheesman & Merikle, 1984), and any stimulus is assumed to exceed the subjective threshold if it falls within the range from 32ms to 80ms (Armstrong & Dienes, 2013). Based on these reference figures, the objective threshold can be difficult to gauge; however, bearing in mind that at a standard playback speed of 24fps a frame is visible for 41.67ms, from a neuroscientific perspective a cinematic subliminal stimulus can be identified as one frame, as it is only with a single frame that the objective threshold could be exceeded without also exceeding the subjective threshold.

2. EVOCATIONS OF THE SUBLIMINAL STILL FRAME

The subliminal image withdrawn from the spectator before reaching the subjective threshold lasts long enough to trigger what is known as the innate alarm system. This is a defence mechanism that facilitates the processing of stimuli as quickly and effectively as possible, with the objective of speeding up reaction times to cognitive inputs, while also enhancing response effectiveness. This neural process has been demonstrated to be much faster and more effective than other neural mechanisms associated with consciousness (Terpou *et al.*, 2019). When people are exposed to an image for less than 16.7 ms, they

are given a sufficient time margin to trigger the same neural mechanisms that react to a potential threat without actually becoming conscious of the fact (Williams *et al.*, 2006; Liddell *et al.*, 2005).

The activation of the innate alarm system also triggers the autonomic nervous system (ANS), associated with the fight-or-flight response. This in turn sets off the emotional evaluation processes that operate in the state of cognitive alert to a potential threat. From this moment, the attention is aroused, the focus of interest is narrowed, and the subject is immersed in a higher state of receptiveness. Thus, according to some studies (Liu *et al.*, 2020), these subliminal audiovisual impulses have the generic capacity to enhance an individual's cognitive attention to the stimuli that follow them.

The masked priming paradigm involves the presentation of a subliminal stimulus, referred to as a *prime*, followed by another, known as a *mask*, which is normally supraliminal. The intention of the mask is to inhibit the neural processes by means of a new stimulus, ensuring that the prime stimulus does not reach the conscious level (Van den Bussche, Van den Noortgate, & Reynvoet, 2009). Finally, the image that is the focus of the required task is displayed. This image is known as the *target*, as it is the stimulus that serves to measure the effect of the prime.

In the context of a study based on textual stimuli (Berkovitch & Dehaene, 2019), an experiment was conducted involving the successive presentation of an initial mask for 100 ms, the prime input for 33 ms, a subsequent mask with a duration of 100 ms, and then finally the *target*. After viewing this series of visual stimuli, the participant was required to answer a question about the grammatical category of the target. Variations on this pattern were also conducted, displaying the series of stimuli with or without the subsequent mask. The question about the unmasked target was answered 10 ms more quickly than the one

about the masked target, thereby confirming that the mask slowed down response time.

As part of the same research project, as many as four other experiments were conducted, with variations related to the consistency or inconsistency between the prime and the target, the subliminal or supraliminal nature of the masks, and adjustments to the time interval between the prime and the target, known as stimulus-onset-asynchrony (SOA).

Based on this series of experiments, it was found that a prime stimulus belonging to a particular grammatical category could speed up processing of a target belonging to the same grammatical category, facilitating faster responses. Another significant finding was that the characteristics of the subliminal stimulus generate expectations about the subsequent stimuli. This effect is more intense if the mask is consciously perceived, and slightly less so if the mask is subliminal.

From these experiments it was concluded that subliminal prime stimuli induce a syntactic context that influences the processing of subsequent stimuli perceived consciously as targets. This is what is defined as syntactic priming. Various studies confirm the unconscious search for semantic and syntactic consistency in the series of visual images (Cohn & Kutas, 2017; Vodrahalli *et al.*, 2018), opening up the possibility of verifying whether the same search for contextual consistency can also be extrapolated to subliminal images. For this reason, when trying to categorise different types of subliminal still frames, it is important to distinguish those that maintain consistency with the shot they accompany from those that disrupt that consistency (such as the insertion of a black-and-white frame in a colour series).

One last aspect that subliminal images can influence relates to their emotional valence. In a study where faces wearing expressions consistent with states of happiness or sadness were shown at intervals of 14ms, 40ms, or 80ms, an EEG identified the presence of the component of the event-related potential (ERP) associated with the perception of faces, known as the N170, regardless of whether the input had been subliminal or supraliminal (Lai *et al.*, 2020). Moreover, in the same study, it was found that N170 latency was longer for the 14ms inputs than it was for those of longer durations. These findings suggest that the N170 may be the epiphenomenon of an unconscious face perception prior to the information processed reaching the supraliminal level. This study confirms that the detection of external facial information is the result of an immediate and precise neural process, even when it does not occur consciously.

It is also worth noting that according to the same study, happy faces showed a bigger neural response when they were detected consciously, while sad faces did so when they were not detected consciously. In other words, not only did the results trigger neural processes related to face perception before this information was conscious, but also these processes can be differentiated based on the emotional valence reflected in the face displayed as a stimulus.

In short, it can be concluded that the human brain appears to be disposed to distinguish between different emotional valences of facial expressions without even any need for the subject to be conscious of having perceived them.

3. CINEMATOGRAPHIC MANIFESTATIONS OF THE SUBLIMINAL: DEFINITION AND CATEGORISATION OF THE FLEETING FRAME

Still frames associated with the subliminal level have always been categorised in a narrow or homogeneous way, but in fact, it is important to note that substantial differences can—and should—be identified in different subliminal frames, through the delineation of clear categories based on their appearance, content, behaviour, or purpose.

Despite the fact that to date there is no empirical evidence of its potential impact on the cine-

matographic environment, these isolated images, discursively out of place, are vested with the legitimacy conferred on them by the narrative and the dramatic universe to which they belong. In other words, these images are never arbitrary, random, or gratuitous, but designed to have a specific impact on the spectator, with a meticulously assigned function in the context of a particular scene or dramatic action. In short, these images fulfil a pre-established function. And although they are never supposed to advance the story since they are never even perceived on a conscious level, they are certainly intended to influence the spectator.

In order to distinguish between different types of subliminal still frames, certain variables need to be identified, such as whether the frame is semantically and/or syntactically connected to the frames that follow it, what kind of graphic or compositional qualities it possesses (from figurative or geometric forms to shapeless images), or whether it reinforces its own presence as a monochrome break in the regular, fluid continuum of the discursive chain through the use of white, black or any other colour that disrupts the orderly flow of frames. Beyond these aspects, another question to consider, as noted above, is whether the frame introduces an emotional valence by inserting a face that might affect the perception of the subsequent supraliminal images. Only after considering the variables described above will we be able to determine the cognitive effectiveness of this device, and to formulate useful parameters for its design, function, and location.

It is patently clear that there are different categories of subliminal frames, beginning with a type that really should be excluded from the list because it exceeds the time limit discussed above of a single still frame (despite the fact that the vast majority of specialised studies continue to refer to subliminal stimuli composed of two or more frames). Such images constitute a category that should properly be labelled "false subliminal images" to highlight the inappropriate nature of their

institutionalised use as an example of something which, in reality, they are not.

While discrediting the inclusion of images made up of more than one frame in the subliminal category, it is worth reflecting for a moment on whether the single-frame subliminal image can be classified as a shot. To this end, it is necessary first to trace the appearance and gradual institutionalisation of the term "shot" itself, to when, in the 1910s[2] (Altman, 1996), the lexicon associated with the new art of cinema began being standardised on both sides of the Atlantic. As Emmanuel Siety points out, the French term *plan* (shot) was initially used to designate "Each of the flat surfaces perpendicular to the direction of the gaze representing degrees of depth"[3] (Siety, 2001: 55). Over time, it ceased to be used to refer to an entire scene, but instead came to mean the series of different shots that comprised it. It was then that the unity of the scene was broken down in an evident desire to draw the spectator's gaze into the dramatic development through a more intimate and dynamic point of view. Epstein (1988) would define it as anatomical decades before it would come to be recognised and characterised by McLuhan (1996), and immediately thereafter by others like Bonitzer (1995), as an inherent feature of hot media.

This is what constitutes the *small visual trauma* caused by the change of shot, according to Jacques Aumont (2000). This sensory reaction is at once enhanced and reduced or concealed by the insertion of an isolated frame, lacking time and space and stripped of point of view. It is neither the product nor the return of a gaze; its purpose is to subvert, in more than one sense, the unity of the scene. It should therefore not be confu-

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sed with a shot, despite the fact that it may technically meet the rudimentary, tautological and inadequate definition of the concept offered in *Aesthetics of Film*, as "any piece of film that runs uninterrupted between two shot changes" (Aumont *et al.*, 1985: 41).

The fleeting frame is of course inserted between two cuts, and establishes a tension between them, playing with our senses and our cognitive system; but it is not a shot nor is it intended to be one, because neither its function nor its behaviour correspond to what we expect from that discursive unit. With this in mind, the more precise classification of "fleeting or invasive frame" will be used here to describe the manifestation of what this study identifies as the presence of the subliminal image in film.

4. USES OF THE SUBLIMINAL STILL FRAME IN CINEMA

Alfred Hitchcock makes use of one of these floating frames in the conclusion to *Spellbound* (1945),

when Dr. Murchison (Leo G. Carroll) ultimately shoots himself in a POV shot underscored by the dramatic added effect of a red still frame covered almost completely by an explosive cloud[4] when the character fires the gun into his own face/into the camera. The disruptive embedding of this frame has the effect of emphasising a highly unusual (especially for classical Hollywood's strict production code) and defiant act of suicide experienced by the spectator in the first person. The projectile fired at the spectator is sensory and cognitive in nature. The case described here can be analysed in figure 1.

By deconstructing the action described above into frames, we can identify one of the frames acting unexpectedly as a transition into the still frame where the image of the explosion appears fully formed. The subliminal stimulus is thus foreshadowed, i.e., it is not inserted abruptly. This raises the question of whether this example conforms to the principle outlined above, that in order to be deemed subliminal the stimulus must be contained in a single frame. In other words, although in this case the stimulus is shown clearly in a single frame, it is in a sense already anticipated in the frame that precedes it.

An interesting aspect of this frame is the sudden and violent intrusion of bright red in a black-and-white film. On the cognitive level, information on movement and position is processed in the parietal cortex much more quickly than information on colour and shape, which are processed in the temporal lobe (Milner & Goodale, 2006). This gives the spectator the perceptual sensation that the red tinge of the explosion actually invades the

Figure 1. Fragment from the end of the film *Spellbound* where the embedded subliminal still frame is located. Note: The time code is in Hour:Minute:Second:Frame format

Figure 2. Fragment from the film *Se7en* where the subliminal still frame showing a close-up of Tracy's face is inserted. Note: The time code is in Hour:Minute:Second:Frame format

subsequent frames as well, despite the fact that the colour is no longer present.

Among contemporary filmmakers, David Fincher is without doubt one of the most decisive and emphatic in the use of this device referred to here as the fleeting frame, earning himself the title of a true master of the subliminal (Marimón, 2015). In the final sequence to *Se7en* (David Fincher, 1995), set in the middle of a vast oilfield where the macabre series of murders orchestrated by John Doe (Kevin Spacey) will come to an end at the very moment that the detective, David Mills (Brad Pitt), discovers that his wife, Tracy (Gwyneth Paltrow), has been brutally murdered by the ruthless psycho-killer. When Mills suddenly receives a disturbing package containing (as he alone confirms) his wife's head, he points his gun at the killer and prepares to fire. In the moment immediately prior to the gunshot, Fincher inserts a fully subliminal image, contained on a single frame, in the form of a photograph of the protagonist's wife, as shown in figure 2.

The severed head is thus perversely evoked without having to be gruesomely displayed. Its presence is limited to an insinuation through the effective combination of an off-camera reference and a subliminal image. The head shot acts as a kind of flash intended to convey the shock experienced by the character on the screen, engaging us in the traumatic mechanism that immerses us in Mills' homicidal rage. Its fleeting appearance expands, infects, and shapes the dramatic action that follows, directing it towards its anticipated conclusion. The shock provoked by this fleeting frame, embedded so aggressively in the discursive chain, spreads and numbs the effect of what happens next. The act and even the sound of the gunfire are unnecessary once this powerful, subliminal perceptual-cognitive trigger has been pulled.

In other words, this image acts as an engine or driver for the action, effectively precipitating the gunshot. But beyond its enigmatically disruptive presence, the image is underpinned by its macabre justification, consisting of using a hypothetical mental flash to show something which, in the compositional strategy that precedes it, is an obvious POV shot that has been withheld from view.

At the same time, in the midst of this shift from the external to the internal, from the perceptual to the psychological, there is clearly an inversion process at work, which translates the living image of a lifeless severed head into the close-up of a face infused with life and joy, while at the same time isolated, frozen, suspended in a completely static format (as both a photograph and a still frame). The intrusive image serves as a palliative, a parody of the trauma that displaces that which *must not* be seen, to make it even more devastating. And this makes it a craftily designed detonator of the trauma. The image is affirmed in its effective absence, triggering the psychological process of rumination.[5]

Two examples of the recurrent use of a subliminal still frame throughout a film can be found in *Sunshine* (Boyle, 2007) and *Cloverfield* (Reeves, 2008). In the first film, this strategy can be found in a scene where the space travellers board an abandoned ship. While they do so, the torches they carry cast shafts of light into space, dazzling the

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spectator for a few moments when those shafts are aimed directly at the camera. It is in these flashes of light that Danny Boyle embeds fleeting frames showing the faces of each of the missing crew members, thereby eliciting a sensation of their phantasmagorical presence (figure 3).

As a culmination to this discursive strategy based on the use of fleeting frames, Boyle concludes with a rapid-fire series of seven still frames, each one showing a close-up (all from an overhead view) of the euphoric face of a missing crew member, resulting in cognitive saturation. On a technical level, over the course of this sequence a total of nine different still frames are used, three of which are shown a second time at the end of the sequence. The scene therefore contains a total of 12 subliminal stimuli.

Once again, as noted above in the case of *Se7en*, the allusion to the dead is not through images that convey a negative emotional valence but through subliminal still frames with an emotional connotation that is completely antithetical to the context of the story. The images chosen are both happy and frozen, creating an absent presence that recalls what is no longer and never will be, as if a chilling spectral presence were filling the spaces of the empty ship.

The case of *Cloverfield* is more striking for its eccentric nature, as the frames inserted here are the product of appropriation. All these frames come from iconic works of classical horror or fantasy like *King Kong* (Merian C. Cooper & Ernest B. Schoedsack, 1933), *The Beast from 20,000 Fathoms* (Eugène Lourié, 1953), and *Them!* (Gordon Douglas, 1954), as shown in figure 4.

In this case, a conceptual dialogue is established between these early black-and-white films, contained in the subliminal still frames, and con-

Figure 3. Subliminal still frames shown during the ship-boarding scene in the film *Sunshine*. Note: The time code is in Hour:Minute:Second:Frame format
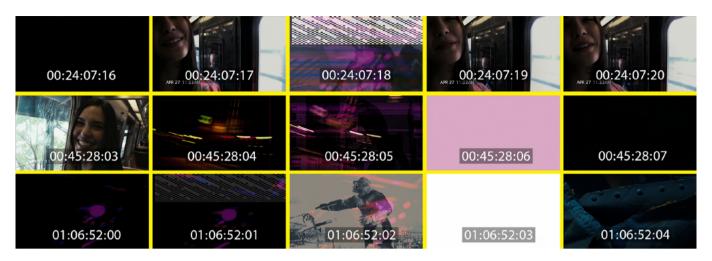
Figure 4. Fragments from the film *Cloverfield* containing subliminal still frames. Note: The time code is in Hour:Minute:Second:–Frame format

temporary cinema based on the new film, whose creators, despite having access to the full arsenal of technological resources available to the film industry today, have made a specific decision to place the monster outside the focus of attention as the action unfolds, never becoming fully visible and never confronting the protagonists face-to-face (except on one occasion more than half-way through the film and another near the end). The monster is portrayed throughout the film through the devastation it causes, but also, in a more playful and mischievous way, through a number of isolated still frames that furtively orchestrate this peculiar tribute. In this way, the monster gives up its place to a fleeting anthology of monstrosity on the subliminal level, understood as something sensed rather than perceived.

This technique effectively positions *Cloverfield* in the monster movie tradition established by Roger Corman and subsequently built on by *Jaws*, whose editor, Verna Fields, took a particularly modest approach, managing the presence of the monster with the utmost caution. Here, the central focus is shifted from the monster towards certain characters who are fighting tirelessly to survive. By giving up its explicit presence in this way, the monster seems to guarantee the suggestion of its omnipresence.

On the formal level, in order to make the terror more convincing, *Cloverfield* relies on the cover of darkness, while following in the tradition of the "found footage" subgenre with the simulation of an—improbable—discovery of video recordings taken by the very characters involved in the events on their mobile phones.

The way the subliminal stimuli are presented in *Cloverfield* closely resembles the aforementioned experiments testing the masked priming paradigm, displaying the stimulus that is to be concealed as a prime, and accompanying it with masks that ensure it is kept below the subjective threshold. In this sense, the approach adopted in *Cloverfield* is extremely precise and effective in keeping the stimuli concealed from the spectator's consciousness.

5. CONCLUSIONS

As this study has clearly shown, an isolated stimulus like that of the fleeting frame can give us access to a hypothetical or potential image. That image, stripped of materiality and connections, benefits from total virtuality, distinguishing it from other images in terms of its appearance, behaviour, and function; because of its dissociated position, free of any diegetic or narrative purpose,

THE FUNCTION OF THE SUBLIMINAL STILL FRAME LIES IN ITS COGNITIVE IMPACT ON THE PERCEPTION OF THE SUBSEQUENT SHOTS, GIVING RISE TO WHAT HAS BEEN IDENTIFIED HERE AS A FLEETING OR INVASIVE FRAME. THIS SUBLIMINAL STILL FRAME CAN AFFECT THE SPECTATOR IN VARIOUS WAYS DEPENDING ON ITS FORMAL STRUCTURE AND CONTENT, BUT ONE EFFECT THAT EVERY SUBLIMINAL STILL FRAME HAS ON SPECTATORS IS TO INCREASE THE ATTENTION GIVEN TO THE SUBSEQUENT STIMULI

it is able to extend or project itself onto supraliminal images, *infecting* them.

This image must remain on the screen for a sufficient amount of time, at least long enough to permit a perception that exceeds the objective threshold, at which point various neural processes begin to be triggered. However, it should not reach the subjective threshold, as otherwise it would enter the spectator's consciousness. Based on the academic literature in the fields of neuroscience and experimental psychology, transferred to cinematography this time interval would be equivalent to a single still frame.

From this we may conclude that this isolated stimulus cannot properly be described as a shot, since it does not have the time span that would qualify it as such, and it does not offer any kind of point of view associated with the narrative or dramatic development of the film. The function of the subliminal still frame lies in its cognitive impact on the perception of the subsequent shots, giving rise to what has been identified here as a fleeting or invasive frame. This subliminal still frame can affect the spectator in various ways depending on its formal structure and content, but one effect that every subliminal still frame has on spectators is to increase the attention given to the subsequent stimuli.

Given how a subliminal still frame affects the spectator in accordance with its characteristics, various elements have been identified here for the development of a preliminary taxonomy of subliminal still frames. In this respect, substantial differences can be identified in terms of the fleeting frame's relationship with subsequent stimuli and the way it is made to influence them. For example, it is important to discern whether the subliminal still frame establishes a relationship of semantic or syntactic consistency with the shots that follow it, given that this determines the effect on the expectations that the frame may elicit. Another relevant consideration is the graphic nature of the still frame, which may range from a figurative image (either related or unrelated to the story) to a monochrome frame or a real or abstract visual motif.

Finally, this study has found that there are subliminal still frames which, beyond their potential cognitive impact, also aim to alter the emotional valence associated with the stimuli that follow them. This type of subliminal still frame is based on the use of faces with a specific emotional charge, which, as discussed above, can trigger a perverse mechanism of emotional inversion.

In this way, through an analysis of the spectator's cognitive system, it has been possible to establish some ontological principles applicable to the subliminal still frame, determining the cinematographic threshold that separates an unconscious reaction from a response belonging to the territory of the supraliminal. At the same time, this study has described elements that could facilitate the categorisation of the different possibilities offered by the subliminal still frame. ∎

NOTES

1   Orthogonal processes involve processing the same event via separate neural pathways, generating independent processing chains between them, while a collinear process involves a continuous processing chain.

2   Roger Crittenden (1991), a specialist in the field of editing, dates its first appearance at around 1910.

3   My translation: "chacune des surfaces planes perpendiculaires à la direction du regard représentent les profondeurs".

4   Hitchcock, along with a few other major filmmakers like Akira Kurosawa, introduced this technique of inserting flashes, usually produced using monochrome still frames.

5   Rumination is a symptom of post-traumatic stress disorder, involving a repeating intrusive thought related to the event that triggered the disorder (Conway *et al.*, 2000).

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THE ISOLATED FRAME AS SUBLIMINAL FACTOR: ANALYSIS AND CATEGORIZATION

Abstract

Among the possible subliminal stimuli that a film may contain, the focus of this study is on those that are viewed for such a short time that they do not enter the spectator's conscious mind. This occurs when the viewing time of the stimulus does not exceed the subjective threshold but is still long enough to have an impact on the spectator, triggering certain neural processes that influence the reception of subsequent supraliminal stimuli. The on-screen duration of this stimulus must necessarily be limited to a single still frame, as the subjective threshold will be exceeded if there is more than one. For this reason, it is not possible to speak of a "subliminal shot," but only of a "subliminal frame." This fleeting frame has no influence on the narrative of the film, as it does not have any time span, nor is it capable of influencing the narrative or dramatic development of the film; however, based on the cognitive and emotional impact it can have on the images that follow them, subliminal frames can be distinguished and categorised according to their nature and characteristics, with a view to determining their cognitive effects, and formulating useful parameters for their design, function, and location.

Key words

Subliminal; Cinema; Film; Conditioning; Frame; Spectator; Psychology.

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EL FOTOGRAMA AISLADO COMO AGENTE SUBLIMINAL: ANÁLISIS Y CATEGORIZACIÓN

Resumen

Dentro de los posibles estímulos subliminales que puede contener un film, el que nos ocupa es aquel que por permanecer poco tiempo a la vista del espectador no llega a ingresar en su consciencia. Esta situación se genera cuando el estímulo no consigue superar el umbral subjetivo, sin que la falta de tiempo de lectura deje de comportar el condicionamiento del espectador, al desencadenarse determinados procesos neuronales que inciden sobre aquellos otros supraliminales sucesivos. La duración cinematográfica de este estímulo no puede sino establecerse en un único fotograma, al resultar cognitivamente superado el umbral subjetivo si aparece más de uno. Por esta razón, no se puede hablar propiamente de plano subliminal, sino de fotograma subliminal. Este fotograma fugitivo no conoce influencia en lo referente a la narrativa del film, ya que no contiene dimensión temporal alguna, ni es capaz de incidir en la evolución narrativa o dramática; pero, dada su capacidad de impacto cognitivo y emocional sobre las imágenes sucesivas, nos permite diferenciar y taxonomizar la concreción de su manifestación en función de su naturaleza y características, con el objeto de establecer su efectividad cognitiva y parametrizar la mejor manera de formular su diseño, funcionalidad y ubicación.

Palabras clave

Subliminal; cine; película; fotograma; condicionamiento; *frame*; espectador; psicología.

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