Mise-en-jeu: A Framework for Analysing the Visual Grammar of Platform Videogames

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ABSTRACT

This paper proposes a framework that addresses the lack of a visual grammar in videogames, providing designers, artists and academics with tools for the analysis of the aesthetics of *mediated space* in videogames. Such systematic description of the visual grammar of videogames' *mediated space* is crucial for understanding the medium itself. Our proposal is based on an analysis of the key-concepts of film's *mise-en-scène*, from which we were able to pinpoint the key-aspects of the visual grammar of the mediated space in videogames, the *mise-en jeu*. The framework presents eight variables: LIGHTING KEY, CAMERA PROXEMICS, CAMERA PERSPECTIVE, SHAPES, AREA OF PHASE SPACE, DEPTH OF FIELD, HORIZON OF INTENT and SETTING. Our method for testing and validating its functionality consisted on a detailed empirical analytical analysis of 36 case studies, all platform videogames from 1980 to 2013. Our research allowed us to find 6 distinct design patterns, proving the efficiency of the framework. For future research we aim towards an understanding of the effects that *mise-en-jeu* has on the player's experience and across diverse videogame genres, provided that a qualitative analysis of the patterns is conducted.

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1. INTRODUCTION

This paper[4] addresses the aesthetics of videogames, a component that is used to describe "the desirable emotional responses evoked in the player, when she interacts with the game system" (Hunicke *et al.* 2004, 2).[5] It takes into consideration Michael Nitsche's five planes theory for the analysis of videogame spaces (2008), especially the *mediated space*, which Sercan Sengün interprets and describes as consisting "of the visual outlet of the game and mostly breeds cinematic and visual studies" (2015, 186-7).

Previous studies include theories on the production of space (Lefebvre 1980; Manovich 2002), videogame spaces (Nitsche 2008; Aarseth 2000; Murphy 2004), game design and development (Wolf 2001; Hunicke *et al.* 2004; Chang & Hsieh 2017), game criticism (Konzack 2002), technical game research (Hunicke *et al.* 2004; Winn 2008), videogames as art and culture (Kuhn & Schmidt 2014), film studies (Giannetti 2014), and cinematography (Logas and Muller 2005).

In an approximation to how film and theatre have *mise-en-scène, mise-en-jeu* has been suggested by Ivan Girina (2013, 53) and by Victor Potier (2014). However, these authors only present terminology and the contents it could address, pointing to cinema as an example. Videogames and cinema, however, are very distinct media. Our framework fills that gap by providing a model that is structured and defined by the specificities of videogames.

In order to answer to our core question — What is the visual grammar of the videogame medium? — we have adapted the variables of *mise-en-scène* to the videogame medium, while adding new variables, native to videogames, and testing these with case studies. These were performed by means of a qualitative analysis with a sample of over 100 scenes from 36 videogames.

The first section of this paper provides an abridged review of the main literature. It is followed by an overview of the methods used to conduct the research. We then propose a framework, all the variables it includes, and demonstrate the patterns we were able to find. We conclude with a summary and a description of this research's limitations, and suggestions for future work.

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[4] This work is a summary of our dissertation *Let's Play the Visual Trail: A Framework for the Analysis of the Mise-en-jeu* (Ribeiro 2018).

[5] Although we reviewed other elements of videogame design.

2. BACKGROUND

Videogame designers often strive to provide mechanically well-developed experiences, with a comprehensive set of game designs and artefacts. The *MDA framework*[6] (Hunicke *et al*. 2004) has been proposed in order to help videogame designers with the tools to conceive those experiences. Its authors define the terms of the framework as:

- *Mechanics* describes the components of a game at the level of data representation and algorithms. They are analogous to the rules of a videogame, and we need to look at them as the machine-driven executions of which a videogame depends when functioning.
- *Dynamics* describing the run-time behaviour of the mechanics acting on player inputs and each other's outputs over time. The dynamics of a videogame are the idiosyncrasies that become a consequence of the implementation of a videogame's mechanics as a constraint of player action. They are the result of this interaction and necessitate symbiosis between the player and the machine.
- *Aesthetics* describing the desirable emotional responses evoked in the players when they interact with the game system (ibid., 2). They are set from a player perspective and are related to the tone of the videogame. In relation to this component, the authors of the framework start by asking "What makes a game fun?" Afterwards they conclude that the word fun is too limited and that it is not always what a designer sets out to achieve with a videogame, and so they created a taxonomy with 8 elements.

To arrive at these concepts, the authors researched what the main elements of videogames are and reached a conclusion: Rules, System and "Fun", and from there they established their design analogues: Mechanics, Dynamics and Aesthetics, respectively. The paper describing the MDA Framework concludes by informing us that player experience is constructed from more than the rules, and that videogame designers only design the mechanics, even when their goal with that is to influence the dynamics and consequently the aesthetics.

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[6] MDA stands for Mechanics, Dynamics, and Aesthetics.

In addition to the MDA framework, we need to understand the basic concepts of the production of space, before moving on to the production of space in videogames. Henri Lefebvre's *La présence et l'absence: contribution à la théorie des representations* (1980) presents a model of spatial structure analysis that came before the theories of Mark Wolf (2001) and Michael Nitsche (2008), which we will discuss ahead, and introduced the concept of *dialectics of triplicity*. It distinguishes three types of spaces: *objective space, conceived space*, and *lived space*. Edward Soja refines Lefebvre's concepts into what he defines as *trialectics*. According to Soja, the *lived space* "never stands alone, totally separate from its precedents or given absolute precedence on its own" (1996, 70). Soja's model defines the concept of third space and maintains that the third space comprehends the previous two. In the third space, all spaces gather together (ibid., 65).

Before Nitsche, Wolf included a very comprehensive analysis of the different characteristics of space (among other categories) in various videogames in *The Medium of the Video Game* (2001). In that work, he remarks that "many games have spaces so elaborate that spatial navigation becomes an important part of gameplay. Navigation is an interaction with space itself, a space through which one actively makes choices to find one's way around. Navigation involves freedom of movement and connected spaces, the connections of which are explored and learned through navigation" (ibid., 433).

Despite Wolf's description, Nitsche (2008) introduced what we believe to be a better paradigm, and on which we based our work. He presents 5 different spaces: the *rule-based space*, which is "defined by the mathematical rules that set, for example, physics, sounds, AI, and game-level architecture" (Nitsche 2008, 15); the *mediated space*, which is "defined by the presentation, which is the space of the image plane and the use of this image including the cinematic form of presentation" (ibid., 16); the *fictional space*, which "lives in the imagination" of the player, "in other words, the space imagined by players from their comprehension of the available images" (ibid.); the *play space*, in which players act within the rules of, not only the game but also, the physical devices that accommodate the play experience (ibid.); and the *social space*, which is "defined by interaction with others, meaning the game space of other players affected" (ibid.).

Although we follow Nitsche's model, we also recognise that it does not take into to account previous models such as those by Wolf, the *MDA framework*, or Lars Konzack's *Computer Game Criticism:*

A Method for Computer Game Analysis (2002).[7] The examples Nitsche provides throughout his book can sometimes depend in excess on film studies, and he focuses exclusively on 3D spaces, not describing elements of the 2D plane, such as the side-scrolling camera. The importance of *trialectics* is mostly recognizable here, as it promotes unidirectional exchange of information between all spaces, something we believe should be present in Nietsche's model.

To deepen our knowledge on the mediated space, we also considered the *Eye Space Framework* (Chang & Hsieh 2017), in which the authors propose a taxonomy of the compositional elements and their respective importance and significance within a given frame. This model contains four categories: *primary subject, distractions, backdrop*, and *guiding information*. We also analysed Heather Logas and Daniel Muller's *Mise-en-scène Applied to Level Design: Adapting a Holistic Approach to Level Design* (2005), that makes a distinction between cinematic and cinematography in videogames, demonstrates the application of the *mise-en-scène* in the *mediated space* and on level design, and establishes the importance of colour values in videogames.

Girina (2013) and Potier (2014) identify the need of a *mise-en-jeu* framework, similar to how film and theatre have *mise-en-scène*. However, there has not been a sharp focus on providing a framework that successfully adapts cinema's analytical tools to the videogame medium, taking in consideration its specificities. For that adaptation to happen, we first need to know how *mise-en-scène* works in film, and for that we referred to Louis Giannetti's *Understanding Movies* (2014). He tells us that "the phrase refers to the arrangement of all the visual elements of a theatrical production within a given playing area — the stage" (47). The author refers that in movies, this terminology is more ambiguous and is used to describe "a blend of the visual conventions of the live theater with those of painting" (ibid.). He provides us 15 variables for the analysis of the *mise-en-scène*: DOMINANT, LIGHTING KEY, SHOT

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[7] Konzack's paper defines a method to examine videogames. The analysis process is based on videogames principally, although it is inspired by other types of analysis approaches from varying disciplines (Konzack 2002, 89). He argues that videogames consist of two different levels: the virtual space, and the playground. Those levels can be used to the describe the game (90).

AND CAMERA PROXEMICS, ANGLE, COLOUR VALUES, LENS/FILTER/STOCK, SUBSIDIARY CONTRASTS, DENSITY, COMPOSITION, FORM, FRAMING, DEPTH, CHARACTER PLACEMENT, STAGING POSITIONS, and CHARACTER PROXEMICS.

3. METHODS

We studied platform videogames because the genre has a long history and well-documented conventions. We analysed 36 videogames, with the selection being based on the works of DeMaria & Wilson (2002) and Stanton (2015).

To collect and analyse the data, we have created tables and visualization graphics.[8] During the collection process, we have listed in a table the variables of the framework and acknowledged all the possible results for those variables. We only provided an orientation on the possible results for the HORIZON OF INTENT and the SETTING, due to the volatile nature of those variables. Adopting the methodology used by Skolnick (2014) for videogames, the analysis was based on the three-act structure, so we analysed three pivotal scenes from each case study, and in each scene, we analysed all variables at three distinct moments.

We started by testing the application of film's *mise-en-scène* to videogames, in order to find out what was incompatible and what challenges we would have ahead. Gradually, this evolved into the current method of analysis.

Having divided the table correspondent to the analysis of a scene in three moments, representing its beginning, middle and end (Fig. 1), we didn't always analyse just those three distinct moments of a scene. In order to increase the granularity of the analysis, whenever needed, we have created expanded tables in which we have described the scene in more detail and distribute that analysis into more moments. We have converted all the expanded tables into histograms to make data visualization clearer (Fig. 2).[9]

[8] Which can be found in the dissertation (Ribeiro 2018).

[9] However, we didn't create histograms for the variable HORIZON OF INTENT because we considered our analysis of it to be too biased and in need of triangulation to improve accuracy.

Value	Beginning	Middle	End
Lighting Key	HK	HK	HK
Camera Proxemics	Long Shot	Long Shot	Long Shot
Camera Perspective	Side Scrolling	Side Scrolling	Side Scrolling
Shapes	S, C	S, C	S, C
Area of Phase Space	Large	Large, Small	Large
Depth of Field	N/A	N/A	N/A
Horizon of Intent	A3, B1, B2, B3	B1, B2, B3	B1, B2, B3, C1
Setting	Exterior	Exterior	Exterior

Fig. 1
Example of an analysis table, and a correspondent expanded table.

Value	Beginning	..	..	Middle	..	..	End
Area of Phase Space	Large	Large	Large	Small	Small	Small	Large
Horizon of Intent	A3, B1, B2, B3	B1, B2, B3	B1, B2, B3	B1, B2, B3	B1, B2, B3	B1, B2, B3	B1, B2, B3, C1

Pattern 1

∞-- Time -- ∞
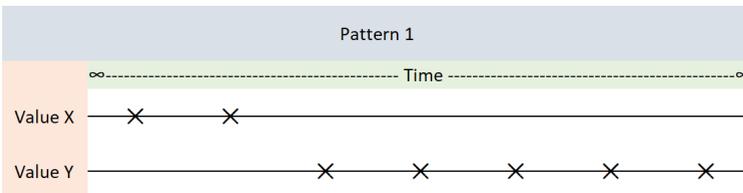
Value X

Value Y

Fig. 2
Example of a data visualization histogram.

Some variables have results that are mutually exclusive and are never present at the same time at any given moment in the scene, while others present results that sometimes develop into mixed outcomes.

4. A MISE-EN-JEU FRAMEWORK

By examining crucial ideas of the *mise-en-scène* in film, we were capable to identify the most important features of videogames' *mediated space*, from which we considered 8 variables for the analysis of the *mise-en-jeu*: LIGHTING KEY, CAMERA PROXEMICS, CAMERA PERSPECTIVE, SHAPES, AREA OF PHASE SPACE, DEPTH OF FIELD, HORIZON OF INTENT and SETTING. We recognised the possible values of these variables by considering the ones from film we thought to be appropriate for videogames, by resorting to other ac-

ademics' studies,[10] and by means of our own deductions based on empirical knowledge on videogames and through analytical play.

4.1 LIGHTING KEY

Similar to what happens in film, in videogames is possible and important to examine lighting, as simulations/representations of light are manipulated in order to create a certain kind of mood in the scene. There are three key-categories to consider: *high-key, low-key* and *high-contrast lighting* (Fig. 3). *High-key* lighting endorses intense, uniform light and few apparent dark locations. *Low-key* lighting supports shadows that are scattered across the scene and large hazy regions of light. *High-contrast lighting* favours a mixture of sharp beams of light and sudden hints of dark.

Fig. 3a, 3b, 3c.
Differences between *high-key, low-key* and *high-contrast lighting*, respectively. *Mirror's Edge* (2008) on the left and on the right, *The Witcher 3: Wild Hunt* (2015) in the middle.

4.2 CAMERA PROXEMICS

Videogames can employ a virtual camera, that can either move in response to players' movements in the game world or be controlled directly by them. The distance relating the camera to the primary subject is practically always contextual and changes in response to player action and narrative. The shot distance and proxemics in videogames are similar to film, which means that we have six basic types: the *extreme long shot,* the *long shot,* the *full shot,* the *medium shot,* the *close-up,* and the *extreme close-up* (Fig. 4).
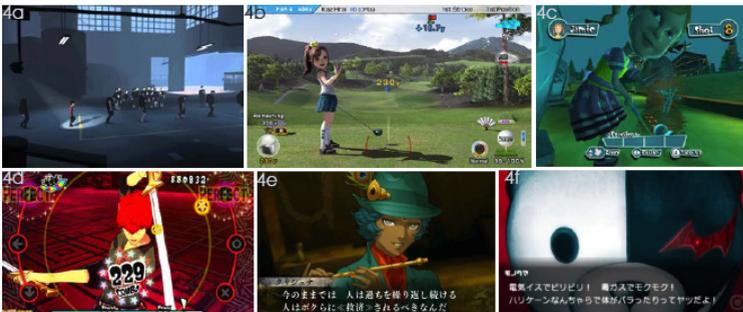

Fig. 4a, 4b, 4c, 4d, 4e, 4f
Differences between the *extreme long shot*, the *long shot*, the *full shot*, the *medium shot*, the *close-up*, and the *extreme close-up*, left to right and top to bottom. *INSIDE* (2016) (4a), *Everybody's Golf 6* (2011) (4b), *Carnival Games: Mini-Golf* (2008) (4c), *Persona 3: Dancing Moon Night* (2018) (4d), *Shin Megami Tensei IV: Final* (2016) (4e), and *Danganronpa: The Academy of Hope and the High School Students of Despair* (2010) (4f).

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[10] Which we make reference to on the appropriate subsection.

4.3 CAMERA PERSPECTIVE

Due to the lack of montage in videogames as we know it in film, camera angles vary depending upon narrative circumstances, or when a controllable camera is present, or in correspondence to player action. Rather, videogames have another component that is of supplementary importance and is innate to the medium: CAMERA PERSPECTIVE. In videogames, the following five CAMERA PERSPECTIVES exist for examination, according to Anjin Anhut (2011): *Side Scrolling, Isometric, Third-person, First-person*, and *Over-the-shoulder*. However, we added a sixth perspective – *Side Static*[11] – because in videogames like *Donkey Kong* (1981), even though we see characters from a side perspective, the camera doesn't scroll (Fig. 5).

SIDE SCROLLING
LOOKING AT A SCENE FROM THE SIDE
PROTAGONISTS MOVES ON 2D LAYERS

SIDE STATIC
LOOKING AT A SCENE FROM THE SIDE
THE CAMERA ISN'T IN MOTION

TOP-DOWN // ISOMETRIC
LOOKING AT THE SCENE FROM ABOVE

GENERAL THIRD PERSON VIEW
SLIGHTLY TOP-DOWN ANGLE

FIRST PERSON
THROUGH THE EYES OF PROTAGONIST

OVER THE SHOULDER
THIRD PERSON VIEW
ON EYE LEVEL WITH PROTAGONIST

Fig. 5a, 5b, 5c, 5d, 5e, 5f.
An illustrative comparison between *Side Scrolling, Isometric, Third-person, First-person, Over-the-shoulder* (Anhut 2011), and *Side Static* perspectives.[12]

4.4 SHAPES

In *The Aesthetics of Game Art and Game Design* (2013), Chris Solarski surveyed the behaviourism of SHAPES in videogames. He points out that following SHAPES are associated with the subsequent aesthetic concepts in art: the *circle* is associated with innocence, youth, vigour and feminineness; the *square* is associated with maturity, stability, balance and inflexibility; and the *triangle* is related with aggression, masculinity and power. This indicates that, like how we observed in film, they are a key element of the *mise-en-jeu*.

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[11] In future studies we also need to consider other perspectives, such as *Top Static,* as found in *The Legend of Zelda* (1986).

[12] Changes have been made to the image in raster graphics editing software.

4.5 <u>AREA OF PHASE SPACE</u>

In *The Aesthetic of Play* (2015), Brian Upton uses the concept of *Phase Space* from physics and introduces it in the field of videogame studies by defining it as the bounds that restrain character movement, and calls it the *horizon of action*. Essentially, the conceivable positions on a given space to which a character can go. In film, *Framing* can be either tight or loose, and a similar description can be used in videogames, but instead of *Framing*, we analyse the *phase space*, and take it contextually, since in videogames it is constantly progressing.

4.6 <u>DEPTH OF FIELD</u>

In the field of videogames, DEPTH OF FIELD is not an element native to the medium but a simulation of the effect we see occurring innately in photography in a virtual camera. Knowing this, when examining DEPTH OF FIELD in videogames, we must first confirm if the effect is present at any given moment or not; and if it is, we need to reflect on why it might be present in some situations instead of being put into action throughout the whole game.

4.7 <u>HORIZON OF INTENT</u>

As we explored Upton's work (2015) we described the concept of *horizon of action*, saying that it comprises a character's possible moves. However, he provides us with the idea of HORIZON OF INTENT as well, which represents the players' set of desirable moves, the ones they are more likely to feel the impulse to make. We need to determine which is the player's HORIZON OF INTENT within any given scene in a videogame, and in that regard, we have confidence that one approach to analyse this consists on using a orthogonal grid coordinate system (Fig. 6).
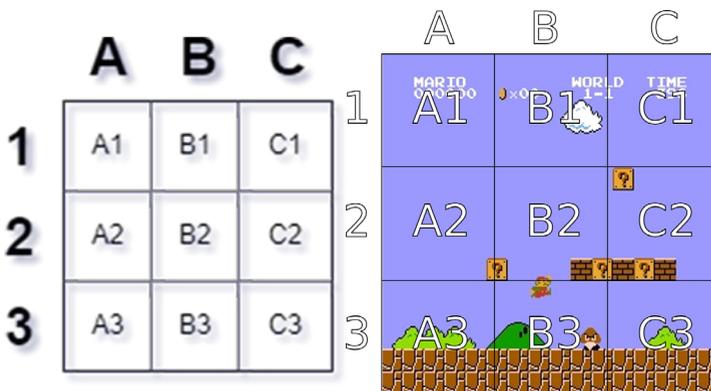

Fig. 6a, 6b.
Grid used to map the position of an object in space and an example of its application.

4.8 <u>SETTING</u>

In narratology, SETTING denotes a space of action and is shown by static descriptions or by indirect references in the narrative. Place imagery can be vastly ambiguous, or a character can provide a very detailed account of the SETTING (Lutwack 1984, 74). Therefore, we believe that in videogames it's imperial that SETTING strives to address principally interrogations regarding location. How detailed that description is, however, is completely contingent on the scope of the researcher and the necessities of the research in hand.

MISE-EN-JEU							
VARIABLES							
Lighting Key	Camera Proxemics	Camera Perspective	Shapes	Area of Phase Space	Depth of Field	Horizon of Intent	Setting
High-key	Extreme Long shot	Side Scrolling	Circle	Tight	Existent	Can be represented with a geometrical coordinate system.	Descriptive, with depth changing depending on scope.
Low-key	Long Shot	Isometric	Square	Loose	Non-existent		
High-contrast	Full Shot	Third-person	Triangle				
	Medium Shot	First-person					
	Close-up	Over-the-shoulder					
	Extreme Close-up	Side Static					

(First column label, spanning all data rows: **POSSIBLE VALUES**)

Table 1
Summary of the variables and their possible values, in the *mise-en-jeu* framework.

5. PATTERNS

To understand patterns, first we resorted to Mark Garcia's definition of patterns, which states that they are "a sequence, distribution, structure or progression, a series or frequency of a repeated/repeating unit, system or process of identical or similar elements" (2009, 8). They are a key-element in spatial design, and the interactions between multiple systems in space result in various effects of different aesthetical representation (ibid., 8-9).

In videogames, we can also find behaviours of design in the mediated space, which can then be compiled and compared, with the resulting comparisons giving origin to patterns when their graphical representation or behaviour is similar. Patterns are, therefore, the generalization of a behaviour that might manifest in the same manner across different variables.

When conducting our study, we identified various patterns by comparison. This comparison was made between all the histograms of all the different variables, meaning that each pattern is comprised by

the accumulation of the results from various variables. We quantified the repetition of visual outlines in histograms and identified the patterns. In the following sections, we describe them, theorize their significance, and question their existence.

5.1 PATTERN 1

Pattern 1 was located in 36 occurrences:[13] 25 times on the AREA OF PHASE SPACE; 6 times on the SETTING; 3 times on the CAMERA PERSPECTIVE; Once on the LIGHTING KEY; Once on the DEPTH OF FIELD.
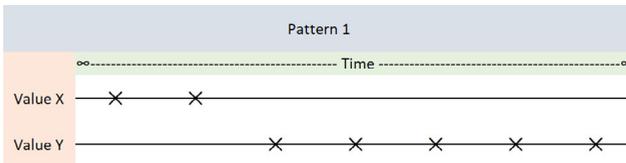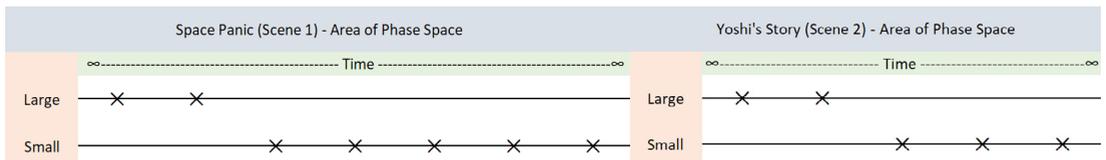

Fig. 7
Representation of Pattern 1.

Essentially, what ensues in Pattern 1 is that the variable exhibits one value consecutively, and then changes to another value that remains the same until the end. It might have to do with the creators' level design choices by, e.g., increasing or decreasing the space the player has available to move, and consequently increasing or decreasing the complexity of the level.

On the first scene of *Space Panic* (1980) that we analysed, this happens because at the beginning of the level the player doesn't have to face enemies, but from a certain point until the end of the level, enemies are always surrounding the player, and in the second scene we analysed of that same videogame, the same thing happens — although the time that the player is left without being challenged by enemies is shorter. On the second scene of *Yoshi's Story* (1997), the AREA OF PHASE SPACE starts by being large but then changes to small until the end, likely in order to increase the challenge in the platforming sections of the game.

Fig. 8a, 8b
Representations of the patterns applied to the examples above.

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[13] The occurrences are the moments in which the visual pattern is identified in a histogram.

5.2 PATTERN 2

Pattern 2 was discovered in 13 occurrences: 5 times on the SETTING; 3 times on the CAMERA PERSPECTIVE; 3 times on the AREA OF PHASE SPACE; Once on the LIGHTING KEY; Once on the DEPTH OF FIELD.
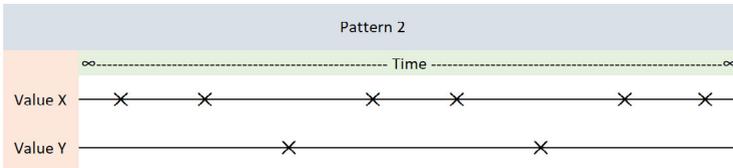
Fig. 9
Representation of Pattern 2.

What occurs in Pattern 2 is that the variable displays one value most of the times, some shifts to another value happen at odd periods, and immediately after it returns to the most constant value. These sudden shifts may exist to allow designers to, e.g., introduce the player to new locales, or to put them in starting locations that then expand into a larger traversal area. This type of change in lighting, e.g., may also be related to a sudden change in order to make navigation more difficult.

On the second scene (*Elec Man* level) of *Mega Man* (1987) that we tested, the CAMERA PERSPECTIVE is mainly *Side Static,* along with a very small AREA OF PHASE SPACE, due to the constant threat of adversaries and platforming risks, but there are two middle points in the level in which it switches to *Side Scrolling,* alongside a larger AREA OF PHASE SPACE. In the test of the second scene of *Mirror's Edge* (2008), we found this pattern on the AREA OF PHASE SPACE variable as well, which is mostly Small but has small spikes to Large whenever the SETTING changes from the *Interior* to the *Exterior,* with the results of the two variables being correlated, probably due to the designers' intent to have *interior* spaces offering a more difficult challenge in platforming.
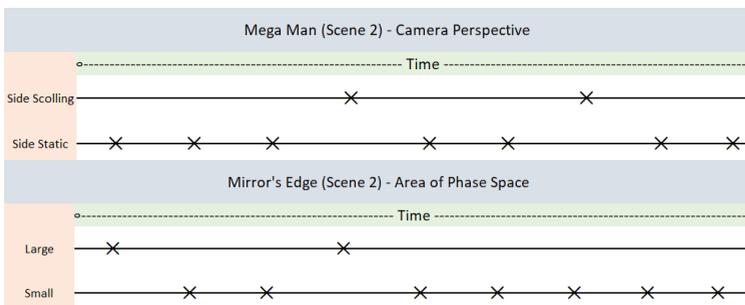
Fig. 10a, 10b
Representations of the patterns applied to the examples above.

5.3 PATTERN 3

Pattern 3 was unearthed in 12 occurrences: 9 times on the AREA OF PHASE SPACE; 2 times on the LIGHTING KEY; Once on the CAMERA PERSPECTIVE.
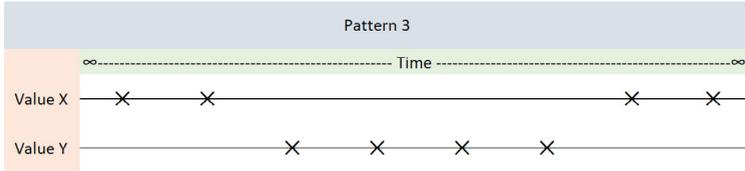

Fig. 11
Representation of Pattern 3.

What happens in Pattern 3 is that there is an initial value for a short period of time, changing to another value for a longer period, and ends with the initial value for an equal short period of time. This design might be related with the tendency that platform videogames have for presenting wide and easy to navigate locations at the start and the end of a level. In two scenes (*Labyrinth Zone* and *Final Zone*) of *Sonic the Hedgehog* (1991) and in two (*Bomb Omb Battlefield* and *Dire, Dire Docks*) of *Super Mario 64* (1996) the AREA OF PHASE SPACE is large at the beginning and at the end of the levels. It is nevertheless small at middle of those levels, moments in which we notice a higher level of difficulty during play. So, this seems to be a design pattern that lets the player observe the level and plan their actions at the beginning in order to prepare for the more difficult moments that will be experienced afterwards, and then cool down when closer to the end.
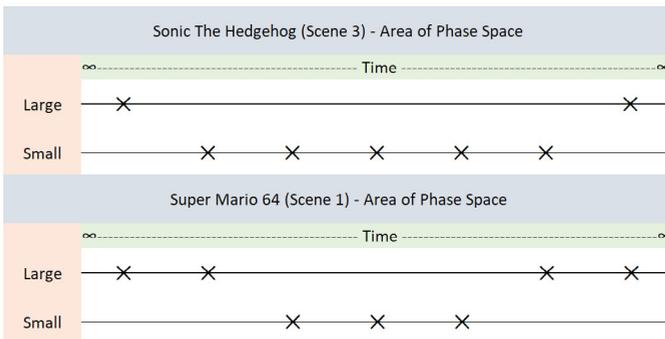

Fig. 12a, 12b
Representations of the patterns applied to the examples above.

5.4 PATTERN 4

Pattern 4 was found in 11 occurrences: 9 times on the SHAPES; Once on the LIGHTING KEY; Once on the CAMERA PROXEMICS.
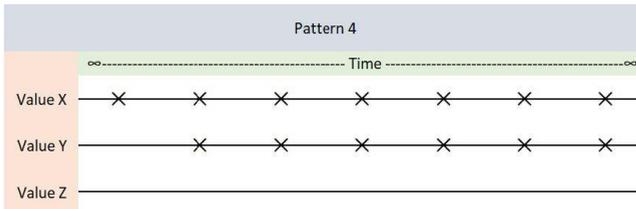
Fig. 13
Representation of Pattern 4.

Pattern 4 presents variables with continuous values from beginning to end, with one value that emerges at either the beginning and halts its presence in the middle, or begins just in the middle and stays visible until the end. While we could consider this to be two different variables, graphically they are very similar, only with the starting point being changed with the end point as the critical point defining the pattern.

On the third scene (*Final Boss*) of *Donkey Kong 64* (1999) we examined, the player merely gets *full shots*, parallel to the *long shots*, in the CAMERA PROXEMICS variable, at the end of the level since that's when they're close to defeating the last boss of the videogame, and that crucial moment is emphasized by changing the CAMERA PROXEMIC'S to a value significantly more intimate, which is the *Full Shot*.
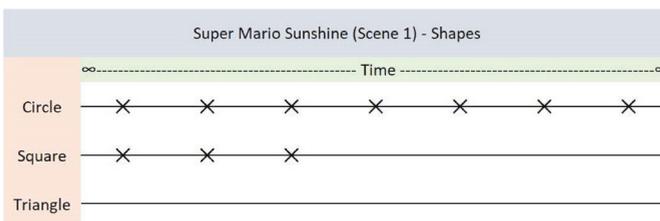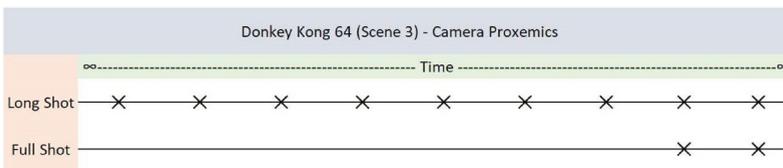
Fig. 14a, 14b
Representations of the patterns applied to the examples above.

Pattern 4 can also be verified throughout all the scenes of *Super Mario Sunshine* (2002) we analysed. In SHAPES, there are always *square* shaped platforms at the start of the level, a design that makes it easier for the player to learn new mechanics, but the shape is never present from midway through the end of the scenes, since the

player is more comfortable with the rules by then and can take more risks with the platforming elements of the game.

This might be attributed to, e.g., the variation of locations within the same level, as they may present different characteristics.

5.5 <u>PATTERN 5</u>

Pattern 5 was located in 9 occurrences: 5 times on the SHAPES; 2 times on the CAMERA PERSPECTIVE; 2 times on the CAMERA PROXEMICS.
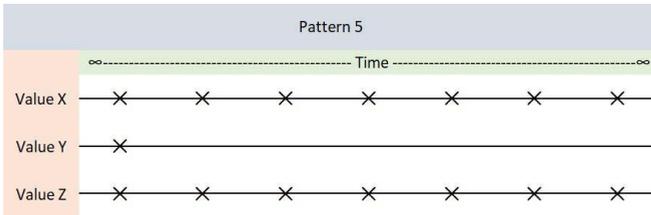
Fig. 15
Representation of Pattern 5.

Pattern 5 is constituted by three parameters, presenting constant values throughout the whole scene, instead of one that becomes null shortly after the beginning. Since the values are consistent from start to finish, with the exception of that on particular moment, it presents itself as a deviation of whatever we might consider the scene's general *mise-en-jeu* is. We believe that this may occur due to the introduction of a visual element that is exclusive to a precise instant of a level. As an illustration, on the *Shape* variable of the first scene (*Spiral Mountain*) of *Banjo-Kazooie* (1998) we analysed, rectangular tiles exist on the floor at the start of the level, but those are never revealed again in the scene, appearing to be restricted to the player character's house.
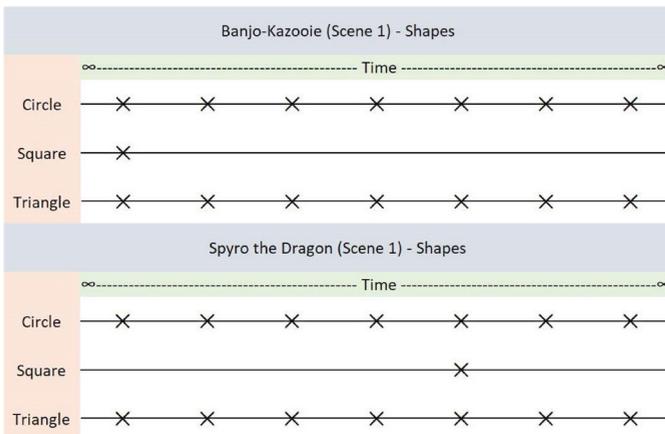
Fig. 16a, 16b
Representations of the patterns applied to the examples above.

The same thing happens on the first scene of *Spyro the Dragon* (1998) that we analysed, in which there is a small transition area with square tiles that the player must go through to access another area, but never sees again in that scene.

5.6   <u>PATTERN 6</u>

Pattern 6 was discovered in 2 occurrences: Once on the SHAPES; Once on the CAMERA PROXEMICS.
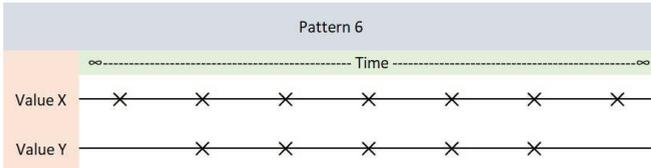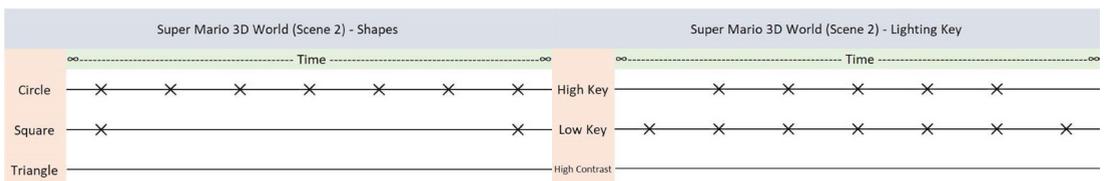

Fig. 17
Representation of Pattern 6.

What happens in Pattern 6 is similar to what we see on Pattern 3, but the variable being analysed consists of three parameters with not mutually exclusive values. There is one parameter that presents a positive value at the beginning or at the end of the scene or solely in the middle when in reverse, creating a pan appearance in the histogram (as observable in Fig. 17). Visually, while this might be recognized as two different patterns, we consider it as one since they are visual inversions of one another. Both occurrences are on the second scene of *Super Mario 3D World* (2013) that we analysed and are linked. What happens there is that whenever there are square-shaped elements in the scene, *high-key lighting* is never present, and when that sort of lighting is present the *square*-shaped elements are not. This happens because the scene consists mostly of a level boss, in which players are introduced to the level in a location where they can be stationary while planning their actions, move to the boss arena in a second stance, and then move onto an area similar to the one in the beginning of the level — where they can rest — and go for the flag that allows them to conclude the level.

Fig. 18a, 18b
Representations of the patterns applied to the examples above.

5.7 <u>OTHER PATTERNS AND RESULTS</u>

Besides the six patterns were able to discover, we found other results we are confident to be of peculiar interest. Many of these are the result of the combination of two or more of the previously designated patterns, e.g. there is a scene in *Earthworm Jim* (1994) in which we observed a break of a pattern's outline midway, for another different result to be momentarily shown, which is similar to what happens in Pattern 3, but with a variable that has non-mutually exclusive results.

We provide some examples of other results in the dissertation, and a complete list of the graphics is annexed to it, but since none of them are repeated through the analysis, none of them can be considered a pattern, and therefore, isn't of consideration in this summary.

6. CONCLUSIONS AND FUTURE WORK

There is no established model that allows us to make a generalized description of the *mediated space* in videogames. Therefore, our study is of critical importance in contemporary game studies. This work not only confirms the need for a *mise-en-jeu*, something already indicated by the research of Girina (2013) and Potier (2014), as it advances our comprehension of it, providing a fundamental basis of framework for its analysis and description, by means of 8 variables we propose. Those variables were built on the foundation of, and proved, the adaptability of film's *mise-en-scène* to the videogame medium's mediated space, with the notion that some aren't applicable to videogames, and that new variables native to videogames are an essential requirement. The variables in our model were tested with case studies of 36 videogames of the platform genre. The case studies showed us that it is possible to use the *mise-en-jeu* framework as a tool for detecting visual design patterns in videogames, and a qualitative analysis of those patterns might result in new knowledge of the mediated space in videogames, since it is a method we didn't apply.

Since at this time we were only able to conduct a particular quantitative research, our results do not directly allow us to evaluate the effect of the mise-en-jeu in player experience. And since we focused our study solely on platform videogames, cannot prove that this framework can is able to describe the *mise-en-jeu* of other genres of videogame, however we see that much of the results we obtained are able to serve such purposes.

Another limitation consists on the fact that we did not involve players other than ourselves, and for that reason the results of the SETTING and HORIZON OF INTENT variables need triangulation, so

that we can eliminate researcher bias,[14] despite our reiteration that this was a postpositivist analysis, allowing for some acceptance of the influence of our previous knowledge on the subject matter.

With this in mind, we propose future research to study other videogame genres, in an attempt to have an overall view of the medium's *mise-en-jeu*. In order to complement that and to build a deeper understanding on the subject matter we will also need qualitative research on the perceived effect that the mise-en-jeu has on player experience. This mixed methodology of quantitative in a first instance, and then qualitative research on the second phase will allow us to more profoundly understand the diversity of the *mise-en-jeu* and its effects on player experience and how to design it.

We didn't address sound, as it isn't certain that it should be part of the *mise-en-jeu*, or a separate field of study. We questioned its place in our framework because in other media, like film and theatre, there is no agreement on sound as part of the *mise-en-scène* nor on its role as part of the diegesis of film (Hackley 2013, 8). It's vital to verify its place on the diegesis of the videogame medium and, consequently, determine whether it can be part of the *mise-en-jeu*, in what terms, and how can it be analysed.

Some variables we believe to be critical in colour studies were left out since they were beyond the scope of our study, due to the working timetable.[15]

It is imperative that upcoming revisions of the framework also triangulate the data of the HORIZON OF INTENT variable, since our analysis doesn't have enough data sources to be valid as a definitive examination of it. Other than our own input, which was based on an empirical observation, future studies must gather data from multiple players and an opinion from videogame designers on what the values of the HORIZON OF INTENT variable might be in any given scene.

Since the HORIZON OF INTENT and SETTING variables cover sepa-

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[14] Assumptions about the intended result that are based on our cultural lens and empirical knowledge.

[15] We recommend reading Erik Geslin et al.'s How Color Properties Can Be Used to Elicit Emotions in Video Games (2016) and Doug Stewart's Color in Video Games: How to Choose a Palette (2017), as those texts describe the complexity of the effect of colour on videogame design and player involvement, and we recommend that those hypotheses can be employed as a basis for critical discussion on the subject.

rate methodologic considerations from the other variables, it's likely that their results won't coexist in the same structure without flaws, in its current state, since their mapping method is different, something that has to be considered and resolved in forthcoming research.

We also think that temporal expression as a phenomenon accessible to observation must be resolved, so that the passage of time can also be graphically represented and that the moments of a scene can be properly connected by lines that visually exemplify those temporal processes. This can lead to a better foundation for qualitative research on the topic.

Finally, we've seen that some patterns are present across diverse variables in distinct scenes. Future work must also relate the patterns that are visually equal to different variables, where they're present, and examine why two different variables on the same scene share the same or similar behaviours. We must also understand the dynamics and how the variables guide one other, and ultimately how that shapes players' experience.

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