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LUCRARE DE DISERTAȚIE

CINEMATICS: A NEW WAY OF STORYTELLING

Interactivity through the lens of the virtual camera

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Introduction

In this thesis I will explore the differences between the cinematic types from a standpoint of storytelling techniques that apply to cinema. Linked to videogames, paintings, theatre and music, the universal language of film with its components – image, action, editing, sound – goes beyond a stated limit of the screen.

As enthusiast gamers, film directors Steven Spielberg and Guillermo del Torro, have been quoting event scenes "intrusive" to the gameplay and they constitute "a challenge for future game developers". Narrating a story for non-interactive mediums becomes a "gameplay" naturally and perfectly controlled by the director so the question is: why is it so important to understand how interactive mediums work with their own stories?

The reason behind this study is the need of acceptance for a new era of filmmaking through the point of view of a computer based system of reference, so that game designers and film creators can merge their understanding of the unity and convergence of a story, how to keep the important issues in mind and how to get past the barriers of non-communication (between the different backgrounds people have in development teams)

In film, it is the director's duty to understand each component of the creative process, the team people, the actors, the pre-production steps and the post-production as well.

In the writing of a game, there is also a need of someone to keep track of everyone's work, but most importantly to give the true direction of the visual, auditory and story lines for each developer (level designers, character designers, animators, riggers, particles creators, cinematics creators, etc.) to construct on the common idea.

The evolution of technology gave us a wide array of narratives, interactive or not, the 3D ludology environment takes on a new task, the same task cinema had more than one hundred years ago: build a language for everyone creating, watching (interacting) and writing about the medium, have a common conduct of representation and understanding of the medium.

Without an inseparable language, the stories we tell with our games can lead to problems of "cinema envy". This is what we experienced when creators introduced cut-scenes in their works: some gamers skip these cinema pieces to this day, driven out by the urge of action.

The novelty of a technology consists of its new set of capabilities that we take for granted. Once a field of development reaches a certain evolutionary point, for example when the masses are instinctively ready to use out of their cumulative experiences, the language of that medium begins to take shape as it becomes more accessible to the communities.

Games like Quake III Arena (id Software, 1997) have "survived" to this day only because the online community had the power to recreate by modifying the game again and again through its numerous "game modes" and organizing contests between individuals or teams and promoting the game

with live video streams for the community to watch the new celebrity icons like "Fatal1ty."

"We believe professional video game play can be appealing to a massive global audience of people who can watch and learn from pros and try to improve their own gameplay — something that we believe isn't as possible for most traditional sports fans."(Goldman Sachs, eSports, *"From Wild West to Mainstream"*, 2018)

Almost seven hundred million people watched eSports online in 2018, according to a study from Juniper Research. Many of those broadcasts occur over YouTube or Twitch, although traditional cable channels — including ESPN — have also started broadcasting major tournaments.

*"It's not like soccer or hockey. The game you learn when you're 13 is not the same when you're 23". (*Guillaume Patry, professional gamer of *StarCraft*)

Some types of games, especially the RTS (real-time strategy) require fast movement through the possibilities of the game's outcomes, thus needing a precise approach in managing resources and decisions, all in a timely manner. FPS games (first person shooter) are in a different time-based category. With this kind of game, the experience of a player gets most of the part needed for winning. Being fast and precise with the aim is not as important as controlling the items, moving to the right place or choosing the right strategy when attacking or retreating.

The games which became popular in the eSports modern space are the ones that require a long time to master, have been around for more than a few years to have a fan community and need at least two players to compete on. Narrative function, storyline or character development, is not a basic motor of the commercial success these games. They rely on the spectacular nature of the gameplay and their power to reconstruct real life situations. The simulation genre (car games, sports simulators, build simulators, tactical simulators) has more to do with the people's interest to learn and perfect themselves or their skills in a specific matter, than to entertain the public when competing for a prize.

Building academic interest on writing for computer games helps not only the industry as a whole, but also gives change to further the discussions on improving the stories and the overall process of creating meaningful experiences of play.

Chapter I

The Cinema Language

"Film language was born when film makers became aware of the difference between the loose joining together of small images in various states of motion, and the idea that these series of images could be related to one another"[1].

It was a matter of time until cinema discovered the possibilities of expression. There are two types of film makers according to Daniel Arijon: *"creators"* and *"artisans"*, both *"indispensable for the craft"*[2] because their films are a product of accumulation and understanding through experimentation. Without the consumer period of the 1900-1914 when most projected films were aimed for the public distraction, film as craft wouldn't have gotten the attention of film analysts and theorists for rationalizing their creative process.

As long as a medium grows with its ability to recreate reality, the communication between the source and the audience is growing as well.[3]

"One of the most important of the many problems in film theory is that of the impression of reality experienced by the spectator. Films give us the feeling that we are witnessing an almost real spectacle"[4]. The spectator's view appeals to this intense sense of belief, making the experience very convincing. There should be no wonder why the first people witnessing *"The Arrival of a Train"*[5] fled the "Grand Cafè" in terror, fearing being run over by the "approaching" train. This legend has since been identified as promotional embellishment, though there is evidence to suggest that people were astounded at the capabilities of the Lumières' *cinématographe*.

Jean-Luc Godard, the *"Nouvelle vague"*[6] film maker, once remarked: *"Cinema is not the station. Cinema is the train."* suggesting that the film

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[1] Daniel Arijon – *Grammar of the film language*, Silman-James Press, Los Angles, USA, 1976, pp. 2-4

[2] idem

[3] idem

[4] Christian Metz – *Film language (A semiotics of the cinema),* The University of Chicago Press, USA, 1991, pp. 4-5

[5] Auguste Lumière, Louis Lumière – moving picture, generally considered one of the first, 1896

[6] *Nouvelle Vague* – The French new wave is a movement based in France in the 1950-1960 periods, considered to be the most influential film movement in the history of cinema. The "French New Wave" refers to the iconoclastic spirit of a group of filmmakers who, between 1958 and 1964, produced a distinctive body of work that departed from the conventions of traditional French cinema in its treatment of narrative, visual style, and editing.

becomes *"cinema"* - a *"moving picture"* - only when the viewer engages imaginatively with the characters which have been moving with the train rather than identifying with the characters waiting on the platform.

The feeling of credibility is non-subsequent to the subjects of the film. These subjects can be *"realistic"* or *"nonrealistic",* according to Christian Metz. Completing this idea, Edgar Morin, comparing still photography with moving pictures, states that the latter *"possesses a higher degree of reality"[7]* because real life is based on motion.

The cinematographic medium has liberties and also limitations. Conflict and evolution make most of its rendering, but *"peace, hope and great truths are all of a static nature and can be but poorly served by the film medium"[8]*. The power of the screen is giving us the clear result of external actions, reactions and events from the captured story. In other words: *"You can't say as much as you can in writing, but you can say what you say with great conviction."[9]*

Like words and sentences form a book, shots and scenes form the movie and give, to each of these mediums, the dimensions of time. Everything we see and hear on screen has a meaning, intentionally crafted by the director's view, and everything contributes to an overall meaning.

Establishing the basics of narrative cinema requires an understanding at least some of the elements of film making: storytelling, recording and editing. How I feel during a certain sequence, and how does the film maker make me feel, react, or think that way is only at the latitude of the combination of these elements, as Daniel Arijon states: *"A good film is not the product of total improvisation, but the result of knowledge, not only of the life and the world that is portrays, but the techniques that render the idea more expressive."[10]*

At this moment we cannot deny that film technique has evolved, with an array of new camera movements and editing techniques, which constructs a powerful liberty for directors, a privilege not possible throughout most of the history of cinema. Becoming *"too technical"* was a concern pointed out by Anthony Harvey[11]:*"Me greatest fear has always been that of becoming too technical. Sitting at a moviola[12] day after day, year after year, one is in danger of becoming obsessed with the mechanics so that they take over everything else. You can lose the whole point of a scene that way."*

This shows the importance of maintaining the vision throughout the process, leaving every other concern aside, the film makers should not be distracted by the technicalities and keep track of their goals at all times. André Malraux wrote in *"The Psychology of the Cinema"[13]* that editing gave birth to film as art: it is the piece that makes its own language. The careful use of

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[7] Edgar Morin – *Le Cinema on L'homme imaginaire,* Editions de minuit, France, 1958

[8] Daniel Arijon – *Grammar of the film language*, Silman-James Press, Los Angles, USA, 1976, pp. 2-4

[9] Robert Flaherty – *Recorded BBC Talks*, London, UK, 14th June, 25th July, 1949

[10] Idem 8, pp. 19-20

[11] Anthony Harvey – film editor, for the British magazine *Sight and Sound,,* UK, 1950

[12] A device that allows a film editor to view a film while editing. It was the first machine for motion picture editing when it was invented by Iwan Serrurier in 1924.

[13] Allan Derek – *Art and the Human Adventure: André Malraux's Theory of Art*, Editions Rodopi B.V, USA, 2009

editing can create new paths when emerging the spectator into the story. Let's take as example the classic American movies from 1900 to 1914. Here the editing can be almost *"invisible"*[14] when the motive of cutting is only to present an occurring event related to the dramatic logic of a scene. When showing a disruptive shot, one that presents a parallel action or a warning for the action to come, people's minds don't accept the new camera angles with the same ease.

André Bazin found three editing devices commonly known as *"parallel editing", "accelerated editing"* and *"editing by attraction"*.

In the process of **parallel editing**, Griffith managed to evoke the simultaneity of two clearly separated actions, by a succession of shots of first one, then the other one.

In *"La Roue"* (The Wheel, 1923), Abel Gance creates the illusion of an accelerating locomotive without having recourse to any real images of speed, simply by an **accumulation of shorter and shorter shots**.

Finally, **editing by attraction**, conceived by Serghey Eisenstein, might be broadly defined as the reinforcement of the meaning of one image by another image which does not necessarily belong to the same action: for instance, the over-imposed effect, in *"The General Line"*, which follows the shot of the bull (fig1.).

Figure 1. The General Line (1929), directed by Sergei Eisenstein

Naturally, various combinations of these three devices are possible and have been proven modular. But whatever they are, they have a common recognizable feature (which could serve as another definition of editing): *"the creation of meaning which is not contained objectively in the individual images themselves, but which arises from their collocation."*[15]

Lev Kuleshov's experiment (fig 2.) with the same shot of Ivan Mozhukhin, whose smile seemed to change in implication according to the shot that preceded it, is a perfect summary of the properties of editing. First we need to mention some of the types of camera shots: **extreme wide, general**

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[14] André Bazin – *The Evolution of Film Language,* What is cinema?, France, 1958
[15] Idem

shot, medium, close-up, extreme close-up. As for shots that have their name from associating to another shot, a movement, or a character, we mention: **cut-in, cutaway, counter shot** (usually refers to a shot of the interviewer listening and reacting to the subject), **tracking shot** (the camera moves with another moving character or object), **point-of-view shot** (as if we were looking through the character's eyes).

The camera movements are usually set in two sets of categories: one is moving around just its own axis: **pan** (horizontal moves), **tilt** (vertical moves), **roll** (the camera spins on the Z axis), the second is moving the camera body position in space: **travelling** (horizontal moves), **lifting** (vertical moves, usually used as a **dolly shot**, as a **tracking shot** or a **follow shot**)

Now let us take into consideration one of the elements in Kuleshov's experiments, we have a broken tree with an axe and a woodman.

In 1936, the shooting breakdown might have looked like this:
1. **General shot** taking in both the actor and the tree.
2. **Tracking shot** forward ending in a **close-up** of his face which expresses a mixture of tiredness and determination.
3. A series of **close-ups** of the tree.
4. Back to the character (in **medium shot**) who walks slowly towards the camera.
5. A backwards **tracking shot** shows him grabbing the axe.

There are many possibilities of cutting a scene like this. Simply directed, easily understood, the sequence of shots, in whatever order we may want to see them, they all have some general things in common: the reality of space in the scene. The intentions and effects of this breakdown are exclusively dramatic or psychologically orchestrated by the creator's vision.

In other words, if this scene was acted on stage and seen from a spectator's view, it would have exactly the same meaning; the grabbing event would still have an objective existence. The change in camera angles does not add to this, it simply presents reality in the most effective manner. First of all by allowing one to see it better, and then by emphasizing what needs emphasizing.

Kuleshov, Sergey Eisenstein and Abel Gance do not show the event through their editing; they allude to it. True, they take most of their elements from the reality they are supposed to be describing, but the final meaning of the film lies much more in the organization of these elements than in their objective content.

The substance of the narrative, whatever the realism of the individual shots, arises essentially from these relationships (Mozhukhin smiling plus dead child = pity); that is to say there is an abstract result whose origins are not to be found in any of the concrete elements. In the same way, one could imagine that young girls plus apple trees in blossom = hope. The combinations are innumerable. But they all have one thing in common: they suggest an idea by means of a **metaphor** or an association of ideas.

To sum up: *"both the visual content of the image and the possibilities of editing mean that the cinema has at its disposal a whole arsenal of devices*

with which it can impose its own interpretation of a depicted event on the spectator"[16].

The Soviet cinema took the theory and practice of editing to their ultimate conclusions, whereas the German expressionist school subjected the plasticity of the image (sets and lighting) to every possible distortion.

The German and Soviet cinemas were certainly not the only important schools at the time, and one could hardly claim that in France, Sweden or America, film language lacked the means to say what it had to say.

If the essence of cinematic art is to be found in all that plasticity and editing can add to a given reality, then the silent cinema was a complete art.
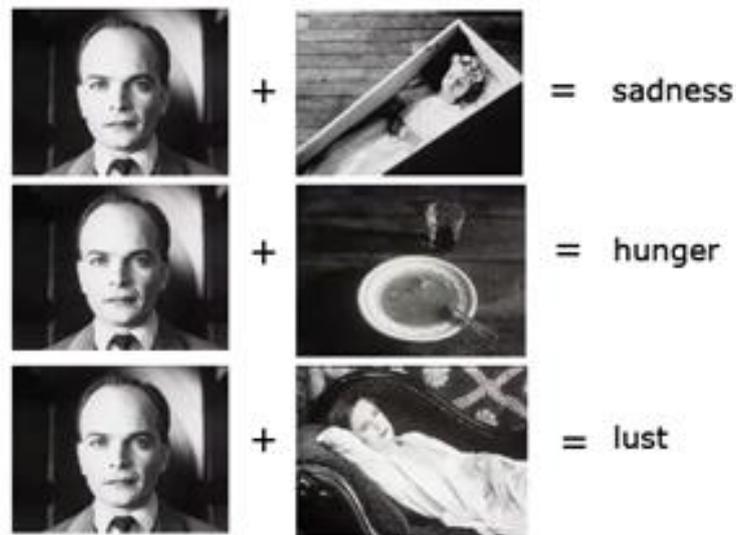

Figure 2. The Kuleshov Experiment

Sound could have played only a subordinate and complementary role, as a counterpoint to the visual image. But this kind of potential enrichment (which at the best of times could only have been minor) would have paled beside the whole range of supplementary reality that was in fact introduced by sound in later films.

Bazin starts with discussing the end of silent film, which, he asks might have been "the birth of a new cinema". In cinema between 1920 and 1940, he sees two trends: Directors who put their faith in the *image[17]* and directors who put their faith in reality.

"The meaning is not in the image, it is in the shadow of the image projected by montage[18] onto the field of consciousness of the spectator {...}

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[16]André Bazin − *The Evolution of Film Language,* What is cinema? mag., France, 1958

[17] André Bazin –"Image"="everything that the representation on the screen adds to the object there represented", *The Evolution of Film Language,* What is cinema? mag., France, 1958

[18] André Bazin –"Montage"="the creation of a sense of meaning not proper to the images themselves but derived exclusively from their juxtaposition*", The Evolution of Film Language,* What is cinema? mag., France, 1958

The camera cannot see everything at once but it makes sure not to lose any part of what it chooses to see.

The amount the audience is engaged with the images is determined by the reality degree, a *"secret of film"*, images which are, *"nevertheless, still perceived as images."*[19]

Silent film was thought of as an art of its own, argues Bazin, that relied more on the image than reality, therefore didn't need sound. However, directors like F. W. Murnau, Erick von Stroheim, and Robert Flaherty put more emphasis on reality—the reality of time and space. With these directors, silent film was limiting because it deprived their films of the reality of sound.

From 1940 to 1960*, "a common form of cinematic language"* evolved. Hollywood films and the *"stark, somber realism, or poetic realism"* of filmmakers like Jacques Feyder, Jean Renoir, Charles Chaplin, Chris Marker and Alfred Hitchcock started their own cinematic method of telling a story. [20]

Every story has a beginning and an ending. Christian Metz defined film narrative as ”*a temporal sequence, one must hasten to specify*”[21]. Using *"the image"* as the vehicle of its language, like dance uses gesture and literature, words, Metz states that cinema has three elements forming it as an art: narration, description and image. The nature of narration and description is temporalized whereas the nature of image is instantaneous. In his book *"Film language – A Semiotics of the Cinema",* the author distinguishes the conversion of two elements: *narrative* and *discourse*. There cannot be narratives for each discourse, but there's always possible for a narrative to have discourse.

The film spectator has the liberty of selecting the images, his brain perceiving only the array of subconsciously chosen images from the screen, thus arranging their order and recreating a story from the narrative he sees presented. Most of the time, the viewer knows at best as much and often less than the characters in the action and the overall situation of a film because it shows him what we want to show him: the main thing for him to follow.

The film is about the characters he sees and goes through the characters. To fill a lack of information, to reveal truths, in short to come and tell a story not only through the information provided by the characters, a strong, rigid director's display of narrative palettes is needed. Everything from the shot tells the audience a story of its own. The combination of all the small "stories" seen on the screen (costumes tell stories, the actor's bodies, objects, colors, sounds etc.) need to draw the sentiment awaited by the director.

We could take the more famous example of *"Citizen Kane"*, Orson Welles (1941). The film begins with the death of Charles Kane, alone in his room and whose last word before he gives up the soul is *"Rosebud"*. The whole film then shows us his life, his childhood, the construction of his empire, the innumerable characters which gravitated around him, building his glory and precipitating his fall. But at the end of the film, the only people who will know why Kane's last word was *"Rosebud"* and what it refers to are the audience. Because here again, in two stages, the master Orson Wells granted us the privilege of seeing two key moments in Kane's story, his death while he is

[19] Christian Metz – *Film language (A semiotics of the cinema),* The University of Chicago Press, USA, 1991, pp. 14-15
[20] Idem
[21] Idem, pp. 18

alone in his room and the fire burning the sledge of his childhood (sledge bearing the inscription "Rosebud").

We find the 7th art using a language of such a great power over storytelling, which it is requiring a true mastering of its knowledge in order for the filmmaker to be able to control what the film is actually saying, not what he thinks it should say. The Lumières brothers could not have helped invent a more cynical art, where the things we see are what they are, and nothing else exists, besides what we see on the screen. We, as an audience, are not actually changing anything to the film story, as with *interactive movies[22]*, like "Late shift" (2016). We, therefore, only observe, but the fact that we feel the characters' feelings, understand the society they live in, laugh with them and approve or dismiss their actions, means that we are actually immersed in the world, just as in a video game, one could say, only the type of interaction differs.

I.   1. Procedural basis of cinema storytelling

"The only job a director can really do in a film, of real value,
is to do something more than what will happen automatically."

Orson Welles, Paris, 1960

We find the **vehicles of narrative** to be present all around us: as spoken and written language, moving or still images, in myth, legend, fables, tales, epics, history, drama, pantomime, paintings (in *Storie di sant'Orsola [23]* by Carpaccio, for instance), news, conversation and movies.

The art of film is a form of aesthetic communication largely syncretistic, hybrid, multimedial, that bears a number of generic characteristics which are tied to the history and the various capacities of its narrative vehicles. It is hybrid because it can seamlessly integrate genres within eachother, syncretistic because it brings together many arts, and multimedial because its language can take shape using different mediums at once.

A film can be told in many ways, playing with perspectives. His **narrator** may be outside the film (not a character of the film) but attested, present. It is through the voice-over that he tells and can provide information to the viewer as when at the beginning of the *Fabulous Destiny of Amelie Poulain* (Jean-Pierre Jeunet, 2001), the voice of André Dussolier introduces us to the parents of Amélie.

The narrator can also be a character in the film. Thus in James Cameron's *Titanic* (1997), history is given to us because the old lady begins to tell it to us. Nevertheless and this is the case of many films, this way of narration does not prevent to *stall* in the point of view. Thus, it is by the memories of Rose, the old lady of *Titanic,* that one enters the action, but all that one will see will not

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[22] *"An interactive film, also known as an interactive movie or movie game, is a video game that presents its gameplay in a cinematic, scripted manner, often through use of full-motion video or live-action footage. ",*https://en.wikipedia.org/wiki/Interactive_film

[23] *The Legend of Saint Ursula* (1490-1498) is a series of large wall-paintings on canvas by the Italian Renaissance artist Vittore Carpaccio, Gallerie dell' Academia, Venice

necessarily have been seen by the narrator, as for example the part when the cards game allows Jack (Leonardo DiCaprio) to win his death ticket to USA.

Narrators in film have commonly been recognized as guarantors of truth. These are omniscient points of view, which cannot *lie*; utterly convincing the audience for whatever he's saying is true.

This is the main feature of the current of German expressionism for example and its iconic film, *The Cabinet of Dr. Caligari* from Robert Wiene (1920). The whole film is peopled with strange characters and decorated with unreal houses. The final revelation of the film explains this atmosphere. All that has been shown and told has been through the eyes and mind of a madman locked up in an asylum. The point of view of a crazy, subjective therefore, allows the film many daring in its decorations, its colors, and the usage of shifted camera angles. The reality is distorted for this reason.

As Roland Barthes puts it: "*indeed narrative starts with the very history of mankind; there is not, there has never been anywhere, any people without narrative; all classes, all human groups, have their stories, and very often those stories are enjoyed by men of different and even opposite cultural backgrounds: narrative remains largely unconcerned with good or bad literature. Like life itself, it is there, international, transhistorical, transcultural.*"[24]

A new story can start from retelling the same story again and again as Andy Warhol shows us with *"Details of Renaissance Paintings Series" (1984).* Making his statement on mass consumption of artistic masterworks, the painter strips each work of its original intent and instead focuses on their value as symbols of popular culture. Furthermore, the process of silkscreening[25] deliberately appropriates the painstaking process of painting the original masterpieces. We see thirteen pictures depicting small fragments of Boticelli, Da Vinci, Ucello. This way of cropping, or segmenting the narrative steps, makes us read both stories: the one from the sixteenth century, and the one from the twentieth century. The story of time is being narrated through these paintings. As we embark in the reading of his series we can only be remarkably drawn into the stories by the conflict they arise.

Let's take for example Leonardo Da Vinci's *"The Annunciation"*[26] (1472). Warhol's adaptation *(fig. 3)* is quite unique. In his interpretation, we only see the hands of the angel (left) and the Virgin (right). Their hands, gestural and symbolic, truly represent the significance of the scene. By cropping the image this way, Warhol takes viewers to the most powerful point in Da Vinci's masterpiece.

One can say he observes the *"Genesis"* as a story, starting with the church semi-dome, continuing with observing Boticelli's *"Madonna"* and her beauty, to Da Vinci's *"The Announcation"*, and ending with Paolo Ucello's *"Saint George and the Dragon"* (1460) where we see Warhol focusing on the calm and controlled moments of the scene.

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[24] Roland Barthes and Lionel Duisit – *New Literary History, Vol. 6, No. 2, On Narrative and Narratives*, The Johns Hopkins University Press, UK, 2013, pp. 237

[25] *Silkscreening* is a printmaking technique in which a mesh cloth is stretched over a heavy wooden frame

[26] The painting describes the biblical scene in which the angel Gabriel announces to the Virgin Mary that she would miraculously conceive and give birth to the son of God, Jesus.
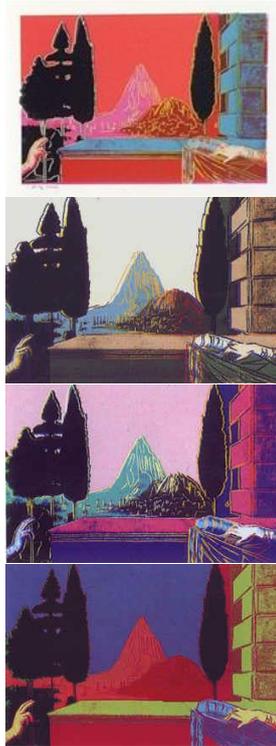
Figure 3. Andy Warhol, Details of Renaissance Paintings
(Leonardo Da Vinci, *"The Annunciation"*, 1472), 1984

Andy Warhol unexpectedly found narrative in *"Andy Warhol's Eight Hour Sleep Movie"*[27] (1964)*,* as the title suggests, by filming himself sleeping. With a running time of five hours and twenty minutes, *"Sleep"* was edited by looping some of the footage. According to Popism, Warhol *"hadn't actually shot that much."* due to the limitations of his Bolex movie camera, which could only shoot four minute lengths of film at a time.

Zbigniew Rybczyński's short film *"New Book"* (1975) works in a similar way. It is a literal adaptation of segmenting the narrative of a story by showing a series of nine different simultaneous perspectives of the same town, each playing the actions of different settings: the apartment, its alley, the bus, the bookshop, the intersection, the café, the post office, the workers, and the park bench.

A new meaning for space and time is described here. Watching how a new book is being bought from the store, and taken home by its owner, from nine different, but concomitant points of view, reveals not only the story, but the natural evolving of a script, so graphical, that it is very clear to see through the script's diagram, how this **screenplay** develops and takes shape into something netted.

The book falling from his arms in the intersection, the bus' emergency brake to avoid the tricycle kid, the falling of someone in the bookshop, the spilling of coffee in the café, all take place in the same moment, revolving around the image from the center of the screen: the intersection.

That centered image now has control of the sound *(fig.4.)*, creating the metaphor as if the book falling caused everyone to slip for a moment, but only for a few, until life's rhythm takes on again. Embracing history's cyclic value,

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[27] Sleep (1964) – Plot: "*A man sleeps for five hours",* https://www.imdb.com/title/tt0187513/

the film ends the same way it started, with no one to be seen on the streets and the man reading his new book.

The narrative constructions can have a very interesting interactive application structure in films like *"Last year at Marienbad"*[28](1961), *"The Butterfly Effect"*(2004), *"Memento"*(2000) are discovering *"new syntactic regions while remaining entirely submissive to the functional requirements of filmic discourse"*[29]. This means the film makers automatically think with a clear matrix of the main figures available for a universal language that is easily understood, but they do not attempt to create an entirely new language with every new work. This is why we should take a more technical approach.

Figure 4. "New Book", Zbigniew Rybczyński, 1975

We've seen how editing tells a story, how a narrator empowers it, and how a formal approach, like the sectioning of an image, works as a story display. It is worth mentioning that cinema has founded a *"set of rules that have nothing to do with the semiotics of the cinema: breaking the 180-degree angle shot, or the taboo against going from a general shot to a close-up, with no change of axis, or against the actor looking at the camera, etc."*[30]

I.   2. The rules of the screen

Digital technology enhancements will always follow *"Moore's Law"*[31]. It provides today's directors with unrestricted means of telling their stories. The limits of **film productions** got thinner with the deployment of the latest technology. We are witnessing the birth of a new medium, as Lev Manovich calls it *"the meta-medium of the digital computer"*[32]. With so many

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[28] Film directed by Alain Resnais. Written by the director and the novelist Alain Robbe-Grillet, France, 1961

[29] Christian Metz – *Film language (A semiotics of the cinema),* The University of Chicago Press,USA, 1991, pp. 213

[30] Christian Metz – *Film language (A semiotics of the cinema),* The University of Chicago Press, USA, 1991, pp. 210

[31] Moore's law follows the observation that the number of transistors in a dense integrated circuit doubles about every two years.

[32] Lev Manovich – *The Language of New Media,* MIT Press, USA, 2002

possibilities arising, the field of **research** has become a starting point for many types of stories, fantastic or real.

Production research is usually either **novelistic** or **journalistic** in approach. *"As a fiction writer, you conduct research in order to find details that stimulate reader interest and authenticate events, characters and settings"*[33]. This is mostly common in film and TV, where authenticity is sometimes replaced for *"dramatic interest"* and *"action"*. However, journalistic research, *"aims at uncovering sources of evidence that can be used to support the presentation of information and dramatic arguments."* [34]

Starting with a **"log line"**, a simple phrase explaining the **main plot**, the researchers test their ability to tell us the story. *"If you cannot describe the complete story in one line, you are not ready to write the script".* [35]

The next step is focusing on "**the premise"**, a description of the basic story. By asking oneself *"what if?"* the subject our story *"does"* a comprehensible **action**, leading to believable **conflict**. Characters emerge from this story, spaces unfold, and actions develop, enough for us to imagine the **mood** of the film. This narrative segment also makes a good tool for *"pitching"* the project to a producer by showing concrete apparel.

Having set a log line and a premise, an **"outline"** can be fixed. Drawing a temporal line, the characters will act and react upon the rigid bodies of major actions, unfolding themselves as good or bad. Like carriers of knowledge, the characters use other characters to expand the narrative world.

Usually written in the third person, present tense, the **"treatment"** is the last step in the development of the novelistic research. According to the story lines, the treatment visualizes their narrative summaries. It adopts a short-story format, dramatizing the premise, and giving the movie a genre to relate to. The atmosphere, actions, and rhythm of the story need to be described by mostly visual adjectives and action verbs. Usually, camera directions are first placed within a **"storyboard"**, but shot descriptions can be used to emphasize the visual value, at times, in the treatment.

"The writer's responsibility in a dramatic script is to describe the scene, write the dialogue, and leave the exact shot selection to the director."[36]

Sometimes it is a good option to add a **"proposal"**, next to the treatment. It gives a general description of the treatment for anyone to understand. It includes budgetary figures, a timeline for shooting the script, preproduction, production, and postproduction times.

Writing the script as *"a good writer, you will not only play with the surface text of the dialogue while telling a story, but also often develop a **subtext** through character actions and reactions."*[37] The **subtext** is a "reflection" of the story. Like an object in the mirror, the closer it gets to it, the clearer it makes for us to see the underlying story.

In *"Playmaking"*, William Archer sustains that *"the essence of drama"* is crisis. **Obstacles** are actually an engine for dramatically strengthening the

[33] Robert B. Musburger – *An Introduction to Writing for Electronic Media (Scriptwriting Essentials Across the Genres),* Elsevier Inc., USA, 2007, pp.223-224

[34] Lev Manovich – *The Language of New Media,* MIT Press, USA, 2002

[35] Idem

[36] Idem 33

[37] Idem 33

narrative because they only exist to be satisfyingly *"overcome by force, will or intelligence"* [38].

The early inventors of "cinematographic language" (Méliès, Porter, Griffith) couldn't have been carrying out a "formal" research prior to their films, *"they cared little about the symbolic, philosophical or human message of their films".*[39] However Georges Sadoul[40] showed how this *"naiveté"* of Méliès conducted to the invention of *"double exposure"*[41], **the dissolve** and **fade-in**, and the **pan shot**.

The pioneers were *"men of denotation rather than of connotation"* opting for a *"rudimentary narrative discourse"* [42]. In a world where new technologies are all computer-based: media databases, hypermedia, text and content management software, we find that the used narrative structures usually follow the pattern of how society is used to see the high end of audio-visual culture.

Film currents like the *"French New Wave"* or *"Dogma 95",* a filmmaking movement started in 1995 by the Danish directors Lars von Trier and Thomas Vinterberg, who created the "Dogme 95 Manifesto" and the "Vows of Chastity" (Danish: *kyskhedsløfter*). These were rules to create filmmaking based on the traditional values of story, acting, and theme, and excluding the use of elaborate special effects or technology. It was an attempt to take back power for the director as artist, as opposed to the studio[43]. found a new way of storytelling by making it possible for low-budget productions to be distributed, promoted and appreciated by the public, a possibility created mostly by attributes of conventions like: the absence of professional actors on set, no pre-made decors or sets, absence of professional lights (using the available lights of the scene), a completely new style of editing, and, some of the times, even image composition breaks every possible rule (like the *"rule of thirds - an image should be imagined as divided into nine equal parts by two equally spaced horizontal lines and two equally spaced vertical lines, and that important compositional elements should be placed along these lines or their intersections."*[44]), by placing the characters on the extremities of the shots, and closing their point of views, etc.

Looking for new perspectives, when breaking the known rules, has helped modern films like *"Holy Motors"* (2012) take life. We see a film about film and film making. Reminding of the *"Nouvelle Vague"* of Jean Cocteau and Jean-Luc Godard, the mystery nature of events in the film could also be regarded as a comment on the ever-changing nature of **cinema production**. From the **motion capture** sequence to the abstract nature of the characters' actions, the film seems to lament the current state of cinema. What is so beautiful about this mode of cinema is the complexity of meaning. This is film

[38] Lee Sheldon – *Character Development and Storytelling for Games,* SVP, Thomson Course Technology PTR, USA, 2004, p. 30

[39] Christian Metz – *Film language (A semiotics of the cinema),* The University of Chicago Press, USA, 1991, p. 95

[40] Georges Sadoul – *Histoire du cinéma mondial, des origines à nos jours*, Flammarion, 1949

[41] Double exposure is a film developing technique, using a device, by adding multiple layers of film on top of each other, with a mask and a dark backdrop.

[42] Christian Metz – *Film language (A semiotics of the cinema),* The University of Chicago Press, USA, 1991, p. 95

[43] Andrew Utterson – *Technology and Culture, the Film Reader,* Routledge, USA, 2005

[44] Bryan F. Peterson – *Learning to see creatively*, Amphoto Press, USA, 2003

so dense in **symbolism** that it requires repeated plays. Whether it's about the changing face of cinema, the acting profession, or an exploration of the nature of identity it doesn't really matter what the director's true intentions were.

"Cinema Paradiso"[45] (1988), is another example of a film following the history of cinema. This time, we see through a young boy's eyes how cinema becomes great fascination, then the abrupt downfall, a premature death of Italian cinema, on the upcoming rising of the First World War (1914-1918). The film brings the use through the changes in cinematography and the dying traditional film making, editing and projecting. It also explores a young boy's dream of leaving his little town to foray into the world outside.

The film language evolved so much to this day, at the extent that, now we take its language for granted. The spectator has learned the possibilities it can hold, the powers it has, the surprise factor, the lies it can tell, how it can deceive using small tricks, how sound creates spaces, how it accompanies the image, what music speaks of, how to read a good character, a bad one, a carefully edited discordant shot, and most importantly, the faith they built into cinematography itself. The gesture of sitting, listening and gazing at the fascinating, enormous screen, hasn't ever stopped to bring hundreds of people in the rooms of the cinema theater, not even after a century after it's ascension as art.

Concluding, cinema will continue to produce films, invent celebrities, build techniques for improving the production, filming, and editing, not only because we have discovered it has a language so vast, but also because we have learned it so well, that it is becoming easier for new productions to be filmed, new genres of film to emerge, and great technical influences to inherit.

Chapter II

The VR language

The year is 1963 and Ivan Sutherland had already engineered a *"revolution in computer graphics with his highly-interactive program Sketchpad"*[46]. In 1965 he has set in motion the wheels of what we will ultimately call **"Virtual Reality"**[47]. Now regarded as the *"father of computer graphics"*[48], I. E. Sutherland advanced the creation of the *"ultimate display"*[49]

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[45] *Cinema Paradiso* – directed by Giuseppe Tornatore in 1988. The **log line**: A filmmaker recalls his childhood when falling in love with the pictures at the cinema of his home village and forms a deep friendship with the cinema's projectionist.

[46] Sketchpad enabled users to design and draw in real time directly on the computer display, using a light pen.

[47] VR has been defined as an *''interactive, immersive experience generated by a computer''* (Pimentel and Teixeira, *Virtual Reality*, 11)

[48] Ivan E. Sutherland - Patent No. 3,639,736", NIHF; Sutherland is widely regarded as the "father of computer graphics."

[49] Ivan E. Sutherland – *The Ultimate Display*. Proceedings of IFIP 65, Vol. 2, 1965, pp. 506-508

in 1968, the world's first head-mounted display, or **HMD**, *"The sword of Damocles"*. This military device truly placed the **user**[50] in a **virtual world**.

The concept of *"placing"* the spectator in a virtual world was not new in 1963, because ten years earlier, Morton L. Heilig started creating *"Sensorama"*, a machine providing a colored **three-dimensional** view of the scenes, using three different screens for peripheral vision, moving and vibrating mechanical parts in the chair, stereo sound, aromas, and wind. Marketed as *"The Cinema of the Future",* it proposed a new **immersive experience**, like film did sixty years earlier with the camera, giving the spectator a chance to look differently at photography (now reality was moving), and how photography did the same with painted art (now reality was more convincing, enrolling the ability to be replicated).

Continuing to reverse-engineer the birth process of virtual reality points out that computers were made with the power to create artificial environments. Early mentions of the technical term *"virtual"* were found in the computer science industry expressing the *"discrepancy between the physical machine and the machine with which users and high-level programmers think they are communicating"*[51].

One can say that computers have virtual features like versatility, automaticity, artistry. Through their software they can simulate a number of existing devices and human activities, thus becoming a storyteller, typewriter virtual calculator, record player, even a video camera. The possibilities of programming are becoming more and more user-friendly.

However, the technological challenges of developing cinema, while significant at the time were *"arguably an order of magnitude simpler than those required for digital interactive story today"*[52]. Although another virtual feature of computers resides in their versatility, as a machine, a computer has no intrinsic function[53]. Through its software, however, it can simulate a number of existing devices and human activities, becoming a virtual calculator, typewriter, record player, storyteller, babysitter, teacher, bookkeeper, or adviser on various matters.

In the Renaissance, the stories of paintings were symbolic representations of **themes**, for example. The **semiotics**[54] inclined towards *"signification rather than simulation"*[55]. Nowadays they tend to reverse, with **VR**. In a century when the military developments for flight tests and trainings are done in VR for cost reasons, semiotics modes changed when new laws of perspective that came into play.

Artificial worlds gave us three axes of space, just like in real life. The first *"system"* of two axes was at its visual immersion peak when the incredible trompe l'oeil effect started taking space in the Baroque period of the 17th century. The third *"new"* axis, now, is within reach and under control. It

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[50] *The spectator* now becomes *the user*, a property given by the new role of the spectator in the narrative of an *interactive* story.

[51] Marie-Laure Ryan – *Narrative as Virtual Reality (Immersion and Interactivity in Literature and Electronic Media)*, The Johns Hopkins University Press, USA, 2001, pp. 27

[52] Ulrike Spierling, Nicolas Szilas – *Interactive Storytelling,* Springer-Verlag, Berlin, Germany, 2008, pp. 3

[53] Marie-Laure Ryan – *Narrative as Virtual Reality (Immersion and Interactivity in Literature and Electronic Media)*, The Johns Hopkins University Press, USA, 2001, pp. 27

[54] The study of signs in the process of communication: gr. *"semiosis"*.

[55] Idem 52, pp. 3

follows the position of the user, and the relative horizontal and vertical space between him and the center of the world, making movement possible, or the impression of movement, at least.

Communicating the story is such a medium needs a common language. For the user to perform in a virtual environment he needs to move. Moving can be classified in gestures. The science field of *Human Computer Interaction* (**HCI**) brought to light the ubiquitous nature of gesture interaction, with audio and/or image driven media. Picking up objects, and holding them, has more to do with the ancestral body language, than with the particularities of the technology. Among others, **the real-time nature of the medium** makes this language possible.

The *"transfiction"*[56] concept is a process aimed at identifying **immersion** solutions where interactions are natural, to provide the user with a rich **"interactive experience"**.

Interactivity is defined by communication theorist Stephen W. Littlejohn as a system on the basis of **relationship**, *"Interactional systems then, shall be two or more communicants in the process of, or at the level of, defining the nature of their relationship."* According to Jane Webster, interaction is *"reciprocal action or influence."*[57]

In the phenomenology of reading, *"immersion"* is the experience through which a fictional world acquires the presence of *"an autonomous, language-independent reality populated with live human beings"*[58]. As **real** as the characters get in books, movies, theatre, and dance, they follow the same state in VR.

Some critics (Simon Penny, Anne Balsamo, and Arthur Kroker) called VR *"hedonistic"*, a *"disembodying"* technology, with the statement that *"VR replaces the body with a body image, thereby causing a Cartesian mind-body split"*.[59] Comparing the experience to a walk in the park, exploring an **interactive virtual space**, may imply a compromise on body freedom, of course, but, to build a narrative discourse, every medium has to find ways around its limitations.

Like modern film, modern VR gaming is technologically limited, while new meanings of this language are being born with every new idea thrown out there by the developers.

Still, after almost 60 years, VR is trying to win an "impossible race" of *"replicating reality"* at its perfection. This can be explained by the high degree of immersion of the medium and the developers' obsession with creating the most of it.

It is important to realize that being narrators, playing with the conventions of time and space, breaking the continuity of story, cutting across multiple actions, and the freedom of choosing different narrative lines of the

[56] Olivier Balet, Gerard Subsol, Patrice Torguet – *Virtual Storytelling (Using Virtual Reality Technologies for Storytelling),* ICVS 2001, France, 2001, pp. 47-48
[57] Jane Webster – *Playfulness and Computers at Work*, New York University, USA, 1989
[58] Marie-Laure Ryan – *Narrative as Virtual Reality (Immersion and Interactivity in Literature and Electronic Media)*, The Johns Hopkins University Press, USA, 2001, pp. 14
[59] Marc Arthur Brown – *"Teacher Troubles",* CD ROM, Brøderbund, 1996

story, is generally much more needed than the development on the immersivity part of the project.[60]

Applying film techniques to games like: "*changing the user viewpoint in mid-action; bridging time or space with a cut; cross-cutting between separate locations, characters or threads of the narrative; incorporating flashbacks and flash-forwards; and so on*"[61]; is what the majority of critics, gamers and developers encourage that should be used in their experiences. They now do more than ever with *PlayStation* games like: *"The New Order: 1886" (*2015), or *"The Last of Us"*[62] (2013).

As a conclusion, VR had been blessed to inherit the artistic languages preceding it (including film); it is technically impossible to limit what the creative possibilities are, in the virtual space, when working on a ludic system with a comprehensible and meaningful set of rules, following a simple structure of narrative (a beginning, a set of actions and an ending).

II 1. The semiotics of VR narrative

One of the great semioticians, Ferdinand de Saussure, concentrated on the patterns and functions of language itself, forging deeper in the field of semiotics in the 1950s. His book, "*Course in General Linguistics",* published in 1916, *"is considered to be one of the most influential books published in the twentieth century"*[63]

"*Semiology"*, as he called it, described how "*linguistic entities are parts of a system and are defined by their relations to one another within said system.*"[64] Using the game of chess as an example, Saussure makes a notable reference to its rules, stating that *"the game is not defined by the physical attributes of the chess pieces but the **relation** of each piece to the other pieces".*[65]

In short, he defines the "*signifier"* as the smallest unit of meaning: any material thing that signifies, for example the words on a page, a facial expression, an image. The concept which they refer to is *"signified".*

The relationship between the signifier and the signified is referred to as *"signification"*, and this is represented in the Saussurean diagram by the arrows (fig. 5). Let's take a **linguistic** example, the word "danger" (when it is invested with meaning by someone who encounters it on a door) is a sign consisting of a signifier: the word "danger"; a signified concept: that door

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[60] Olivier Balet, Gerard Subsol, Patrice Torguet – *Virtual Storytelling (Using Virtual Reality Technologies for Storytelling),* ICVS 2001, France, 2001, pp. 89

[61] Marie-Laure Ryan – *Narrative as Virtual Reality (Immersion and Interactivity in Literature and Electronic Media)*, The Johns Hopkins University Press, USA, 2001, pp. 88

[62] The Last of Us is a three-dimensional 3rd Person Shooter game created by Naughty Dog and published by Sony Computer Entertainment. Plot summary: *"In a hostile, post-pandemic world, Joel and Ellie, brought together by desperate circumstances, must rely on each other to survive a brutal journey across what remains of the United States."* https://www.imdb.com/title/tt2140553/

[63] Arthur Asa Berger – *Semiotics and Society,* Springer Science+Business Media New York, 2013, pp. 22-26

[64] Mark Aronoff, Janie Rees-Miller – *The Handbook of Linguistics* , John Wiley & Sons, USA, 2017, pp. 108

[65] Idem 63

keeps dangerous materials out of reach. A sign must have both a signifier and a signified. You cannot have a totally meaningless signifier or a completely formless signified.[66]

Figure 5. Saussure's model of the sign; Source: Based on Saussure: 1967

HCI semiotics, as a discipline to study the process of giving meaning to computer-based communication systems, has been largely studied, for example, de Souza et al[67] and Dittrich, Valtolina, O'Neill[68], while works on VR are quite few.

Regarding the study of B. R. Barricelli, D. Gadia, A. Rizzi and D. L. R. Marini on *"Semiotics of virtual reality as a communication process"*, we find three abstraction layers of semiosis: *"syntactic, semantic and pragmatic"[69]*.

Syntax is the rule model of **organizing** or **interpreting words**, from a given vocabulary, into sentences. Languages rely on literary symbols, but in VR symbols mainly tend to be the *"visual elements"*. This makes its *"syntax"* to be a *"visual communication system"*.

Semantics studies **the meanings** of the elements of a vocabulary and their composition. To translate this in a language of visual systems, the user *"choice of representation and narrative persuasive methods"* constitutes the *"semantic level of communication"*.

Finally, *"pragmatics"* takes shape on two elements: *"context"* and *"assignment of meaning"*. Placing the message, the sender and the receiver on the same level, and dealing with the **effects of the communication**, assigning meaning in VR has a dynamic (selective and versatile) nature, thus **interactive**. Constant changes in the **context** force the user interaction to push through new **sets of meanings**. In VR applications the interactivity of objects and events can lead to various storylines: the interactive user explores the virtual world as he builds an *"encyclopedia on the fly",* but the final interpretation can *"strongly diverge from the VR author's intention."[70]*

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[66] Dan Chandler – *Semiotics, The Basics,* Routledge, USA, 2002, pp. 36-38
[67] Clarisse de Souza – *A Semiotic Engineering Approach to HCI*, USA, 2001, pp. 55-56
[68] Shaleph O'Neill – *Interactive Media: The Semiotics of Embodied Interaction*, Springer, UK, 2008
[69] Barbara Rita Barricelli – *Semiotics of virtual reality as a communication process*, Behaviour & Information Technology, Italy, 2016, pp. 1
[70] Idem 69, pp. 3

Following the above set of principles, we find **the structure** of **VR narrative** to be strongly bonded to the **choices of events** and how they raise **emotions in users**. Like with film, the experience of virtual reality is complete even without sound. Here it is also complementary and selective. In *"New Book"* (fig. 4) hearing the characters chatting in separate images was possible by our attention functions when concentrating on a single image and hearing only that, our auditory system abstracting the rest of the screens: *"Most often, auditory attention is directed at things people are most interested in hearing."*[71]

Using **avatars**[72] provides a richer communication between the user and the computer, but VR storytelling can be conveyed by the "*visual and non-visual channels*"[73] only. The emotional state of users has the ability to *"read"* the story as it unfolds, therefore the variety of VR's **applications**.

The first element of narrative structure is the storyline; a temporal and causal sequence of the story main events. Interactivity offers the opportunity the change the course of events. By reordering events that cause new stories to emerge, the experience takes on a *"focalisation"* property.

The **focalisator** is a semiotic aspect of narrative structures, described as the person whose point-of-view is adopted to present the story[74]. In VR the user of the system is the *"focalisator"*, in film, the director.

Umberto Eco defined the storyline as *"fabula"* and a *"specific narrative expression as **plot**".*[75] To make every piece of a puzzle find its way to its neighbor is to imagine how the sculpting itself, which took the pieces apart, virtually brings them together. To this aim, VR gives many emotional stimuli for the creator to keep under control.

Making the experience pleasurable is by designing a model of "storytelling", for each application. A good narrative design complies with the given boundaries of the space and user actions.

With an "*actantial role of the hero*"[76], the user of VR applications has received a **manipulation stage**, where he is assigned a **goal**, and a **competence stage**, where he acquires the abilities to overcome the obstacles necessary to reach the goal, and a **performance stage** where the user has obtained the goal.

We have introduced the three levels of analysis by B. R. Barricelli et al.: syntactic, semantic and pragmatic.

This kind of classification is becoming a needed paradigm of virtual storytelling due to the development of the current consumer-oriented VR devices, for immersive and interactive visualization. The entertainment industry is constantly increasing the technological and technical solutions to create new generations of VR games and **360 degree stereoscopic movies**. Even with the creation of new use cases, the technology has not yet been fully developed.

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[71] F.H Bess, L. Humes – *Audiology: The Fundamentals*, Lippincott Williams & Wilkins, USA, 2008

[72] Avatar - *an electronic image that represents and may be manipulated by a computer user (as in a game)*, /www.merriam-webster.com/dictionary/avatar

[73] Barbara Rita Barricelli – *Semiotics of virtual reality as a communication process*, Behaviour & Information Technology, Italy, 2016, pp. 12-13

[74] Idem (free translation)

[75] Umberto Eco – *A Theory of Semiotics*, Indiana University Press, USA, 1976

[76] Idem 73

We therefore find implicit reason for **ludic** exploration, rather than dramatic performance. A big consequence of this is the obvious disproportionate value given to *"player agency",* offering little attention to how agency works in an **improvisational performance**.

With drama and improvisation, commonly used as models for designing narrative interactive systems, we can adapt a model of **improvisational theater** to show how an implementation of performing acts can be used as a way of storytelling.

Carefully orchestrated stage drama draws its power from language. Without the ability to gain information from the language, the narrative is not rendered. This makes the *"sapient"*[77] , or **symbolic**[78] cognitive component: what the conscious mind makes out of the story through interpretation based on the words spoken and their meanings to the **spectator**.

The *"sentient"*[79] cognitive component is the *"iconic*[80] *experience"*[81] of the performance; how the mood, action, movement, facial expressions, intonation of line delivery shape the narrative as it's being presented.

Finally, the *"indexical"*[82] cognitive component is the performance's ability to give its *"dramatic effect"*; how the **sapient** symbolic ideas and emotions are maneuvered by the mind and heart in response to the **indexical** and **iconic** modes of the story.

Good theater, film, games bring all three of these semiotic processes together in a single complex experience.

II 2. Agency and immersion

"Immersion arises when artwork and technologically advanced apparatus, message and medium, are perceived to merge inseparably. In this moment of calculated totalization, the artwork is extinguished as an autonomously perceived aesthetic object for a limited period of time."[83]

First of all it is necessary to start designing a system that can introduce information for guidance. Then take a wide look at framing the *"agency"* (*"the ability for players to have persistent, meaningful effects on the events of*

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[77] Sapient: *wise, or attempting to appear wise;*
https://www.merriamwebster.com/dictionary/sapient

[78] **Symbolic** is a mode in which the *signifier* does not resemble the *signified* but which is fundamentally arbitrary or purely conventional – so that this relationship must be agreed upon and learned: e.g. language in general (plus specific languages, alphabetical letters, punctuation marks, words, phrases and sentences), numbers, morse code, traffic lights, national flags; Dan Chandler – *Semiotics, The Basics,* Routledge, USA, 2002, pp. 36

[79] **Sentient**: *responsive to or conscious of sense impressions;*
https://www.merriamwebster.com/dictionary/sentient

[80] Dan Chandler – *Semiotics, The Basics,* Routledge, USA, 2002, pp. 36-38

[81] **Iconicity** in semiotics is defined as *the analogy between the form of a sign and the concept it refers in our perception of the world;* Paul Bouissac, *Encyclopedia of Semiotics*, New York: Oxford University Press, 1998

[82] **Indexical** is a mode in which the signifier is not arbitrary but is directly connected in some way (physically or causally) to the signified (regardless of intention) – this link can be observed or inferred: e.g. 'natural signs' (smoke, thunder, footprints, echoes, non-synthetic odours and flavours), medical symptoms (pain, a rash, pulse-rate), measuring instruments (weathercock, thermometer, clock, spirit-level), 'signals' (a knock on a door, a phone ringing), pointers (a pointing 'index' finger, a directional signpost), recordings (a photograph, a film, video or television shot, an audiorecorded voice), personal 'trademarks' (handwriting, catchphrases), Dan Chandler – *Semiotics, The Basics,* Routledge, USA, 2002, pp. 36

[83] Oliver Grau – *Virtual Art (From Illusion to Immersion)*, The MIT Press, UK, 2003, pp. 338

the experience"[84]*)* as a **shared property** of the participants in an interactive VR story.

We mostly have two identities in a VR experience: **the user** and **the author**. The hierarchy of the two builds an autonomous system capable of giving the sense of freedom where needed. It is mainly considered that adding concrete facts to the narrative actually comes at the *"expense of the freedom of the user to choose for himself how the narrative should play out."*[85]

Today's games have achieved *"agency"* in the domain of action or puzzle oriented gameplay, and it is largely believed that *"agency"* has an *"unmistakable power"*[86] for creating successful interactive experiences.

In a first person shooter, like Quake III Arena (id Software, 1997), agency works as a core for the narrative. Being so connected to the virtual environment, the game rhythm, or the event rate you decide, as a player, is proportionate to the *"immersion"* factor. The higher the grade, *"the more active we want to be in the environment".*[87]

Agency is not the ability to press buttons, click the mouse or move the joysticks; it goes beyond *"participation"* and *"activity"*[88]. The way an extensive exposure to surroundings or conditions can easily teach us a language through *"immersion"* in a specific community, the same way users take on the difficult task of understanding and adapting to the medium of virtual reality. Janet H. Murray refers to the term *"transformation"* as one of the **characteristic pleasures** of digital environments, among *"constructivism"* and *"authorship"**.

The shape shifting or morphing nature of computers gives users original paths for narrative interaction. Drawing applications are the most concrete example of such a game **transformation** system like *Sketchpad*, 1963. Game theorists called transformative play *"a moment of transcendence"* that can *"metamorphosize the players of a game, the culture of which the game is a part, even the game itself."*[89](Quake III Arena, 1997)

A game as *"Minecraft",* (Mojang, 2009), relies its narrative on **construction** tools like axes, shovels, or pickaxes to chop down trees, dig inside the landscape, and mine for resources to later build various objects. Creating the world as you go has shown great agency impact on the young gamer's community, with a record of *"74 million monthly active users in December 2017"*[90]. The figures demonstrate how the pleasure of the users constructing the environment and building a set for multi-layered, multi-player with interactive **multi-ending** stories, can reach an unexpected level of **agency**, thus popularity.

As a conclusion, *immersion* is the key to make users mentally absorb a process, a change, a passage from one mental state to another. Doing this with

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[84] Andrew Stern - *Embracing the Combinatorial Explosion (A Brief Prescription for Interactive Story R&D),* USA, 2008

[85] J. Tanenbaum and K. Tanenbaum – *Improvisation and Performance as Models for Interacting with Stories,* School of Interactive Arts & Technology, Canada, 2008

[86] Oliver Grau – *Virtual Art (From Illusion to Immersion)*, The MIT Press, UK, 2003, pp. 338

[87] Janet H. Murray – *Hamlet on the Holodeck (The future of narrative in cyberspace),* MIT Press, USA, 1997, pp. 126

[88] Idem, pp.128

[89] Katie Salen, Eric Zimmerman – *Rules of play (Game design fundamentals),* MIT Press, USA, 2003

[90] Helen Chiang, *Minecraft* head, for *PopSugar* magazine, 2018

virtual reality necessitates a *"most exact adaptation of illusionary information to the physiological disposition of the **human senses**"*[91]. The headset only facilitates the user's vision and hearing to merge in the space, but the controllers open a third one; the tactile sense. We could stretch this thought and propose the fact that a combination of three senses is enough to sometimes trigger the **synesthesia**[92] of a fourth one, the smell or taste, especially in a carefully crafted VR environment, where the user experiences a strong evolution of senses, like *"conscious illusion can shift right around for a few moments into unconscious illusion"*.[93]

Chapter III

Cinematics: Film meets ludology

The definition of cinematics (or **game cut-scenes**) by Friedman: *"live or computer-generated videos clips, usually not interactive, interludes between stages that furnish additional information, such as story elements, tips, tricks or secrets."*[94]

For a century of cinema people have been exploring **cinematic** ways of presenting their stories, of structuring events, and creating relations between experiences. Translating the film language to the computer language greeted more creators in the field; capturing footage digitally meant less tedious processes of filming, developing and, especially, editing films. "

According to Lev Manovich, the most important **influence** of cinema on computer systems was *"the mobile camera"*[95]. Created in the 1980s and 1990s for visually exploring all the axes in 3D virtual spaces by the military,at the same time by the computer printing industry, and by the succesful Hollywood special effects teams, the camera model became *"an interface convention"*[96] for most of the design software used at the time. Tracking, tilting, panning and zooming are now keyboard-mouse driven coordinates used to access data, models, objects, bodies and lights. Computer interface benefits from an invention introduced by cinema: *"the mobility of the frame"*.[97]

The *"point of view"* of the *virtual camera,* along with *game genre,* becomes a primary tool for how people explain **gameplay**[98]. It has

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[91] Oliver Grau – *Virtual Art (From Illusion to Immersion),* The MIT Press, UK, 2003, pp. 14

[92] "***Synesthesia** is a perceptual phenomenon in which stimulation of one sensory or cognitive pathway leads to automatic, involuntary experiences in a second sensory or cognitive pathway"* – Richard E Cytowic, *Synesthesia: A Union of the Senses (2nd edition)*, MIT Press, USA, 2002

[93] Oliver Grau – *Virtual Art (From Illusion to Immersion),* The MIT Press, UK, 2003, pp. 338

[94] Anthony Friedman – *Writing for Visual Media (Second edition)*, Elsevier Inc., UK, 2006, pp. 290

[95] Lev Manovich – *The Language of New Media,* MIT Press, USA, 2002, pp. 88

[96] idem

[97] idem

[98] *"Gameplay is a term used to define **the way players interact** with a certain video or computer game. It is further characterized as the way the game is played, including the **rules**, the **plot**, the **objectives** and how **to conquer** them, as well as a **player's overall experience**. As*

implications for the "*structure design of the interactivity.*"[99] We find three types: *subjective* point of view, like in film, we see what the character sees (first person view, e.g. *Quake*), *"third person view",* taking the *"over the shoulder"* position of the camera, or narrator's view, and the *god* view, in strategy games, like *"Civilization"* (MicroProse, 1991), and role playing games (**RPG**), like "*Witcher*" (Atari, 2009), where we see the world from a higher perspective, in film language, an *"aerial shot"* looking at the ground.

Another feature of cinematic perception *"which persists in cultural interfaces"* is a ***rectangular framing** of represented reality"*[100]. Some theories follow conceptualizing the cinema screen as *"a transparent window onto the world, the metaphor of a mirror being central to psychoanalytic film theory".*[101] Cinema and photography inherited framing from paintings. Since the Renaissance, the frame acted as a **window** onto a larger space which was assumed to extend beyond what we see. In the famous formulation of Leon-Battista Alberti, the frame acted as *"a window onto the world".*[102] Or, in a more recent formulation of French film theorist Jacques Aumont, *"the onscreen space is habitually perceived as included within a more vast scenographic space. Even though the onscreen space is the only visible part, this larger scenographic part is nonetheless considered to exist around it."* [103]

Just as a four by three **aspect ratio** frame of a movie and a square photograph presents a part of a larger space, a window in HCI presents a framed view within a larger document[104]. Game developers commonly used framing to mark the running of an **in-game cinematic** by adding two black stripes at the top and bottom of the screen, as long as the cut-scene plays, just to announce the player of a short break in his interactivity, and not to accidentally press a button and skip the cut-scene.

Although modern games have already solved these problems by delaying inputs, from the players' controllers, as the cinematics start, or, even better, to make the cinematics **interactive**, like in *"The Last of Us"* (Naughty Dog, 2013), or *"The New Order: 1886"*(Sony Computer Entertainment, 2015), involving the player seamlessly throughout the gameplay. There is a strong appeal in the way *The Last of Us* visually mimics a film, but it had its success especially because it reconstructed a film the user got to be a part of.

Most gamers, at the inception times, were playing the fighting game "*Tekken 2*" (Namco, 1995) just for seeing the cinematics. The "*Final Fantasy*" saga (Square Enix, 1987) went for this marketing strategy as well. These games will reward the player's abilities to overcome obstacles with the beautiful display of masterfully animated films describing the evolution of the

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video games gained popularity in the 1980s, the term gameplay became more popular as well. Its continuing popularity has expanded its use to include other types of games as well" – https://www.techopedia.com/definition/1911/gameplay

[99] Lev Manovich – *The Language of New Media,* MIT Press, USA, 2002, pp. 289

[100] Idem

[101] Vivian Sobchack – *The Address of the Eye: a Phenomenology of Film Experience*, Princeton University Press, 1992

[102] Leon-Battista Alberti – *On painting*, 1435

[103] Jacques Aumont – *The image,* British Film Institute, 1997

[104] Idem 99

story, of characters, of spaces and the relations between them, building the world as a story, with each **level**[105] at a time.

The production quality and the inventiveness of the video games astounded and captured much attention among film studios. Inspired by their stories, and having already a targeted audience, many of them went along and created films inspired by games: *"Super Mario Bros."* (1993) , *"Mortal Kombat"* (1995)*", "Lara Croft: Tomb Raider"* (2001)*", "Hitman" (2007)",* *"Tekken"* (2009)*", "Need for Speed"* (2014)*"*.

Game animation teams are now working in the film industry to adapt and create the **translation** for story, characters, assets and rules of their own games, to the cinema screen.

Vice-versa, we can also see films **recreated** in the form of various genre games as: *"Alien vs. Predator", "Alladin", "The Lion King", "Star Wars", "Tron","The Lord of the Rings"* and *"Jurassic Park"*. Usually released for keeping the audience "activated", and maintain the sales up for a while, most of these games did not have constructed a clear modular narrative environment for a successful video game to come up, a result of the **linearity** of the cinematic art. In games like *"Lord of the Rings"* and *"Star Wars"*, where imaginative languages, territories, and fantastic characters are at hand, the narrative can easily propose **nonlinear** premises of play. Here, the **time** is unexplained and mostly unimportant, so whatever option a character from the film might take in a game system, the narrative stands the same. You will still fight *orcs* in *"Lord of the Rings"*, and whatever side you take on, in *"Star Wars"*, you know who the opponents are.

We find video game *auteurs*, like Hideo Kojima[106], who have expressed a great admiration for cinema throughout their careers by actually quoting films, homages and technical direction.

Storytelling can be a driving force for games, and when it is accompanied by directional expertise, they can make the game "cinematic", a prevalent term among gamers who tend to generally describe a game that uses narrative throughout the gameplay. It is these kinds of cases where cinematics come in and postpone the **interactive** part of player agency, ideally without diminishing it. While the cinematic plays, the game continues, changing the rhythm, pushing the story forwards and leaving the player to rest, as most of the gameplay runtimes in modern single-player games go to the extent of twelve hours' worth of playing time. The user can wait, but no more than a few minutes, until the cinematic should be complete and *greet* the player back into the gameplay, except we are referring to an **end-game cinematic**[107]. How a game **cut-scene** can use the power of storytelling to immerse the player to such a degree that, actually taking action and playing the game, as they should, became an almost discouraging and unmatched experience to the cinematic experiences, is demonstrated by the *"Final Fantasy"* **storytelling by**

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[105] A game **level** is a **space** and **time** constrained **section** of a game, created by the developer to optimize the workflow, organize the code, and give structure to the storyline. It usually starts within a new environment, in a new time tense of the action, or both, and ends with a reward for the player for completing the level and preparing him for the next level, which, conventionally, is more difficult to surpass.

[106] Hideo Kojima is the creator of the video game series *"Metal Gear Solid",* developed by Konami Computer Entertainment in 1998.

[107] *"Metal Gear Solid 4"* (Konami Computer Entertainment, 1998) ends with a 30 minute long cinematic, where the central character meets his father. https://youtu.be/X5ET36lbIMA

cinematics model. Being so close to **film** language, the cut-scenes tend to use **dynamic editing, dramatic effects** and **special effects**.

While we are looking at the **interactive story** of the game we play, we find it emerges from the result of our actions; another story gets born, much more general and **covering**, complementary to the more detailed interactive one, called by the cinematics.

Giving reason and a wider perspective to the interactive story, the **cinematic story** is mostly spoken through film language.. Organizing a cinematic experience is often an event that also requires some proof of knowledge on the game **implementation** side. Making the animation capture process easy-going is a must, as is on set, in the film industry.

The discipline of respecting the **rigors of filming**, like everyone being quiet when rolling, also applies to the cut-scene *"filming"*, or the motion capture[108] (character animation) stage. The results are proportionally balanced to how professionally responsible each participating individual is, and how well the given tools are used, like the cinema language (when breaking down a script), cinematography expertise (photography, when framing the shots), and acting (when directing the movement and mood).

In other words, cinematics are similar to the scenes in the interactive movies, when the spectator watches the outcomes of his decisions. Kinautomat (1967) by Radúz Činčera, for example, had its trailer created by using this text as a premise: *"Imagine a movie where you can decide the outcome. A choice: would you help her? And when you decide, [the] movie will show the consequences, but choose wisely, because everything that happens… is up to you."* The time the spectator is given to vote the given options, a time when interactivity holds the narrative, the few seconds it is "active", is actually the time of the digital game itself, where interactivity is most of the experience, and not the play.

In conclusion, a cinematic needs time, space, and a narrative universe to describe. Getting to the point of deleting a cut-scene from a game is like cutting out a scene from a movie. It can be done, but with narrative consequences.

III 1. The virtual camera

Anne Friedberg called the cinematic experience *"a mobilized virtual gaze"[109]*. It enables the spectators to assist to the spectacle without leaving their place, at the cost of **immobilizing** them. We take the *gaze* as identification to the camera lens, abstracting to the presence of the camera, *coinciding[110]* with it.

It is important to notice that creating a cinematic for a video game shows the **best** camera angles, character movements, spaces, assets and light deployment, a **cinematics director** can possibly achieve. Being in charge with the creation of a trailer or an in-game cut-scene he takes the same responsibility as the **film director**. They both follow a storyboard, work with the camera to capture script characteristic actions, change the rhythm of

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[108] **Motion Capture**: the process of digitally recording the movement of objects or people.
[109] Anne Friedberg - *Window Shopping: Cinema and the Postmodern*, University of California Press, USA, 1993, pp. 2.
[110] Lev Manovich – *The Language of New Media,* MIT Press, USA, 2002, pp. 108

movement, use light for dramatic effects, connect various members of the team to commonly understand the concepts, and give the spectator the indispensable feeling of immersion, as if **they** take part of story, they are the ones who have the best view of the action. The camera is placed where someone else decided, for you, but what happens to the camera in VR?

A *"screen-less representational apparatus – VR"[111]*establishes a **break** of the universal rules of the screen, the body of the user being **transposed** inside the sphere of the virtual environment. This explains the camera's mounting on user's head.

Immobilization of the body, in the case of VR, is at an unprecedented scale, paradoxically opposed to what freedom the natural movement it offers. Moving your head causes the "camera" to move, pan, and tilt. Standing and kneeing are also comforted by the vertical adjustment in the virtual space. A forwards move will make the user travel through space; many applications have put this locomotion artifact to use with their virtual applications, including *"virtual reality coasters"*, like *"Rage of the Gargoyles"*, made by *"Samsung"* and *"Six Flags"*.

"Rage of the Gargoyles" is one of the first virtual reality coasters with a video game built into the ride. Using the track movement of the rollercoaster, the camera moves with it by calibrating itself with the sensors along the track. You play by looking around, shooting gargoyles using the point of view of the user, and the headset *"Samsung"* provides, *"VR Gear"*. While flying through the air on one of eight participating *Six Flags* coasters around the U.S, the game is meant to seamlessly integrate with all the twists and turns of the coaster it's synced to. To display the ride through the virtual camera, but feel it through the body, would be enough to escape motion sickness is an ambitious thing to claim. Dizziness varies from person to person, but it most certainly is there for the new-comers of VR.

We can look at the virtual camera from another standpoint. When making the motion capture scenes for games or movies, directors often use a rig to simulate the camera, as if it was present in the virtual space, with the characters. Consisting of three or more markers, the camera rig is usually handheld, and brings raw data to the 3D editing software, bringing the process of cinematics even closer to cinema.

The motion control rigs from Mark Roberts Motion Control, offer a system in which a cloned virtual camera is born. The system has the coordinate of its nodal point figured out by the dimensions of the rig's axes and the variables of how the real camera is mounted. Using the *"Flair"* software, the user can export the movement he did on set, with a real camera, and real people (usually on a green screen for keying[112])

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[111] Lev Manovich – *The Language of New Media,* MIT Press, USA, 2002, pp. 109

[112] **Chroma key compositing**, or **chroma keying**, is a *"visual effects/post-production technique for compositing (layering) two images or video streams together based on color hues (usually blue or green). The technique has been used in many fields to remove a background from the subject of a photo or video – particularly the news casting, motion picture, and video game industries.",* https://en.wikipedia.org/wiki/Chroma_key

III 2. Cinematics development

For this study on the creation of cinematics for a video game, I will propose going through the stages of the **processes** when producing an engaging **cinematics experience**.

Many of the game **design teams** are relatively small, where art **directors** do the cinematics, outsourcing the animations for freelancers to deal with the time consuming parts. It is usually required a full-time cinematics person to create authentic pieces of action with meaningfully applied **filmmaking** techniques, to define conventions of **naming** the steps, to keep track of the **milestones**[113] of the scenes, and create a **pipeline**[114] for the production.

Assuming that we have created a storyboard, and we have our characters, and our script, we now need to create the specific animation for telling the story. The step before capturing the motion would be a **video** breakdown of the action needed to complete the cinematic. This step is analyzing what angles the virtual camera should use for us to see the best of the action. **Motion capture** is an animation production technique that uses cameras or sensors to capture the body and face movement of the actors and translate it to 3D software for **processing**. On top of the real actor, new technology software like *"Vicon Shogun"* can overimpose the 3D character in real time, for the director to spot mesh imperfections during the shooting, thus making the production easier.

Adapting a "free" production style for cinematics is not recommended. Storyboards, scripts, and minimal **choreography** are needed to capture data the right way. To keep the scene interesting, moving the characters is a good idea to create a **flow** in the rhythm. Characters that just talk with no body language are too inert to be **convincing**.

Across any game the mood changes and we have to keep in mind the spaces we're in, the noises we hear; is it a loud area, should we record the actors speaking **loudly**, or **softly**? We wouldn't want to hear a soft conversation outside a fighting military base. First, it would be impossible for us to hear, and secondly, for the characters to really speak like that. It all depends on the storyboard a director has to keep in mind.

Getting the **realism** needed for the characters to move, props are used to take place as furniture, stairs, windows or swords, guns, etc. An important aspect of these props is their **weight**. If, for example, if in the real capture, a character is holding a gun which is underweight, we will see an unnatural look in the movement of the animated character when holding and moving the gun, in the final animation. One more thing to consider is that **handheld** motion doesn't always work as intended, because the virtual camera rig tends to have the same weight problem.

Filming video along with the capture is a great way to follow the **speed**. Many times cinematic artists have complained that the speed from the motion capture is looking much slower inside the action scene of the final

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[113] **Milestone**: A significant stage or event in the development of something.

[114] **Pipeline**: A production **pipeline** is a series of stages, either in the state of development, preparation, or **production of a film**, developed by a producer, and ideally in different stages of the post-production process.

animation, so they have to manually increase its speed by roughly twenty-five percent.

Actors need to be real actors. Motion capture is time-consuming anyway, so the last thing you want to do is lose time training people to become your characters. Hiring professional artists for performing specific roles comes with the appropriate responsibility. They will keep the motion consistent and will learn the dialogue much more easily than an unprofessional actor would, saving time and effort when creating the motion capture. Also using **voice over** sound clips on set helps actors locking the cues on timing and sampling the dialogue.

It is much more important to focus on the movement of the scene, than finding the best point of view. Sometimes characters block each other, and it is commonly fixed by constant moving the camera and the actors.

As far as facial animation is concerned, it should be *"baked"[115]*, or attached within the body motion capture animation, for synchronizing issues.

In figure 6 we see a standard model of a **cinematic pipeline,** as proposed by *Tanya Jessen*, for the making of the video game *"Gears of war 3"* (Epic Games, 2011). We see a logical diagram ordering the cinematics production steps, in a comprehensible manner, each color representing a different team of at least two people, ideally engaging in the project in a commonly fashion, step by step, following the other teams' work, until the end of the project. Close communication between the layers of production is necessary, as seen in the figure.
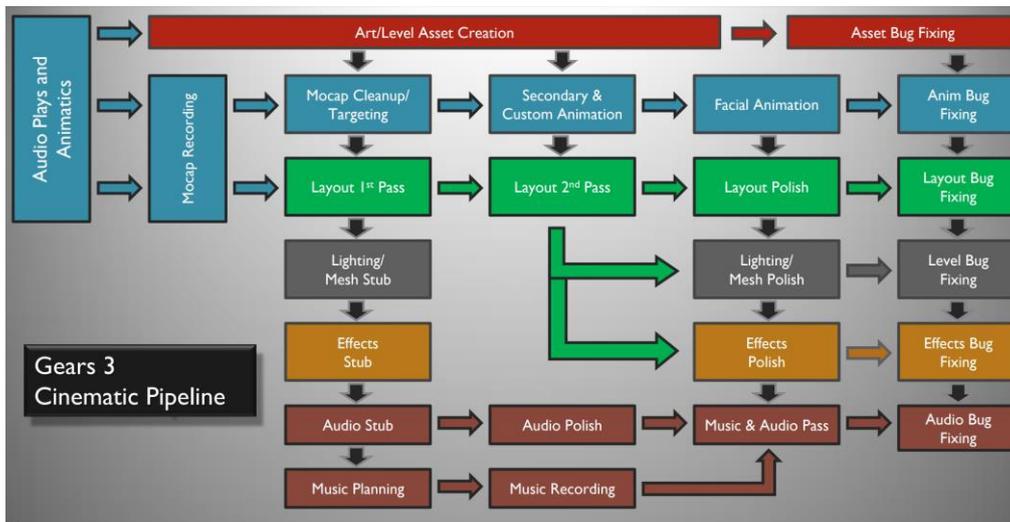

Figure 6. Tanya Jessen, producer for Gears of War 3, model of the cinematics pipeline.

"Level design is both an artistic and technical process"[116]. Similar breakdowns of film productions have been seen used to create the same kind of scenes, although some steps like "lighting" take place in the first phases, some film productions even use "**pre-light**" working days to prepare the light before going into shootings. Some actions develop in parallel to the rest of the

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[115] "**Baking**" is a **term** frequently used in computer graphics (CG) in regards to game development and traditional, non-realtime rendering (Cycles or Blender Render), referring to the merging together of two or more independent animations.

[116] Cliff Bleszinski, *The Art and Science of Level Design,* Epic Games, Session #4404 at Game Developers Conference GDC, USA, 2000

processes, like "level asset creation", the film correspondent of "scenography", develops along with the recording of sound and movement of the game, something that is not possible with movies, where you need everything before rolling the camera. The **"bug-fixing"** steps for the level designer[117], animation, effects and audio can be translated as the **post-production** stage of film (editing, special effects, color grading and sound), where unnecessary information is thrown away and relevant action and concepts are carefully picked by the film editor.

III 3. From theory to practice: "*The Gun Paradigm*"

Henry Jenkins, author of the book *"Convergence Culture: Where Old and New Media Collide",* officially described **transmedia** in 2006, as a story that *"unfolds across multiple media platforms, with each new text making a distinctive and valuable contribution to the whole."[118]*

He warns that the term "transmedia" means *"across media"* and directors may have different understandings applied to the same story. It can be confused with media franchises or cross-platform productions like *"A Bug's Life"* (1998), the film, then the game, which followed the film's narrative and opened scenes from the movie as you played.

What makes a project worthy of a *"transmedia"* name is that transmedia storytelling focuses on each **platform**, distributing new story insight through **multiple** platforms, specifically chosen to add more **value** to the story, rather than *"retelling the same story in a different format"[119]*, as traditional cross-platform storytelling does to one story.

Mass-media, as we know it, according to Jenkins, is going through a *"paradigm shift".[120]* He describes how, in the 1990s, the rise of the digital *revolution* was anticipated to bring aside the old media, and make room for new media, how the internet would replace broadcasting, but it turns out mediums never completely disappeared, they *"converged"* with the new mediums. "*Convergence refers to a process, not an endpoint."[121]*

The risk of transmedia is the **fragmentation** of the markets targeted by each product and its own medium. Some fans may not come back to the TV series after the creators invite them on the **Internet**, for a fun online game.

Examples of good, potential projects are all around TV, film, games, and books. We see most the successful transmedia worlds originate from cinema (*The Matrix*, 1999, *Star Wars*, 1977), books (*Harry Potter*, 1998) and games (*Pokémon*, 1996), the last being the most financially successful, with $90 billion in total franchise revenue, according to a study of *Wikipedia.org*.[122]

A great detailed dissection of the strategy of multi-platform storytelling is conducted on *"The Matrix"* by Henry Jenkins in his seminal book "*Convergence Culture (When Old and New Media Collide)*". The

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[117] **Level design**, **environment design**, or **game mapping** is a discipline of game development involving creation of video game levels—locales, stages, or missions.
[118] Henry Jenkins – *Convergence Culture (When Old and New Media Collide)*, New York University Press, USA, 2006, pp. 95-96
[119] Idem
[120] Idem, pp. 5
[121] Idem, pp. 16
[122] https://en.wikipedia.org/wiki/List_of_highest-grossing_media_franchises

Wachowski brothers directed not only the film, but also how the different new storytelling mediums took alignment, for offering more information to the fans (Web Comics, then an animated short movie, after a massively multiplayer online computer game), in a **constructive** way, sequentially adding a *new story perspective[123]* with each appearance of the new mediums.

"The Gun Paradigm" is the name given to my transmedia project consisting of a short film, an interactive video installation, and a VR game.

Without knowing from the start what could have become of a film inspired by a dream, I proposed continuing the world I described in the short film *"Paradigm"* (2017)[124] in two different mediums: art installation, and VR game.

The feeling of constant fear, paranoia, dark encounters, all the actions revolving around the presence of a gun, became enough of a collection of thoughts to drive me to make a film about the story of a criminal. Following a nonlinear structure, the film's aesthetic aims for a film-noir atmosphere, no dialogue, and three characters (one is subtly resumed to in the VR game).

The three minute and a half short film "Paradigm" starts by showing the main character (actor Ion Bechet) walking through a dense fog. We see his steps hasting as he starts forcing his way into a parked car, within seconds. When inside, as he checks the mirror, we **cut to** a close-up of the jacket he was wearing, now standing in the dark, on a fence. Gradually approaching with a flashlight, a gloved hand carefully inspects the item and takes it away. At this point you ask the question, who is this man? You can only assume he is following our protagonist. We can only see his hands once, and he is wearing sanitary gloves. That is enough to construct the fought that our main character's actions are "done"; he has been caught, but how?

I don't show this, I suggest him being murdered by someone else, in the next scene, outside the airport. You may ask, by whom? The answer lies in the next scene. Here we see Ion Bechet alive, under a railway bridge, smoking a cigarette, as we hear the train passing above. Out of the dark, a third character walks into the scene, goes to Ion and places a gun in front of him. Ion takes the gun.

From here on out, the film presents the outcome of these actions in a metaphoric fashion; the gun is fired, but the sound is easily camouflaged by the thunders of a storm.

"Paradigm" is a meditation on the dark side of society, an essay of my thoughts on criminality and corruption, and how two of the most different societal realities confront each other, **using the gun as a premise** and rendering the spectator as a state of inertia, incapable of changing the outcomes, *the observer*.

This state of the spectator is about to change with the next project, "The Gun"[125](2018). It is an interactive video installation consisting of two sensors, an ultrasonic distance measuring device, and a touch capacitive sensor connected to the metal parts of the pistol (a Parabellum gun replica).

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[123] Henry Jenkins – *Convergence Culture (When Old and New Media Collide)*, New York University Press, USA, 2006, pp. 95

[124] "Paradigm", a short film directed and edited by Bogdan Ceangu, equipment by Liviu Marghidan, and filmed by Valentin Mircea, https://vimeo.com/247606573

[125] The Gun, video installation, was first presented in 2018, and at MNAC, *Organic Proxy*, Bucharest, in 2019

Both connected to an Arduino[126] device, the sensors transfer their collected data, through OSC[127], to one the most versatile software created for artists, Max/MSP/Jitter[128]. The computer constantly reads through nine videos, each depicting a different year in the evolution of World War I.

We start experiencing the installation two meters away from the gun. Looking at the screen shows us the sky through the hole of a bunker. A quiet, calm density of chirping sounds are echoed inside the concrete room.

As you slowly move towards the gun, at around 160 millimeters, your body will trigger Max to play a video containing pictures from, and English text information on, the last year of the First World War: "*1918, the total number of military and civilian casualties in World War I was more than 41 million.*"

At this point, most of the users stop moving as the video unfolds the facts and fades its music and image to its cyclic ending structure.

In its intrinsic value, movement acts as a narrative driver when reaching the next cue point, at the distance of 1300 millimeters, the year 1917 is projected: *"1917: On April 6, 1917, the U.S joined its allies – Britain, France, and Russia – to fight in World War I"* .

This body-gun relation pattern continues at the same pace through the years 1916, when Romania enters the war, 1915, renumbering casualties to one million, and 1914: *"28th July 1914, Austria-Hungary declared war on Serbia"*.

The distance from the user to the gun is now less than 400 millimeters. At this time, the critical political situation is being presented on screen as it was back in 1914, with the assassination of the Austrian archduke and his wife by a serbian student, making the times' newspaper headlines. You can read the original news written in the French newspaper "Le Petit Parisien", and also in the "New York Times". The blood covered shirt, now exposed in the Museum of Military History in Vienna, is revealed like the rest of the videos, in a black and blue-tinted-white.

Users hanging around 200-300 millimeters will cause more footage, and photographs, from the first phase of the war, to be displayed. Being close to the gun, you can read "pull the trigger" on the box the gun is placed on. If the gun or the trigger are touched, the video installation cuts to the final projection, a bright blue celestial image trades places with a blood-red sky.

Relating to "Paradigm", the spectator from the film now becomes the user in the video installation "The Gun". He has now inherited the power to

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[126] *"Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control both physically and digitally"*, https://en.wikipedia.org/wiki/Arduino

[127] OSC: *"open sound control is a protocol for networking sound synthesizers, computers, and other multimedia devices for purposes such as musical performance or show control. OSC's advantages include interoperability, accuracy, flexibility and enhanced organization and documentation"*, https://en.wikipedia.org/wiki/Open_Sound_Control

[128] *"**Max**, also known as Max/MSP/Jitter, is a visual programming language for music and multimedia developed and maintained by San Francisco-based software company Cycling '74. Over its more than thirty-year history, it has been used by composers, performers, software designers, researchers, and artists to create recordings, performances, and installations"*, https://en.wikipedia.org/wiki/Max_(software)

control the screenings with his physical presence, like a film editor, but what are the narratives implied in the case of an art installations, besides the user?

The answer lies outside the **interactivity and agency** of the user; **the concept**, in the case of any narrative medium, is equally important to agency, but in installation art the concept is so vivid and so close to the user, that it is very hard not to receive the clear message it sends.

Reordering the concepts of *users* and *author*, the *inventor* now has nothing to participate with in the narrative, but the lines of the code to control; the exact way the spectator will interact is usually a puzzle, at first.

Sensor driven installations like "The Gun" are not as accurate in their unfolding, like a digital film is, in its nature; it is sufficient to say any film is accurate in its description, as long as it can be played indefinitely, and it can achieve the same performance each time. The video installation in our case holds its viability only through the **action** of the user's experience, of what he makes of it. This is made possible by the uniqueness of the user's movement, subsidiary to the human body's anatomical and physical constraints. If the user is not there, the installation is idling forever.

For its narrative to unfold, the installation needs not only a user, but also an *author*, **using the gun as an intermediary** communicator, masking the audience into the **driver quality** of its narrative, as *the creator* of the story.

Sitting at more than a century away from the ending of the First World War, "The Gun" is aiming to explore our moral responsibility in war, and how the random distances between us and interactive objects can make up stories as a whole.

My experience with NLE[129] software taught me how to visually approach new methods for compositing, animation and editing. Real-time animation was something new to me when I filmed "Paradigm", in 2016.

My next idea was to create a virtual world. It first appealed as an impossible task one individual could handle, but it turns out *Unreal Engine* [130] has all the developing tools needed to program, animate, and compile in **real-time**, using a visually structured coding environment.

Applying basic cinema concepts to the narrative of VR was of big interest, so I continued the transmedia story of the gun, to the **VR game**, *"The Gun – VR"*.

Using Unreal Engine 4 (UE4), the digital environment, was now offering an almost unlimited specter of possibilities to work with. Like a blank page, it was always a matter of action-reaction dependent journey, throughout the process. Being decisive, but keeping the users free, was the strongest challenge. Thinking on how the story should develop in a **virtual world**, as an inventor, you find yourself placed **between** the user and the computer, with unprecedented responsibilities, constantly counting premises of actions, a problem specific to multiple narrative structures, possible when **interactivity** comes into play.

To this point, we have seen the gun being used as an object of *conflict*, triggering the action (in the film), as an object of *presence*, unifying the user and the author (in the installation). Next was to use the gun as an object of

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[129] NLE: nonlinear editing

[130] Unreal Engine: An open source, C++ software with 3D capabilities and game specific developing tools, created by Epic Games, in 1998, with the first person shooter *"Unreal"*.

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absence, with the narrative constructed around the actions of the user in the **searching** of it.

Therefore we get the interest of creating a virtual world as a basis for what a virtual camera would eventually see. The process of recording a camera move in the virtual environment, as a **cinematic scene**, in **game movie** or **cut-scene**, gives the player another view point.

"The Gun – VR" came out as, what I like to call, a "missing piece" from the short film, "Paradigm", the *investigational* part. The **gloved hands holding a flashlight**, which we see in the second scene of the short movie, inspecting the jacket, acted as a **start** for conceiving the VR game. Using an episodic character from the film, **the detective**, the user now becomes the **player**.

Now, that a character is inherently given, the **immersive experience** needs to give a **quest** or an array of narratives, for the player to interact with, to make it more than an immersive experience, a **ludic system**, comprising of rules, options and events that commonly help telling the story of the gun in a new, more **concluding** way.

What the first two mediums have missed, the third medium, VR, now finds new story opportunities to tell and holds the "weight" of what the other two narratives gave it as a basis, engraving the path for **cinematics storytelling** to be possible.

To use the virtual camera in the same expressive nature as with the real cinema camera means to simply copy the cinema language and paste it to the virtual camera, be it in a 2D, 3D, or VR computerized environment.

In the case of "The Gun – VR", the cinematics have the camera moves give hints to the player. The two levels (the garage and the attic) start by being filmed trough the character's eyes, engaging both the character and the player into the virtual scene.

Entering the game shows a credits screen, a startup cinematic movie containing information on the project and the people involved. Then a quick tutorial is needed, showcasing the movement and the grabbing gestures. This part acts as an interesting stage because, at this point, most of the players immediately forget the instructions for VR once inside the level, being more experienced with the mouse and keyboard (or similar interface devices like game pads, joysticks, steering wheels) when playing games.

Starting the first level with no further due is, therefore, important for engaging the player. I do this with the first in-game cinematic, representing a walk through the space of the garage, as seen by our character. The first moment we enter the game we hear a phone calling in a low-lit garage, where two cars and a scooter are parked. Our cinematic slowly transports the point of view to the table, where the mobile phone keeps ringing.

To this point, the player has been just a **spectator**, a **passenger** of the virtual camera. If he chooses to answer the phone enables the power of **authorship** to the player by unveiling information on the characters and their goals.

To overcome the next obstacle of the game, he will have to pay attention to the phone call. Eventually he learns that he has to reach for the car keys to start his mission of finding *"the missing gun"*, in *"one of the rooms"* at the last floor of an apartment building, action which causes the second cinematic to deliver him into the new space of the attic, walking up the

stairway. The same point of view camera angle is used to transport, with the sound of the footsteps, the player inside the new scene.

Now that he has the freedom to move anywhere in the hallway, to listen closely to the doors, trying to open them, or to grab objects like a soda can, a lighter, a flashlight, a candle stick, a gun magazine and a spinner toy, the player is fully immersed in the story, trying to find the gun.

A third cinematic can be triggered by trying to grab a smoking cigarette from the window ledge. It shows how a slow travelling shot can suggest, to the player, to move along the hallway for clues.

The only interactive objects that do not contribute to the narrative, but do add to the improvement of player agency, much more than expected, are the soda can, the gun magazine and the spinner toy. One interesting fact about the creating of synesthesia in VR is given by the soda can on the ledge; almost every player had subtly experienced **thirst**, while they did the gesture of drinking it.

Another cinematic triggered by the player, while opening the only unlocked door from the hallway, discovers a new **potential** for camera use in VR. As we open the door, the camera moves towards the surprised neighbor, a 3D animated model of a man, showing him gesturing away his anger, then the camera lifts to a medium shot. The cinematic ends cutting to the point of view of the player. The risk of **displacing** the camera out of the convention used to this point (the player's head) had two different meanings between the players: one that explained the situation as if the player character himself entered the room, and another where the player character stayed at the door, and the dramatic side of the situation is preserved within the rhythm, angles, and the type of shots the virtual camera combined in the cinematic, conceptualizing the small misfortune, that both our characters, equally, faced, into a piece of narrative impossible through simple gameplay.

After listening to all the doors, hearing neighbors chatter, fights, television news, and loud music played, the player eventually finds the pitch black room where the gun is. With enough **exploration** of the map, he should have already discovered the **three methods** of making light in the dark room: the flashlight, the lighter, or the candle (which catches fire with the use of the lighter, making it the brightest light).

Ordered in the hierarchy of their efficiency, the three types of lights make the **narrative tools** of our story, the **story elements** driven by the player to complete the task of finding the gun on three **correlated difficulty** levels: easy (the candle), medium (the lighter), hard (the flashlight). Many would expect the flashlight would be the easiest way to find your way in VR, but it turns out its low angle view of conic light is not as efficient as a widely spread light source, especially when trying to look for hidden objects.

The last cinematic of the VR game is triggered when the player finds the gun and picks it up. The moment follows a series of four other triggers, for example the high pitched sounds, alerting the presence of the gun being very close to your hands, a bright lightning strike suddenly lighting up the dark room, with a loud thunder succeeding it. This time, the cinematic camera turns your head with the use of a short panning away from where the user is looking (the shelf where the gun is) to the window, causing the climax of the story, a moment when the player succeeded in realizing the scope of the game.

"The Gun – VR" was made with the word "cinematics" in mind. All the in-game cinematics I have created are called *"real-time cinematics"*, because the virtual camera never stops showing the world and the time of the game, it is not using pre-renderd cinematics except the starting tutorial and the generic screen. The architecture, lights, assets, textures and animations were never subjects of interest in the making of the game, although a very highly detailed level design, sound design and especially light design was possible due to the graphics power of the UE4 game engine. Character animations were possible through the Mixamo.com, free 3D assets website, and the sounds imported from the royalty free sound portal, freesound.org, including some of my own recordings. Most of the interactive functionality is already made inside the game engine, making the process easy for beginners.

Concluding the "The Gun Paradigm" with the VR game, our transmedia story reveals how the audience came to **"govern"** over the pistol. Now they virtually **hold the gun** in their hands, after just **seeing** it in the short film, then **approaching** it at the video installation.

We have seen how cinematics add to the story and give life to the characters, how they structure the time, events, and the decisions of the player, what happens when cinematics take control of the viewpoint of the story, and how a virtual game experience can be described as "cinematic".

Conclusions and Future Proposals

This dissertation set out to investigate the **role** that game **cinematics** play in the various aspects of **narrative** enrichment possibilities, and to use computer programming to detect the general **workflow** needed to improve the stories of digital games, interactive films and VR immersive experiences, with the use of the virtual film **camera**.

In the **future**, the discourse on **cinematics storytelling** can continue onto a more detailed approach of cinematics producing, inspired by the use of new technologies like motion capture and motion control, 3D scanning, real-time cinematics, sensor based events, and movement related innovation technology.

An analysis to the **film language** emerged André Bazin's *"editing devices: parallel, accelerated, editing by attraction"* and Kuleshov's *"metaphor",* enough narrative substance to give new means of language to the world of digital narrative.

Looking further into filmmakers' visionary approaches, we find inspiration for understanding the evolution of film language as a **continuous improvement** of other director's precedent statements. A similar way to the evolution of business, where competition is vital for improvement, the VR space has the advantage of borrowing the speech of cinema, photography, and all the other mediums before, seamlessly integrating them each into the virtual world, competing with the realism of film, and, why not, with mimicking reality itself.

It is no longer a matter of how powerful computers are to recreate a perfect mirror of reality, it has, is, and always will be a problem of **structuring** the rules, creating basic creative platforms, engage the user to participate, modulate, invent, and only then you have a **functional** ludic virtual environment which is obeying to the same physical rules as the *"focalisator"* chooses to apply. Photorealistic designs in Unreal Engine 4 are almost "there", as shown with the new demo from Quixel[131], *"Rebirth"*.

Future computing (quantum computing) will surely help simplify the real-time programming process, but we will still need developers that respect our collective, human nature of storytellers and story listeners, writers that understand our story expectations, and software engineers that are making software easily operable, open-source, with a generous knowledge-shared, and knowledge-based user community, all of which UE4 currently has. This makes clear the fact that, without UE4, "The Gun – VR" would not have been a possible project, for a newcomer to VR, in such a short period of time (two months). Future developing for the game is majorly regarding the improvement of player agency through narrative choices.

Having discussed the similarities and differences of film and VR, we have discovered a **hierarchical framework** when creating any type of cinematic scene, be it film or video game: *research, logline, premise*, *outline*, *treatment* (storyboard), and *proposal*.

A "time ahead" way of looking at cinematics would be working on a version of a virtual reality game which also implies reality itself. Proposing **augmented reality** (AR), which now flawlessly does what the modern concept of virtual reality wants to (integrate the user in a reality as close as possible to ours) finds a new set of rules, similarly obedient to the VR rules, which comply to the film rules, and so on, until narrative finds its roots in a more complex, organic environment; **the real world**.

In the case of an AR **detective game**, like the practical study, "The Gun – VR", the modularity, variability, unpredictability of reality, with combining the use of **artificial intelligence** (AI), to help with the narrative structures, which can only be interchangeable, interactive and independent, the **virtual camera** will become a **tool** in itself to navigate, identify and modify the augmented assets. This is because AR uses small video cameras for its operation, constantly monitoring distances, accelerations, spaces, etc. This opens the case of these cameras merging together, virtual plus real, as a conceptual basis for narrative display.

Continuing the work in AR may take years for the technology to develop at a consumer level, thus, for now, working in VR on The Gun – VR's problems and improving on the storyline, character development, agency, and cinematics innovation, is a logical requirement.

Film language has proven to be the most reliable tool for effectively pointing out a story in VR, through the lens of the virtual camera.

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[131] **Quixel** is an industry leader in high-end scan-based applications, specializing in art tools for the Games, Visualization and VFX industries. After releasing its first line of tools in 2011, Quixel products quickly became a defacto standard for modern art production pipelines.

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