UNIVERSITY OF GOTHENBURG

Ludological Communication of Social Reality

(A communicational perspective)

Aladin Hrustanovic

Master of Communication Thesis

Report nr. 2015:026

University of Gothenburg
Department of Applied Information Technology
Gothenburg, Sweden, June 2015

ABSTRACT

Ludological Communication of Social Reality is about researching video games from a communicational perspective. Its purpose lies not only in researching, how video games can communicate about global reality, as it takes a much bigger role in the field of game studies and communications. The main argument of this thesis is that video games can communicate outside their intended purpose, and that they could be used effectively for such communication by studying structural elements and levels of the video game. With combination of theories from game studies, linguistics, philosophy, psychology and mathematics, a conceptual model of video game communication has been built, based on mass communication media. The results have shown that communicational elements can be found on all levels of story, player activities and design. Also that developed and intended purposes of the game are directly connected to the communication of the game, but not necessarily with each other.

Keywords: Ludology, communication, communicational elements, social reality, video games, intended purpose, developed purpose, game studies.

LUDOLOGICAL COMMUNICATION OF SOCIAL REALITY

by

Aladin Hrustanovic

Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree of

Master of Science

Master in Communication

Gothenburg University

June 2015

Acknowledgements

I would like to thank the faculty, my supervisor, family and all my friends for their belief in me, and their continuous support.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION.

We spend around 3 billion hours a week playing video games on this planet, and this number only includes the ones that can be measured. (McGonigal, 2011) While many more are being played behind the trackers in private, and according to Forbes in 2014 there were 781 million games registered on popular video game distribution platform called Steam, now there are probably even more. (Kain, 2014) And of those millions, almost 40% of the games have never seen the light of a screen. (Kain, 2014) And with the numbers like that it is reasonable enough to know that this industry attracts astonishing amounts of money every year, and it is getting more and more popular with the progress of technology.

This thesis was made from the passion for that technology and from the experiences of a person that falls within that lost Nintendo generation, when video games presented not only the hype of the moment, but also a new form of enjoyment and challenge. In time this new form of enjoyment became even more widespread and popular, and soon it attracted new questions and ideas that were stretching towards a more serious side of the phenomena, game studies were born. Now well into the 21 century, we don't see it as a phenomena anymore, but the questions and ideas of those times are still here, some have been answered and some have been given new perspectives and are still weighted among the interested kind. Eugene Jarvis, a known game designer once said, *"video games are ubiquitous now"*. (BrainyQuote, 2015) Meaning they are everywhere, present in our daily lives and are showing themselves as a form of what I like to see as digital companionship of the new century, An escape from this social reality, when you wish that you could do anything you want and whenever you wanted, at least for the moment. This work is my contribution to the field of Ludology, the game studies, which see video games as something more than pure entertainment and are looking on the other side of the coin, to search for the answers that help us understand video games and how are they affecting us both as players, and as population. As an inspiration for this work, I have taken course of actions that was already made in a similar way by some more distinguished members of this field such as Ian Bogost, whose work weighs heavy influence on this paper. At the same time this paper draws knowledge not only from other researchers from the field of game studies, but also from philosophy, psychology, linguistics and even mathematics. All in pursue of the goal to contribute to their side by using communication as the source of power. Communication is a power that is strongly advocated in this work, and it is used as an example to show how our own social reality can be seen incorporated anywhere around us, even in video games. By the insertion of social elements that are not only informational but also communicational. This work is not an educational one, or even philosophical one, but it is in my belief a communicational one, for the reason why it must be so is the same as why we as humans must always listen before we speak, even if what we hear is not what we wish.

In the following chapters it will be seen as why it is so, as one follows the path of nine random video games all from their own respective genres. Which carry those social elements that not only reflect and represent, but also inform and communicate a part of our own social world. There is a view in this thesis that sees video games as a useful communicational medium that doesn't balance its understanding on the language, but on the individual ability and perception. A process in which players act as rational agents capable of perceiving, decoding and understanding the elements within the game, with its technology acting as information carrier and designers as information senders. This thesis argues that because of technology and vast creativity, video games could be used as a powerful communicational tool outside of their intended purpose. The most important elements for that communication are encoded in the levels of story, design and player activities. They consist of a specific type

of information, which can carry a meaningful communicational content to a selected audience. It also argues that modern video games are complex, dynamic and multilayered structures that cannot be generalized with common categorization or purpose.

Aim of the thesis.

The aim of this thesis is to research video games from a communicational perspective, with the main argument that video games can effectively communicate outside their intended purpose.

Besides following the aim of the thesis, this research has another purpose, which is to design a communicational model, which could serve for the future studies of video games.

Structure of the thesis.

The structure of this thesis is done on four levels, and in ten different chapters. The first level, which consists of five initial chapters, brings the most important frame of the thesis. In the first three chapters we can find the introduction, which introduces the topic and points towards the aim and arguments of this thesis. Then the background chapter, which discusses the origins of the game studies, together with all the relevant theories and concepts that will be used in this research. The methodology section provides a detailed overview on the course of this paper and discusses relevant terms, which are an important part of that course. In the same level there are two important frameworks for this thesis, theoretical and conceptual. The first includes all the most relevant theories for this study and the second provides a conceptual model for communicational study, based on the theoretical framework.
In the second level of this thesis, there is only one chapter. Chapter of games and social elements and it consists of nine selected representatives with social elements for the analysis.
In the third level, which is formed out of two highly significant chapters for this thesis, there are results and the communication analysis. In the results chapter, a coding scheme is provided for the extracted social elements, together with their summary and the content analysis.
The communication analysis, utilizes the relevant theories from the theoretical framework, and applies them to a conceptual model. The same chapter provides also a communicational discussion, which brings a larger perspective on video game communication. The last level and final two chapters consist of conclusion and discussion of the research, where the conclusion is summarized in key points and together with theories is discussed in the discussion.

CHAPTER 2: BACKGROUND.

Ludology is the study of games, and in these days especially about video games and gaming.
In the field of Ludology, video games are studied and analyzed because of their immense popularity, which has spread rapidly in the last 30 years of the 20th century in the so called gaming revolution. Since then, people have been trying to understand what is happening behind the digital curtain of video games, how are they designed, why are they so popular and what kind of effect do they have on the people who play them. But the study of games has not started with the video games themselves as games have existed in the past, and video games are seen as a contemporary model of that classical genre which has contributed to the

founding roots of the field itself. For example, in 1713 Francis Waldegrave provided the first, known strategy solution to a two-person card game, a minimax mixed strategy equilibrium, upon which he noted that a mixed strategy *"does not seem to be in the usual rules of play."* (Walker, 2012)
Not even hundred years later, Augustin Cournot provided a restricted version of the Nash equilibrium. (Walker, 2012) The same equilibrium that saw it's later use in the famous Game Theory. But more serious research into games was done in the first half of the 20th century, with some of the most notable people like, Emile Borel, who published several papers on theory of games by studying poker. (Chen, Lu and Vekhter, 1999) Also people like John Von Neumann who was one of the most important people in the beginning of computer science, stating once *"If people do not believe that mathematics is simple, it is only because they do not realize how complicated life is."* (Goodreads.com, 2015) Among his enormous contributions to mathematics and computer science, without of, the world as we know it today might have been quite different, he also made important contributions to the game theory. In 1928 he published his first paper on game theory, called *"Theory of Parlor Games"* in which he mathematically proved the famous Minimax theorem. (Chen, Lu and Vekhter, 1999) Theorem which states *"that every finite, zero-sum, two-person game has optimal mixed strategies"* and as well that there is more than one optimal mixed strategy, infinitely many. (Weisstein, 2015)

Von Neumann, Emile Borel, Steve Nash and others have contributed enormously with their work to the game theory, which then as today saw a huge application in mathematics and economics as well as daily life. But in today's world of video games, things like game theory are beginning to get new dimensions and new perceptions on contemporary problems that we face in our social reality. As we advance both in mind and time, we explore and discover new things that affect our life in unprecedented ways, and we turn back and question and reuse theories of times focusing on their modern application. For that I stand strongly in support to some of the claims and works done by modern researchers, both those who have been in the field of game studies since its early days, and ones who have just started to make their contribution.

Indeed it could be said that Ludology, or game studies have picked up the interest of many people such as Jesper Juul who contributed greatly to the world of Ludology, with works such as "Games telling stories?" (Juul, 2001) where he researched narration of the video games, could video games tell a story, concluding that video games and classical narrative works such as novels have big differences, mostly because of the included interactions within the video games and time framework in which the video games are happening. Or Ian Bogost, whose work on video game rhetoric has not only been a source for methodological inspiration of this work, but also a source of deeper understanding of symbolical and procedural influence on a player. His procedural rhetoric is one of the most important works in game studies, where he argues that players are persuaded by far most on procedural activities, in which games make persuasive argumentations. (Bogost, 2008) Bogost argued that video games are expressive and persuasive mediums, which can not only make claims about the world, but also take social positions, all by using procedurality as a way of conveying ideas and information. (Bogost, 2008)

In a similar fashion have Messaris and Humphreys acknowledged the importance of communication in video games, as they understood that players are not just observers, but active participants. (Messaris and Humphreys, 2006) And often mentioned Torben Grodal in

media and game studies, who talks about interactivity and nonlinearity where our daily life and experiences are characterized in mental storytelling and used by different media. (Grodal, 2009)

But this thesis doesn't only rely on the most notable researchers for its answers, as it also uses some of the ideas from works done by new researchers, like Gabriele Ferri from University of Bologna, whose focus was on semiotics and semantics of video game play and narrative (Ferri, 2007) and also Valentina Rao, who asked herself can video games be taken as a discourse and could they make arguments, where only to discover that things are not so simple as they seem. (Rao, 2011)

This thesis is focusing less on the question of how something is communicational, but more on the question of what is communicational and where are the elements of that communication. Using similar methods that have already been proven successful in the past, such as ones of Ian Bogost, and the works of already mentioned researchers, combined with significant theories from other fields. Game Theory, Wittgenstein's Language games and also his Family Resemblance Theory, Index, Icon and Symbols by Charles S. Pierce and even Maslow's hierarchy of needs. They are all important for this research, and more about them will be seen in the proceeding theoretical framework.

The importance of studying video games today is clearer than ever, since the games of today have long moved from simple graphical elements and elemental actions. And have become more complex, dynamic and structured in layers of elements than the definitions of a "game". Which perhaps in the past were most focused on rules, play and entertainment, are now breaking those barriers and are creating new definitions and new dimensions.

CHAPTER 3: METHODOLOGY

This thesis is based on a process of exploring and analyzing the design of 9 video games, in search for the socio communicational potential of elements within them. Thesis connects the communication of a video game to both intended and developed purpose of the game, through understanding of two relationship aspects. 1: The relationship between the player and the designer and 2: The relationship between the semantics and semiotics in the video game.

Methods used in this thesis can find their roots both in deductive and inductive reasoning and qualitative research. Which is primarily because game studies are not a new field of science, and theories that have been established in them through time, are numerous and often come from a wide range of other fields, such as philosophy, linguistics, mathematics, etc. Therefore making them very attractive for deductive testing and reasoning. At the same, there seems to be a strong notion regarding video games, which makes them very susceptible to inductive research, and that is that modern video games in general are not a simple static unit. But rather they are dynamical, multilayered and complex individual units. The logical reasoning for that comes from a similar factual reason as it comes from the advance of technology. As one could reasonably argue that video games are not only a product of a certain technology, but are also connected to its evolutionary progress. Thus what that means, is that if we can say that technology is a dynamical thing, since it constantly keeps evolving and changing without having any obvious static point on which to firm itself permanently, hence one could see the same resemblance in video games. As they constantly keep changing themselves, with

new technology incorporated in design, production and purpose, they also do not seem to have a static firmness that would make them not only predictable, but also linear in evolution. The same dynamical force of human needs, which drives for constant change, satisfaction, improvement and excitement. By connecting together new and different layers of elements from a mixture of other genres, which before was not so conceivable or even intended. That mixture of different layers within one video game could very much make a game far from being simple, but more complex as there seem to be no linearity or predictability in a game itself, but so could well be for the genres themselves.
This notion that has proven itself through time, is in my opinion a strong character that must not be neglected, and with this view I also advocate that what makes them so dynamical, complex and multilayered, the same force makes them also very unpredictable in nature. For one never knows what will the next game be like, which elements will it have, how will it be structured and what kind of expectations could realistically be taken about it. Since many of the designers, hide their work much like many literary authors, or filmmakers do. Not only to spoil the pleasure of the excitement, but also to reserve some liberty in unpredictability of designing. Plus as I here also defend strongly the differences between the intended and developed purpose of the game, one could see the logic and truth in that unpredictability. But that same unpredictable force, in both designing and also final understanding of the game by the players makes them something that is hard to control, not only for a categorization purpose for example, but also for a communicational purpose.

But even though video games are today showing themselves in such complex, dynamical and multilayered view, it doesn't mean that video games as individual units cannot be connected with each other. Which is why a careful approach has to be taken with the whole video game industry. And when it comes to game studies themselves, the high amount of presence of established theories and works, together with a high number of different titles in existence and even more in development, suggest that combining deductive and inductive approaches would be both practical and also conventional.
With a deductive approach one could test the theories in existence and question some of the works that have been done using them. Using inductive approach, one could focus on the particular cases without any obvious connection and explore them in higher detail. The advantage of that would be in keeping the researcher open minded and not limiting himself by carefully selecting the representatives for which he already knows in great detail.

I strongly advocate that any researcher that puts his focus on video games, bares an open mind and takes any general claims in a critical sense, as no two video games in the world are the same, even if one is copying the other. The reason for such claim is not from my experiences or the position that I have taken in this study, but the fact that video games are media that share only one static attribute, the human element of creation. And as people yet cannot clone themselves, or be perfectly mimicked by either a person or a machine, there are elements in every game that separate one from another. Even the game that is produced by the same designer, with the same human elements and the same intended purpose, will not be duplicated, because people do not buy a new game that is a perfect copy of the one before. So even if the game comes in series, like books or movies, there is always something new in them, elements that make them different. Therefore I urge any future researcher not to put all the games in the same box, but to take them as individual units that can serve for a certain purpose.

As mentioned before in the previous section, this thesis is focusing great deal on what is communicational and where are the elements that are communicational. Some but less emphasis has been put on researching if something is communicational and how exactly it communicates, as latter has been done a lot in the previous researches. Important focus has also been placed on the purpose of the game itself, dividing it into intended and developed purpose of the game since purpose itself is connected to first how the game is envisioned and designed, and then second how it is used and viewed by the player. Less attention has been given to the exact meaning of the game or the elements for the individual player himself, the process of mean making and reasoning in human mind. As that would fall perhaps more into the field of cognitive sciences, psychology or even philosophy, but less into communicational science.
Hence the meaning is only touched, as far as communicational purpose can allow. The line is drawn with a difference in practicality of information between a communicational game and an informational game. As that difference is connected to not only the purpose of the game, but also to the design of the game or its structure of elements and layers to be precise. In this game, three levels have been taken in that structure: story, player activities and the overall design.

To achieve that I have used an already tested method of research that is based on a similar mixture of both deduction and induction. The method was similar to the one used by Ian Bogost with his procedural rhetoric.[1] Bogost analyzed games through observation and gameplay. He observed the functionality of processes inside the game and the implementation of symbolic elements on which he draw his conclusions. He focused on one game at the time and analyzed them within the same parameter of communication and social reflection. Which is why this work is using the similar method of study, as this work is not only inspired by his methodological style of research, but in a way also by a similar purpose, which is the social communication and influence of video game elements on the player.

For this thesis I have decided to use 9 different video game genres and 9 different representatives of those selected genres. Representatives were selected from the most popular and common video game genres regardless of when the game was created. In this moment I feel obligated to explain the reason for such selection of both genres and their representatives. Genres are in the most common terms categories, by which the games are categorized according to their most recognizable characteristics. The necessity of that is the same as with categorization of literary titles for example, but it is done in a less structured and organized way. Genres in this work have been chosen according to the games that appear as the most common and not as all the genres that could be found in today's market. The reason for such narrow choice is firstly because it would be too impractical to use all the possible genres that could be found in existence. And secondly there is no official categorization of video game genres, so one could argue that there are many different varieties as one sees fit. Problem with genres is in exactly that multilayered specter of video games, where you have elements of several genres incorporated in one game, making it hard to pin the game to a strictly one type of genre. So the genres that can be found are the product of common social acceptance and not official regulation.

[1] An example of this method can be found in his paper on The Rhetoric of Video Games, url:

With the representatives in this work, genres have been selected first, drawing them from multiple sources of both popular video game websites and research works from game studies. Upon that the representatives have been selected based on only two main criteria:

- They had to be true representatives of their genre.
- They had to be based on more than a simple design with simple repetitive actions.

The reason for such criteria was because I wanted to maintain the element of randomness as much as possible; as I consider that inductive approach with video game analysis is the most suitable one. In the element of randomness, the researcher is open for possibilities of new information and new conclusions, which might come in conflict or in different light with the already established conclusions.
This type of researching can be compared to the philosophy or Sir Karl R. Popper, and his theory of Falsifiability. Where he criticizes the classical style of scientific research in deductive reasoning where *"if you start with a premise that certain hypothesis is true, then the only conclusion that can be deduced in the end is that hypothesis is true. He argues that we cannot prove that a certain theory is true, but we can show that certain prediction is false. And if the prediction is not true, then also the theory isn't true. So then a new theory or prediction is evolved to explain the new observations."* (E. Kenyon, Jr., 1984)
Popper believed that *"no scientific theory is conclusively verified and can only be called a scientific theory if it can be falsified or disproven. To him scientific theories are observed under special set of circumstances and can always be discarded or modified if the observations do not meet the expectations. According to him, if a statement is to be scientific, then it must be falsifiable and that we must always seek to eliminate the false, rather then establish what is true."* (Sewell, 2015)

I have coined my beliefs in a similar sense as Sir Popper regarding this research, and therefore all of the theories and arguments that have been made so far in this thesis are going to be tested in a specific set of circumstances, which can be disproven if the circumstances of the research change. In this research the presented criteria are what creates a specific circumstance, as the representatives are based on them. But a note has to be made about the criteria and what it means exactly, to be a true representative and to have more than a simple design with repetitive actions.
The first criterion draws on that categorization problem that most modern video games are facing with. Their multilayered structure makes them hard to classify into one specific genre, so to keep the clarity of the work as high as possible and organized as much as possible, the representatives have to be true to their genres. Meaning to have most of their characteristics that define the type of the game, dominated by one genre. And the second is to improve the circumstances of the research by utilizing that multilayered structure, not only to increase the possibility of finding good communicational elements, but also because most modern games come in such structure with high amount of elements. Another keynote that has to be made here is that although all of the representatives have been played and observed during this research, not all of them have been strangers to me before this time. Some of them have been played before, but the reason for why I have decided to use them was because there is a difference when you are only an active participant without observing or paying attention to the structure and elements, and when you are paying more attention to what is behind the game itself and its levels without acting as a player, but as an active observer.

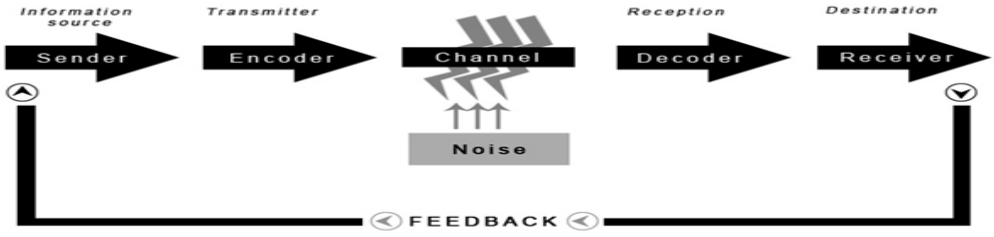
A. SPECIAL AMENDMENT TO THE METHODOLOGY SECTION.

In this section few important notes have to be made on communication and social reality before the next chapter of this thesis begins. These notes serve for both better understanding of the setting of this thesis, and for explanation of these important elements that are central to the following levels and chapters. That is why I consider them necessary to be separated from the rest of the methodology section.

"The most important thing in communication is hearing what isn't said." (BrainyQuote, 2015) Words spoken by Peter Drucker, a once one of the leading authors and management consultants in United States, which couldn't be more true to the purpose of the communication for this thesis.
But even his words are not enough to explain the whole communication and how it will serve this thesis. So perhaps the best way to start would be by defining the concept of communication that will be used in this study. First thing that has to be noted here, is that there are more then one definitions in existence about communication, and while none of them will be disputed here, only one will be selected that fits the purpose of this work. The definition that was selected for this thesis was taken from professor John Velentzas and Dr. Georgia Broni and their article about communication cycles. They have defined communication *"the act of conveying information for the purpose of creating a shared understanding or the activity of conveying information through the exchange of thoughts, messages, or information, as by speech, visuals, signals, writing, or behavior."* (Valentzas and Broni, 2014) Their definition suits this thesis best, not only because it is one of the most detailed but also because it also mentions more than one mean of conveying information, as you would often find in some less elaborate definitions. "*It is the meaningful exchange of information between two or a group of people."* (Valentzas and Broni, 2014) The meaningful part of information is very important in this study, as one part here discusses a practicality of information. Another reason why their perspective on communication is well suited here is because in their paper they are taking into consideration the technology, programming, and web designing among other applications, so the context of their writing is in similar area as this thesis. But perhaps one of the most distinguished parts of their definition is that it doesn't use the word "shared meaning", but it uses the words "shared understanding". The difference in them is that "meaning" on itself, is not so explicit as understanding. With words as "shared meaning", it could be understood as both participants share mutual understanding of a certain thing, or it could also mean that they share the same purpose of something. As Sanford I. Berman explains: *"too often we wrongly assume that other people use words as we do. We therefore wrongly assume that other people mean what we mean. And this is when we have misunderstandings. Because meanings are in people, and not in words, we cannot eliminate misunderstandings completely."* (I. Berman, 1982)
The words shared meaning would then be very inappropriate for a well formed definition of communication, so the words shared understanding is better, because it is less vague and more precise regarding the intention of communication. This thesis connects communication with the purpose of the video game, and the purpose decides the reason why something exists, or for what it is used. And with that, shared meaning would be in serious conflict with the difference in intended and developed purpose.

Regarding the communicational focus of this thesis, it is as already mentioned in the type and content of the information. And the Linear Model of Communication by Shannon and Weaver, is the best suited for this thesis, as this type of model is often found in mass media,

like television, radio, internet, etc. This thesis agrees with the view that video games are a form of mass media, because they both share the same characteristics in terms of the reach and the spread of the information. Since mass media is often referred to as *"one-to-many"* communication. (Livesey, 2011) Meaning that one person, communicates to many through a certain channel. In the case of video games, they are designed often by more than one person, but the concept is still valid as it will be shown in the further parts of this work.



SHANNON-WEAVER'S MODEL OF COMMUNICATION

***Source**: Google, url: http://goo.gl/da4ORs*

This model was first presented by Shannon and Weaver and its principles are very simple, with a sender of a message on one side and the receiver of the message on the other. Sender encodes the message and sends it via particular channel and the message is decoded on the other side by the receiver. Feedback is not immediate in this case. (The Communication Process, 2013)

In the same sense will this model be used for this thesis. Sender or the information source will be the individual designer, who encodes the communicational elements and their message according to his own created meaning within a particular video game, which serves as a channel. And to the final end to the player or in this case the receiver, who decodes the message and creates his own meaning according to his own understanding of the message. Since the feedback is not immediate in this case, the receiver can use the same or another channel to send a feedback, but the means are often a bit different. A bit detailed explanation of that will be provided in the fifth and eighth chapter.

But a small note has to be made regarding the noise in video game communication.
"Noise can be defined as an unwanted signal that interferes with the communication or measurement of another signal. And noise and distortion are the main limiting factors in communication and measurement systems." (V. Vaseghi, 2000) But when it comes to video games and the noise, we have to remember that at most times, the game is already presented to the player in one piece. And unless there is some technical difficulty, which would obscure the playing of the game, noise would not actually exist or be significant enough in video games. But it wouldn't be able to distort the elements or the structure of the game itself.

The second crucial thing for this thesis is the concept of social reality. In this thesis the elements and their communicational properties have been extracted regarding our general social reality, where reality is a social construct and certain social elements appear in most parts of the world, but assume different forms and understanding.

"Reality is merely an illusion, albeit a very persistent one." – Albert Einstein. (BrainyQuote, 2015) Words that could be taken in a sense that what we think is real is often just a misinterpreted perception or certain things in society. This could be argued for many of the elements that have been extracted in the following chapter, but nevertheless misinterpreted or not, persistent and ever-present they are. In one form or another, their presence is often shaping the world and social beliefs in which we are not a mere observer, but an active participant.

Perhaps the best way to explain the concept of social reality is by understanding what reality actually means. Peter L. Berger and Thomas Luckmann have discussed this topic heavily in their book called "The Social Construction of Reality", where they agree that reality is a social construct, with two key terms in mind for understanding it. These two terms are "reality" and "knowledge", and they define the reality as *"a quality appertaining to phenomena that we recognize as having a being independent of our own volition (we cannot 'wish them away')".* (L. Berger and Luckmann, 1966) And they define the knowledge as *"the certainty that phenomena are real and that they possess specific characteristics."* (L. Berger and Luckmann, 1966) They elaborated these two terms with an example of a man walking on a street, and he knows that the world in which he lives is real, because it has certain characteristics and he is confident enough about them, to know that it is not something that exists only in his minds.

In a same way this thesis takes the concept of a social reality in the following chapters. The elements that are found in the video games are conveying a message about different parts of social reality. Meaning we cannot wish them away because they exist independently from our own will, and they consist of certain convincing characteristics that make us confident that they exist in this world.

Brian Whitworth made another interesting view about reality in his article about how physical world and the whole universe, is actually a virtual reality, which is created by the information processing through space and time. He used knowledge of physics and information technology to portray an idea that the *"essence of the universe is information, matter, charge, energy and movement could be aspects of information"* and that *"core physical properties like space, time, light, matter and movement could derive from information processing".* (Whitworth, 2007)

The reason why his view is interesting for this thesis, is that we are in a way both discussing the issue of information processing through space and time. For my study the space in time is determined with the communication of video game, through which information is being processed in a specific time and space. And even the first notion of reality as a social construct, is in some way connected to this, as both are based on some kind of information processing. In the first case with reality being a social construct, that processing is done in every individual, while in the second case it is done in a way that it is not about perceiving, but conceiving the reality.

Whitworth imagines a world within a world, and gives an explanation by using the game The Sims as an example. That same game is also used in this thesis, but Whitworth, used it by imagining what would happen if someday, those tiny little Sims, would start to realize that their world is actually virtual. And although they wouldn't be able to perceive the processing that creates it, they would be able to conceive it, like we humans do now. Sims would then

compare how a virtual reality would work, to how their world actually works, on that they would not be able to know for sure, but they could make convincing deductions. (Whitworth, 2007)

Social reality is very attractive for social research, not only because we can explore the social world in its functionality by exploring how it is perceived, but also because it makes a researcher question what is real. If we were to believe Berger, Luckman and Whitworth here, then what this thesis would ultimately suggest is that if we want to understand what reality actually is, then we would have to research the perception and understanding that is constructed within the individuals themselves. And that would suggest that any general and simple statement about the influence of communicational elements on construction of social reality would not be sufficient and also easy to defend.

A final note about social reality has to be made on the reason, for why such concept was chosen for this thesis. The reason for this lies in the global reach of the video games themselves.

At this moment more than 7 billion people inhabit this planet, and the video games are almost never developed for only one specific area, or one culture, or one society within the global population. Video games are created in one corner of the world and distributed globally in pretty much the same form as the were designed, and the importance of that is that they are meant to be enjoyed and understood as equally as possible by everyone who plays them. Video games are played by people of all ages, and if one thing could be taken for granted about most video games, is that they are meant to be enjoyable as much as possible. But with enjoyment, comes a question of how one sees enjoyment, since there are many different games in existence that do not put entertainment as their primary focus. While that is true and entertainment is something that could be argued as another part of Einstein's definition of reality, where all rests in fabled perceptions (BrainyQuote, 2015), it cannot be said the same for enjoyment. Having pleasure in something is not part of the fabled reality, but a part of certain sensory perceptions, where each individual soul in this planet can experience enjoyment in one form or another.

Social reality is taken here in a general sense, and it is not aimed at one particular culture or society within this world. It is in a same way in which video games are distributed around the world and this world consists of many different cultures and social groups, where some of them have similar views on social aspects and others do not. Certain social aspects or elements, like stereotypes, power, control, etc. can take different forms of appearance in a certain society. But the value of this is not in pursuit of all possible forms of social manifestations of particular social elements, but in search of representations or communications about a general form of an individual social element and its manifestation within a specific video game.

CHAPTER 4: THEORETICAL FRAMEWORK OF THE THESIS.

When we think about communication in video games we have to think about them as another type of communications media. And what is often typical or rather said common for any media is that their operation circles around information input and output. But to think of them as such we have to establish what kind of media they actually are and what is their principal method of communication. For starters, ex CEO of Electronic Arts John Riccitiello said in 2011: *"Gaming Is the New Mass Media"* (Patel, 2011) and he supported that claim not only with his long experiences within the gaming industry, but also by projecting that the number of gamers in the following years could skyrocket to the numbers in billions, which according to him was only around 200 million in the year 2000. When he was delivering the speech, he was speaking at the Ad Age Digital Conference and the focus was on marketing and target audience. What makes this speech so important is that he not only said that video games are the new mass media, but he described the essential difference between this and other mass media. He said "*people don't really do anything while they are gaming, they focus on that and multitasking is almost nonexistent."* (Patel, 2011) While in other media for example Internet, you are often found doing several things at once and shifting your attention between them. But to know that something is a mass media, it doesn't mean that the information transfer or communication is done in the exact same way as other mass media, such as television, internet, radio, etc.

This quest for that difference in communication was puzzling many researchers, who have decided to take upon them to provide their own perspectives on the answer. Some of the theorists such as Ian Bogost who believes that video games are both an expressive and persuasive medium and he supports that by using *"procedural rhetoric theory"*, which he developed by observing and analyzing video games through gameplay. (Bogost, 2008) He believes that according to his theory, arguments in the video game are not made through construction of words and images, but through behavior that is predesigned and encoded into a game, rules that create procedures through which an argumentation is made and the player is persuaded. (Bogost, 2008) He argues, *"video games do not simply distract or entertain with empty, meaningless content. Rather, video games can make claims about the world. But when they do so, they do it not with oral speech, nor in writing, nor even with images. Rather, video games make argument with processes."* (Bogost, 2008) And for him therefore video games can be both persuasive and expressive through processes. Bogost especially sees visual expressions as subordinate to procedural expressions and written, verbal and visual rhetoric all together are inadequate comparing to procedural rhetoric. (Bogost, 2008) Simply stated, nothing makes a better argument about something than a procedure. Bogost used rhetoric and symbolic manipulation to portray a persuasive influence on the player. The purpose of the rhetoric is of course to use the language as effectively as possible, to make claims and persuade with solid argumentations. (Rhetoric.byu.edu, 2015) Language is indeed a powerful tool for communication and even Bogost recognizes the importance of symbols for rhetorical argumentation. We *"manipulate the symbolic systems that game provides"* and through that manipulation of symbols that are governed by the rules of the game, we not only according to him get the real experience of the game by exploring the rules, but also construct the meaning of the game. (Bogost, 2008)

Valentina Rao, discussed in her research if video games can make argumentations and saw video games as a form of discourse. *"arguments need some premises and conclusions in order to exist."* (Rao, 2011) Suggesting that video games need more than just a simple representation of something in order to make a valid argument about something. Her interest was focused on the games that have a certain communicational goal, and looked for her explanation by using serious games for an example. Serious games are supposed to be a specific part of the video games world. Their intended purpose is more than just to entertain the player, as they intend to provide training, education and situation simulation. (Igi-global.com, 2015)

Both Rao and Bogost focused more on gameplay than anything else, which comes in hand with popular opinion that gameplay is the most important and active level in a video game. And its not hard to understand why, Authors Paul Messaris and Lee Humphreys said, *"video game does not merely show us things, it asks us to do things, to participate, to play."* (Messaris and Humphreys, 2006) They also agree that in that participation, we are demanded to do certain things and the level of those demands and how they are instituted in the game, influences the attitudes that a player might develop when playing the game. In their book "Digital Media, Transformations in Human Communication" they have compared video games as a simulation, as education, as communication and entertainment when discussing the future of video games. (Messaris and Humphreys, 2006) Torben Grodal made a similar argument regarding player activities or to be precise his motor actions, to define his "interactivity" where a *"player has the ability to change the visual appearance of what is on a computer screen by using motor actions via digital interface."* (Grodal, 2009) And he also says *"the more a player is using his motor actions to interact with the environment that simulates the aspects of a possible real world; the greater is his experience of interactivity."* (Grodal, 2009)

Jesper Juul (Juul, 2001) was another defender of the notion of video game communication, by using video game narrative and if video games can tells stories. Also he wondered how can they be compared to a traditional narrative media such as books and films. The answer he came up with in his comparative research of narrative elements is that yes, video games can tell stories. But different kind of stories that have different properties than the ones you find in books or films for example. According to him, the defining part of video game narrative is the timing and mixing narration with interaction. Whereas in other media he argues, *"you are following a strict line from beginning to an end, in video game you do not as you are participating with interaction and you are creating a conflict between that narration and interaction, as you cannot have them at the same time."* (Juul, 2001) His point was that they can convey meaningful messages, but the translation is completely different than with other media (Juul, 2001)

But despite their research and arguments that prove that video games can be communicational and that they can convey meaningful messages, the problematic part of all that is the one that still remains. And the one that goes in line with the same old question that keeps repeating itself in the world of game studies. That is what is the message, but more specifically what type of information is being used. This thesis is very interested in a specific type of information that is used and its content. Simply answering if something is communicational and stating the reasons does not cover the whole puzzle, where a significant part lies in where is that communication happening. And the answer on this could come from theories that predate the researchers mentioned above.

Such theories have been taken from linguistic world from Charles Sanders Peirce, and his well known Index, Icon and Symbol signs theory. (Port, 2000) The key is to understand that sign carries a meaningful information. *"For example; Icon can stand for a picture of a cloud, which would mean that it is an icon of a cloud, similar to the way you see icons on your desktop in a shape of a small picture, which bears a resemblance to what it represents. Index, is on the other hand something that correlates with another thing, like smoke is an index of a fire for example, and clouds an index of a coming rain for instance. Difference is between the first two, that in the first you can notice a resemblance with something while in the other you first have to detect certain properties that indicate to something. Symbols are not a direct portrayal of something like a picture and do not have any attributes that would indicate to a certain thing, but they are a common socially accepted representation of something, like words and letters or monetary units for example."* (Port, 2000)

Linguistic world has given a lot of inspiration and reasoning for the communication of video games. Perhaps the best reason for that is because the whole computer science is based on the interpretation of signs and symbols into meaningful objects that we can understand. Computers are perhaps one of the best examples of such language as all information is passed in the form of 1 and 0, which is known as a binary code. (The Problem Site, 2015) That code is then transformed with a specific type of sequence into something that we, as humans can understand, for example the numbers on the calculator, or the letters that we use for our writing. (The Problem Site, 2015) We see letters on the screen, but the computer only sees specific sequences of 1 and 0.

With signs and symbols comes also a semantic and semiotic meaning. Which is another theory that originates from linguistic studies and has seen its use in computer science and also in video games. When we are thinking about semiotics, our focus is on the signs and symbols in language or communication. *"Sign is any physical form that has been imagined or made externally (through some physical medium) to stand for an object, event, feeling, etc., known as a referent, or for a class of similar (or related) objects, events, feelings, etc., known as a referential domain. In human life, signs serve many functions. They allow people to recognize patterns in things."* (A. Sebeok, 2001) And *"Signs allow each species to (1) signal its existence, (2) communicate messages within the species, and (3) model incoming information from the external world. Semiotics is the science that studies these functions."* (A. Sebeok, 2001) Semantics being related to semiotics focuses on *"the study of meaning in language."* (R. Hurford, Heasley and B. Smith, 2007) Hurford, Heasley and Smith have also provided a very interesting definition of what that meaning pretends to by dividing meaning into: Speaker meaning and Sentence meaning. *"Speaker meaning is what a speaker means (i.e. intends to convey) when he uses a piece of language. Sentence meaning (or word meaning) is what a sentence (or word) means, i.e. what it counts as the equivalent of in the language concerned."* (R. Hurford, Heasley and B. Smith, 2007)

This linguistic approach was understood and taken by some of the fresh researchers in the field of game studies. Such was Gabriele Ferri from University of Bologna, who wrote an excellent paper on that subject, and who understood the importance of this relation between semantics and semiotics in video games. Ferri saw the application of it in the interpretation of mean making of video games. He stated in his research that *"a computer game is an interactive matrix, a system of possibilities producing a single game-text each time a player interacts with it"* and also the matrix being full of actualized elements in which every element has a semantic value because of its content. (Ferri, 2007) Furthermore, he continues

by stating that *"gaming on itself is an interpretive practice and that it shares some of the qualities with perception and meaning making of a standard text, but there is significant difference between them."* (Ferri, 2007)

The differences In them are in the elements called "semes" (a linguistic sign)[2], where according to him in video games they are often constantly changing and not every one of them are originally and explicitly present in the matrix, as some of them are added by the player. In his study he was talking about playing a game and narration and used that for his semiotic methodology, where he replaced the word "meaning" with the semiotic notion of "content" and the word "text" with "interactive-matrix and game-text." (Ferri, 2007)

To justify that he was referring to Louis Hjelmslev's sign model of expression plane and content plane, where according to the model, both planes are further classified in semiotic form and semiotic substance. That gives you then content-form, expression-form, content substance and expression-substance. (Nöth, 1995) Ferri understood that, as *"The expression substance is the material substance wherein a sign is manifested, including sound, writing but also other visual and spatial elements; the expression form is the way expression substance is organized and subdivided in interpretable portions. The content substance is composed by concepts, thoughts and also objects and relations, organized by the content form."* (Ferri, 2007)

These theories are focusing on the type of information that is transmitted in one form or another, through signs and semantic meaning. They focus on meaning of the elements within the game. But meaning on itself doesn't explain why something exists and how it is used.
For that, theories such as Wittgenstein's Family Resemblance, Game Theory and Maslow's Hierarchy of Needs have been used. These theories are often seen as the essence for the purpose of games, even though they are quite different to each other.
Wittgenstein argued that some words do not have a single essence that encompasses their definition. (Philosophy-index.com, 2015) And to show an example, he used the word "game". He claimed that the word *"game doesn't have a single thing common to all of the uses of that word, even though we might think of them as that they do. For him not every game has the same purpose and not every game is played by the same rules or has the need for special equipment for example. But what the games do have with each other is the so-called family resemblance. Meaning that they share some of the traits with each other like a family for example shares some traits between the family members. Son is not the same as the father, and daughter is not the same as the mother, but they are related to each other and they share some similarities. Wittgenstein saw the games as the same thing, none of them having a single common thing, but they are nevertheless related to each other."* (Philosophy-index.com, 2015)

Game Theory on the other hand, has its roots stretched further then Family Resemblance theory and talks about social situations, but it doesn't have one creator as some of the mentioned theories above. Theodore L. Turocy and Bernhard von Stengel defined Game Theory as *"the formal study of conflict and cooperation. Game theoretic concepts apply whenever the actions of several agents are interdependent. These agents may be individuals, groups, firms, or any combination of these. The concepts of game theory provide a language*

[2] A linguistic sign (Merriam-–-webster.com, 2015)

to formulate, structure, analyze, and understand strategic scenarios" (L. Turocy and von Stengel, 2001)

Regarding the behavior of the players in the game, Torben Grodal also made a big contribution with his "nonlinearity" as here it is used for portrayal of the player behavior and developed purpose of the game. In which he argues, *"nonlinearity in the media can emancipate a player from various constraints."* (Grodal, 2009) He claims, *"the reason for wanting multiple choices and multiple possible storylines is the desire to simulate the feeling of a (relative) freedom of choice that we may have in real life, or an utopian romantic wish for a virtual world that liberates from the restrictions of the real world. Seen from this point of view the creation of several alternative routes simulates freedom."* (Grodal, 2009)

But the most common element that every video game has, and is also related to the purpose of existence, is a human factor. Both designers of the game and the players are humans, with certain personal needs that need to be met. Here the Maslow's Hierarchy of Needs comes in help, to explain the influence and importance of intended and developed purpose of the game.
"Maslow wanted to understand what motivates people. He believed that people possess a set of motivation systems unrelated to rewards or unconscious desires. Maslow (1943) stated that people are motivated to achieve certain needs. When one need is fulfilled a person seeks to fulfill the next one, and so on." (McLeod, 2007)
Theory developed in 1943 by Abraham Maslow consists of 5 stages:
"1. Biological and Physiological needs - air, food, drink, shelter, warmth, sleep.
2. Safety needs - protection from elements, security, order, law, stability, freedom from fear.
3. Love and belongingness needs - friendship, intimacy, affection and love, - from work group, family, friends, romantic relationships.
4. Esteem needs - achievement, mastery, independence, status, dominance, prestige, self-respect, respect from others.
5. Self-Actualization needs - realizing personal potential, self-fulfillment, seeking personal growth and peak experiences." (McLeod, 2007)

These theories consist of the theoretical backbone of this thesis, and everything else is developed from these theories and their research.

CHAPTER 5: CONCEPTUAL FRAMEWORK OF THE THESIS.

This part serves for development of the communicational concept of this thesis. The idea of how can previous theories be applied on the stages of the linear communication model. Theories that create a theoretical framework form an explanatory part of any conceptual model of analysis. Without theories that could be applied to a certain concept, the analysis of the communication would be of little value, as not only would the analysis model be to vague and too abstract, but also unclear and undefined.

Hence the development of a strong framework that could be used for future studying of video games is vital for this thesis. As it strongly hopes that communicational perspective would also in the future be taken seriously in the field of game studies.

Towards building a model:

In the methodology section, it was mentioned that two important relationship aspects have to be understood if one wishes to understand the communication of video games. Those aspects have been built on both purpose and the meaning of the game.

1. The relationship between the player and a designer.
2. The relationship between the semantics and semiotics in the video game.

If we choose to ignore the relationship and the communication behind it between the player and the designer, then we are at risk of misunderstanding the purpose of the game itself, and to fail in understanding the relationship between semantics and semiotics, we risk at failing to understand the meaning of the game and its elements. Purpose and meaning are very essential to understanding the communication of any video game.

For successful understanding of the communication in the game, a researcher must understand first why the game has been created in the first place. It would be foolish to claim that games can be easily categorized and generalized by a similar purpose, without asking if it even serves that purpose.
If one neglects to understand the purpose of the game, then he might not see the important differences in the structure of the game where most of the communicational elements can be found. The communicational interest here is the type of information, where the communicational elements can be found and what is their message. But all that comes from the structure of the game, because the game is designed with a specific purpose in the first place. With purpose, a designer creates story, gameplay and also the overall design. In those levels he encodes the elements using programming and he puts them into a specific and arranged place and sequence. In such arrangement and sequence they are given to the player, but in the end it is the player who decides what is real and what is not. Players understanding of those elements can be very different from a designers and so he can develop his own purpose of the game, which can then transform it into something else than what was initially planned or intended.

Semiotics and semantics have already been mentioned a lot in the previous part, as communication cannot exist without some sort of meaning. After all transferred information must have some meaningful content so the understanding can be shared or created.
A Linear Model of Communication, developed by Shannon and Weaver, provides this transfer of information through a channel. In our similar case, the channel is a video game, or

more precisely, the structure and levels of the video game which hold communicational elements. But the relationship between the designer and the player must be taken seriously, because they both have certain expectations from each other. Video game designers are depending on their fan base community for their continuing support, while at the same time those same passionate fans are depending on the designers to stay true to their path that made them so passionate in the first place. For that they establish a relationship between each other with a line of communication, for a purpose of satisfaction of their needs and to provide a quality feedback. After all, we all have our own favorite brand or creator of something.
David E. Hawkins wrote about the importance of relationships in business, and he believed that *"relationships of any kind have a life cycle and to maximize the benefits it is important to consider the longer term implications of our actions on the value of creating relationships where it is aim to deliver improved performance."* (E Hawkins, 2011)

In the Shannon and Weaver model of communication, feedback is not an immediate priority, as communication flows mostly in one direction. (The Communication Process, 2013) And a concept model for this thesis reflects that and is built in a similar way with six major points, with the last one aimed at the established relationship.

1. Video game designer with a desire for satisfaction of his needs and an intended purpose of the game.

2. Designer acts as an encoder of the information, by encoding the information into the video game using programming skills, thus creating the elements and its structure.

3. Video game acts as an information channel, with information in its structural levels: story, gameplay/player activities, and game design.

4. Player acts as a decoder of the information and creates his own meaning of it, according to his own understanding.

5. Player uses that created meaning to develop his own purpose according to his own needs for personal satisfaction.

6. Player provides a feedback through establishing a relationship with a designer, by supporting or rejecting the game.

- As seen above, the concept model of this thesis follows a similar pattern to the linear communication model, and in the first level, the designer has its own ideas about how and why to create a game and he is using those ideas to establish an intended purpose of the game. That purpose is guided by his desire to satisfy various personal needs.

- In the second level, designer follows the linear communication model, to provide an input using his programming skills. As explained in the theoretical part, all information in the computers is done with 1 and 0, which is a binary language. (The Problem Site, 2015) But the programmer isn't using 1 and 0 to create an input, but he is using another language, which acts as something that both computer and the programmer can understand. That is called a high-level programming language. *"A program written in a high-level language is called a source program or source text.*

Rules that prescribe the structure and "grammar" of the source text are called syntactic rules. Rules of content, interpretation and meaning are called semantic rules. A high-level programming language is determined by its syntactic and semantic rules, i.e. its syntax and semantics." (Juhász, 2012)

- Video game on the third level acts as an information channel, through which the information is transported within the encoded elements and the structure to the player. The structure in this part is set on three levels, and they are acting as the most important levels in the video game. In this part also, the technology acts as an information carrier. Since whether it is personal computer, video game console, or mobile phone, they are all computers in a way and share the same characteristics of a computer, including the operating language.

- In fourth level player decodes the received information, but the meaning of the information doesn't necessarily need to be shared between the designer and the player. Torben Grodal also supported this with a statement that *"semantic meaning is based on concrete perceptions and motor patterns"* (Grodal, 2009)

- In the fifth level, player uses that meaning that he created and uses the game to satisfy his own needs, by developing his own purpose of the game. Again like a designer, to satisfy his own certain needs.

- Since in the linear communication model the feedback isn't immediate, feedback is provided by support or the rejection of the game from the player himself.

Since this thesis is about how video games communicate social reality, this model has to be used for that function. According to this conceptual model, if video games are to communicate about reality, then their information in the elements or within a structure has to be connected to the real world in one form or another. Meaning they have to provide some practical information about our own reality even if that was not part of their intended purpose. To achieve that I have applied qualitative research into those elements, not only to prove that the elements are indeed social and that you can find them in our real world, but also to explain what they really mean, to make them clearer for understanding.

CHAPTER 6: GAMES AND SOCIAL ELEMENTS

In this chapter, nine selected video games are described and their social elements are extracted.

Video games in this chapter are:

1. Action	***2. Action & Adventure***	***3. Shooter***	***4. Adventure***	***5. Role-Playing***	***6. Simulation***	***7. Strategy***	***8. Sport***	***9. Puzzle***
Mirror's edge	*Assassin's Creed 2*	*Team Fortress 2*	*Grim Fandango*	*Gothic*	*The Sims*	*Populous: The Beginning*	*My Racing Career*	*Lemmings*

Game 1. Action: Mirrors Edge.

A game produced by Electronic Arts Video Game Company and released in 2008, is an action game based around a free-running game play. The game is set in a Utopian city that bears no name in which all aspects of private and public life are controlled and governed by a totalitarian leadership.
In this world, most residents have accepted the new style of leadership and abide by the rules. While some, who have rejected such life have become outcasted from the society and live in the constant danger from the government hunt and reprisal. One of such group of people is the city's illegal courier service, operating against the law, acting as message bearers for the people who wish to communicate anonymously. And in this courier service is where our main protagonist Faith is found. She is a runner, and her job is to deliver messages from point A to point B as fast as possible and without getting killed by the police that are often trying to stop her on her path by using all means necessary.[3]

On that path she using her skills in free-running or Parkour which is "*the sport of traversing environmental obstacles by running, climbing, or leaping rapidly and efficiently"* (Merriam-webster.com, 2015) Using these skills the player faces dangers along the way, such as constant chase by the police which is using various lethal and non lethal means to stop you. And also dangers from the environment such as buildings, gaps between them, ledges and cranes and everything else that could normally be present in a big city.

Social elements that have been found in this game are: ***Control, Social Conformism, Social Identity, and subculture.***

3 Some of the story details have been taken from the gamefaqs walkthrough, url: http://goo.gl/GxxOnm

Game 2. Action & Adventure: Assassin's Creed 2

Action and Adventure genre is one of the genres that tries to provide player with as much as possible of both worlds, in attempt to immerse a player not only into the game mechanics of action sequences, but also into the storyline and exploration of the virtual environment.
The game Assassin's Creed 2, developed under Ubisoft Entertainment S.A. is a very interesting example of a video game as it is also a rare sort in the video game market. The reason for this is because the Assassin's Creed series are based around real historical settings and events, taken and wrapped into fictional storyline, which makes the game not only interesting and exciting, but also profound and more realistic.

The game is set in the 15th. Century Italy, during the time of the renaissance. The player assumes the role of the young Ezio Auditore da Firenze, a young Florentine from a wealthy banking family. The family belonging to a secret brotherhood called the Assassin's, an ancient order that fights the Templars in their attempt to dominate the world with power and control. As the family of young Ezio is killed by a Templars plot, from the rival family of Pazzi, he joins the Assassin's brotherhood and follows the steps of his father in vengeance and protection, against the evil Templar order. During the path he gets older and wiser and experiences things that change his way of thinking, making him grow from a boy to a man. The game involves many recreated real historical places such as Venice, Florence, Forli, San Gimignano and also historical characters like, Niccolò Machiavelli, Leonardo da Vinci, Lorenzo de' Medici and others as he interacts with them, while exploring the historical places. [4]

Social elements that have been found in this game are: ***Power, Responsibility, Maturity.***

Game 3. Shooter: Team Fortress 2

A team based online multiplayer shooter game, developed by Valve Software and released in 2007.
The game which is fully based on multiplayer does not follow the same mechanics as the other representatives so far, which makes this a step to the sidelines when it comes to communication of video games. Games based on online multiplayer experience mostly involve elements such as team cooperation, player versus player competition and not so much focus on the storyline, in favor to competition between players.
Team Fortress 2 is based on a comic atmosphere; the game consists of two opposing teams of each having nine different classes of characters that players can choose from. These characters are the same in both teams but under different colors, one red and the other blue. Teams are representing two different organizations as part of the backstory to the game; the red team is part of the Reliable Excavation Demolition (RED) and Builders League United (Blue). Each character that players choose has different characteristics and abilities, making the player use the class, which he feels the most comfortable with. These classes are: **Scout, Soldier, Pyro, Demoman, Heavy, Engineer, Medic, Sniper, Spy.**[5]

Social elements that have been found in this game are: ***Stereotypes.***

4 The plot was outlined from Imd game Synopsis, url: http://goo.gl/xDk2Yt
5 Some of the details have been taken from the Gamefaqs walkthrough, url: http://goo.gl/KikNii

Game 4. Adventure: Grim Fandango

A dark-comedy neo-noir adventure game created by Lucas Arts Entertainment Company, LLC and released in 1998. The game is set in the Land of the Dead and follows Manuel "Manny" Calavera, a travel agent in the Department of Death in the city of El Marrow. The player takes control of Manny and acts as the all known Grim Reaper, to escort the immortal souls form the recently deceased, to the Land of the Dead. Where is then decided based on the previous life of the departed, which mode of transportation has the soul merited to the Ninth Underworld. Clean and sinless souls get to ride the fast number nine train to the Land of the Dead, which takes them about four minutes, while sinful souls have to walk to the Land of the Dead, which takes them about four years, during which many of the souls lose hope and stay in between, never moving on.[6]

Manny is working to pay of his debt and working as a Reaper he hasn't been very successful lately. As the game begins his boss tells him that he has to sell a premium package to a soul or lose a job and in his search for a premium package soul he discovers a scheming and hideous plot, a beautiful woman and a crew of new loyal friends. (IGN, 2015)

Social elements that have been found in this game are: ***Personification of death, Culture.***

Game 5. Role-playing: Gothic

Gothic is a single player, role playing video game, first published in 2001 and developed by Piranha Bytes. Gothic is a typical modern role-playing game, which means that it is heavily based on character development, world interaction and progression. Player has to complete various quests and achieve various types of goals not only to progress through the story, but also to unlock new skills, items and attributes. Important part of that progression is done through world interaction that surrounds the player, which not only brings a better immersion between a game and a player, but also gives player a lot of different options to adapt his gameplay to his own liking, using the environment as best as he knows and can.[7]

The story of the Gothic is where all of the above mentioned elements get the meaning and function.
It takes places in medieval fantasy world in which humans were fighting the orcs. As a result of the war, the King of the humans needed to extract more magical ore from the mines, for the production of weapons. Therefore he has ordered that all criminals are to be put to work in the mines as prison labour and for powerful mages to create the magical Barrier that would cover the mining city so the escape is prevented but would allow living creatures to enter. Twelve powerful mages have done as ordered and casted the spell, which covered *"the colony"* and in their mistake, they have soon realized that they were too entrapped within the magical Barrier from which no living creature could escape. Over the years the King has thrown quite a lot of prisoners in there to work, and one of those prisoners is the main character, which carries no name. Soon after you are thrown into *"the colony"* you are told that there are three camps of which one you have to choose and join. Camps are essential to

[6] Some details of the game have been taken from the Grim Fandango Network, url: http://goo.gl/vGJ6rw
[7] Some details of the game have been taken from the game review, url: http://goo.gl/YsFhsd

survival as it is explained to the hero, because the prison is a ruthless place and being good with one camp makes it easier. But our hero is eager to escape as well. [8]

Social elements that have been found in this game are: ***Slavery, Dynamic Interactionism.***

Game 6. Simulation: The Sims

The Sims is a life simulation game, developed by Maxis and published first in 2000 and falls under a category of the so called "sandbox" games, which means that minimum limitations are placed on the player, allowing him to roam and change the world as he pleases and is only limited by the actual game design. Perhaps the best way to describe the game would be as one of the popular gaming websites did in their review of the game: *"It is about creating, managing, and controlling the lives of tiny computerized people who dwell in miniature homes."* (GameSpot, 2015)

The Sims do not have a storyline or a game plot which you could pursue to the end. The game generally doesn't even have an ending and being a sandbox game; means that what happens in the game is mostly up to the player. Similar design could be seen in other sandbox games, freedom to explore, to create, destruct, freedom to choose, all only limited by the design of that particular game.
In The Sims, the player has to control a virtual character that he creates, called the Sim. Sims are virtual people in the game and the player has to satisfy their needs, in a very similar principle as it would have to satisfy a real human being. The player controls virtually everything that revolves around his virtual person, from bathing, showering, eating, sleeping, clothing, shopping, socializing, work, school, job, vacation, paying bills, building homes, decorating, relationships, love, dating, creating a family including children and other things that could be found in real life.

Game is not based on a specific story, it doesn't have a specific objective or goals and the game doesn't have a story based ending. The only way the game could end is if your character dies and there is no one else in your household that you can control. Other than that, the game can last forever with an option to turn off aging if the player so much desires. The Sims is a very specific sandbox type of game, because even though the main focus is on controlling the virtual person and his life, player has also many other things that it can control such as weather for example. Imagine having your own digital dollhouse where anything can happen and how it happens is entirely up to you.

Social elements that have been found in this game are: ***Language, Social simulation.***

8 Story was outlined from the game guide, url: http://goo.gl/w4ryk3

Game 7. Strategy: Populous: The beginning

Populous, which is simple in its design, but nevertheless fun and exciting, introducing an innovative gameplay that is both expressive and entertaining. Game created in late 90s, with the setting on a fantasy solar system and the universe within the game that is not so much connected to reality. The story of the game is quite basic and it doesn't take long before the player masters the gameplay. Several thousand years ago, the Gods have unleashed four tribes of human beings upon the galaxy. Matak, Chumara, Daikini and the Braves. In time tribes have advanced and became more powerful, soon they fell into war with each other, over land and nobility. The player assumes the responsibility of the Brave tribe; the goal is to eliminate all enemy tribes to ensure the safety of your own people. Player can construct buildings to train followers and use magic and force to achieve victory. The final goal is for your Shaman to become a deity.[9]

Game falls under category of strategy games, meaning that the game requires from the player a lot of decision-making and some creative thinking, with problem solving. Tactic is very important as the good resources and abilities with which an objective can be achieved. In Populous, the Shaman is a female and it appears to be the only female in the tribe, as all the other followers that you train come out as male. The followers which the player controls are very important for achieving victory, especially in combat, since Shaman is weak in defending herself in combat, but strong in using magic and spells. She is counting on her followers to bring her victory over another tribe and the number of the followers decides how strong your tribe is. Besides being a strategy game, it is also something else, a "god-style" of game, which means that the player is controlling some kind of god like character and has the powers that would befit such entity. In Populous that is shown in the way that the player can raise ground from the sea to create a bridge, send a swarm of insects that creates confusion among the enemy units and also create a tornado, which has destructive powers.

Social elements that have been found in this game are: ***Religion, Belief, Followers, Social influence.***

Game 8. Sport: My Racing Career.

My Racing Career is a detailed online Motorsport Manager Game, that is set in the world of sport racing and the player assumes the command of career management of a racing driver.
Player starts with creating his own driver and then climbs up the ladder, using management skills that he learns along the way. During the career, the player has to learn how to take care best for his driver and also team management as some of the most important elements are in the micro-management, such as different skills and finances. Player is responsible for the success of his driver and the team, and since this game is heavily based on management, his skills and knowledge that he acquires in that, determine how successful he is going to be in the game. Managing everything, from driver's employees, sponsors, training and all other important elements of a real driving career. The ultimate goal for the player is being successful enough to climb to the level of Formula 1 racing, but the player can decide a different path of his driver by joining a different racing world.[10]

9 Some details have been taken from the strategy guide of the game, guide url: http://goo.gl/No2FY8
10 Some game details were outlined from the official webpage of the game. url: http://goo.gl/Ra4zoP

The important part of this is that the game is not based on the story and that the player is not playing alone against the computer, but real people on internet, as this is online multiplayer game which means that real people are playing it against you.

Social elements that have been found in this game are: ***Social realism, Management.***

Game 9. Puzzle: Lemmings.

Lemmings was first developed in 1991 by DMA Design and it immediately reached high levels of popularity. Puzzle games are designed to make player think about solving a certain problem or a situation so that the certain objective can be reached. Puzzle games have gone a long way from their humble beginnings such as the Tetris, and it is an area of games that still attracts many designers. Now I believe that puzzle are even more present in video games, as they are increasingly incorporated in other genres where the whole game might be action or adventure based, but along the story a player has to solve riddles and puzzles to proceed.
Such example would be for example the game Sherlock Homes vs. Jack the Ripper, where you play as Legendary Sherlock Holmes in attempt to solve puzzles and riddles of the notorious case, to achieve an objective of solving the mystery. But the difference there is that the main focus is on adventure, while Lemmings and similar games to Lemmings, such as The Lost Vikings 1992 for instance which came in a similar time as the Lemmings, have their main focus on problem solving.[11]

Lemmings are very simple, there is no special story or one main protagonist, which the player can control, but there are many of them, called lemmings. These funny looking creatures with green hair, wearing purple and can only go in one direction at the time, are associated with the real lemmings from the animal kingdom, even though they do not have much in common. Player needs to take care of the obstacles in front of the lemmings, by assigning certain lemmings roles, which they would perform in hope to overcome the obstacle and get to the finishing end. The challenging part is that lemmings never stop, they always keep walking at the same pace and if the player doesn't take care of the obstacles and provides a safe path, then lemmings may die, which would then finish the game. Main objective for the player is to save a certain amount of lemmings and bring them to finish, so depending on the level that number of required amount of surviving lemmings is changing.

Social elements that have been found in this game are: ***Myths, Language-games***

[11] Some details of the games have been taken from game reviews:
Lemmings, url: http://goo.gl/IKhtgT
Sherlock Holmes Vs. Jack the Ripper, url: http://goo.gl/SpuQ5h
The Lost Vikings, url: http://goo.gl/VDNdRB

CHAPTER 7: RESULTS

In the previous chapter, nine different games were described and their most notable social elements have been noted.
Most of the methodology behind that has already been explained in the first section of this thesis, but for the purpose of this chapter, only a quick reminder will be made regarding the levels of the video games and the social elements that were the focus of the observation.

In the first part of this thesis, it was said that the communicational interest here is in the type of information and its content, which can be communicational regarding social reality. Or simple stated what is communicational and where is it located. This type of information acts as an information carrier and it is hiding in all the elements within the game.

These elements are incorporated in three most important levels of any game; story, player activities and design, which will also be defined with more detail here. In the previous chapter the elements have been extracted from the games and in the next page, a coding scheme is located which indicates the location of each social element found within the game.
Below the coding scheme is its description and the explanation of the elements, what they mean, where can they be found in our physical reality as well as in virtual reality. Most of the elements by themselves are not self-explanatory or self-evident, so their concepts have been explained in brief with academic research.

Coding scheme of the location of the social elements.

Game:	Elements.	Story	Player activity	Design
1. Action: Mirror's Edge	*Control, social conformism, social identity, subculture.*	c, sc, si, su.	c, su.	c, sc, si
2. Action & Adventure: Assassin's Creed 2	*Power, responsibility, maturity.*	p, r, m	p, r, m	p, r.
3. Shooter: Team Fortress 2	*Stereotypes.*		s	s
4. Adventure: Grim Fandango	*Personification of death, culture.*	pd, c	pd, c	pd, c
5. Role-Playing: Gothic	*Slavery, dynamic interactionism.*	sl, di.	sl, di.	sl.
6. Simulation: The Sims	*Language, social simulation*		ss.	la, ss.
7. Strategy: Populous: The beginning	*Religion, belief, followers, social influence.*	re,	fo, si.	re, be, fo
8. Sport: My Racing Career	*Social realism, management.*		sr, ma	sr, ma
9: Puzzle: Lemmings	*Myths, language games.*		lg	my, lg
	22	12x	16x	18x

Explanation of the table:

The table is divided into eleven rows and five columns. First two columns represent the games that were analyzed and the elements that were found in them, then the last three columns represent the most significant parts of the game. Those parts were story, player activity and the design of the game.

The story is where the player gets the information about what is happening in the game, the background, the setting or other information that is needed for the player to better understand his purpose in the game.

Player activity or gameplay is what the player does in the game, the actions that he performs or controls. These are not the actions that are happening around him or the actions of other non-playable characters.

Design of the game is the largest specter of this division, since it involves everything from the image, graphics, symbols, layout, etc. Everything that is part of the overall image and the general behavior of the game. This section is most often not in players direct control, since

the player can mostly only use the elements that are part of the design, in a way they were designed to behave or to be used. Without special modifications of the design, the player can only use it and observe it.

In the last three columns the elements can be recognized by their initials, or their first letters. That applies for all the elements from all of the games in the table. These elements represent the elements that were the most notable or were the most significant within the game for the representation of social reality. This means that within the games, perhaps more elements could be found that have the ability to communicate or represent something else, but for the interest of social reality, these were found as the strongest.

In the first game **Mirror's Edge,** the elements that were found were: Control, social conformism, social identity and subculture. The first element of control can be found in the story since there is where we are explained what has happened in that society and how did that Utopian city came to be. The element of control is connected to the system of governing of that city, which draws from political ideology of totalitarianism. Allan Todd explains this ideology in his Cambridge article on dictatorships. Which according to him is something that *"comes to power as the result of a mass movement or revolution and are, at least in theory, committed to a radical ideology and program of political, economic and social change."* (Todd, 2002) That mass movement is exactly what happens in the game, as the story begins.

We are also explained in the story how society has divided itself, to those who conformed to the rules and general behavior and to those who did not. Faith belongs to those who did not. So in the story we also find control and social conformism. But social conformism is not necessarily a result of some control or political ideology. At least according to Philip Zimbardo and Cindy X. Wang and their article about Conformism, in which they explore the reasons why people conform themselves to something. (Zimbardo and X. Wang, 2015) They write about two types of conformism: Informational and Normative. *"The first talks about reducing uncertainty in situations that are unfamiliar to us and we do not know what to do, so we conform and follow others. In second we conform to be liked or to create a good impression, we conform to a certain group and accept their norms and behavior."* (Zimbardo and X. Wang, 2015)

But there in the story we can also find social identity and subculture, where already in the beginning of the game we find out who the Runners are and what is their mission. Faith belongs to a certain social group and with which she identifies herself. It is something very common in our world, as Henri Tajfel explains in his Social Identity Theory, in which *"people position themselves in certain social groups with which they can identify with."* (McLeod, 2008) Identifying and conforming are not the same things, but it is not hard to imagine and understand how the theme of the Mirrors Edge can reflect certain elements of our true social reality in which we have many different societies in which people behave differently, some join groups because of conforming and some because of their identity.

Through narration we find out what is the difference between the Runners and the rest of the society. Faith who is narrating the story explains how they see the world and the city; how they see themselves and that what they do keeps them alive. They are a subculture, and their beliefs, motivation and behavior is what makes them stand out in that society, what makes them really different. Nikola Božilovič described it as a *"special way of life is based on a specific cultural pattern – certain value system, ideas, norms and rules of behavior, symbol*

formation and their use, taste, fun, music, appearance and speech of particular social group" (Božilović, 2010) and *"when it opposes the mainstream or dominant cultural model, this way of life gets transformed into a cultural style, that is subculture"* (as cited in Božilović, 2010) And for that difference they are judged and hunted.

But control can also be found in the player activity, since he is the one running through the city avoiding the police that are trying to stop him by all possible means. Player is doing an illegal activity according to the rules of that utopian society since all the communication is strictly controlled. Protagonist is avoiding the police, fighting them on occasion and by that he is avoiding and fighting the control itself. The practitioners of Parkour identify themselves as Traceurs, which comes from the old French, to trace, to move quickly.[12] And they behave in a similar way and see the world in a similar way at most times, but being Traceur is part of a large subculture in the city, so as such it is also a part of the main players activity. However control doesn't stop there, it is a part of every social aspect of the city, and it can be clearly seen in the design of the game as well. The city doesn't have a lot of colors; most predominant are red, blue and white, with occasional appearance of other minor colors. The key was to have the city which looks the same, organized, controlled and when the player is rushing through the city he can see how all the buildings have similar lines and construct, all the offices have the same furniture and there is always one tone that dominates everything else, control and conformity. But when looking at the Runners and how they look, they are all different from each other, they have their own style of clothes, physical appearance, tattoos, even the logo by which they identify themselves with. All that could be found in the design of the game.

In the second game **Assassin's Creed 2**, the elements that were found were: Power, responsibility and maturity. The power is one of the most important elements within the game, and in a sense the game could be seen as a power game, because it is present in all the levels of the game. And it is also something that our physical world is closely connected with at all times. In 2012 Selin A. Malkoc and Michelle M. Duguid, wrote an article about Social and Personal power in which they stated *"Feeling a sense of power is arguably one of the most common goals of individuals in contemporary society, with most people seeking power and almost all wanting to know more about those with power"* (A. Malkoc and M. Duguid, 2012) Supporting this claim Vincent J. Roscigno wrote in his psychological article about power, *"Those of lower status are constrained to playing by the rules much of the time, while those in higher positions might be able to create or use even seemingly neutral rules in self beneficial ways."* (J. Roscigno, 2012) And John French and Bertram Raven identified five bases or forms of power.

"Legitimate (perception that someone has a legitimate right to prescribe behavior to someone else)
• Reward (coming from the perception that someone has the ability to mediate rewards to another person)
• Expert (based on perception that someone has special knowledge or expertness)
• Referent (is based on identification with another person)
• Coercive (based on perception that someone has the ability to mediate punishment on another person)" (R.P. French, Jr. and Raven, 1959)

[12] The word originates from French: [French, tracer, traceur, from tracer, to trace, map out (a route), move quickly, from Old French tracier, to trace; see trace1.], 1. (Gymnastics) a participant in the sport or activity of parkour, url: http://www.thefreedictionary.com/traceur

From that is not hard to understand how important and influential power is in society, as these statements are true enough even in this day of age, like they were in the past and like they will continue to be in the future.
We can find it also in the story, since the game involves two large powerful factions fighting for dominance. Templars Vs. the Assassin's, and also two rival families, Auditore and Pazzi. Each with grievances over another and each on a mission to destroy the other. The story is where you are explained that during the game, although large part of the story comes in other parts of the Assassin's Creed series. Player uses the power to fight his enemies and his every move is dedicated to achieve victory and dominance over the adversary, sometimes in a form of fighting, trickery, talent or skill. But it always involves power. In design that power is transformed into symbolic representations, meaning you have symbols of the family, the city, factions and also uniforms and weapons. They symbolize who everybody is.

Responsibility is something that comes very close to power in this game. And not only in the game, after all Voltaire said, *"With great power comes great responsibility"* (Goodreads, 2015) When you are talking responsibility you have to know, that you are not only responsible for yourself, but also your faction, your people, your family and that is shown through story, through the activities that the player performs and also design.

On the other hand, maturity is close not with power, but with the story and responsibility in the events that happen in the game. Taking the maturity into the question, it is not the question about knowledge or responsibility, but the question of growing up, becoming who we are destined to become, a grown person from a girl into a woman and a boy into a man. Dr. Gerald Stein talks about *"humility, balance between the head and the heart, emotions and the sense of what is worth fighting for and what is not."* (Stein, 2009) These qualities according to him are part of a sign that a person is growing up. As the game progresses the character is getting more mature and the story changes him from being a careless youngling, to a grown and responsible man. It is also shown in the way the player behaves, as he has to follow the story and he becomes part of the characters quest, and to be truly successful he has to show maturity also in his gameplay as he develops his skills and tactics. But it is not so with the design, because even though the games overall design is screaming seriousness, the game isn't forcing the player to behave in a specific way or to adopt a specific way of thinking, so the maturity rest solely on the players shoulders and the story in which the character evolves.

Team Fortress 2 is full of predominantly one element, stereotypes. That element appears in the activity and the design of the game, and it is hard to argue in which has the stronger presence. Player has the ability to control nine different classes and all of them come with a specific appearance and abilities. One of such abilities for example goes to the Soldier, which has the ability to use his whip and whip other players to make them move faster. Although that alone couldn't be seen as stereotypical, if one of the characters wouldn't happen to be black. But stereotypes alone are often misunderstood in society today, as they have a negative social label and come with the ability to become something more like prejudice and discrimination, which could also lead into racism. Craig McGarty, Vincent Y. Yzerbyt and Russell Spears have written an amazing paper on explaining the nature of stereotypes called "Stereotypes as Explanations: The formation of meaningful beliefs about social groups". (McGarty, Y. Yzerbyt and Spears, 2002) They have provided an excellent introduction into the real nature of stereotypes, by using a natural example from daily life. *"All of the users of*

that street are individuals, but they are also members of society and, they are members of groups that help us to explain why those people act in the way they do at particular times. Indeed, individuals and groups can be said to be the central facts of society. Without individuals there could be no society, but unless individuals also perceive themselves to belong to groups, that is, to share characteristics, circumstances, values and beliefs with other people, then society would be without structure or order. These perceptions of groups are called stereotypes." (McGarty, Y. Yzerbyt and Spears, 2002)

Design of the game is also where they have their resting place, since the stereotypical views in Team Fortress 2 are often incorporated in the overall design of the characters.

Grim Fandango projects a lot of cultural influence I the game and it can be seen in both the story, player activity and the design of the game. The story involves the underworld and the Ninth Underworld, this and similar visions of the post mortem life are found in some of the South American cultures as the game uses variety of Mayan and Aztec art and Mexican folklore. (Grim Fandango travel guide and manual, n.d.) And many of the characters in the game seem to be Mexican and the language they use is English but with occasional appearance of some Spanish words mixed with the English language.

The culture is involved also in the player activities. Since the main character of the game is acting as Grim Reaper, which is not only found in Mexico but also is a social belief that can be traced far into the history of many parts of the world.
Ancient Greeks called him Thanatos, death with a friendly face accompanying the dead to Hades. (Harris, 2015) And the Norse mythology had beautiful young women called Valkyries, who served both as Odin's messengers and as escorts of warriors who were killed in battle. (Harris, 2015) Other religions called them Angels of Death, such as Judeo-Christian religion and Azrael the Islamic Angel of Death. (Harris, 2015) They were all doing a similar work as our Manny Calavera from Grim Fandango. Personification of death is closely connected to the cultural beliefs and you can find it in all the levels.

Gothic is a role-playing member. Slavery and dynamic interactionism are the elements that cry out for the attention in this game. I have put both elements in both story and the player activity level. Because in the story you are told what is happening and how the prison colony came to be in the first place. Prisoners are actually used as slave labor, and again the same concept could be found in our reality. One such article explains how US prison system is *"riddled with racism and classism and private companies have a cheap and easy labor market."* (Khalek, 2011) But upon your arrival there, you are also told to join one of the three camps because that way survival is easier. So for that matter I have sensed an amount of dynamic Interactionism in the story, since you choose the camp, you influence the camp and the camp also in return influences you. This concept comes from psychology and *"argues that that behavior is an outcome of the continuous and reciprocal interaction between the person and the situations they encounter"*. (j. Reynolds et al., 2010)

Often in role-playing games, when you start you have to decide who you are going to be in the beginning, which race, which nation or faction and those are choices that stay with you for the rest of the game so it is both important in the story and also in the player interaction. Who you are and what you do is what defines you in the game and it is also how the world responds to you.

In the game of **The Sims**, I have found two elements that basically describe what is most famous about the game, language and social simulation. I have put social simulation in the player activity and the design, because all your activities in the game are an attempt to simulate a certain segment of the real social reality, but the key factor here is that it is putting credibility over realism. In our world such simulations could fall into modeling, where you design a model to simulate a certain behavior. Like in wind tunnels for example. Social simulation in The Sims can also be found in the design of the game because the game is designed for exactly that purpose. Language on the other hand, has been put only in the design, since Simlish (the language used by the characters in the game). It is something that player can neither control or understand because it is gibberish, but it is mostly recognized by its design and the way it shows itself in the form of talk clouds.

Populous: The beginning is a strategy and the elements in it were found to be: Religion, belief, followers and social influence. Religion has been put in the story and the design of the game, since part of the story explains the purpose of your religious struggle. The Shaman has to become a Deity and in the design you can see the differences between the Shaman and the Followers. Also the whole design of the game has that religious tone, so it is definitely present in both levels. Religion in our own world is very important element whether it is Christianity, Islam, Buddhism, etc. But Shamanism is something not very common in most modern societies. Being "*an ancient healing tradition and moreover, a way of life. It is a way to connect with nature and all of creation."* (Shamanism, 2015) Shamans are supposed to be *"spiritual beings with the ability to heal, work with energies and 'see' visions."* (Shamanism, 2015)

Followers themselves have been put in the player activity and the design but not the story. You create followers to combat other tribes and in the design you can see how they appear all the same, and only distinguished with each other by the design of the specific type of followers. This element could be found also in connection to religion, since most religions are measured in population of followers, for its popularity.

Social influence is only seen in the player activity, since more followers you have, the more powerful you are. Belief is only seen in the design, since you cannot control the belief, you don't see it directly, you don't hear or read about it, but you do sense its presence, since the game carries the religious tone, therefore it has to carry the belief with it. Social influence and belief are both also very present in our real world. They could also be connected to religion, or even politics, where popularity and support determines the strength.

My Racing Career is a sports game, and the elements found there with connection to social reality are Social realism and Management. Both of them present in activities and the design. If you have something based on realistic representation, than your activities represent realistic possibilities. Such game I consider different to simulations, even though they share most similarities. But realism is something simulations put under credibility, as you are meant to consider something credible, but not necessarily realistic. Averill M. Law recognizes this difference in his paper, with arguments that *"A simulation model and its results have credibility if the decision-maker and other key project personnel accept them as "correct." And Note that a credible model is not necessarily valid, and vice versa."* (M. Law, 2009)
And he elaborates that validation by saying: *"Validation is the process of determining whether a simulation model is an accurate representation of the system, for the particular objectives of the study."* (M. Law, 2009) Meaning that something credible is not necessarily

valid, just because it s accepted as correct. While sports games, have to have credibility in equal terms with realism, as you not only have to accept the simulation as credible, but you also have to validate it as an accurate representation. For example, the sound of the ball, the sound of movement of the characters, the behavior of the elements, etc. Such realism is found often in training simulations. And finally if you have a sports game designed for sports management, then it is logical to assume that your activities are also based on management. But since the game is a multiplayer game that is played online, then the story here is minimal next to non-existent.

Lemmings are a puzzle representative and the elements of myths and language games have been found inside that are the most connected to our social reality. Myths have been put in the design only, since little Lemmings are most often associated with the real animal Lemmings and the myth that surrounds them, such is then seen the behavior of their virtual counterparts. Language games have been put in activities and the design, since some of the Lemmings have the ability to use specific nonverbal behavior that serves for communicating a specific type of message to other Lemmings and that can be controlled by the player himself. That was connected to Ludwig Wittgenstein and his Language-Game, in which he believed that language and actions are woven into each other and not separate elements. He said that language is part of actions and believed that the world consisted entirely of facts, and that human beings are aware of those facts by having mental representations or picturing the way things are. (Kemerling, 2011) With language as Game, he believed that *"the meaning of a word or phrase or proposition is nothing other than the set of (informal) rules governing the use of the expression in actual life and like the rules of a game, Wittgenstein argued, these rules for the use of ordinary language are neither right nor wrong, neither true nor false: they are merely useful for the particular applications in which we apply them."* (Kemerling, 2011)
And this is the crucial part of his concept and merging actions with language. Lemmings cannot speak and they can only perform simple repetitive actions, which can be interpreted as a simple language that Wittgenstein was talking about. Wittgenstein provided an example: *"2....Let us imagine a language...The language is meant to serve for communication between a builder A and an assistant B. A is building with building-stones; there are blocks, pillars, slabs and beams. B has to pass the stones, and that in the order in which A needs them. For this purpose they use a language consisting of the words 'block', 'pillar', 'slab', 'beam'. A calls them out; --B brings the stone which he has learnt to bring at such-and-such a call. -- Conceive of this as a complete primitive language."* (Shawver, 2015)

So if lemmings are walking all in the same direction and there is a cliff in front of them, and the player wants to use one of the lemmings to turn others around, he uses the Blocker, which then stand still, stretch their arms in both ways and upon encountering the Blocker, other lemmings just turn to other direction and keep walking. Blocker doesn't say anything, except performs a simple action that tells one specific thing to others, which is to turn around. A similar way is with those two builders. Builder A tells the assistant B which item he needs and the assistant B hands it to the builder A. It is true that in Wittgenstein's case, the builder uttered the word, while the Blocker in lemmings did not; he used nonverbal communication of stretching his arms and making a stop sign. Which other lemmings understood as something specific and performed an action, which fitted the sign. Wittgenstein talked about this former example as an example of a primitive language, one specific action for one word, *"using language to prompt people to do specific things."* (Shawver, 2015) But such primitive language could also be performed using entirely nonverbal communication, think about sign

language in our world. A sign language is a *"system of manual, facial and body movements as the means of communication."* (WFD | World Federation of the Deaf, 2015) And also since they were designed to do exactly that type of behavior, they fall into the design category too.

CHAPTER 8. COMMUNICATION ANALYSIS

The purpose of this part is to bring pieces of the puzzle together and form a structured analysis of this ludological communication, by combining the elements found in the video games, with scientific theories and argumentations that have been mentioned in the early beginnings of this work.
As mentioned also in the beginning of this research, the study that was conducted here is to some degree in accordance to the similar studies that have already been done before, especially by Ian Bogost and his *Procedural rhetoric*. (Bogost, 2008) As it can be indicated by the results from the previous section, the levels in which the communicational elements can be found are often depended on the type of game that is analyzed, so the idea behind that is that communication is of extreme importance not only for the game studies but also for the technology that sits behind them.

Those nine video games that have been analyzed in the previous chapter have been found with 22 different social elements incorporated into their story, player activities and design of the game. All of those social elements carry some kind of information. But perhaps the best way to explain that information and communication of these elements is to use them on our conceptual model, which would explain in detail where and how things happen when it comes to video game communication.

The model consists of 6 levels, and it is built on the example of Shannon and Weaver model of linear communication. Which is a common communication model with mass media.

---

1. In the first level there is a designer with a specific purpose in his mind. He intends to create a game, which would serve a certain purpose according to his own personal interests and needs. Much like the player who needs to satisfy his own needs, so does the designer. Abraham Maslow's theory fits here very well. (McLeod, 2007)

2. In the second level the designer uses his knowledge and encodes the information into an organized structure and creates the game itself. He builds the game as he would be building a house, starting with basic foundations and proceeds towards the end. Along the way, he creates everything that his creation needs to be completed. He creates a story, player activities, overall design and the structural frame to support those main parts of the game. Designer is a human being it could be logically understood that to create a video game he must possess a certain amount of skills, which would allow him to accomplish his task. Those skills are various, but most of them require the knowledge of coding information. Most of that coding is done through a programing language, which is a special assortment of symbols and signs, much like in an

ordinary language that we know, but with a different structure.[13] This is where the information input is happening.

3. Now in the third level, the game is constructed. Its main parts of story, player activities and game design are completed and they are constructed of signs, which carry a semantic meaning, meaningful information. This can be supported by research on semantics and semiotics, such as the one by Hurford, Heasley and Smith regarding the meaning of semantics (R. Hurford, Heasley and B. Smith, 2007) And also theories such as Louis Hjelmslev's sign model of expression plane and content plane (Nöth, 1995), which was further elaborated by Gabriele Ferri and his mean making by using semantics and semiotics in video game narrative. (Ferri, 2007) But perhaps, the most significant theory for this thesis regarding signs and semantic meaning is provided by Charles S. Pierce, with its Index, Icon and Symbols theory. With if you consider that everything you see on the screen when playing the game is created from a sequence of images or frames to be precise. In a similar way to the ones you see in the movies, and if they are run at the certain speed, which is called frames per second or frame rate, what you see of simple frames is then actually transformed into a moving continuous motion. (B. Watson, 2013) Each frame is basically a picture. Therefore if we consider with that the theory of Signs by Charles S. Pierce, with its Index, Icon and Symbols where signs carry meaningful information as it is explained in the theoretical framework. (Port, 2000) Then games could be also defined as a total sum of all the icons, symbols and indexes that are present in the game. Which means that everything you see in the game is informational and carries some kind of information regarding something in all the levels of the game.
In the same third level, the game as it is completed acts as an information channel, supported by the technology that acts as an information carrier. Whether it is a personal computer, video game console or a mobile phone. Technology allows the transfer of information from point A to point B through a communicational channel.

4. In the fourth level player receives and decodes the game with all the information that is contained in it.
For player to receive the information that is within the game, it has to interact with it. And in this part is where theories from player interaction come into an effect. Ian Bogost defends his "procedural rhetoric" (Bogost, 2008), Valentina Rao uses game as a discourse (Rao, 2011), Jesper Juul focused on if video games can tell stories (Juul, 2001) and Torben Grodal used his "interactivity", for player-game interaction via interface. (Grodal, 2009) Even Messaris and Humphreys used their comparison of video games as communication, through player activities. (Messaris and Humphreys, 2006) Through those interactions between the player and the game elements in this part, the player also creates his own meaning, according to his own abilities of understanding and personal perceptions. Sanford I. Berman supported individual meaning, by saying *"meanings are in the people"*. (I. Berman, 1982) Mentioned researchers focused mostly on gameplay, but for this part the most important theory is from Ian Bogost and his "procedural rhetoric", where Bogost argues that through

[13] Example of the programing languages, url: http://goo.gl/147r7S

symbol manipulation we are not only creating a meaning, but we are also experiencing the game. (Bogost, 2008) Through that game we follow rules, and the rules are supposed to act as a persuasive force on the player, by using procedures that are performed as argumentations. But according to the results that have been achieved in the previous section, that persuasive force could come from other sources rather than procedures alone. For example story or the design, which ranked very high in communicational elements.

5. In the fifth level, the player uses that created meaning of his to decide the real purpose of the game. Now In this level, it doesn't only have to be a player who creates his own meaning, it could be anyone. But here the player is used as the best example. In this level, the developed purpose of the game is born from that drive to satisfy his own certain needs according to the model of Abraham Maslow. (McLeod, 2007) Here the game is not only categorized, but also utilized according to the needs of the player.
   Here theories such as Wittgenstein's Family Resemblance Theory comes in hand, as it argues that no game has anything in common, but it only has similarities with each other. (Philosophy-index.com, 2015) Those differences could be argued that are created from dynamic nature of the video games. As they constantly keep advancing, changing, becoming more complex and multilayered, to satisfy the needs of the players. Player will use the understanding of the game to pursue his own satisfactions. That is where also theories like Game Theory and Torben Grodals "nonlinearity" theory comes in hand, as they all talk about situations and style of actions that can be pursued in a game. Game Theory advocates conflict and cooperation between the agents, (L. Turocy and von Stengel, 2001) but this thesis has also used another aspect of that theory. Noncooperation as the best action is an individual satisfaction of purpose. (K. Levine, 2015)
   Grodal used nonlinearity, to speak about nonlinear gameplay and freedom to pursue our own course of actions, breaking from the restrictions of the linear rules of the game. (Grodal, 2009)
   Developed purpose advocates that the game doesn't have to be used the way it was intended. That the game can serve many purposes, and they can keep changing at any time, according to how the player understands the game. Developed purpose is in serious conflict with the concept of "serious games" as it sees them very limited and at the same time vague, because they define themselves according to the intended purpose and don't consider the possibility of a developed one.

6. In the sixth and final level, the player decides according to his own experiences that he had with both the designer and his games, if he is going to either support him or reject him.
   If he supports him, it means that the designer has managed to introduce all the necessary elements in the game to provide the player with a possibility to satisfy his own needs. That in return generates a certain liking towards the designer and if such path is continued, the player might become a fan and keep supporting the designer in the future. The support that a player gives to a designer is in a way a form of relationship, where they both are depended on each other to satisfy each other needs. A designer gives satisfaction with his product, while in return he gets recognition,

reward and support. This could not only be a form of relationship, but also a quality feedback that both of them need in that mutual connection.
To understand and support that we only need to look towards the marketing. After all video game industry is a business, and as every business it is dependent on the profit that it creates with its products. And it is no secret that if you want to make profit, you need something that is worth buying.
The same David E. Hawkins, that was already mentioned before regarding the importance of business relationships, concluded in his paper, that *"there can be little doubt that relationships are a critical factor for all business whether private sector, public or third sector. In fact some might suggest that relationships are the real critical success factor without which it becomes difficult to build or sustain business over time."* (E Hawkins, 2011)

Discussion on the communication analysis

The video games from this thesis can be thrown into this model, and with all the theories and concepts regarding their communication, it can be clearly seen that video games can not only be informational but also communicational.
The difference between what makes a game communicational or purely informational is what I see in the practicality of information. Both types of games are informational in basic view, as that was proven by the theories, but different information's have different practical values if we are talking about communicational video games. The practicality of the received information is what distinguishes an informational game from the communicational one, as some information's are not valuable outside the game for an individual, while some others might share information that can be practical for more than just that virtual environment.

The real question that presents itself here now, is how to achieve that practicality of information, so the game can be more than just entertaining. One of such attempts was with the already mentioned form of "serious games". Serious games are supposed to be a specific part of the video games world. Their intended purpose is more than just to entertain the player, as they intend to provide training, education and situation simulation. (Igi-global.com, 2015) These games are designed to be true and loyal to the intended purpose, set on by the designers of the game, as according to a popular belief in that world, a player is supposed to absorb information more easily if the game involves more than just entertaining elements. (Igi-global.com, 2015)

Practicality of the information is the same reason why some people agree that there are such things as "serious games", and it all comes from the purpose of the game and that designer-player relationship, that was talked about before. But I would like first to criticize this term, as it is too narrow and at the same time too vague to be able to distinguish these games from others. Using the term "serious" is implying that their intended purpose is not based on entertainment but something else, and at the same time being "vague" because we do not know what makes them so serious. As even an educational video game could still very much be amusing and not at all serious. Also to say that something is serious with implication on educational value is like comparing video games to school textbooks. But the problem where I see it most is what someone calls educational, can someone else call purely informational or recreational even, and what someone takes as serious, someone else might find very amusing.

So to call a game serious, it would have to be wondered, as serious to whom? Many in the world still regard video games as a pure entertainment product, and how can they be blamed for that. Since for generations we have been led by the old saying from Corinthians 13:11 *"When I was a child, I talked like a child, I thought like a child, I reasoned like a child. When I became a man, I put the ways of childhood behind me."* (Biblehub.com, 2015) And it is the same saying that keeps resonating today, not only in the minds of many grownups, but also in the minds of young people who are eager to grow up and assume the responsibilities of the world. In that world, there is no serious place for video games and ludological communication, as if something would led the opinion that childish things have no real matter of saying. Like when a child opens his minds about a "serious" matter in front of an adult company, only to stagger to the wall of hush.
Therefore to call something serious is only a matter of perspective, which most of the things in reality are. If we take a look back to the part that talks about social reality, we can reflect back to the words of Peter L. Berger and Thomas Luckmann *"a quality appertaining to phenomena that we recognize as having a being independent of our own volition (we cannot 'wish them away')"*. (L. Berger and Luckmann, 1966) And Einstein who called it an illusion. (BrainyQuote, 2015)

That same perspective regarding serious gaming is supported by some of the researchers who have studied this phenomenon in psychological perspective. Haring, Chakinska and Ritterfeld wrote that *"from a social science or, more specifically, a psychological perspective "serious games" do not exist. The seriousness of a game must be determined by the experience of the user instead."* (Haring, Chakinska and Ritterfeld, 2011) But their main argument was not that there could not be a thing like a serious game, but that a term "serious game" cannot be. The reason as according to them is, that that *"in principle any game can be a serious game. In contrast, an acclaimed serious game does not necessarily result in educational impact at all. The genre itself is mainly driven by design purposes or content advocates."* (Haring, Chakinska and Ritterfeld, 2011) Therefore at best then it could be said that video games in general can serve for various purposes.

In a similar manner we cannot neglect the reality of video games and their ability to influence people. Even Grodal said, *"The ability to play is a very general innate feature that characterizes all mammals."* (Grodal, 2009) Regardless if we call them serious or not, they are here and are getting more and more complex and dynamic and multilayered, in the hands of advancing technology. They are global; they constantly keep changing, as the games from today are completely different from the ones in the beginning, or even ones from five years ago. That difference both in structure and design, together with billions of player around the world aging from young to old. All arguing that communicational influence these creations have is something that must not be neglected.

But even such creative minded and impressive creations such as video games have a limited amount of possibilities for communication. Those limitations come from the same source as the first intended purpose of the game. The human creator and the fact that every game despite how large or complex it is, is still a limited amount of information in one place.
But when video games do communicate, they do it in a very special form. As these nine representatives can argue, how indeed different they are from other media.
Yes they are a different kind of media, but what kind of media are they is the question. Before it was said that video games are a form of mass media, but words of John Riccitiello alone are not enough to support the claim, that video games truly are the new mass media.

Still even, they do share certain characteristics between them, which could stand by his words. Buffalo State College in United States has made an interesting list of what defines mass communication, more specifically the characteristics that are connected to the mass communication.

They wrote six key characteristics of mass communication.
"1. The source of mass communication message generally is a person or group operating within an organizational setting, 2. Mass media messages are sophisticated and complex, 3. Channels of mass media, also called mass vehicles, involve one or more aspects of technology, 4. Audiences generally are self-selected, people who tune in to a particular television or who read a particular magazine, 5. Feedback is minimal in mass media, and no real give-and-take is practically possible. Message flow typically is one-way, from source to receiver, 6. Like other forms of mediated communication, noise exists in the mass context."
(State College, n.d.)

These characteristics come in line with characteristics of video games. Moreover, not only do those characteristics match on every single point, it also proves that the Linear Model of Communication is the type that is just suited for mass communication. In this case, it also proves suitability of the conceptual model, which follows this type of communication.

However video games use theatricality with interaction. They portray things in astonishing forms; they are marvelous, shocking and even inspiring. But their theatricality doesn't serve its own purpose, but it serves for the player's purpose. It serves to lure the player in, to seduce him and make him interact as much as possible. Designers want you to play and keep playing the game, so what they create is a reflection of that virtual seduction.

This is exactly what makes ludological communication, such an important and interesting field to research, because of that continuous focus when you are immersed in your play and exactly then is when the game is influencing the player and the player is influencing it.
For Bogost, nothing makes a better rhetorical persuasion than the procedure in the game (Bogost, 2008). And the purpose of the rhetoric is of course to use the language as effectively as possible, to make claims and persuade with solid argumentations. (Rhetoric.byu.edu, 2015)

Most of these researchers that were brought to this thesis are focusing on gameplay as the most important element for communication. They do not deny that other parts of the game can be communicational or persuasive, as it is also supported by the mentioned theories and their research; but many still put gameplay into the front and onto the pedestal.
While this research does acknowledge their results and the importance of gameplay is noted in the results of the coding scheme, these games ranked highest in the design and closely high on the story. Which means that what is communicational most in these games is what is designed in the world that surrounds the player.

But we must not imagine that the players do not have a saying in this influence of video games. What this research here showed, is that in this selection of video games design was very important for communication, but it is also true that these games have been selected on a loose criteria and other games could have given different results. Also these games have only been researched in their default state, which is a design as it was made by the designers and has remained that way. But it all indicates towards that argument of intended and developed purpose, as satisfaction of needs is something that must never be underestimated.

After all Maslow's Hierarchy of Needs (McLeod, 2007), has been advocating on that behalf since the first half of the 20th century, when the model has been developed first by Abraham Maslow. He wanted to understand the human motivation and his model doesn't only speak how different needs are important for us, as it can also be understood in how really different we humans are from one another. Some people might shift certain needs before others, and the same give them priority or neglect them completely for different reasons.
But the fact is, that humans are always motivated to satisfy certain needs. It is where developed and intended purpose comes strongly in line with that.

In the beginning of this thesis, it was stated in the introduction, that video games cannot be generalized with common categorization or purpose. This argument comes from two theories. One of them already presented above as Family Resemblance theory by Wittgenstein, and the other on Maslow's Hierarchy of Needs. But both of them are connected in one form or another to the purpose and the way the game is used and understood.

I am convinced that the communication of any video game largely depends on the both spectrums of intended and developed purpose. The reason I have for this belief is the evidence that can be seen first in the evolving video game technology that has happened in the previous few decades. Video games have become indeed more complex structures, and we owe that thanks mostly to the progress in computer technology that has grown exponentially over the same decades that video games have. In the computer industry there is a term known as Moore's Law, which emerged in the 1970s, and it predicted even then that the processing power of computers will double every two years. (Mooreslaw.org, 2015)

While some may have a strict look on this rule and offer criticism in the form of computational measurements, it is still widely accepted and for me it is the rule that does not need to be viewed with measuring the actual power of processing units, and comparing them to their evolutional progress. It is something that can be seen not in the power itself, but in the applicability and usability that surround our daily lives. To notice that, one must only go into the store and buy a new computer, and then in two years to only come back and realize that what he had bought has been suddenly downgraded both in class and power. New products are emerging not on yearly basis, but on daily basis and it often seems that with the information technology, we are always on the lookout for that "wow" moment, something new and exciting, something in which we can both invest our time and our money. For that reason we create new and impressive forms that are always interconnected, multilayered and multidimensional, truly dynamical as well.

On a popular website called ChangingMinds.org, was an interesting list published of different game purposes that might be developed by the player and their reason for playing the game.
They didn't talk about developed or intended purpose of the game, but they only provided an interesting example how the player can use games in different ways.

List:

- *"Games as Comfort: repeating recognizable patterns, cocoon*
- *Games as Time-Wasting Just avoiding boredom.*
- *Games as Learning: discomfort, new skills, improvement, and progression.*
- *Games as Self-Development: social, risk management*
- *Games as Conflict: Winning and losing.*
- *Games as Hope: gambling, wish fulfillment.*
- *Games as Hedonism: just for the pure pleasure*
- *Games as Therapy: healing inner hurts*
- *Games as Escape: fantasy, better than movies, visceral, safe*
- *Games as Need-Fulfillment: Getting what you can't get elsewhere.*
- *Games as Social Facilitation: Helping along the conversation.*
- *Games as Bonding: Connecting people as one.*
- *Games as Being: As the person you really want to be.*
- *Game as Purpose: Providing meaning and intent.*
- *Games as Experiencing: That make you happier.*
- *Games as Discovery: Self, others and things.*
- *Games as Storytelling: With plot, characters and so on.*
- *Games as Realizing: creating reality in real-time.*
- *Games as Prisons: Lock-in, control and more."* (Changingminds.org, 2015)

This list is not naming different kind of games according to their intended purpose, like for example serious games or genres, but this list stands for the developed purpose that gets developed or innate in the player and the way he takes the game for himself, the way he acknowledges and understand it. And furthermore, what here could be seen as 19 different games and their purposes, could in reality be only a handful of different titles which would sometimes change purposes according to the needs of the player, his developed purpose. Taken for example, the games that were analyzed in this paper, and putting them into this list, we could see that quite few of these purposes could be applied to any of those games. For instance the game Team Fortress 2, could be seen sometimes as time-wasting game, because perhaps you have nothing better to do at that time, and at the same time it could be seen as a conflict game, because it is about winning and loosing. Also it could be used for bonding with other players as you play and socialize with people all around the world. My Racing Career is an excellent example how a player might see it as a game of learning, self-development and hope as wish fulfillment. Many people want to experience the feeling of being there and realizing things, that they probably will never be able to realize in the first place, so the ability to satisfy certain human needs is vital for a success of any video game.

For the game to utilize its true purpose, it must be able to satisfy both needs of the player and the designer, even if not all of them. But that cannot be done if the relationship between them is not strong enough, if they do not communicate somehow.

But perhaps there is another way of showing the importance and the difference between the intended purpose and the developed purpose of the video game. By using Game theory. Game theory or the theory of social situations has been around for quite some time and it is often used in mathematics, economics and social sciences, but recently it has also gained popularity in the field of game studies.
Theory has already been explained in the previous parts, so that will not be done here in such detailed way.

In this part an example by David K. Levine will be used for the representation. There are two main branches of the theory according to him; cooperative and noncooperative game theory. In the former the theory focuses mostly on how intelligent individuals interact with one another in an effort to achieve their own goals. Levine in his article used an example from a famous game called the Prisoner's Dilemma, in which two players (partners in crime) have been arrested and interrogated for a committed crime. They are placed in a separate cell and they are each is given the opportunity to confess to the crime. (K. Levine, 2015)

Matrix of payoffs.

	not confess	confess
not confess	5,5	-4,10
confess	10,-4	1,1

***Source**: (K. Levine, 2015)*

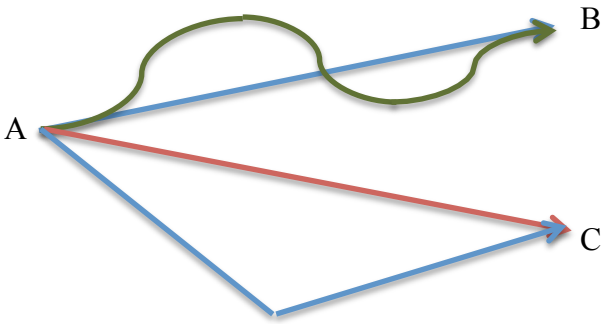
The highest number is better in the matrix and if the both players or the prisoners do not confess, then they split the proceedings of the crime and they both take an equal share of 5 utility points. If one of them confesses and the other one does not, then the one that did confess makes a deal and testifies against another, for the exchange of freedom. He then gets the all of 10 utility points and the other one gets -4, as he goes to prison. If they both choose to confess in exchange for a reduced term, but still go to prison then they both get only 1 utility point, as it is better then one confessing against another, but not as good as going free.
Levine used this example as "construction of a bridge", the logic of that according to him is that it is best that the bridge is built, but even better for an individual if someone else does it. (K. Levine, 2015)

If we take this example from the Game theory and use it for the communication between the designer and the player, then we can learn from the noncooperative theory that each side is trying to achieve their own goals. For the designer the goal is to create a good and successful product, while for the player is to get the product that would provide him with a certain sufficient satisfaction. And if we can learn something from the example above is that in both cases of confessing and not confessing, the key is a good cooperation between each other. The example from above is putting two men in a certain social situation, and to get the best result they both need to be quiet and if they are separated, to achieve the best probability of both not confessing, both men would have to come to an arrangement before the crime, to not confess in case they get arrested, or confess and get the reduced term of punishment.
But regardless of their choice, cooperation seems to be the key to success, and it could be very much seen the same in the relationship between the designer and the player. If they both cooperate and establish a quality-based communication, then I see no reason why both of them couldn't have a good personal profit from that, a quality product and a good personal satisfaction when playing.

But the above provided example is an example that is based on a game using two players, each pursuing their own goal, but at the same time each depended on another. Another example could be made here where there is only one player and the purpose is to utilize that developed purpose in achieving not only personal satisfaction, but also freedom.
Such example is the concept of "nonlinearity" by Torben Grodal, in which was also used in the previous parts. But in simplified terms, he argues, *"nonlinearity in the media can*

emancipate a player from various constraints." (Grodal, 2009) And if we insert a developed purpose that a particular game represents to a player, it would perfectly explain the reason and the need for the following behavior: "modding", cheating and breaking the in game rules. All of which are based on the same principle, change the player behavior in the game. By "modding", the player is using his own created modifications that add or change something in the game. When cheating, the game is using either various bugs in the code of the game to exploit them for his own benefits, or using an outside program to disrupt the specific process within the game to change its value. That way he can add himself for example, more money, health or ammunition depending on whatever he needs. Finally by breaking the in game rules, the player defies the path of rules that are set in the game, and creates his own set of rules and style of play. Breaking the in game rules is in my belief another cry for freedom and expression of that developed purpose by the player. And it is the closest to that nonlinearity that Grodal had in mind, but instead of receiving it, in these examples the player is creating it.

Example of such nonlinear behavior.



The blue lines represent the linear path and predetermined rules of behavior by the designer. Green line represents freedom where player changes his behavior along the path, to satisfy his own need for freedom in play according to his developed game purpose. The red path is where player uses cheating to break the rules, again to satisfy his own needs according to his developed game purpose.

The importance of this model is not only for portrayal of the importance of distinguishing developed purpose from the intended one, but also in understanding the procedurality of which Bogost was talking in his own work. He claims that procedures in the game are the most persuasive ones, but this model shows that perhaps not every procedure needs to be set by the designer. Player can choose to defy the rules of the game and use the rules that govern the game, to his advantage, to satisfy his own needs.
Finally it could also be used to portray the relationship between the game designer and the player, where communication is of unprecedented value.

Keith Stuart the journalist for The Guardian, described this concept of designer-player relationship by saying: *"All games exist in this space between the player and the designer, both of whom come into the agreement with their own agendas and their own character-forming experiences, their own baggage. It is the tension between these sets of demands that create gameplay. Both participants take active roles. Just like in a relationship."* (Stuart, 2015) And if the communication between the designer and the player doesn't work, much like in any relationship it will start showing signs of troubles and if things in communication do not improve, the relationship will break and players will leave. So for that meaning they both have to keep finding a mutual ground on which they can build their understanding, improve communication and provide mutual feedback to one another so the quantity never

endangers the quality because as the old saying goes “people often forget when you won, but they never forget when you have failed”.

I think there is no such thing as perfect synchronization between intended and developed purpose, but that also doesn’t mean that there is no communication and relationship between them, just as I believe that there is no such thing as a game without information, but the answer is and always will be what kind of information and how is it practical.

CHAPTER 9: CONCLUSION OF THE RESEARCH.

The purpose of this thesis was not only to present how video games can communicate outside their intended purpose, in this case about social reality, but also to contribute to the field of game studies and communication. By developing a framework for studying video games from a communicational perspective, developing a conceptual model for the analysis of video game communication and to provide a deeper insight into a real purpose of the video games.

This achievement will be presented in the following key points of this thesis:

1. Main focus of the thesis was how video games can communicate about social reality, by using incorporated communicational elements within the structure of the video game.
2. Structure of the video game was divided into three key levels: story, player activities and design, as these three levels have been shown as the most important and most visible levels for the player.
3. To understand the communication of video games about any social reality, the relationship between the designer and the player has to be investigated as that leads to purpose, and the relationship between the semantics and semiotics, as that leads to meaning of the game.
4. Purpose of the game was divided on intended and developed purpose, the first created by the input of the designer and motivated by his own personal needs. And the second created by the player based on the understanding of the output of the game and his own personal needs.
5. Video games follow a linear communication model, where player is mostly the receiver of the information, but rarely acting as a sender, and when he does it is in limited amounts, by changing the rules or changing a part of the game.
6. The game is defined as communicational by defining the practical nature of the received information from the game. If the information has any practical value for an individual outside the virtual environment then the game could be seen as communicational, if not then it would be only informational.
7. Because the layers and the elements of the game are constantly changing with every new game, and they are often being mixed and connected in unpredictable patterns, the games are considered dynamic, complex and multilayered structures.

Conclusion of the research findings.

In the thesis, it was discovered that communication of the video game can be found in all three main parts of the video game: the story of the game, the activities of the player and the overall design of the game. It was also found that communication can be equally important in all those parts of the game and that success of the video game largely depends on how it can satisfy both the needs of the designer and the player of the game. As those needs are also one of the most powerful factors of influence for them. For that satisfaction of their needs, the relationship between them is very important and has to be understood. And another finding was that when video games are communicating they are not doing it in a clear way, as players decode the received information from the game through their perception and their ability of understanding the information. When their general characteristics together with the popularity aspect and the global reach were considered, it was found that video games fit the

profile of mass media. At the same time those general characteristics were also responsible for the finding that video games are not possible to categorize in absolute terms, and that video games can be made for various purposes, but none could be called serious games.

CHAPTER 10: DISCUSSION OF THE RESEARCH.

In the beginning of this paper, several views and arguments have been made that started this work.

- Video games do not rely on the language for understanding, but on individual ability to perceive, decode and understand the elements of the game.
- Because of technology and creative human mind, video games can be used as a powerful communicational tool, even outside of their intended purpose.
- That the most important communicational elements can be found in the levels of story, design and player activities.
- These elements are created from a specific type of information, with meaningful communicational content for a selected audience.
- Modern video games are dynamic, complex and multilayered structures.
- Video games cannot be simply generalized neither with categorization or the purpose.

These arguments have been tested with the combination of scientific concepts and theories, both modern and old. As both fields of game studies and communication, have emerged from the need to understand a deeper nature of common occurring things in the world. And much like other fields of science, they both have been seen incorporating ideas and visions from other fields, to provide theories and explanations for things related in this world.

Therefore much like both of those fields, have this thesis done the same in reach for its conclusion, with concepts and theories that have been both used in communication and ludology, but some with a different origin. This thesis did not only seek to provide another view or affirmation, to the theories that have been researched in a similar matter before. But to attempt in providing at least one common principle, which both video games and communication can share. A model on which the future can be studied, as video games are long past that simple entertainment point, and have taken a role of a true digital companionship, in the beginning of the 21 century.

As it is shown in the chapters above, video games do not translate the same as other mass media, as they use symbolical interpretation, hiding not behind the text, but behind pictures, sounds, and actions. These particles that are part of a bigger unity, that as many of the researchers mentioned here believe, seduce you into immersion. To play and do, instead just to observe. Jesper Juul (Juul, 2001), said the games do not translate as other media because of that interaction, mixed with narration of the game. Bogost (Bogost, 2008), Messaris and Humphreys (Messaris and Humphreys, 2006) and even Grodal (Grodal, 2009) and younger researchers like Ferri (Ferri, 2007) and Rao (Rao, 2011), have all realized the importance of activities in that symbolical interpretation. But their focus only pushed the activities to the front, and others to the back. As especially Bogost believed that every other form of expression is subordinate to the processes. (Bogost, 2008) These processes are specifically designed player activities. But what this thesis has shown in its research is that player activities are only a part of the whole communication. In this case they were subordinate to the design, but regardless of that, it also shows that communication can be found in all levels.

And all levels should be regarded as equally important, not just procedural activities or the visual or written rhetoric alone.

But that communication is not clear, like in written or heard language, as the player needs to be able to perceive, decode and understand what is being shown to him. Above all he has to be a rational agent, with sound mind. However even without that, the results of that understanding and mean making can be very different to what was originally intended. Sanford I. Berman, made it very clear in his statement that meanings are in the people, and those meanings can be different. (I. Berman, 1982) But in this case, video games are dominated by pictures, sounds and player activities, where several things are happening at the same time and classical forms of language, are less frequent, therefore less likely to be the most important source of influence. Which is both what happened in this analysis, as what happened with Bogost and his procedural rhetoric. But I repeat, less frequent, does not mean less powerful.

At the same time, those pictures, sounds and players activities, although they are the most frequent and more likely to achieve a great deal of influence over the player, the factor that decides the most influence is not in the game, but in the individuals on both sides.
Personal needs of a designer and a player. From this many connections and explanations can be made. Such as the astonishing success of video games themselves, which grew from the ability to satisfy a large specter of personal needs in both younger and older generations. Abraham Maslow and his Hierarchy Of Needs talk about human motivations, and the same motivations that aspire to change and advance through the time. (McLeod, 2007) The success of technology is in the ability to satisfy both the creator and the user, and video games are part of that technology, and the source of the success lies in the same ability. Grodal stated himself that we humans share the same ability with all the other mammals, and that is he ability to play. (Grodal, 2009) Which is born inside of us, and is not something that is taught or adapted from social environment.

And from the same need for satisfaction, comes the need to form relationships between designers and the players. After all designers are players themselves, when they are not acting as designers. Hence we must not forget that video game industry is a business, with a mission to produce quality products that would not only be enjoyed as much as possible, but be also inspirational and perhaps informative. Here we must take the words of David E. Hawkins, who has built an extensive career realizing the long-term importance of business relationships. (E Hawkins, 2011) But in video game industry, it is not just about business-partner relationship, but a community of fans, who are relying on the designers to satisfy their needs, so in return they can do the same for them.

To pursue that satisfaction, video games and technology in general have had to be dynamic and keep changing over time, to provide new ways of doing things and new ways of impressing people. It was once written in the communication discussion, that video games of today are not the same as they were in the beginning, and even five years ago. As we can see that from our own nine representatives, who seemingly don't have anything similar with each other, or anything in common. Nevertheless they do share certain similarities and at least one common factor that even Wittgenstein forgot to mention, human players.
In his theory of Family Resemblance Theory, he used the word game for example and argues that all games have only similarities between them, like a family, but still each game an individual unit. (Philosophy- index.com, 2015) A view, which I support very much here and

so do the results, and those similarities and differences they have are making games hard to categorize in a clear matter. Plus their constant change, designer's relentless attempts to pursue that goal of player satisfaction, is creating an impressive mixture of layers, but also a very confusing situation. Where different genres are gradually combined and none of them become completely clear or definable.

But with that ability to satisfy a wide range of needs their popularity has expanded with lighting speed, and quickly they have become a new mass media. With a communication, that can reach a massive amount of people in a very short time, but originating from a small group of people. The characteristics described regarding mass communication from Buffalo State College (State College, n.d.) matches precisely on every point, with video games. So when John Riccitiello called them a new mass media, he was very correct.

This media is like other mass media, used for various purposes. As some are used in attempt to share educational information to the players, so they would not base themselves more on entertainment, but on more serious side. While there is no dispute that something can be serious for someone, there is no official system, which could define what really is serious and what is not. Haring, Chakinska and Ritterfeld believe that "serious games" do not exist and that player alone has to determine what is serious for him and that genre itself, is driven by the purpose. (Haring, Chakinska and Ritterfeld, 2011) So as stated in conclusion, there is no such thing as "serious games", but only games for various purposes. And even that could be connected to Wittgenstein's Family Resemblance Theory and Maslow's Hierarchy of Needs, as both of them deal with needs and purposes in one way or another.

Maslow has proven itself very useful for this thesis, especially with intended and developed purpose of the game. It is not easy to satisfy all the needs of both the designer and the player, and one could even argue that it is impossible. But human needs are extremely powerful actor, not only in video games but in a general sense too. We can feel that every time we go and do something, as we do it because of one need or another. We justify our actions because of various needs; we connect our emotions and purpose to them. But above all, I agree with Maslow, that our motivation comes from a desire to satisfy certain needs. (McLeod, 2007) And those needs, I would argue that they would certainly influence what is persuasive or not in video games.

This research and its results I believe have given a lot of insight into the nature of video games, especially for communicational purposes. It is not easy to study video games, as they themselves are a relatively new invention, if one takes human history in consideration. They have truly been a success in the world and they are likely to continue on the same path. That path is in a way parallel to the path of computer technology, as the basic old principle of the more we can, the more we do, still insists of being. So to study video games, can be compared with the same problems of studying computer science. New ideas and developments are made every day and to keep up with everything, is not so easy. At the same time, they are still giving that entertaining aftertaste even in the academic world, so together with their short history, limitations can be considerate. For this thesis, limitations posed in the form of time and resources, but even so with interesting results.

For that only this research has given a big contribution to not only game studies but also to communicational research. And I believe that it does open new doors and invitations for future studies, that might focus more on the influence alone on the player but not only on the

psychological basis, but philosophical and communicational as well. Video games are the new mass media and they are going to be more complex and more dynamical, and the differences between the developed and intended purpose are going to persist, so the time invested in them for scientific research, surely is not and could not be wasted.

REFERENCES:

1. A. Malkoc, S. and M. Duguid, M. (2012). Not All Power is Created Equal: Role of Social and Personal Power in Decision-making. 1st ed. [ebook] Available at: http://rady.ucsd.edu/docs/seminars/Malkoc_and_Duguid.pdf [Accessed 14 Mar. 2015].

2. A. Sebeok, T. (2001). Signs: An Introduction to Semiotics. 2nd ed. [ebook] Toronto Buffalo London: University of Toronto press, p.3. Available at: http://monoskop.org/images/0/07/Sebeok_Thomas_Signs_An_Introduction_to_Semiotics_2nd_ed_2001.pdf [Accessed 19 May 2015].

3. BrainyQuote, (2015). Eugene Jarvis Quotes at BrainyQuote.com. [online] Available at: http://www.brainyquote.com/quotes/quotes/e/eugenejarv435050.html?src=t_video_games [Accessed 19 May 2015].

4. Bogost, I. (2008). The Rhetoric of Video Games. 1st ed. [ebook] Massachusetts Institute of Technology, pp.117-140. Available at: http://www.cogsci.rpi.edu/public_html/ruiz/EGDFall2013/readings/RhetoricVideoGames_Bogost.pdf [Accessed 19 May 2015].

5. BrainyQuote, (2015). Peter Drucker Quotes at BrainyQuote.com. [online] Available at: http://www.brainyquote.com/quotes/quotes/p/peterdruck142500.html?src=t_communication [Accessed 19 May 2015].

6. BrainyQuote, (2015). Albert Einstein Quotes at BrainyQuote.com. [online] Available at: http://www.brainyquote.com/quotes/quotes/a/alberteins100298.html?src=t_reality [Accessed 20 May 2015].

7. Božilovič, N. (2010). Youth Subcultures and Subversive Identities. 1st ed. [ebook] Niš¡: University of Niš¡,Faculty of Philosophy, p.46. Available at: http://facta.junis.ni.ac.rs/pas/pas2010/pas2010-05.pdf [Accessed 17 May 2015].

8. Biblehub.com, (2015). 1 Corinthians 13:11 When I was a child, I talked like a child, I thought like a child, I reasoned like a child. When I became a man, I put the ways of childhood behind me.[online] Available at: http://biblehub.com/1_corinthians/13-11.htm [Accessed 20 May 2015].

9. B. Watson, A. (2013). High Frame Rates and Human Vision: A View Through the Window of Visibility B. 1st ed. [ebook] pp.18-31. Available at: http://vision.arc.nasa.gov/publications/Watson-2013-SMPTEMotImag.pdf [Accessed 23 May 2015].

10. Chen, J., Lu, S. and Vekhter, D. (1999). Von Neumann and the Development of Game Theory. [online] Cs.stanford.edu. Available at: http://goo.gl/NqTgkl [Accessed 19 May 2015].

11. Changingminds.org, (2015). The Purpose of Games. [online] Available at: http://changingminds.org/disciplines/game_design/games_as/games_as.htm [Accessed 10 May 2015].

12. E. Kenyon, Jr., R. (1984). Popper's Philosophy of Science. [online] Xenodochy.org. Available at: http://www.xenodochy.org/article/popper.html [Accessed 17 May 2015].

13. E. Hawkins, D. (2011). The importance of relationships. 1st ed. [ebook] Palgrave Macmillan. Available at: http://kmhassociates.ca/resources/4/The%20importance%20of%20relationships%20in%20business.pdf [Accessed 19 May 2015].

14. Ferri, G. (2007). Narrating machines and interactive matrices: a semiotic common ground for game studies. 1st ed. [ebook] University of Bologna: 2007 Authors & Digital Games Research Association (DiGRA)., pp.466-472. Available at: http://www.digra.org/wp-content/uploads/digital-library/07311.02554.pdf [Accessed 19 May 2015].

15. Goodreads.com, (2015). John von Neumann Quotes (Author of The Computer and the Brain). [online] Available at: http://www.goodreads.com/author/quotes/205578.John_von_Neumann [Accessed 19 May 2015].

16. Grodal, T. (2009). Stories for Eyes, Ears, and Muscles. In: T. Grodal, ed., Embodied Visions: Evolution, Emotion, Culture and Film, 1st ed. [online] Oxford University Press, pp.130-150. Available at: http://goo.gl/soSeqc [Accessed 19 May 2015].

17. GameSpot, (2015). The Sims Review. [online] Available at: http://www.gamespot.com/reviews/the-sims-review/1900-2533406/ [Accessed 19 Apr. 2015].

18. Goodreads, (2015). a quote by Voltaire. [online] Available at: http://www.goodreads.com/quotes/709747-with-great-power-comes-great-responsibility [Accessed 12 Mar. 2015].

19. Grim Fandango travel guide and manual. (n.d.). 1st ed. [ebook] Available at: http://www.brainygamer.com/VGC/GrimManual.pdf [Accessed 14 Mar. 2015].

20. Harris, W. (2015). Origin of the Grim Reaper - HowStuf Works. [online] HowStuffWorks. Available at: http://science.howstuffworks.com/science-vs-myth/strange-creatures/grim-reaper2.htm [Accessed 14 Mar. 2015].

21. Haring, P., Chakinska, D. and Ritterfeld, U. (2011). Understanding Serious Gaming: A Psychological Perspective: Chapter 20. 1st ed. [ebook] IGI Global, p.414. Available at: http://www.irma-international.org/viewtitle/52506/ [Accessed 22 May 2015].

22. I. Berman, S. (1982). Words, Meanings and People. 1st ed. [ebook] Concord, California: International Society for General Semantics, p.7. Available at: http://goo.gl/42rp7P [Accessed 21 May 2015].

23. Igi-global.com, (2015). What is Serious Games | IGI Global. [online] Available at: http://www.igi-global.com/dictionary/serious-games/26549 [Accessed 9 May 2015].

24. IGN, (2015). Grim Fandango Remastered (PC). [online] Available at: http://www.ign.com/games/grim-fandango-remastered/pc-20021351 [Accessed 19 May 2015].

25. Juul, J. (2001). Games Studies 0101: Games telling Stories? by Jesper Juul. [online] Gamestudies.org. Available at: http://www.gamestudies.org/0101/juul-gts/ [Accessed 19 May 2015].

26. Juhász, I. (2012). Programming Languages. 1st ed. [ebook] p.2. Available at: http://www.inf.unideb.hu/kmitt/konvkmitt/programming_languages/book.xml.pdf [Accessed 19 May 2015].

27. J. Roscigno, V. (2012). Power, Sociologically Speaking Â» The Society Pages. [online] Thesocietypages.org. Available at: http://thesocietypages.org/specials/power/ [Accessed 12 Mar. 2015].

28. J. Reynolds, K., C. Turner, J., R. Branscombe, N., I. Mavor, K., Bizumic, B. and Subašič, E. (2010). Interactionism in Personality and Social Psychology: An Integrated Approach to Understanding the Mind and Behaviour. 1st ed. [ebook] Canberra: John Wiley & Sons, Ltd, European Journal of Personality, p.1. Available at: https://pages.wustl.edu/files/pages/imce/personality/reynolds_et_al_ejp_2010.pdf [Accessed 19 May 2015].

29. Kain, E. (2014). Nearly 37% Of All Registered Steam Games Have Never Been Played. [online] Forbes. Available at: http://www.forbes.com/sites/erikkain/2014/04/17/nearly-37-of-all-registered-steam-games-have-never-been-played/ [Accessed 19 May 2015].

30. Khalek, R. (2011). 21st-Century Slaves: How Corporations Exploit Prison Labor. [online]Alternet. Available at: http://www.alternet.org/story/151732/21st-century_slaves%3A_how_corporations_exploit_prison_labor [Accessed 14 Mar. 2015].

31. Kemerling, G. (2011). Wittgenstein. [online] Philosophypages.com. Available at: http://www.philosophypages.com/hy/6s.htm [Accessed 20 Mar. 2015].

32. K. Levine, D. (2015). What is Game Theory?. [online] Levine.sscnet.ucla.edu. Available at: http://levine.sscnet.ucla.edu/general/whatis.htm [Accessed 10 May 2015].

33. Livesey, C. (2011). The Mass Media. 1st ed. [ebook] United Kingdom: Sociology Central, p.1. Available at: http://www.sociology.org.uk/media_defined.pdf [Accessed 21 May 2015].

34. L. Berger, P. and Luckmann, T. (1966). The Social Construction of Reality. 1st ed. [ebook] New York: Penguin Group, pp.7-13. Available at: http://perflensburg.se/Berger%20social-construction-of-reality.pdf [Accessed 17 May 2015].

35. L. Turocy, T. and von Stengel, B. (2001). Game Theory. 1st ed. [ebook] Academic Press. Available at: http://www.cdam.lse.ac.uk/Reports/Files/cdam-2001-09.pdf [Accessed 19 May 2015].

36. McGonigal, J. (2011). *We spend 3 billion hours a week as a planet playing videogames. Is it worth it? How could it be MORE worth it? | A conversation on TED.com*. [online] Ted.com. Available at: http://www.ted.com/conversations/44/we_spend_3_billion_hours_a_wee.html [Accessed 20 May 2015].

37. Messaris, P. and Humphreys, L. (2006). Digital Media: Transformations in Human Communication. 1st ed. [ebook] Peter Lang, 2006, pp.188-195. Available at: https://goo.gl/VyfyyI [Accessed 19 May 2015].

38. McLeod, S. (2007). Maslow's Hierarchy of Needs. 1st ed. [ebook] Available at: http://www.ouchihs.org/apps/download/2/NghLRUHA09ycRFi190Zws5youGeihn81UYVGpHLCukqjXEs1.pdf/Maslow's%20Hierarchy%20of%20Needs.pdf [Accessed 20 May 2015].

39. Merriam-webster.com, (2015). Parkour | the sport of traversing environmental obstacles by running, climbing, or leaping rapidly and efficiently. [online] Available at: http://www.merriam-webster.com/dictionary/parkour [Accessed 22 May 2015].

40. McLeod, S. (2008). Social Identity Theory | Simply Psychology. [online] Simplypsychology.org. Available at: http://www.simplypsychology.org/social-identity-theory.html [Accessed 26 Jan. 2015].

41. McGarty, C., Y. Yzerbyt, V. and Spears, R. (2002). Stereotypes as Explanations The formation of meaningful beliefs about social groups. 1st ed. [ebook] Cambridge: The press syndicate of the University of Cambridge. Available at: http://catdir.loc.gov/catdir/samples/cam033/2002073438.pdf [Accessed 18 May 2015].

42. M. Law, A. (2009). How to build valid and credible simulation models. 1st ed. [ebook] Tucson, AZ 85715, U.S.A.: Averill M. Law & Associates, Inc., pp.24, 25. Available at: http://www.informs-sim.org/wsc09papers/003.pdf [Accessed 20 Apr. 2015].

43. Mooreslaw.org, (2015). Moore's Law. [online] Available at: http://www.mooreslaw.org/ [Accessed 10 May 2015].

44. Nöth, W. (1995). Handbook of Semiotics. 1st ed. [ebook] Indiana University Press, p.66. Available at: https://goo.gl/phwgub [Accessed 10 May 2015].

45. Patel, K. (2011). Electronic Arts CEO Riccitiello: Gaming Is the New Mass Media. [online]Adage.com. Available at: http://adage.com/article/special-report-digital-conference/ea-ceo-riccitiello-gaming-mass-media/226832/ [Accessed 5 May 2015].

46. Port, R. (2000). Icon, Index and Symbol: Types of Signs. [online] Cs.indiana.edu. Available at: http://www.cs.indiana.edu/~port/teach/103/sign.symbol.html [Accessed 10 May 2015].

47. Philosophy-index.com, (2015). Family Resemblance in Wittgenstein Philosophy Index. [online] Available at: http://www.philosophy-index.com/wittgenstein/family-resemblance/ [Accessed 10 May 2015].

48. Rao, V. (2011). How to Say Things with Actions I: a Theory of Discourse for Video Games for Change. 1st ed. [ebook] Utrecht: Authors & Digital Games Research Association DiGRA., pp.2-15. Available at: http://www.digra.org/wp-content/uploads/digital-library/11312.32336.pdf [Accessed 19 May 2015].

49. Rhetoric.byu.edu, (2015). What is Rhetoric?. [online] Available at: http://rhetoric.byu.edu/encompassing%20terms/rhetoric.htm [Accessed 9 May 2015].

50. R. Hurford, J., Heasley, B. and B. Smith, M. (2007). Semantics A Coursebook. 2nd ed. [ebook] Cambridge,: Cambridge University Press, pp.1-26. Available at: http://npu.edu.ua/!e-book/book/djvu/A/iif_kgpm_Hurford%20J.%20R.,%20Heasley%20B.%20Semantics.%20A%20Coursebook..pdf [Accessed 19 May 2015].

51. R.P. French, Jr., J. and Raven, B. (1959). The Bases of Social Power. 1st ed. [ebook] pp.155, 156. Available at: http://web.mit.edu/curhan/www/docs/Articles/15341_Readings/Power/French_&_Raven_Studies_Social_Power_ch9_pp150-167.pdf [Accessed 17 May 2015].

52. Sewell, M. (2015). Popper's Falsification. [online] Science.martinsewell.com. Available at: http://science.martinsewell.com/falsification.html [Accessed 17 May 2015].

53. Stein, G. (2009). Signs of Maturity: What Does It Mean to "Grow Up?". [online] Dr. Gerald Stein-Blogging About Psychotherapy from Chicago. Available at: https://drgeraldstein.wordpress.com/2009/09/03/signs-of-maturity-what-does-it-mean-to-grow-up/ [Accessed 12 Mar. 2015].

54. Shamanism, (2015). Shamanism | What is Shamanism?. [online] Available at: http://www.shamanism.com/what-is-shamanism/ [Accessed 20 Mar. 2015].

55. Shawver, L. (2015). Wittgenstein's Concept of a Language Game. [online] Postmoderntherapies.com. Available at: http://postmoderntherapies.com/word.html [Accessed 20 Mar. 2015].

56. State College, B. (n.d.). Mass Communication. 1st ed. [ebook] Buffalo State College, p.66. Available at: http://faculty.buffalostate.edu/smithrd/UAE%20Communication/Unit7.pdf [Accessed 19 May 2015].

57. Stuart, K. (2015). It's complicated: why playing a video game is like having a relationship. [online] the Guardian. Available at: http://www.theguardian.com/technology/2015/jan/23/destiny-playing-video-game-is-like-relationship [Accessed 10 May 2015].

58. The Communication Process, (2013). The Models of Communication. [online] Available at: http://thecommunicationprocess.com/models-of-communication/ [Accessed 20 May 2015].

59. The Problem Site, (2015). Binary Codes - The Mathematical Language Spoken By Computers. [online] Available at: http://www.theproblemsite.com/codes/binary.asp [Accessed 10 May 2015].

60. Todd, A. (2002). The European dictatorships - Excerpt (Dictatorships: ideologies and totalitarianism). 1st ed. [ebook] Cambridge: Cambridge University Press. Available at: http://assets.cambridge.org/97805217/76059/excerpt/9780521776059_excerpt.pdf [Accessed 17 May 2015].

61. Valentzas, J. and Broni, G. (2014). Communication cycle: Definition, process, models and examples. 1st ed. [ebook] Greece: Technological Institute of Western Macedonia, pp.117, 118. Available at: http://www.wseas.us/e-library/conferences/2014/Istanbul/FINANCE/FINANCE-17.pdf [Accessed 21 May 2015].

62. V. Vaseghi, S. (2000). Noise and Distortion. 1st ed. [ebook] John Wiley & Sons Ltd, p.29. Available at: http://dsp-book.narod.ru/295.pdf [Accessed 24 May 2015].

63. Whitworth, B. (2007). The Physical World as a Virtual Reality. 1st ed. [ebook] Albany,: Massey University, Albany, Auckland, New Zealand, pp.2, 13. Available at: http://arxiv.org/pdf/0801.0337.pdf [Accessed 17 May 2015].

64. WFD | World Federation of the Deaf, (2015). Sign Language. [online] Available at: http://wfdeaf.org/our-work/focus-areas/sign-language [Accessed 20 Mar. 2015].

65. Weisstein, E. (2015). Minimax Theorem -- from Wolfram MathWorld. [online] Mathworld.wolfram.com. Available at: http://mathworld.wolfram.com/MinimaxTheorem.html [Accessed 19 May 2015].

66. Walker, P. (2012). Chronology of Game Theory. [online] Econ.canterbury.ac.nz. Available at: http://www.econ.canterbury.ac.nz/personal_pages/paul_walker/gt/hist.htm [Accessed 19 May 2015].

67. Zimbardo, P. and X. Wang, C. (2015). The Lucifer Ef ect by Philip Zimbardo. [online] Lucifereffect.com. Available at: http://www.lucifereffect.com/guide_conform.htm [Accessed 12 Mar. 2015].