THE REPUBLIC OF TURKEY

BAHÇEŞEHİR UNIVERSITY

A TAXONOMY PROPOSAL FOR VIDEO GAMES WITH A FOCUS ON VISUALIZATION MODES

Master's Thesis

ADNAN ALİCAN SÖNMEZ

ISTANBUL,2019

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Playing Experience

Name/Last Name of The Student: Adnan Alican Sönmez

Date of the Thesis Defense:

The thesis has been approved by the Graduate School of Social Sciences.

I certify that this thesis meets all the requirements as a thesis for the degree of Master of Arts.

Asst. Prof. Güven ÇATAK

Program Coordinator

This is to certify that we have read this thesis and that we find it full adequate in scope, quality and content, as a thesis for the degree of Master of Arts.

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August 2019 Adnan Alican SÖNMEZ

ABSTRACT

A TAXONOMY PROPOSAL FOR VIDEO GAMES WITH A FOCUS ON VISUALIZATION MODES

Adnan Alican Sönmez

Game Design Graduate Program

Thesis Supervisor: Assoc. Prof. Çetin Tüker

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Players usually have different types of experiences according to different types of games. Game developers have created different types of companions, created better camera angles, given new perspectives which aim to help players to understand and experience the mechanics and evolution of the games in their ways. However, this can be a different type of aspect via different platforms and categories. Different types of games mean different types of perspective is needed because not ever game can have free movement, limited movement or key-based movement, better camera angles or limited camera angles, free roam or story-based free roam (limited roam), simple storyline, decision-based storyline, no storyline etc.

In the scope of this thesis, we are going to be looking at different types of games with different categories and how can be seen in a different experience might be taken upon this and can be really effective to get better visualization skills. To examine these categories and different types of experiences a table created upon a partial amount of known games which has left these types of experiences upon players which can also be described as a DNA schema of a game. With this table it is a possibility that almost every game can be more understandable.

Keywords: DNA schema, camera angle, category, movement

ÖZET

GÖRSELLEŞTİRME MODLARINDA ODAKLI VİDEO OYUNLARI İÇİN BİR SINIFLANDIRMA ÖNERİSİ

Alican Sönmez

Oyun Tasarımı Yüksek Lisans Programı

Tez Danışmanı: Doç. Dr. Çetin Tüker

Ağustos 2019, 74 Sayfa

Oyuncular genelde farklı kategorilerde yer alan farklı oyunlarda farklı tarzda tecrübeler edinebilirler, bununla birlikte oyun geliştiricileri de yeni kamera açıları yeni dünya tasarımları, daha ayrıntılı veya daha anlaşılabilir bir yardımcı oyun karakteri gibi çalışmalarda bulunmaktadırlar böylelikle oyuncular da edindikleri yeni bakış açılarını, yeni tecrübelerini kendilerince ifade edebilirler. Dolayısıyla farklı türdeki oyunlar, farklı kamera açıları ve tabii ki farklı bakış açıları demektir. Çünkü her oyun aynı özgün harekete, sınırlı harekete veya hikâyeye bağlı yüzeysel harekete, yapılan seçimlerle ilerleyen harekete, serbest kamera açılarına veya sabit kamera açılarına sahip değildir.

Bu tezde de bakacağımız farklı oyunlardaki perspektifleri ele alarak nasıl ve ne ölçüde farklı tecrübeler elde edilebileceğidir ve kullanan kişinin bakış açısının ne kadar değişebileceğidir. Bu kategorileri ve tecrübeleri incelemek maksadıyla bilinen belirli ölçüdeki oyunun yer aldığı bir tablo oluşturulmuştur. Buna bir oyunun DNA şeması gözüyle de bakabilmek ve bu farklı kategorideki oyunları daha anlaşılır kılabilmek mümkündür.

Anahtar kelimeler: DNA şeması, kamera açısı, kategori, hareket

CONTENTS

FIGURES

ABBREVIATIONS

AA	:	Action Adventure
ACT	:	Action
AI	:	Artificial Intelligence
AR	:	Augmented Reality
AVR	:	Ambient VR
BF	:	Back Forward
CDOF	:	Camera Degree of Freedom
CL	:	Closed
CPM	:	Camera Projection Mode
CVP	:	Camera View Point
DIM	:	Dimension
DOF	:	Degrees of Freedom
EL	:	Environment Limits
FLT	:	Flat
FP	:	First Person
FPS	:	First Person Shooter
FR	:	Free Roam
GU	:	Game Universe
HRR	:	Horror
HS	:	Hack & Slash
ILR	:	In Level Roam
ISPRS	:	Isometric Perspective
IVR	:	Immersive VR
LL	:	Level Limited
LP	:	Larger than Player
LR	:	Left Right
LRR	:	Limited Roam
LS	:	Looter-Shooter
ML	:	Mission Limited
MOIB	:	Movement on Isometric Background
MSR	:	Mission Roam

MXR	:	Mixed Reality
ND	:	Not Defined
NPC	:	Non-Playable Character
NSB	:	Non-scene-based NPC
O	:	Observer
OTS	:	Over the Shoulder Shot
OW	:	Open World
P	:	Participant
PAR	:	Path Roam
PL	:	Path Limited
PM	:	Player's Movement
POW	:	Partial Open World
PP	:	Parallel Projection
PRS	:	Perspective
PS	:	Player Scale
PTC	:	Pitch

PXP	:	Parallax Perspective
PVP	:	Player vs Player
R	:	Roll
RFPC	:	Roaming Freedom of Player Character
RM	:	Reality Mode
RPG	:	Role Playing Games
RTS	:	Real Time Strategy
SB	:	Scene-based NPC
SCE	:	Scale Comparison of Environment
SCR	:	Screen
SCR	:	Screen
SP	:	Smaller than Player
STA	:	Stationary
T- RPG	:	Turn-based Role-Playing Games
TP	:	Third Person
TPS	:	Third Person Shooter
VR	:	Virtual Reality
VS	:	Versus
Y	:	Yaw

1.INTRODUCTION

Game developers always ambitious to create better and more complex games. Despite the advancement in gaming industry and technology for creating complex and better working physics engines, dynamic lighting and so on to this end, one exception which believed to be lacking of understanding is non-player- characters (NPCs) within games. Currently these NPC interactions can be described as static and deterministic, without the player getting a sense of character about a particular NPC's nature, behind its purpose of creation, or indeed the game itself. Static and deterministic gameplay means that gameplay can degenerate into reacting to the behavior of the NPCs rather than navigating through the game or its story line.

Although all those advancements there is still some serious amounts of misunderstandings and miscommunications between gaming developers and AI (artificial intelligence) researchers in order to understand a player's nature, what's driving them to explore further, visualize and create different ways to complete a game. Taxonomy determines these expectations in order to understand game genres, gaming universes, NPC types etc.

As technology has advanced, new types of perspective methods. Newest one but actually active since 1950s first created by a Filmmaker who is Morton Heilling created a large booth-like machine called Sensorama, which was created with an intention of combining multiple Technologies to give one to four people the illusion of being in a fully 3D immersive World. Since the first immersive game which is called "PONG" which released in 1972 full release for everyone's Access in 1975. Since then, everything started to change. Characters came, story came (etc. ZORK 1977), colors started to use (etc. Indy 800, Atari/Kee, April 1975). At first player's only focus was to understand the mechanics of the game besides having fun. In time, mechanics began to share their percentage of taxonomy, observation and many other skill-required features. In First Person Shooters (FPS) and Real Time Strategy (RTS) games are mostly skill-based; its main purpose is to increase one's gameplay skills. If for example player plays StarCraft or Civilization or XCOM series (RTS) and players die constantly which can be frustrating. Likewise, if

player almost invincible, after some time spending so time in the game, it begins to bore the player as well, So the only possible solution for this problem is to create a balance sequence between skill and difficulty. Virtually it can be said that every game has a possible way to express some sort of visualizations, these visualization materials can be explicit (etc. mortal kombat) or implicit (etc. super mario bros.). In these kinds of games, a possible amount of training visualizations exists to help players for improving their gameplay. Another perfect example is Tetris which is based on skill, visualizing the peaces, timing, where to put the peaces in order to get better score each time player plays. If gameplay for the player is not improving at all this means that player is not learning, no increase in skill, and has an increased chance about not having fun at all.

This thesis introduces a detailed periodic-like table of taxonomy of used videogames in general which explains any game's feature in detail to understand with a proper way to look into the GU (game universe). Different angles, different perspectives, different GUs means multiple effective ways to increase player's visualization skills based on their strengths upon which games player's been playing.

2.BACKGROUND AND RELATED WORK

In this chapter an overview of FPS, TPS, RPG, RTS to literature review. This chapter shows an overview of some memorable examples which share similar features in name of taxonomy, and to train visualization skills. Term ‘taxonomy’ basically means to classify every specified main topic with their own area of features. Detailed explanations for this thesis topic will be reviewed and explained properly.

2.1 LITERATURE REVIEW

In this section of thesis, I looked into some resourceful and helpful topics about how to train someone's spatial skills, observative skills and how to classify video games not just due to their genres but also their special ways in order to understand video games' nature in a better scientific way. In an article mentioned that improving spatial skills has a vital importance to understand better to visualize better in gaming universe and many other researches in order to progress further. Spatial visualization skill can be described as the ability to think of an object 2D or 3D and manipulating it by visualizing mentally. (McGee,1979). Of Course, improving visual and spatial skills can also be improved way better due to childhood education and training. However, this cannot be described as a new research methodology because there was already an idea existed for using educational games and many other related computer applications in order to improve spatial skills and visualization skills. (Wells,2003). Researchers show that it is possible to use VR (virtual reality) and AR (augmented reality) to improve visualization skills. Nowadays a part of specific applications designed to be used via VR and AR in order to research and compare the traditional training compare to VR based training. In another article mentioned that old methodology and learning techniques have a limited effect upon newer generation for video game practice on performance for spatial tasks. The article also mentions that in order to get an effective result upon video game training for spatial tasks require three versions of spatial skills, spatial perception, mental rotation, and spatial visualization. Above all the others spatial visualization skill needs more time, practice and more effort due to its difficulty. Using VR and AR in especially in industry training also have a grave importance. Because not everyone is capable of learning with text or audio-based learning. In VR/AR contributors can follow instructions via executing them in hand. For example; car restoration, house architecture, ship architecture, in education such as chemistry. Spatial visualization has another important aspect due to the gender differences due to their performances, incognitive abilities (Lawton & Morrin 1999). In other types of abilities, genders generally are closer to be accepted as equal (except verbal ability which is female-dominated area).

(William Bricken-Training in Virtual Reality-1990)

As William Bricken mentioned in his article (training in virtual reality(august 1990)),it is possible that students can learn better in reprogrammable environments that can be created by the teachers without using mouse, monitor and keyboard." the most important principle of classroom activity design is that the student's actions determine what will be learned"(Walker Fundamentals of Curriculum).His idea was that if it can be taught with words so it can be taught pictures as virtual experience. He also mentioned that not every job can be easy in VR environment but it sure helps to be prepared enough to prevent any mistakes, accidents which can occur in reality. In monitor, or in class participant's learning and observing skills can only help him/her for a limited range of variety, on the other hand in VR participant's momentum (how quickly they can react according to given instructions or deciding critical actions inside virtual reality).

Media and Method

(Richard E. Clark-1994)

In this article Clark mentioned that he needed to be focusing on the new ways of learning methodologies that can be eased expected expressed concerns. He suggested that fact must be interpreted as evidence that instructional methods are the underlying common element of all substitutable media and attributes of the media. He says that Reiser is agreed that media were replaceable but suggested that we try to"...find the evidence of an instructional method that is not replaceable by a different method to achieve similar learning results.". He also mentioned three key points from the heart of his argument about the media itself and method:

First, that when learning is influenced by external events, those events must support cognitive processes or structures that are required for learning goals by students who are unable or unwilling to provide them for themselves.

Second key issue is that instructional designers, developers and researchers often fail to adequately link their work to the basic and applied research on the learning from instruction. In this second key issue he mentioned the consequence of being too often unaware of the evidence about important cognitive processes necessary to achieve desired performance on learning tasks.

The third key issues that contributes to the confounding of media and methods is that, when people are conducting design and development for delivery by new media**,** *"people usually tend to ignore basic and applied research if that research was conducted with older media.".* As Clark also mentioned that *"we too often act as if we can believe that each new delivery technology requires a new theory of learning and performance. Thus we "reinvent the wheel" constantly but inadequately.".*

The problem about this is that it always depends on the older media resources in order to find methods which to be used in new programs. If the medium in question is new, the chances of finding required sources are slim and developers may conclude that there is nothing to be done because of no research information from previous methods.

Final conclusion in his article was about the methods that are replaceable which he said that it depends on the level or stage in the design process.

Yes, Video Games Do Improve Spatial Reasoning Skills

Dr. Randy Kulman

The author explains about the spatial reasoning which can be seen as an ability that shown via a creative child when taking apart a bike and putting it back together, or when designing and building structures in Minecraft which was recently cited in a Vanderbilt University Study as being a better predictor of future creativity and innovation than traditional math or verbal skills.

The article shows that spatial reasoning skills are strongly connected to mathematical abilities and to success in many technical fields. H1: This show the suggestion that parents might want to pay more attention to a child's creative skills while playing with such everyday items as Legos, a dollhouse, construction toys, or even video games that require visualization and mental rotation skills. In general, spatial reasoning skills are frequently associated with higher levels of academic achievement and creativity. H2: There is also a substantial research to suggest that many video games including action games such as medal of honor and puzzle games such as Tetris can help children to develop these spatial reasoning skills.

3.TAXONOMY

Taxonomy is a scientific methodology to classify things or concepts, which can also be games as well, such as game genres can be described as a type of taxonomy.
Game developers can use taxonomy to understand what they supposed to develop, how its elements needed to be reacting, AI researchers can find better ways to understand the NPC and game universe. With taxonomy, games which created due to the older version of taxonomy till today can be identified better for their genres. At first video games generally have shooting, sports, puzzle, fighting etc.
In time these genres derived in to more subgenres.
Such as
Horror -> Survival horror, horror fps
Shooting - > FPS, TPS, A-RPG
Puzzle - > match 3 puzzle, story-based puzzle, escape based puzzle

In taxonomy of video games there are a set of freedom features based on the camera angles, freedom of movement, looking around, exploring deeper parts of the gaming universe (e.g. collectables, Easter eggs) which at first was just focused on flat sight for the players to see the game upon the screen. In time these features derive within for a better detailed understanding about these elements.

These are a small amount of the examples which can be categorized in a DNA-type classification so called taxonomy in order to understand the insides of that game's original bases.

Figure 3.1 (Sample of Taxonomy of Video Games)

Source: https://previews.123rf.com/images/greyjj/greyjj1407/greyjj140700027/29652429-video-game-genres-icons-set.jpg[1]

These figures are some of the basic descriptions for the taxonomy for video games.

[1]https://previews.123rf.com/images/greyjj/greyjj1407/greyjj140700027/29652429-video-game-genres-icons-set.jpg

Figure 3.2 (Taxonomy of Video Game Genres)

[2]

Source:https://www.researchgate.net/profile/Dariusz_Gotlib/publication/292128935/figure/fig2/AS:669949081157637@1536739716101/Variety-of-video-game-genres-an-attempt-to-classify-genres-and-kinds-source-authors.jpg

This table for the taxonomy of videogames can also be describe as a family tree which keeps expending through years.

[2]https://www.researchgate.net/profile/Dariusz_Gotlib/publication/292128935/figure/fig2/AS:669949081157637@1536739716101/Variety-of-video-game-genres-an-attempt-to-classify-genres-and-kinds-source-authors.jpg

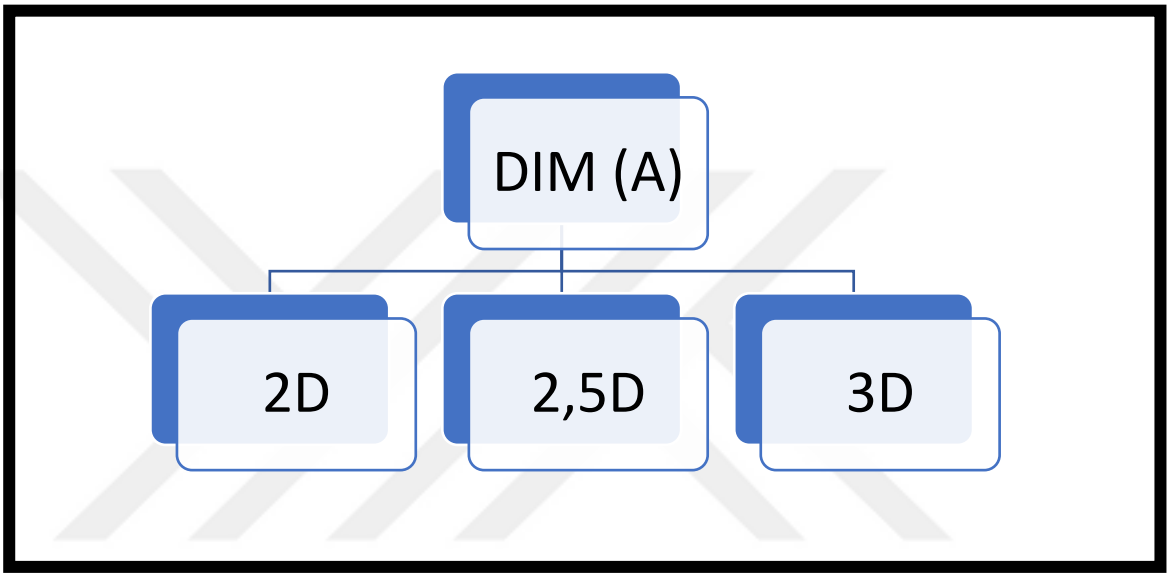
4.PROPOSED TAG SYSTEM

4.1 DEFINITIONS

4.1.1 Dimensions of the Game Universe

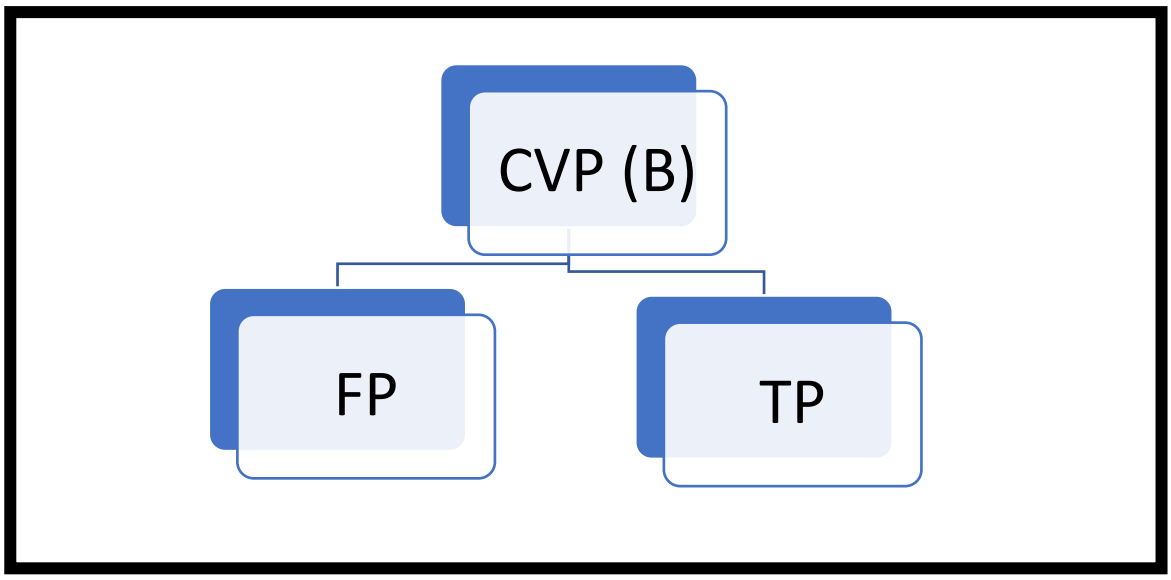
Dimensions through the history of gaming has a noticeable difference. More dimensional elements mean, more time to explore, more time to observe, more time to see more details in video games in order to get a better interaction result.

Figure 4.1 (Dimension Table)



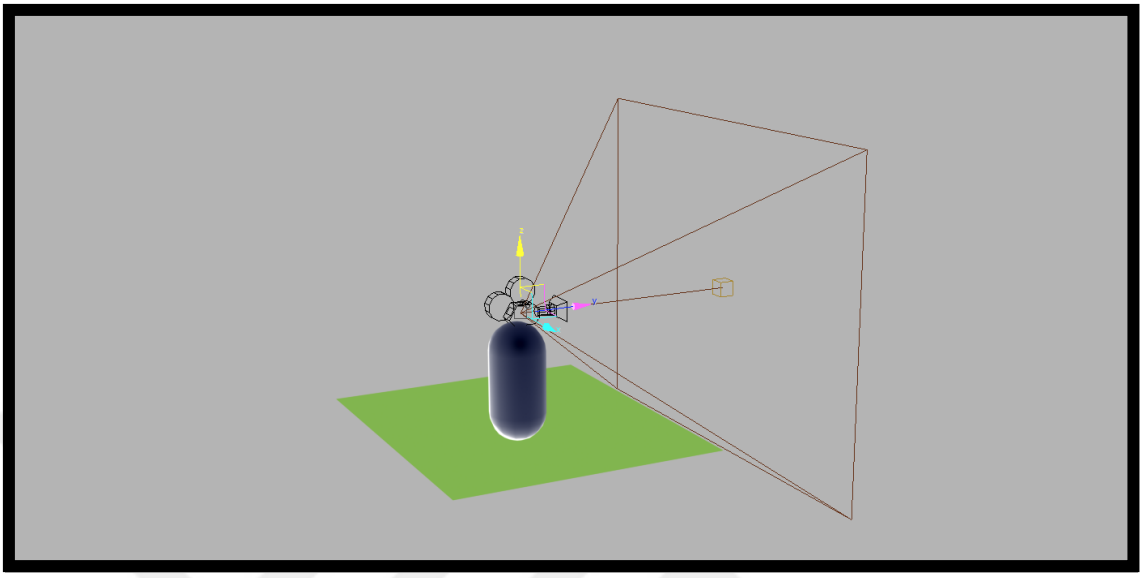
4.1.2 Camera Viewpoint

Figure 4.2 (Camera Viewpoint Table)



4.1.2.1 FPS (First Person Shooter)

Figure 4.3 (FPS)



In this section of overview which shows some of FPS games which derived from old school FPS games (etc. Wolfenstein 3D, DOOM).

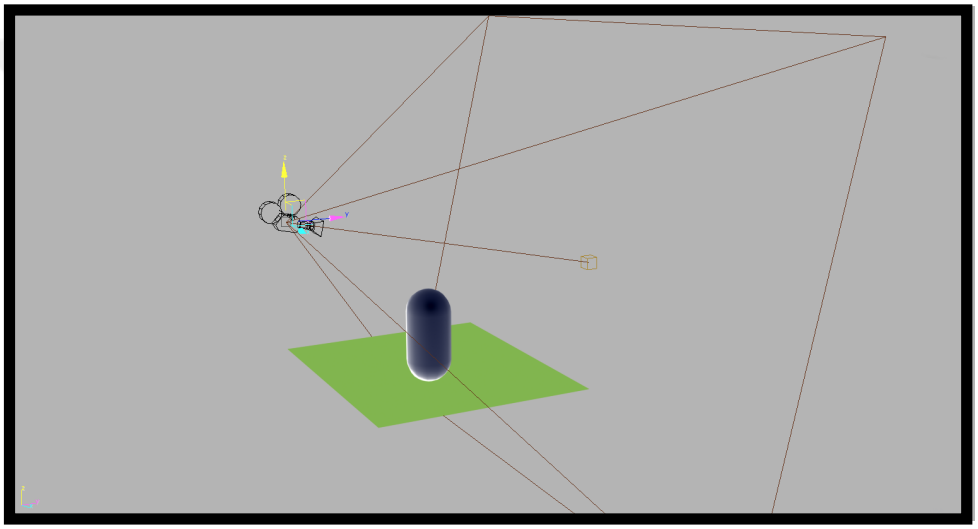
The term “first-person” is a video game genre centered around gun and other weapon-based combat which been demonstrated in combat via first person view. The player act as the main character of the game based on this genre. Many FPS games come out so far in this general genre in which a player controls a character in a game world and develops(in today’s FPS games it is mostly common that RPG elements can be seen in FPS games).In previous games such as classics like Duke Nukem 3D (GearBox Software, 3D Realms, 1996), Doom, Shadow Warrior, and of course father of all FPS genre Wolfenstein 3D(id software,1992), only development was to get better guns, discover secret rooms, collect health packs and armor. At first these games had 2D graphs with 3D depth, main character can run faster, jumps, and turns left and right (Figure 2.1). Only thing that players were doing was to explore, and destroy enemies without bothering to follow where they are exactly so in time players could begin to get bored because of the repetitivity. One of the most important improvement for not just gaming but in general was the invention of mouse (1968 Fall Joint Computer Conference) (Douglas Engelbart (January 30, 1925 – July 2, 2013)), another important improvement for this genre was to

add “looking” mechanic for these games so players can observe these games from a different perspective to have fun and increase their visualization skills.

4.1.2.2 TPS (Third Person Shooter)

Another subgenre type of shooting games which the player can see the whole-body character in screen. This subgenre is of course related to FPS typed games as well but in different ways one is to allow players to play just seeing gun point not the character but on the other hand in third person view in other words it’s called over the shoulder shot.

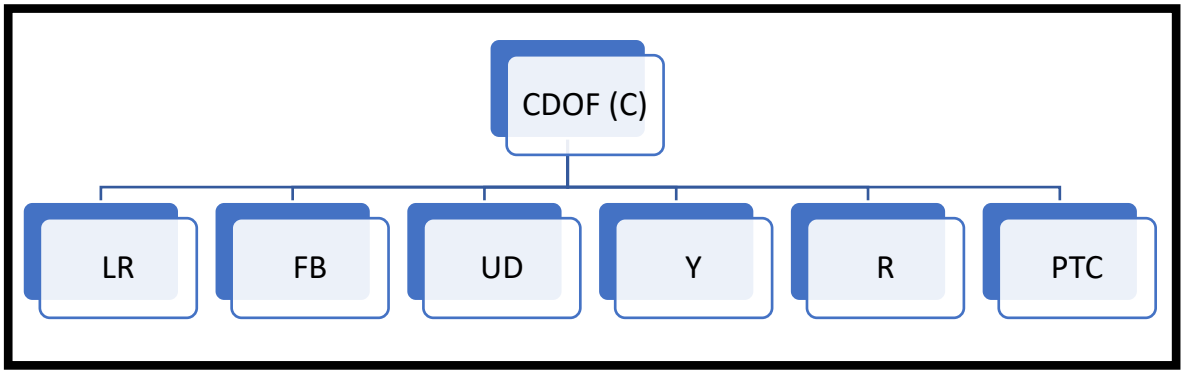
Figure 4.4 (Visual version for over the shoulder shot)



First-person shooter games focus on details better, third person shooter games are often focus on the environment and player's character from close or far distance. For example; Grand Theft Auto 5 is an exception in its previous series because of being TPS and FPS. It depends on players choice of visualization and gameplay in order to get the mission done or exploring in a different way.

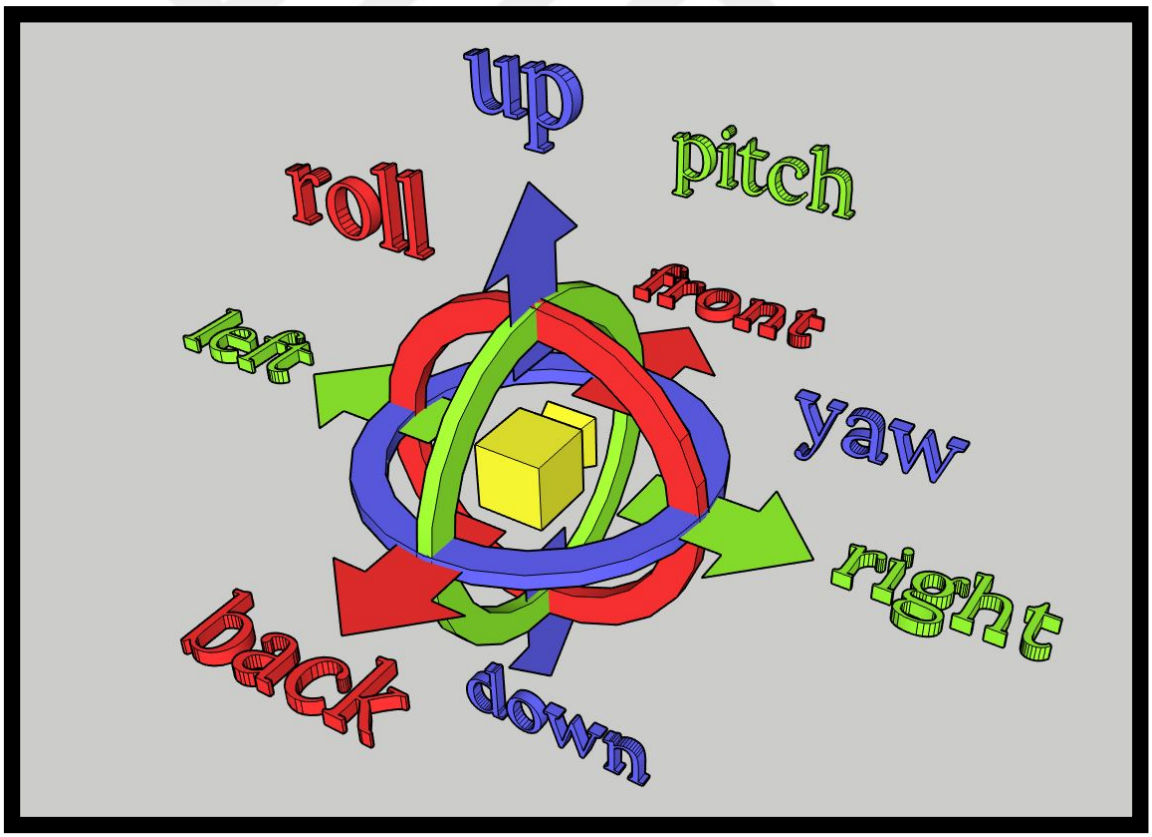
4.1.3 Degrees of Freedom (DOF)

Figure 4.5 (Camera Degree of Freedom Table)



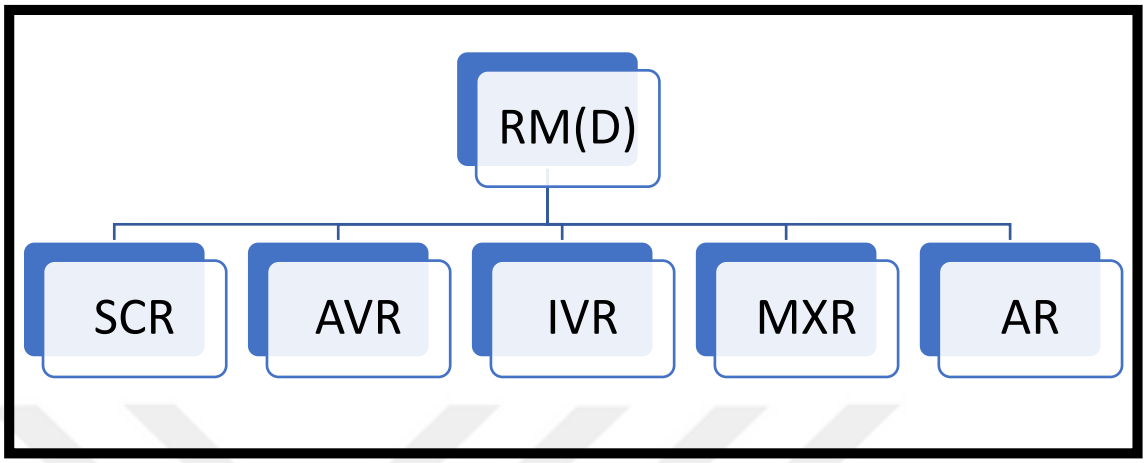
DOF refers to move a rigid body in 3D space.

Figure 4.6 (Degree of Freedom)



4.1.4 Reality Mode

Figure 4.7 (Reality Mode Table)

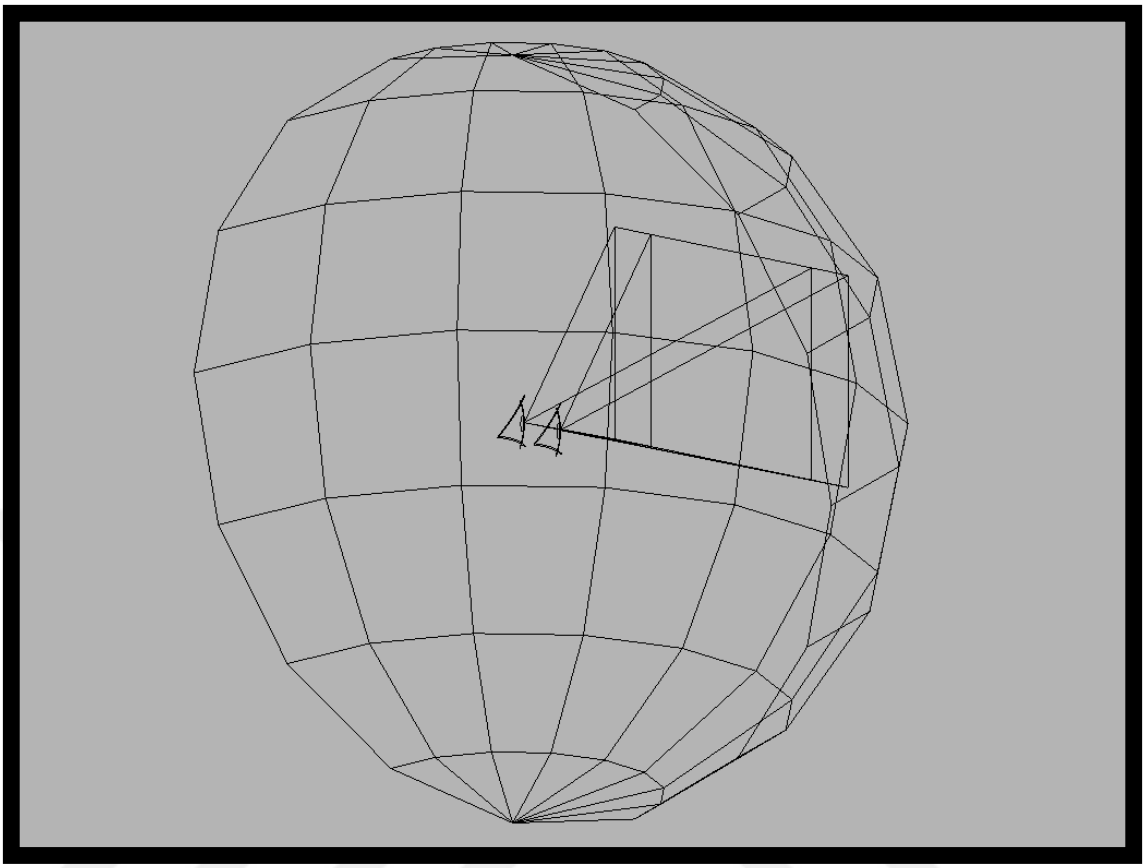


Reality mode is a series of modifications which aim to create a realistic environment in order to help players to express how to interact with the gaming universe, other players and NPCs. Based on this there is also another thing called Project reality which is being created with a series of combined arm tactical first-person shooter, which is aim to create a realistic combat environment in order to let the players understand what it means to be a team worker and understand coordination.

4.1.4.1 Ambient VR

This type of VR as can be described by its name which is focusing on the environment realism for the player, in order to convince player that the environment which they're in is real or close to real is based on the audio generated 3D sound, audio quality. Some studies also use real materials from real world in order to increase efficiency rate of realism on the player.

Figure 4.8 (Ambient VR)



4.1.4.2 AR (Augmented Reality)

Augmented reality is basically a way for the players to interact with real-world environment where the objects in real world are enhanced via computer-generated information in order to instruct the players how to execute which can also be said as a real-life instruction manual but in a fun way. Of course, learning life-saving instructions can be fruitful and maybe having fun while learning but has a vital importance upon the newest generations who is learning from this technology in these days.

Figure 4.9 (AR)

Source: https://www.inverse.com/article/16407-ar-in-the-workplace[3]

4.1.4.3 IVR (Immersive Virtual Reality)

Immersive VR is real-world object replacer in short terms of explanation. It's the presentation of a convincing real-world equivalent environment which has an ability to stop or suspend disbelief and fully engage with the created environment. To increase an effective way of immersion is based on freedom of movement, physical interaction, physical feedback, narrative engagement and of course 3D audio. [4]

[3] Source: https://www.inverse.com/article/16407-ar-in-the-workplace

[4] Source: https://whatis.techtarget.com/definition/immersive-virtual-reality-immersive-VR

Figure 4.10 (IVR)

Source: https://www.youtube.com/watch?v=XFU0rVvzhjc[5]

[5] https://www.youtube.com/watch?v=XFU0rVvzhjc

4.1.4.4 MR (Mixed Reality)

It's a combination of real-time environment and computer-generated environment in order to interact and create new types of applications, games etc. which can co-exist. Usually this technology being used for training in surgical operations, earthquake simulations, driving simulations.

Figure 4.11 (MR)

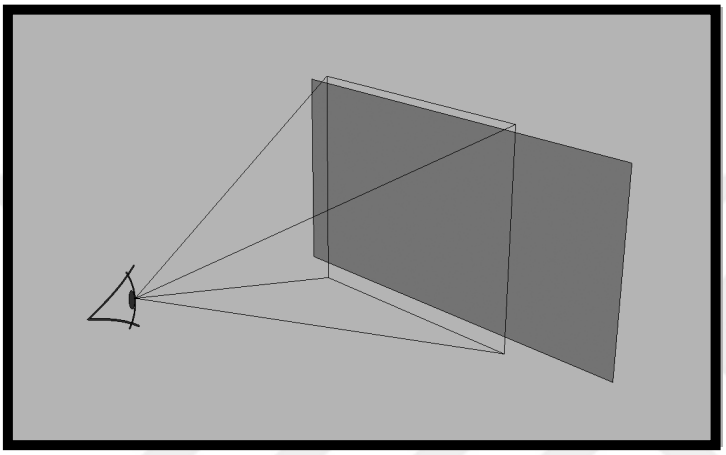
[6]Source: Source: https://www.lifewire.com/thmb/mxo4NAssZj1cB_v1T-ni8WYuEMs=/768x0/filters:no_upscale():max_bytes(150000):strip_icc()/what-is-mixed-reality-4588764-01-5c8165ce46e0fb0001336467.jpg

[6] Source: https://www.lifewire.com/thmb/mxo4NAssZj1cB_v1T-ni8WYuEMs=/768x0/filters:no_upscale():max_bytes(150000):strip_icc()/what-is-mixed-reality-4588764-01-5c8165ce46e0fb0001336467.jpg

4.1.4.5 Screen

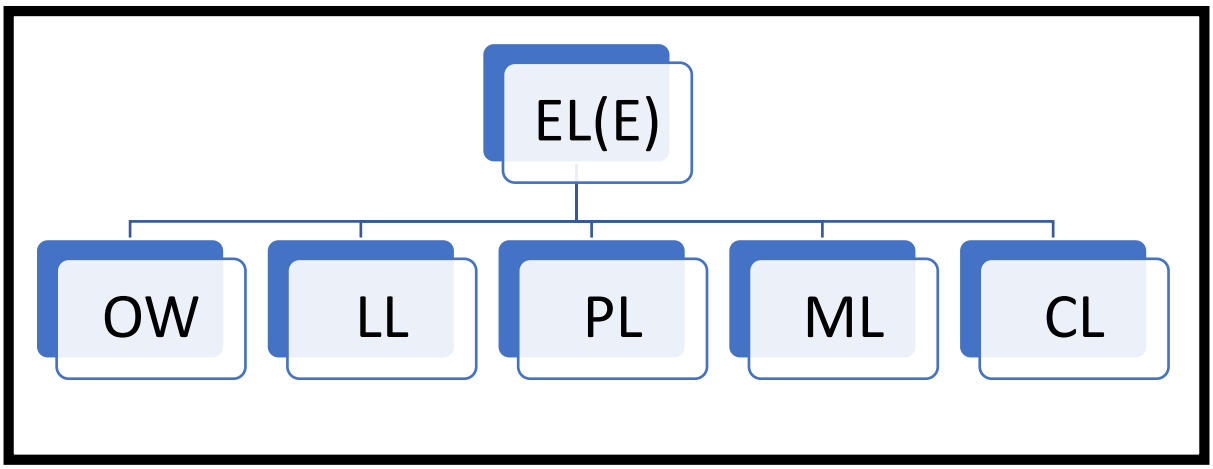
A flat area where player can see objects, game world etc. limited through their eyes. Seeing the necessary elements via a screen can be beneficial but also can be limited due to observation.

Figure 4.12 (Screen)



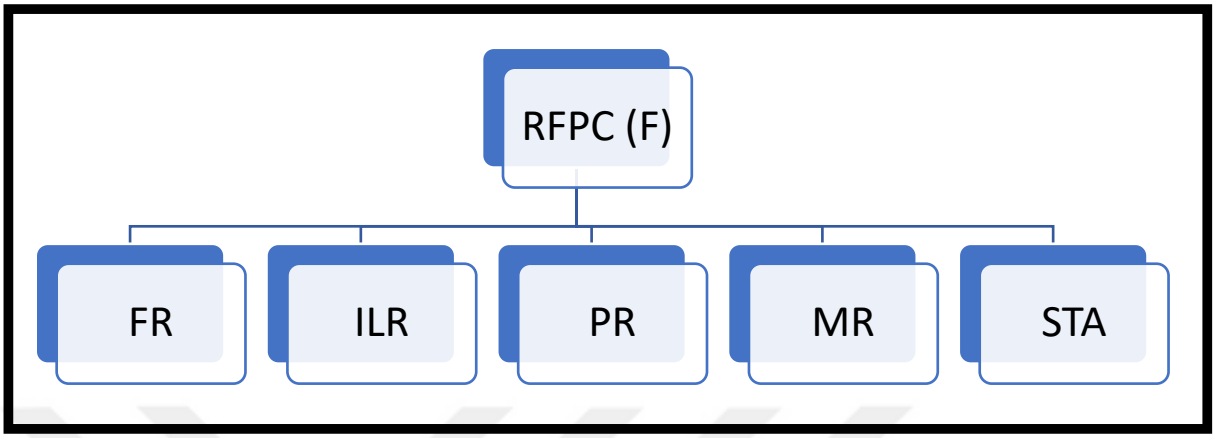
4.1.5 Environment Limits

Figure 4.13 (Environment Limits Table)



4.1.6 Roaming Freedom

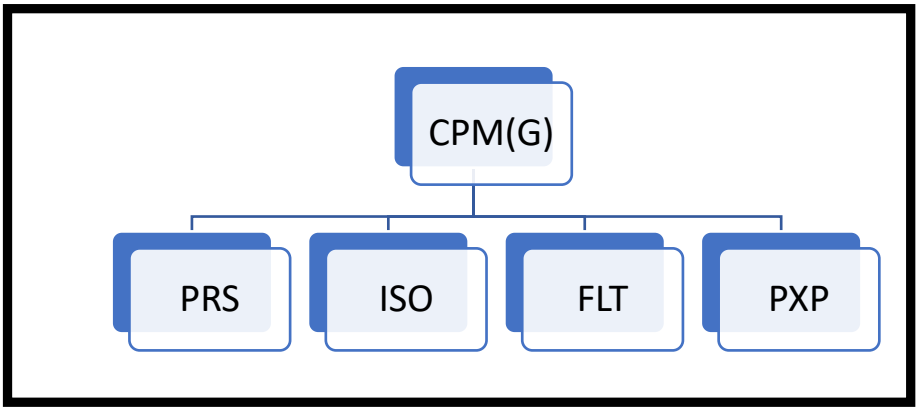
Figure 4.14 (Roaming Freedom of Player Character Table)



4.1.7 Projection Mode

Projection mode is based on an object being pushed away from a central structure and create various modes within time. These projection modes can be divided into four; Flat parallax, flat static, isometric, perspective.

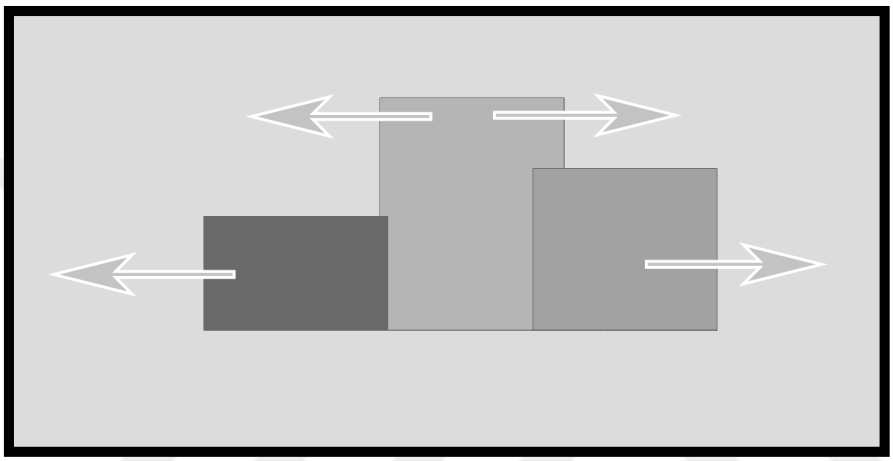
Figure 4.15 (Camera Projection Mode Table)



4.1.7.1 Flat Parallax

Flat Parallax is a 2D area which can be act as a 3D for the change in viewpoint for the player. Parallax is a displacement or a difference in the apparent position of an object viewed along two different lines of sight.

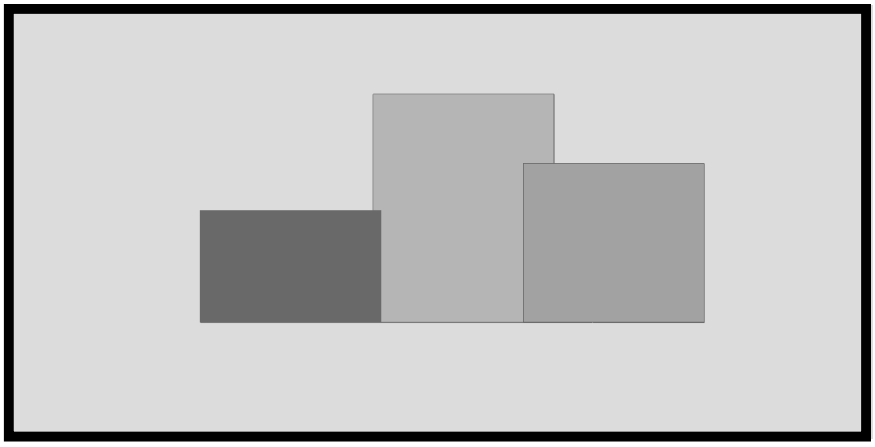
Figure 4.16 (Flat Parallax)



4.1.7.2 Flat Static

2D world point of view with the lack of movement and because of that there is no change of view upon the camera angles.

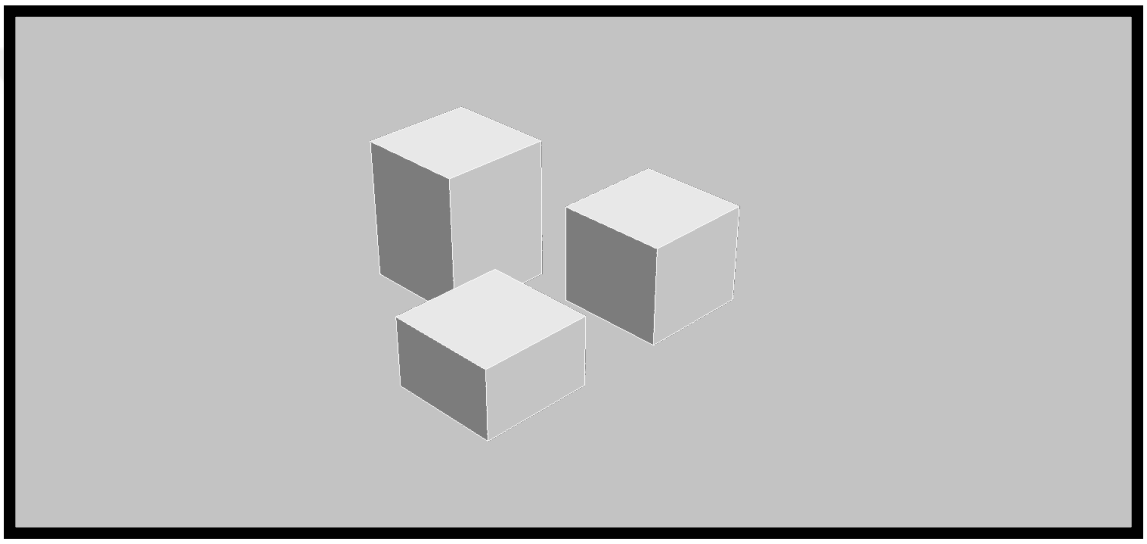
Figure 4.17 (Flat Static)



4.1.7.3 Isometric

Graphics combined video games with pixel art which angle the viewpoint to reveal directions of the environment that may not be visible from a top-down perspective or side view, but managing to produce a 3D effect. Of course, not all the games created via a perfect orientation x, y, z with a degree of 120 to each other. some form of parallel projection such as dimetric projection is common.

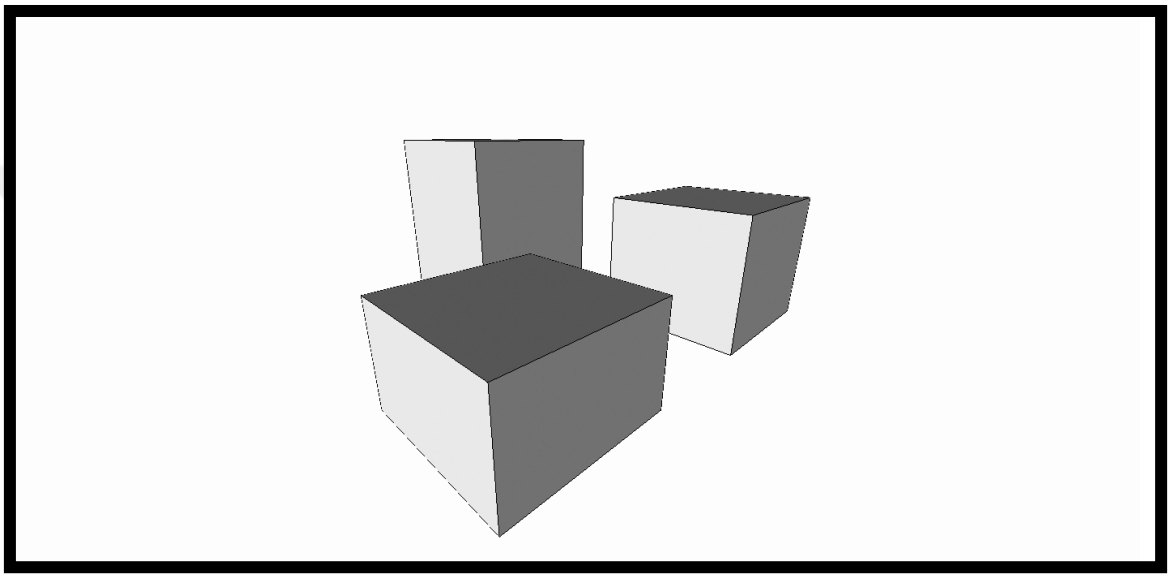
Figure 4.18 (Isometric)



4.1.7.4 Perspective

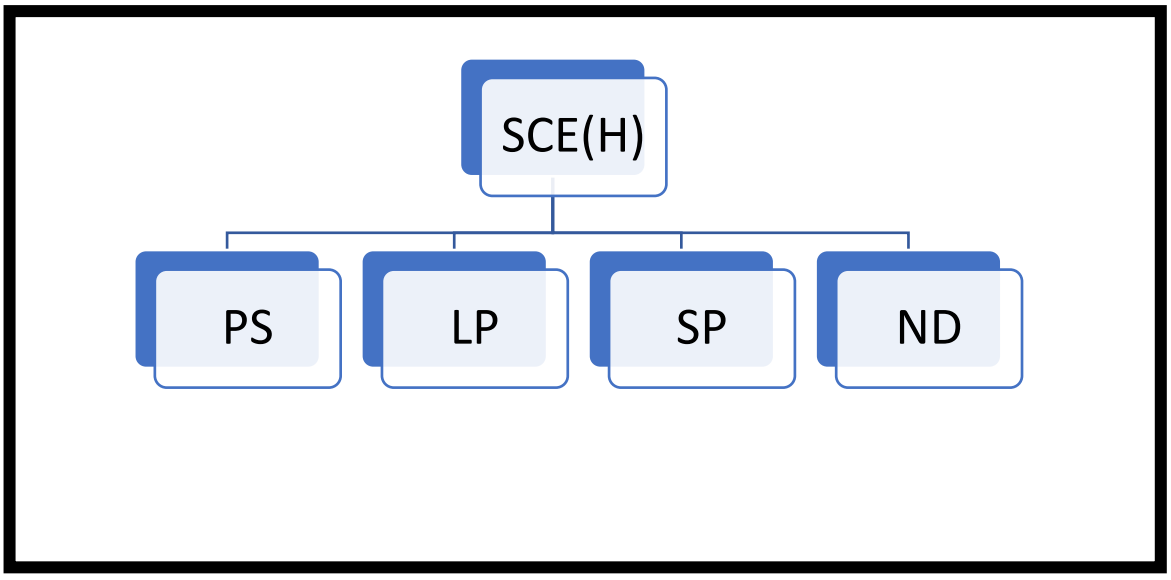
Perspective is to create a sold 3D object on a flat area the get the perfect impression about their height, width, and the position of these objects, environment etc.

Figure 4.19 (Perspective)



4.1.8 Scale Comparison

Figure 4.20 (Scale Comparison of Environment Table)



4.2 CASE STUDIES

4.2.1 The Taxonomy Table of Games Selected for Case Study

	GAMES	DIM	CVP	DOF	RM	EL	RFPC	CPM	SCE
I	Doom	[2,5D]	[FP]	[3DOF]	[SCR]	[LL]	[ILR]	[PRS]	[PS]
II	Max Payne 1	[3D]	[TP]	[5DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
III	Max Payne 2	[3D]	[TP]	[5DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
IV	Max Payne 3	[3D]	[TP]	[5DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
V	Grant Theft Auto V	[3D]	[TP]	[6DOF]	[SCR]	[OW]	[FR]	[PRS]	[LP]
VI	Half Life	[3D]	[FP]	[5DOF]	[SCR]	[LL]	[ILR]	[PRS]	[PS]
VII	Jak & Daxter	[3D]	[TP]	[4DOF]	[SCR]	[OW]	[FR]	[PRS]	[LP]
VIII	Jak 3	[3D]	[TP]	[4DOF]	[SCR]	[OW]	[FR]	[PRS]	[LP]
IX	Kingdom Hearts	[3D]	[TP]	[5DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
X	Sim City 1	[2D]	[TP]	[0DOF]	[SCR]	[CL]	[STA]	[FLT]	[LP]
XI	Tetris	[2D]	[TP]	[1DOF]	[SCR]	[CL]	[STA]	[FLT]	[ND]
XII	Zaxxon	[2,5D]	[TP]	[2DOF]	[SCR]	[ML]	[MSR]	[ISO]	[LP]
XIII	Re-volt	[3D]	[TP]	[4DOF]	[SCR]	[PL]	[PAR]	[PRS]	[LP]
XIV	Donkey Kong PC, Game & Watch	[3D]	[TP]	[2DOF]	[SCR]	[ML]	[PAR]	[PXP]	[LP]
XV	Mario PC, Gameboy Advanced	[2D]	[TP]	[2DOF]	[SCR]	[PL]	[PAR]	[PXP]	[LP]
XVI	Subway Surfers	[3D]	[TP]	[2DOF]	[SCR]	[CL]	[STA]	[PRS]	[ND]
XVII	PES	[3D]	[TP]	[1DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
XVIII	NFS (Need for Speed)	[3D]	[TP]	[4DOF]	[SCR]	[LL]	[PAR]	[PRS]	[LP]
XIX	Barbie Dressup	[2D]	[TP]	[2DOF]	[SCR]	[CL]	[STA]	[PXP]	[PS]
XX	Bejewelled	[2D]	[TP]	[2DOF]	[SCR]	[CL]	[STA]	[FLT]	[ND]
XXI	World Series Poker	[2D]	[TP]	[0DOF]	[SCR]	[CL]	[STA]	[FLT]	[ND]
XXII	Farmville	[2,5D]	[TP]	[0DOF]	[SCR]	[CL]	[STA]	[ISO]	[LP]

XXIII	Harry Potter 1	[3D]	[TP]	[4DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
XXIV	Harry Potter 2	[3D]	[TP]	[4DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
XXV	Harry Potter 3	[3D]	[TP]	[4DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
XXVI	Harry Potter 4	[3D]	[TP]	[4DOF]	[SCR]	[LL]	[ILR]	[PRS], [ISO]	[LP]
XXVII	Harry Potter 5	[3D]	[TP]	[4DOF]	[SCR]	[OW]	[FR], [MR]	[PRS]	[LP]
XXVIII	Harry Potter 6	[3D]	[TP]	[4DOF]	[SCR]	[OW]	[FR], [MR]	[PRS]	[LP]
XXIX	Harry Potter 7-1	[3D]	[TP]	[4DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
XXX	Harry Potter 7-2	[3D]	[TP]	[4DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
XXXI	Witcher 3	[3D]	[TP]	[6DOF]	[SCR]	[OW]	[FR]	[PRS]	[LP]
XXXII	Pusu Uyanış	[3D]	[TP]	[5DOF]	[SCR]	[LL]	[ILR]	[PRS]	[LP]
XXXIII	Crash Bandicoot 1	[3D]	[TP]	[5DOF]	[SCR]	[PL]	[ILR]	[PRS]	[LP]
XXXIV	Crash Bandicoot 2	[3D]	[TP]	[5DOF]	[SCR]	[PL]	[ILR]	[PRS]	[LP]
XXXIII	Crash Bandicoot 3	[3D]	[TP]	[5DOF]	[SCR]	[PL]	[ILR]	[PRS]	[LP]
XXXV	Crash Team Racing	[3D]	[TP]	[4DOF]	[SCR]	[LL], [PL], [ML]	[ILR]	[PRS]	[LP]
XXXVI	Yakuza 1	[3D]	[TP]	[5DOF]	[SCR]	[OW]	[FR], [ILR]	[PRS]	[LP]
XXXVII	Judgement	[3D]	[TP]	[5DOF]	[SCR]	[OW]	[FR], [ILR]	[PRS]	[LP]
XXXVIII	Elder Scrolls Skyrim	[3D]	[TP], [FP]	[5DOF]	[SCR]	[OW]	[FR]	[PRS]	[LP]
XXXIX	Skyrim VR	[3D]	[FP]	[5DOF]	[IVR]	[OW]	[FR]	[PRS]	[LP]

Figure 4.21 (Gameplay footage, Wolfenstein 3D, Id Software, May, 1992)

[7] Source: By KimoXvirus https://www.youtube.com/watch?v=MdAu3h4Emps

Mostly in its time classical popular FPS games were played on Commodore 64. Usually players focus on how to beat every level can they beat the level without eliminating enemies or have to fight for moving forward and gain better score to get the first place in the leaderboard. Another objective player has is to discover the secrets in each level to find armor, better weapons, temporary power ups.

Wolfenstein 3D (Commodore 64, PC):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5D	FP	LR, FB, P(3DOF)	SCR	LL	ILR	PRS	PS
A	B	C	D	E	F	G	H

[7] KimoXvirus https://www.youtube.com/watch?v=MdAu3h4Emps

Figure 4.22 DOOM (1993)

[8]Source: https://doom.fandom.com/wiki/Spiderdemon

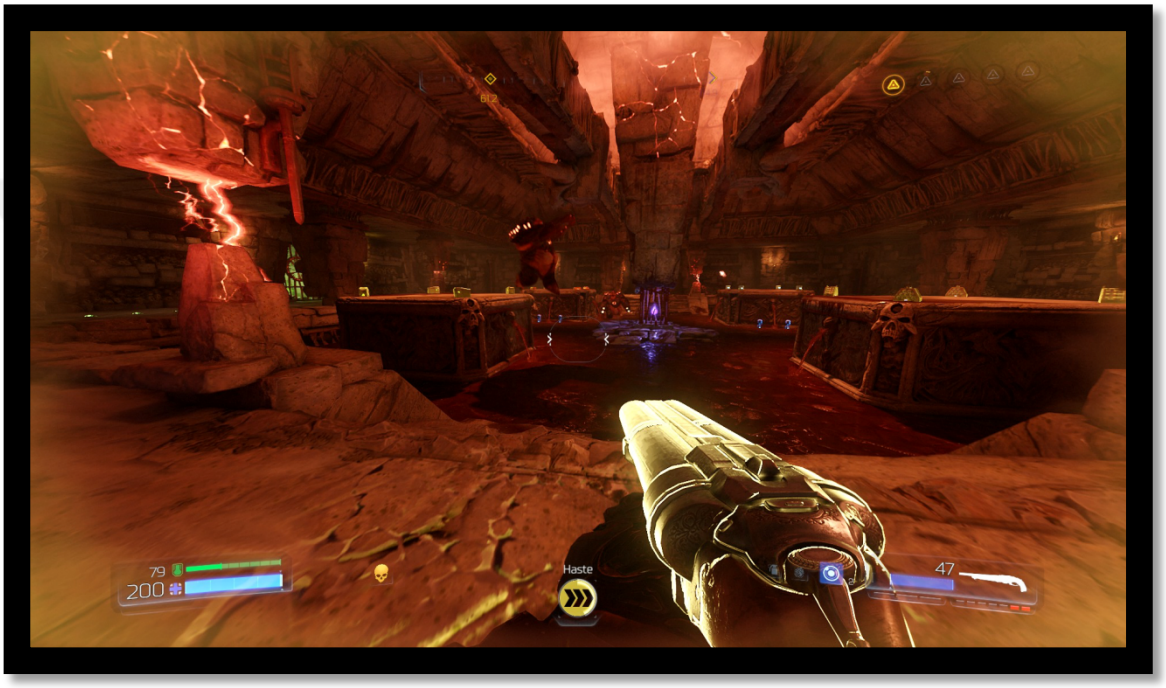
Another popular example can be given for this genre is DOOM (id software,1993) was a phenomenon with same types of objectives collect power ups, discover secret rooms etc. It is possible to practice some visualization skills in order to maintain some gained experiences. Although improvements can also be seen clearly in compare to Wolfenstein 3D players can have some newer ways to express their visual skills and movement reactions.

[8]https://doom.fandom.com/wiki/Spiderdemon

Doom (Commodore 64, PC, PS1):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5D	FP	LR, FB, P(3DOF)	SCR	LL	ILR	PRS	PS
A	B	C	D	E	F	G	H

Figure 4.23 Doom (2016)



[9] *Source:*https://www.shacknews.com/article/94706/doom-review-like-hell-you-will

This version of doom has couple of new mechanics besides graphical improvements, such as weapon mods, armor upgrade chips, health upgrade chips, collectible figures, and the most common one was called “momentum”. In comparison to the classical phenomena this version of doom offers a familiar but a different type of perspective. Such as weapon modification, character’s enemy execution etc.

[9] https://www.shacknews.com/article/94706/doom-review-like-hell-you-will

When it comes to enemies to glow, and the main character “Doom Slayer” can perform these executions that break open these enemies without taking any damage and gives players health and ammo.

Doom (2016) (PC, PS4, XBOXONE):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	FP	LR, UD, FB, Y, P, R(6DOF)	SCR	LL	ILR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.24 Borderlands 2 VR (14 Dec. 2018, GearBox Software)

[10] Source:https://www.roadtovr.com/borderlands-2-vr-review-psvr-an-ok-version-of-a-good-game/

Originally Borderlands 2 came out 2012 a successful sequel to first of this franchise “Borderlands”. Borderlands 2 VR is as seen in title is a VR based version of the original game to give players a different perspective upon the series which they have so many possible experiences including visualization skills. Game itself has a bloody cartoony

[10] https://www.roadtovr.com/borderlands-2-vr-review-psvr-an-ok-version-of-a-good-game/

way of a sense of humor. In terms of movement about Borderlands 2 VR is basically players decision to how to control the movement itself either moving with the left stick on the VR controller or rather using one of the VR's main common way to travel in game called "teleportation". Players can get a closer better view about how to visualize while playing and having fun in the game in comparison to its original version. In original every player can choose to visualize the environment, mechanics, and of course, its advertisement was almost about "gazillions of guns" but this time gazillions of guns in VR.

Borderlands 2 VR (PSVR, HTCVIVE):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	FP	(LR, FB, UD, Y, R, P) (6DOF)	IVR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.25 Elder Scrolls V Skyrim VR (17 Nov. 2017, Bethesda Softworks)

[11] Source: https://arstechnica.com/gaming/2017/11/the-world-of-skyrim-is-thrilling-and-flawed-in-vr/

In the world of elder scrolls, player's main character was an ordinary person without a memory about their past. In time this character began to realize his/her true potential and destiny in order to save Skyrim and end the conflict between imperial forces and stormcloaks. The story of the game doesn't work on a karma-based system, it basically lets player to roam around without depending on a story-based progression, via exploring the skyrim's GU there are some basic yet can be confusing challenges needed to be taken care of carefully. Each part of this world is built on some known Nordic myths, and of course bandits, soldiers, assassins, vampires, werewolves, werebears (DLC).

In comparison to the older versions of the elder scrolls series, in Skyrim after the last DLC the main character can also create his/her own house whenever they managed to

[11] https://arstechnica.com/gaming/2017/11/the-world-of-skyrim-is-thrilling-and-flawed-in-vr/

buy a field from the village's Jarl's (Mayor of the village) right hand man in other words his/her advisor. As the previous versions of this series till the second installment. For the gameplay itself there is no such thing called new game plus, as mentioned the game also doesn't have rely on the karma-based decision making, so whenever player decides to join either side it turns that side's benefits in short, every part of the Skyrim's changes as well. Players can either go on and choose which side they want to support early on to change the main story line's quest which represents almost the end of the game or players can wait to choose and create a meeting for an arrangement between the opposing sides for a temporary truce in order to get a better ending for the game(But it still needed choosing even if the player beats the game so it doesn't change the course of the ending for the game but shows a different scenario that what happens if players either choose one of the sides or prefer not to).In terms of gameplay itself has a different way of freedom at the movement. In compare to the original version, VR version has teleportation (which again commonly used via closer to these types of games. It doesn't have to be an RPG game but it can be a shooting game as well)

The original game was released 11st of November 2011 has an outstanding performance according to the audience. Players can either choose exploring the whole Skyrim without having any bond with the main objectives. In VR players can look this gaming universe (GU) in a different perspective in compare to sit in front of the monitor.

(**Keyword:** Game Universe (GU))

Skyrim VR (PSVR, HTCVIVE):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	FP	5DOF	IVR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.26 One of the VR headset used for VR games (PlayStation VR, Oct. 2016)

[12] Source: https://www.youtube.com/watch?v=DhJFmXQqjRQ

[12] https://www.youtube.com/watch?v=DhJFmXQqjRQ

Figure 4.27 Fallout 4 VR (12 Dec,2017)

[13] Source: https://store.steampowered.com/app/611660/Fallout_4_VR/

Original release was released November 10th 2015, as it best described to be an improved version of Fallout 3 and Skyrim. As mentioned in an article on pcgamer there are some noticeable improvements but not that perfect. NPC animations are also noticeable too in compare to Skyrim but mostly Elder Scrolls 4 : Oblivion (20 Mar.,2006).Reaction time is also improved , Older versions of Fallout series also have V.A.T.S. mechanic but when player decides to use it in first versions it only effects as a T-RPG(Turn-Based Role Play)mechanic which uses action point in turns, in fallout 3 (28 Oct,2008 ,Bethesda Softworks) and new Vegas (19 Oct. ,2010 , Bethesda SoftWorks) it works as an RPG mechanic that consumes action points but not like its former turn based versions. And also using V.A.T.S. system in fallout 3 and new Vegas world pauses so player can decide which is the best probability to defeat the enemy using V.A.T.S. (its origin is actually a medical thoracic surgery performed using a small video camera, based on anatomy of human body[14] system mechanic in fallout 4 in compare to **fallout 3** and **new Vegas** can be act as an improvement in some point but not always, players need to improve their

[13] https://store.steampowered.com/app/611660/Fallout_4_VR/

[14]https://en.wikipedia.org/wiki/Video-assisted_thoracoscopic_surgery

reaction time and visualization to be effective against the mutated enemies, raiders and other factions in The Commonwealth. Another noticeable difference is workbench mechanics which lets players to use their imaginations build their own bases to live, help residents to stay, and secure against threats. VR takes this into another level. In VR players see the post-apocalyptic world with a faster reaction time.

Fallout 4 VR (PSVR, HTCVIVE):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	FP	5DOF	IVR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.28 (Half Life, Sierra Ent., Oct., 1997)

[15] Source: https://store.steampowered.com/app/70/HalfLife/

Half-life is a mission-based progression game, player's main character is a scientist and a researcher Dr. Gordon Freeman. In this game's mechanics players can either follow

[15] https://store.steampowered.com/app/70/HalfLife/

linear mission-based playthrough or sometimes there are some critical items and weapons can be found upon progressing through the game. Some objects such as boxes are breakable which also can contain healing items and ammunition. Basically, in order to win the game effectively, players must search almost every corner of the current game level whichever they are in. Either to understand how to get to the next area faster way or just to explore the current level to understand the level design, AI enemies which are responding due to the character's actions. The character's movement is changeable due to the player's reaction of time.

Half Life (PC, PS2):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	FP	(LR, FB, UD, R, P) (5DOF)	SCR	LL	ILR	PRS	PS
A	B	C	D	E	F	G	H

Figure 4.29 (The 3-D Battles of WorldRunner, Square, JP:12 Mar.,1987, NA, Sept.,1987)

[16]Source: https://i.ytimg.com/vi/hnuCGCktgq4/maxresdefault.jpg

Players taking control of the main character called Jack the WorldRunner. The game itself run upon a 3D world and mainly based on an early forward-scrolling. Main objective here is to run each episode till reaching the last episode (episode 8) and while running collect bonuses and shooting down beasts in order to get higher scores.

WorldRunner (FAMICOM):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5	TP	0DOF	SCR	PL	PAR	PXP	PS
A	B	C	D	E	F	G	H

Figure 4.30 (Max Payne, Remedy Entertainment, Gathering of Developers, 23rd July, 2001)

[16] https://i.ytimg.com/vi/hnuCGCktgq4/maxresdefault.jpg

[17] Source: https://i.ytimg.com/vi/1zg7ufhiC5Q/maxresdefault.jpg

In 90's 3D scale video games still have ways to go, not many games had bullet time mechanics. First "bullet time" definition was found not within video games but two recognizable movies called "Full Contact"(1992) and "Hard Boiled"(1992) Directed by John Woo, actor of these action movies was Chow Yun Fat who had made slow-motion gunplay his own through these which turned up legendary films which gave influences for Matrix series(Matrix(1999), Matrix : Reloaded (2001),Matrix :Revolutions(2003),Enter The Matrix(14th May,2003, Shiny Entertainment), Animatrix (3rd Jun,2003), Matrix Online (22nd Mar,2005, Daybreak Game Company, Monolith Productions), Matrix : Path Of Neo (7th Nov., 2005, Shiny Entertainment ,Atari)) ,V for Vendetta(31st Mar.,2006), and of course Max Payne series (Max Payne, Max Payne 2, Max Payne 3).[18]

The main story of Max Payne is about the detective Payne who comes home after a hard-working day to spend the night with his family, until he finds out the terrible truth about his family's murder. After this traumatic experience detective Payne seeks out justice in order to take down his family's murderers. Main objective of the game is to progress through the levels with enough ammo and painkillers. Max Payne was considered an early stage of evolution for action-based shooting games. Especially its signature mechanic which is mentioned before called "bullet time".

Max Payne (PC, PS2, XBOX):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, FB, R) (3DOF)	SCR	LL	ILR	PRS	PS
A	B	C	D	E	F	G	H

[17] *Source*: https://i.ytimg.com/vi/1zg7ufhiC5Q/maxresdefault.jpg

[18] https://www.gamesradar.com/a-videogame-history-of-bullet-time/

Figure 4.31 (Max Payne 2 The Fall of Max Payne, Remedy Entertainment, Rockstar Games,14th Oct.,2003)

[19] Source: https://3drealms.com/catalog/max-payne-2_52/

In the second one of the Max Payne series, main character reinstated in his job as a police detective yet again. In this game's mechanic hasn't changed only the graphics get more details in order to help players to experience a better action.

Max Payne 2 (PC, PS2, XBOX):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, FB, R) (3DOF)	SCR	LL	ILR	PRS	LP
A	B	C	D	E	F	G	H

[19] https://3drealms.com/catalog/max-payne-2_52/

Figure 4.32 (Max Payne 3, Rockstar Studios, May 15th,2012)

[20] Source: https://i.ytimg.com/vi/ApTQKXSPrJ0/maxresdefault.jpg

Third and the final of the Max Payne series introduces players with a new in-game mechanic called 'cowering' which lets people to use the advantage of environment upon the enemy AI and progress through the game itself effectively. It's basically the same type of gaming mechanic yet again based on "bullet time" but in terms of creativity, Max Payne III can take it into another level such as multiplayer options to let players express their combat experience in game against not AI but real people, another noticeable mechanic of the game is arcade mode where the players can get scores via eliminating AI enemies.

[20] https://i.ytimg.com/vi/ApTQKXSPrJ0/maxresdefault.jpg

Max Payne 3(PS3, PC, XBOX360):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, FB, R, P) (4DOF)	SCR	LL	ILR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.33 (Crackdown 1, Real Time Worlds,20 Feb, 2007)

[21] Source: https://i.ytimg.com/vi/3FWnWT-f0I4/maxresdefault.jpg

Crackdown is an open world game which sets in the fictional Pacific City, players control an enhanced agent, main objective is to takedown 3 main gangs in order to complete the main objective other than that is to contribute side missions, free-roam the city. Game itself is basically action packed, shooting game which doesn't need to follow the story in order to pass game time. Players can observe every part of the map, discover what can

[21] https://i.ytimg.com/vi/3FWnWT-f0I4/maxresdefault.jpg

they uncover like Easter eggs, adept their playing methods about how to increase their visual skills, and above all to know the game itself in a better way while playing.

Crackdown 1(XBOX360):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, UD, FB, R, P) (5DOF)	SCR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.34 (Crackdown 2, 6th July, 2010, Ruffian Games)

[22] Source: https://www.youtube.com/watch?v=evGNj6JKoUg

[22] https://www.youtube.com/watch?v=evGNj6JKoUg

Crackdown 2 (XBOX360):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, FB, R, P) (4DOF)	SCR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.35 (Crackdown 3,15th Feb,2019, Sumo Digital, Reagent Games, Cloudgine, Certain Affinity, Ruffian Games)

[23]Source: https://www.windowscentral.com/sites/wpcentral.com/files/styles/xlarge_wm_blw/public/field/image/2018/11/crackdown-3-wrecking-zone_2_.jpg?itok=7-di4tNd

[23]https://www.windowscentral.com/sites/wpcentral.com/files/styles/xlarge_wm_blw/public/field/image/2018/11/crackdown-3-wrecking-zone _2_.jpg?itok=7-di4tNd

Crackdown 3 (XBOXONE):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, FB, R, P) (4DOF)	SCR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.36 (Dungeon of The Endless,27 Oct, 2014, Amplitude Studios, Sega)

[24] Source: https://store.steampowered.com/app/249050/Dungeon_of_the_Endless/

From text-based and MUD (multi-layered Dungeon) to better detailed visuals of the fantasy world. From simplified pixels to polygons, helps players to visualize deeper in the gaming universe of RPG. In this turn-based game, each turn marked when a new door opens on the current level. At the start of the game, players gain fixed amounts of

[24] https://store.steampowered.com/app/249050/Dungeon_of_the_Endless/

resources: Industry, Science and Food. Industry is mainly used for building constructions and turrets, science is based on finding new components to build more efficient structures and turrets, and of course food mostly used for regaining player's character's health.

Dungeon of The Endless (Microsoft, IOS):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2D	TP	(LR, FB) (2DOF)	SCR	LL	ILR	PRS	ND
A	B	C	D	E	F	G	H

Figure 4.37 (Dragon Age: Inquisition, Bioware, 18 Nov., 2014)

Source: https://www.gameskinny.com/b2ezo/video-game-history-40-years-of-the-rpg-genre[25]

In gaming universe of the dragon age series are not always depending on the hack and slash mechanics or just exploring, it depends on choices the players make to set course for their character's destiny upon this series. Another mechanic for this game is battle

[25] https://www.gameskinny.com/b2ezo/video-game-history-40-years-of-the-rpg-genre

management, players not only can play as their own customized characters but also players can control teammates too, with the battle management RPG can turn into strategy-based combat. The camera angle of this game can be seen as a parallel projection or from a perspective of a player for a better gameplay experience, better understanding the gaming universe around the player's created character. Which provides more than enough time to come up with an effective strategy while observing the environment peacefully.

Dragon Age: Inquisition (PC, PS4, XBOXONE):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, FB, R) (3DOF)	SCR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.38 (Neverwinter Nights, BioWare, Infogrames, 18th June,2002)

[26]Source: https://www.gameskinny.com/b2ezo/video-game-history-40-years-of-the-rpg-genre

Neverwinter nights is a TPS RPG video game which is set in a fantasy world called "Forgotten realms". Mainly the objective of this game is to complete the given quests and farm dungeons to gain experience and get better equipment in order to progress effectively and ready to take higher challenges. Players mostly focus on exploring in these types of dungeon farming hack & slash RPG games are mostly focus on people who likes to spend time and improve their skills to find new ways to play the game itself in more creative ways.

[26] https://www.gameskinny.com/b2ezo/video-game-history-40-years-of-the-rpg-genre

Neverwinter Nights (PC):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	(LR, FB, R, P) (4DOF)	SCR	OW	FR	PRS	PS
A	B	C	D	E	F	G	H

Figure 4.39 (Mobile Royale,30th April, 2019, IGG)

[27] Source: https://www.bluestacks.com/blog/game-guides/battlefield-throne-clan-hegemony-mobile-royale/mobile-royale-battle-guide-en.html

Mobile Royale is a strategy-based game which has a progressive story while passing every level.

[27] https://www.bluestacks.com/blog/game-guides/battlefield-throne-clan-hegemony-mobile-royale/mobile-royale-battle-guide-en.html

Mobile Royale (Mobile):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	0DOF	SCR	CL	STA	ISO	ND
A	B	C	D	E	F	G	H

Figure 4.40 (Divinity: Original Sin 2,14th Sept., 2017, Bandai Namco)

[28]Source: https://www.trustedreviews.com/best/best-multiplayer-games-3613457

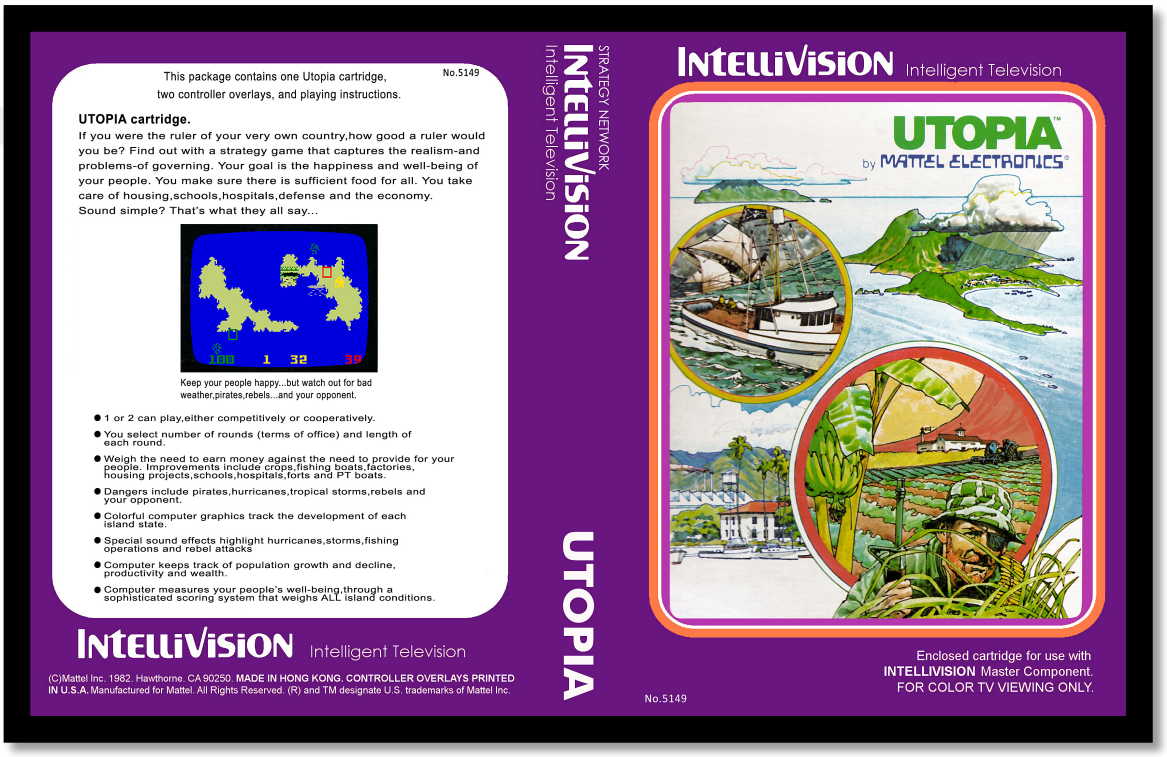
In Divinity Original Sin series, players usually get into a dialog-based and kind of complicated but flexible RPG, at first impression on players it can be understandable that every choice has its effects upon the story-based progresses due to these types of games. Players act as an observer from a different point of view where they use point and click method in order to observe and gain a better understanding upon how to defeat the enemy and understand deeper details of the gaming universe.

[28] https://www.trustedreviews.com/best/best-multiplayer-games-3613457

Divinity Original Sin:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, FB, R (3DOF)	SCR	LL	ILR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.41 (Utopia, Intellivision, 1981, Don Daglow)



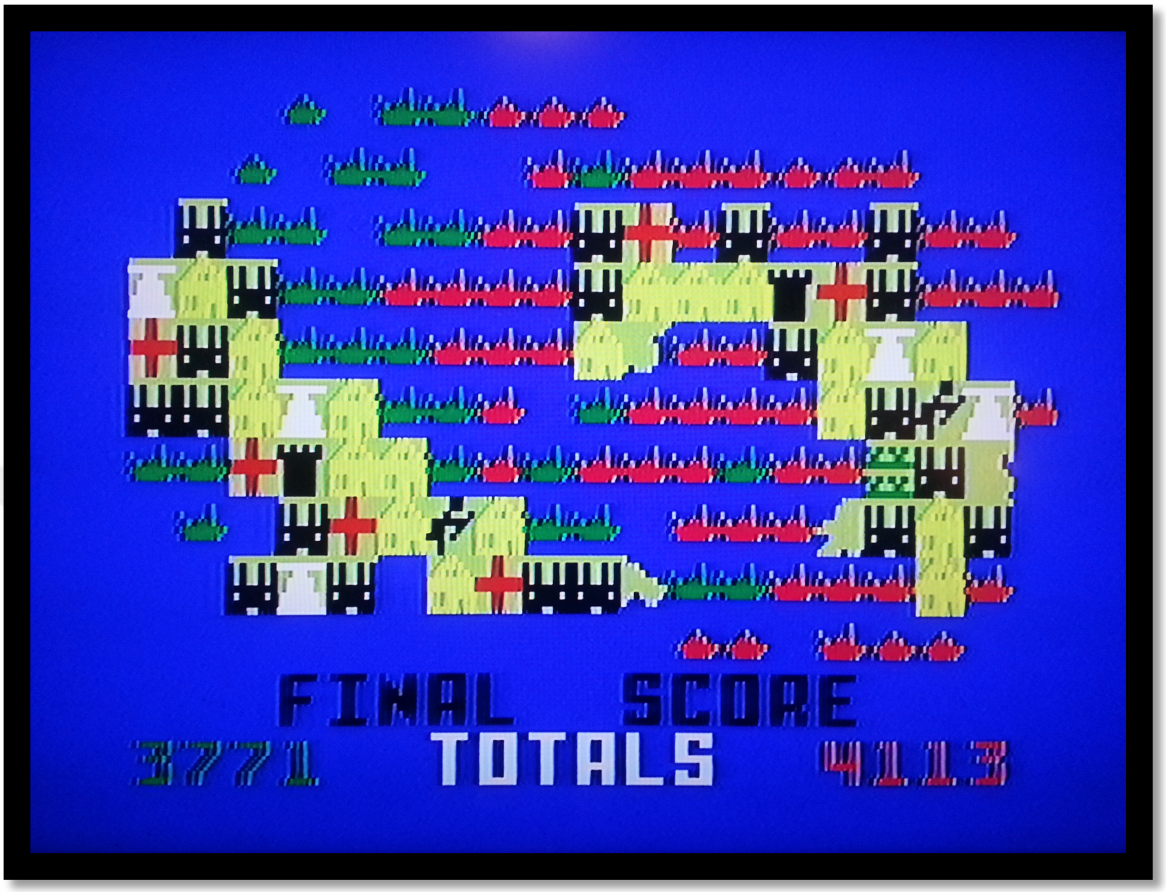
[29] Source: https://www.covercentury.com/covers/intellivision/u/intv_utopia_none.jpg

Utopia is a strategy-based video game which created by Don Daglow in 1981 released for intellivision (Mattel Electronics,1979-1984).[30]

[29] https://www.covercentury.com/covers/intellivision/u/intv_utopia_none.jpg

[30] (https://en.wikipedia.org/wiki/Intellivision)

Figure 4.42 (Game scene from utopia)



[31] Source: http://atariage.com/forums/topic/232244-a-very-utopia-thanksgiving-d/

Utopia is also excepted as the beginning of the city-building mechanic which passed for the next generation games such as SimCity series (EA, Feb, 1989-2014), Civilization series (MicroProse, Activision, 2Kgames,1991-2016) etc.[32]

[31] http://atariage.com/forums/topic/232244-a-very-utopia-thanksgiving-d/

[32] https://en.wikipedia.org/wiki/Civilization_(series)

Utopia:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2D	TP	0DOF	SCR	CL	STA	FLT	ND
A	B	C	D	E	F	G	H

Figure 4.43 (Civilization 1, Micro Prose, Sept. 1991)

[33] *Source:* https://www.youtube.com/watch?v=eaP_RXJvmEU

Civilization as mentioned in its name is a strategy-based game where the players create, and edit their civilizations. In order to manage these civilizations effectively players must explore the unseen corners of the unknown map of the world which is shown in a flat land image. Players manage resources, choose culture types, conquer enemy civilizations and expand their lands. Good thing about Civilization series is to help the player to understand the item management, effects of critical choices in order to increase their created culture's next steps.

[33] https://www.youtube.com/watch?v=eaP_RXJvmEU

Civilization 1:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2D	TP	0DOF	SCR	CL	STA	FLT	ND
A	B	C	D	E	F	G	H

Figure 4.44 (Civilization 2, Micro Prose, 1996)

[34]Source:

https://www.reddit.com/r/impressionsgames/comments/a1xjx2/civilization_2_map_with_caesar_3_icons/

[34]https://www.reddit.com/r/impressionsgames/comments/a1xjx2/civilization_2_map_with_caesar_3_icons/

Civilization 2:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5D	TP	0DOF	SCR	CL	STA	ISO	ND
A	B	C	D	E	F	G	H

Figure 4.45 (Civilization 3, Firaxis Games, Nov. 1st 2001)

[35] Source: http://scientificgamer.com/civilization-through-the-ages-civilization-3/

Civilization 3:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5D	TP	0DOF	SCR	CL	STA	ISO	ND
A	B	C	D	E	F	G	H

[35] http://scientificgamer.com/civilization-through-the-ages-civilization-3/

Figure 4.46 (Civilization 4, Firaxis Games, 2K Games, Oct. 25th 2005)

[36] Source: https://www.softportal.com/scr/4336/civilization-4-big-4.jpg

Civilization 4:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5D	TP	0DOF	SCR	CL	STA	ISO	ND
A	B	C	D	E	F	G	H

[36] https://www.softportal.com/scr/4336/civilization-4-big-4.jpg

Figure 4.47 (Civilization 5, Firaxis Games, 2K Games, 24th Sept. 2010)

[37] Source:
https://static.gamersgate.com/media/products/product/14686584/screenshot_1674_1022_BMCTV1O.jpg

Civilization 5:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5D	TP	0DOF	SCR	CL	STA	ISO	ND
A	B	C	D	E	F	G	H

[37]https://static.gamersgate.com/media/products/product/14686584/screenshot_1674_1022_BMCTV1O.jpg

Figure 4.48 (Civilization 6, Firaxis Games, 2K Games, 21st Oct. 2016)

[38] Source: http://time.com/4324377/civilization-6/

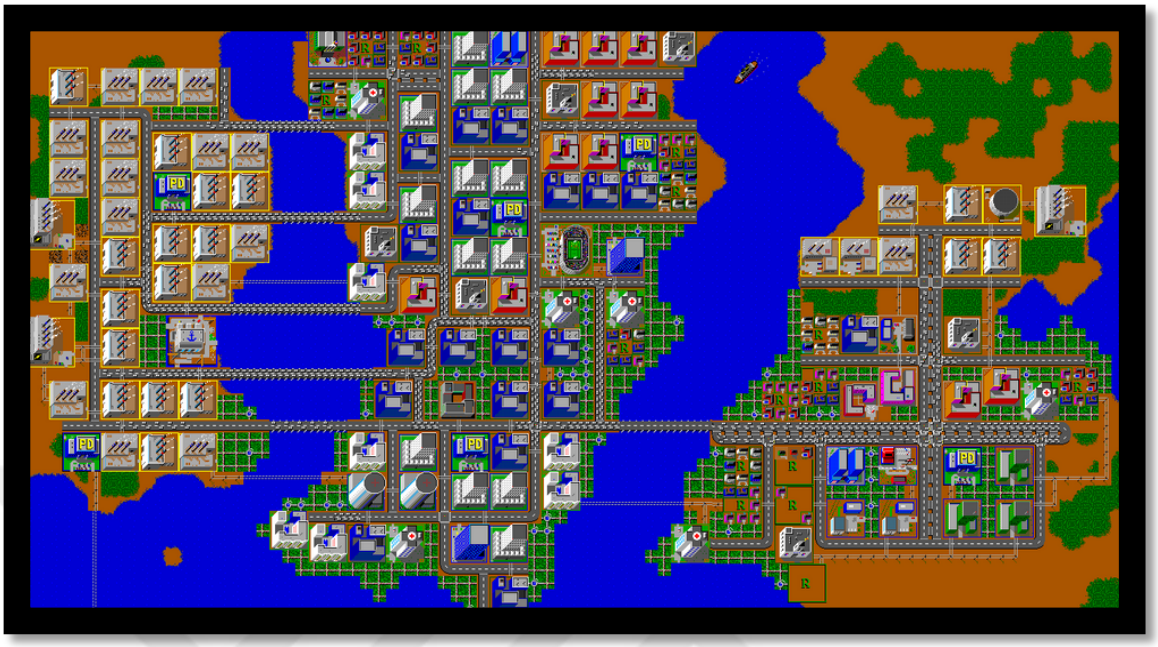
Time after time in Civilization series graphics, camera angles shows some obvious changes plus weather conditions. Players have a better chance of understanding their visualization, decision, creative skills while the series changes. New ways of understanding the details behind each game not just only by the graphics etc. but also the reactivity in game universe. How ever since this development managed to get a good amount of attention throughout the strategy-loving player communities.

Civilization 6:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2,5D	TP	0DOF	SCR	CL	STA	ISO	ND
A	B	C	D	E	F	G	H

[38] http://time.com/4324377/civilization-6/

Figure 4.49 (Sim City 1, EA, Feb,1989)



[39] Source:
https://www.reddit.com/r/SimCity/comments/47di07/i_spent_2_hours_on_simcity_classic_to_make_this/

SimCity series was also maid according to the real-time strategy gaming genre, it is city-building simulation game that lets player take control and build the city which players wishes to, but in this gaming universe players must observe the resources well in order to build an effective and productive city to manage.

Sim City 1:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
2D	TP	0DOF	SCR	CL	STA	FLT	ND
A	B	C	D	E	F	G	H

[39]https://www.reddit.com/r/SimCity/comments/47di07/i_spent_2_hours_on_simcity_classic_to_make_this/

Figure 4.50 (SimCity Build It, EA, 22nd Oct, 2014)

[40] Source: https://www.pinterest.com/pin/785526359979389475/

In older series of The SimCity Franchise players in the first release players only be able to see a flat line of the gaming universe in time when the second one release developers began to use parallel projection to let players visualize what they were creating. After that graphical improvements, weather functions, better NPC citizens, better camera movements and ZOOM added to let the players know how the gaming universe would react their decisions while players building their own city in dreams.

SimCity Build It:

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	0DOF	SCR	CL	STA	ISO	LP
A	B	C	D	E	F	G	H

[40]https://www.pinterest.com/pin/785526359979389475/

Figure 4.51 (Harry Potter and The Philosopher's Stone, EA Games, Warner Bros. 15 Nov. 2001)

[41]

Source: https://www.vizzed.com/vizzedboard/retro/user_screenshots/saves27/270265/PLAYSTATION--Harry%20Potter%20and%20the%20Sorcerers%20Stone_Mar6%2016_16_43.png

Harry Potter and The Philosopher's Stone was originally created by British author J. K. Rowling. The book itself first published in UK on 26th of June 1997 by a publishing company called Bloomsbury. In US the game itself is called Sorcerer's Stone. In this video game adaptation of the original novel, players control the main character Harry Potter to discover the details of the Hogwarts the school of witchcraft and wizardry. There are four houses of wizard groups, these are: Ravenclaw, Hufflepuff, Slytherin and Gryffindor. Objective in this game is to collect points while progressing through the main questline in order to get Gryffindor to number one and defeat the evil dark wizard called "the one who shall not be named" aka Voldemort. Player's movements are limited because of camera controls not being fluid. Adapting can be challenging but can be rewarding at the end. Of course, it's not basically only an action-based fantasy game, players must solve puzzle, react against timed challenges to get more house points.

[41] https://www.vizzed.com/vizzedboard/retro/user_screenshots/saves27/270265/PLAYSTATION--Harry%20Potter%20and%20the%20Sorcerers%20Stone_Mar6%2016_16_43.png

Harry Potter and The Philosopher's Stone (PS1):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, P 4DOF	SCR	LL	ILR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.52 (Harry Potter and The Philosopher's Stone, EA Games, Warner Bros. 15 Nov. 2001)

[42]Source: https://www.romulation.net/media/img/screenshots/PSX/10246/s4ffef779ddb7ec12e03951a3ed8169b4.jpg

The second installment of the game is to help the main character to uncover the truth about recent unexpected horrifying events in Hogwarts and to find more about the source of mysterious voices and the chamber of secrets.

[42] https://www.romulation.net/media/img/screenshots/PSX/10246/s4ffef779ddb7ec12e03951a3ed8169b4.jpg

Harry Potter and The Chamber of Secrets (PS1):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, P 4DOF	SCR	LL	ILR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.53 (Harry Potter and The Chamber of Secrets, EA Games, Warner Bros. 15 Nov. 2002)

[43]

Source: https://iv1.lisimg.com/image/4060230/480full-harry-potter-and-the-chamber-of-secrets-photo.jpg

[43] https://iv1.lisimg.com/image/4060230/480full-harry-potter-and-the-chamber-of-secrets-photo.jpg

Figure 4.54 (Harry Potter and The Prisoner of Azkaban, EA Games, Warner Bros. 29 May 2004)

[44]

Source: https://i.ytimg.com/vi/rGM5x6WwUr4/hqdefault.jpg

In the third installment of the novel-based video game, the journey starts at the beginning of the Hogwarts express train where some sudden events occur beyond the main character's control. Unlike the previous versions of the game players can control not only harry but also Harry's friends Ron and Hermione. Progressing further on the story will led to a terrifying truth, Harry's parents were betrayed by their best friend Serious Black. In order to progress effectively, players must understand how and where to use these three characters in order to solve puzzles, fighting enemies. The main difference in this third game is not just only graphics or camera angles but also, it's possible to increase the current selected character's abilities in order to have a decent advantage against the enemy. In order to do it is to collect beans throughout the game And of course, every character has their own unique abilities and spells (Hermione can use repair spell, Ron can see secrets, Harry can climb obstacles & use Patronus etc.)

[44] https://i.ytimg.com/vi/rGM5x6WwUr4/hqdefault.jpg

Figure 4.55 (Harry Potter and The Prisoner of Azkaban, EA Games, Warner Bros. 29 May 2004)

[45]

Source: https://i.ytimg.com/vi/Rmy6HRJm8UM/hqdefault.jpg

Harry Potter and The Prisoner of Azkaban (PS2)

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, P 4DOF	SCR	LL	ILR	PRS	LP
A	B	C	D	E	F	G	H

[45] https://i.ytimg.com/vi/Rmy6HRJm8UM/hqdefault.jpg

Figure 4.56 (Harry Potter and The Goblet of Fire, EA Games, Warner Bros. 11 Nov. 2005)

[46]Source: https://img.youtube.com/vi/YqjWH_Zii2U/0.jpg

The 4th game's main objective is to collect beans and cards to power up the characters while progressing in level. In Goblet of Fire, Harry and his friends controlled by the player to increase puzzle solving skills in order to understand the very nature of this 4th installment of the game. Camera angles mostly changeable due to some certain sceneries. In comparison to lack of movement freedom or free roaming is limited, creators of the game itself mostly focus on co-op gameplays, combat and of course, puzzle solving.

[46] https://img.youtube.com/vi/YqjWH_Zii2U/0.jpg

Harry Potter and The Goblet of Fire (PS2)

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, P 4DOF	SCR	LL	ILR	PRS, ISO	LP
A	B	C	D	E	F	G	H

Figure 4.57 (Harry Potter and The Order of The Phoenix, EA Games, Warner Bros. 29 June 2007)

[47]Source: http://wiimedia.ign.com/wii/image/article/798/798713/harry-potter-and-the-order-of-the-phoenix-20070621060502595.jpg

[47] http://wiimedia.ign.com/wii/image/article/798/798713/harry-potter-and-the-order-of-the-phoenix-20070621060502595.jpg

5th game of the Harry Potter series begins with Harry uniting with his friends, after reaching Hogwarts, it's player's decision whenever to progress in story in order to access more rooms in Hogwarts or just roaming around to find any sorts of secrets and unlockables. Most noticeable ones are the new added minigames such as Wizard chess, gobstones and exploding snaps. Camera angles can change freely until engaging in battle mode against enemy wizards or opposing school houses.

Harry Potter and The Order of The Phoenix (PS2, PS3):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, Y, P 5DOF	SCR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.58 (Harry Potter and The Half Blood Prince, EA Games, Warner Bros. 3 July 2009)

[48]Source: https://static.gamespot.com/uploads/original/mig/6/4/1/8/966418-945906_20090717_002.jpg

[48] https://static.gamespot.com/uploads/original/mig/6/4/1/8/966418-945906_20090717_002.jpg

The 6th installment of the game is based on free roaming, skill improvements, and most noticeable one is potion making minigame to access unique potions to help progressing further. Camera movements of the game itself quite satisfying to find secret Hogwarts Emblems.

Harry Potter and The Half Blood Prince (PC, PS3):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, Y, P 5DOF	SCR	OW	FR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.59 (Harry Potter and The Deathly Hallows Part-1, EA Games, Warner Bros. 19 Nov. 2010)

[49]Source: https://www.gameshome.com.sg/wp-content/uploads/2017/03/41lldZT9hL.jpg

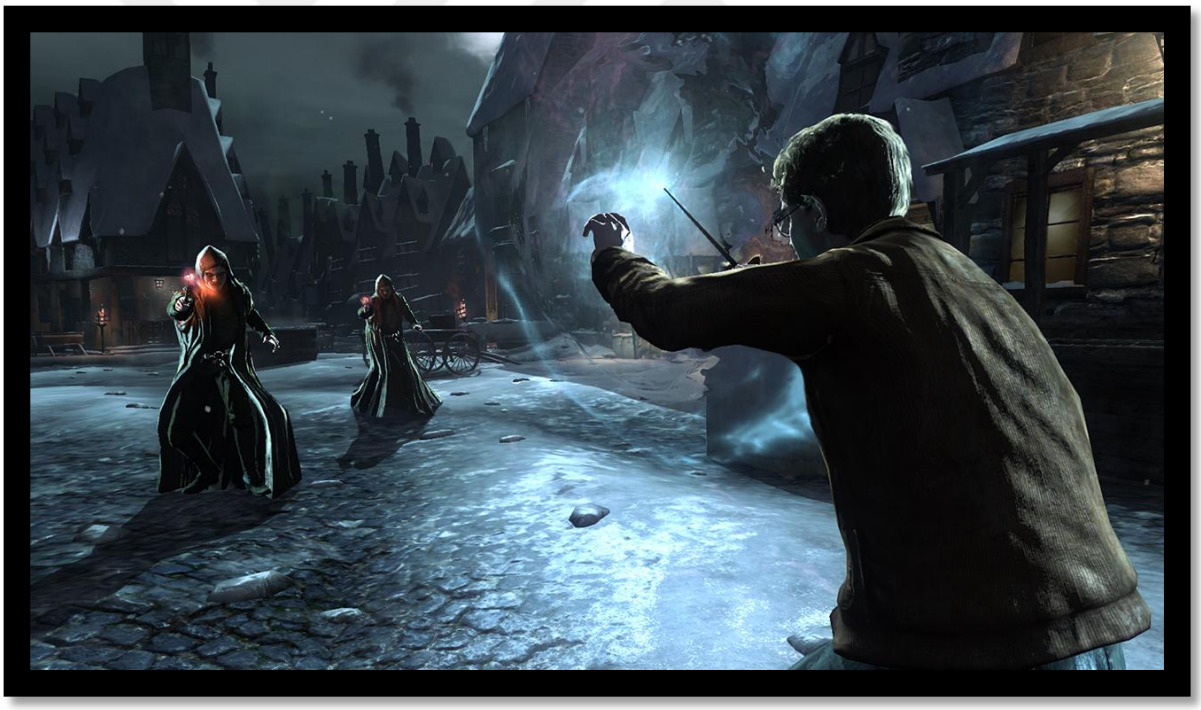
[49] https://www.gameshome.com.sg/wp-content/uploads/2017/03/41lldZT9hL.jpg

The last part of the series is based on wand combat, which is like a shooting game but replaced with magic wands. In this game, players basically focus on leveling up their character in order to access new spells to use in combat.

Harry Potter and The Deathly Hallows Part 1 (PC, PS3):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, Y, P 5DOF	SCR	LL	ILR, PAR	PRS	LP
A	B	C	D	E	F	G	H

Figure 4.60 (Harry Potter and The Deathly Hallows Part-2, EA Games, Warner Bros. 15 July 2011)



Source: https://cdn.mos.cms.futurecdn.net/a9472f70aac14cf37ea0fe87a080fc9a.jpg[50]

The second part of the game basically followed the footsteps of its previous installment. But in this story based magical combat game, after progressing in story, players can control other characters such as Ron, McGonagall.

[50] https://cdn.mos.cms.futurecdn.net/a9472f70aac14cf37ea0fe87a080fc9a.jpg

Harry Potter and The Deathly Hallows Part 2 (PC, PS3):

DIM	CVP	CDOF	RM	EL	RFPC	CPM	SCE
3D	TP	LR, UD, FB, Y, P 5DOF	SCR	LL	ILR, PAR	PRS	LP
A	B	C	D	E	F	G	H

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