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Design in Games

Game Design and How Does Design affect the perception of the game?

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XR Design

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Abstract

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Abstract:

Game design is a very important part of the game development process. Creation of game content, bringing it into technical compliance. The study of the features of game design and its impact on the perception of the player is the object of this work since the game can only be successful when the player is involved in it.

The object of this work is Game design.

The subject of work is the influence of design on the perception of the game.

The purpose of the work is to study how important game design is in computer games. Based on the goal, it is necessary to solve the following tasks: consider the design features in games; study the tips of game designs; determine the game world rules; reveal the specifics of the work over the design: copying or from scratch; analyze games and designs.

Keywords: Game design, level design, content design, game mechanics, graphic components, visual aesthetics, interaction, world design, system design.

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1 Introduction

Relevance of the research topic. Today, video games have incredibly high popularity in different segments of society. Moreover, for the younger generation, born at the beginning of the century, games are an important part of life. That is, video games are a process that makes up the cultural environment of modern society. Digitalization is a trend inherent in the development of the information society.

Considering video games from the art side, we should consider their design, which contributes to the formation of the aesthetics of a game and popularizes it, endowing it with an independent art form.

The theoretical basis of this study is the work of such researchers as Denikin, for whom game design is an art; Kazakova, who studies the features of the design of the game environment in game design and considers it as a whole an activity of a project nature; Laritskaya, who pays attention to the applied value of design in computer games; Nazarov, who positioned the psychological component of a computer game and other researchers.

The structure of the work includes an introduction, the main part consisting of aspects of game design and dimensions of the Game World, a conclusion, and a list of references and sources.

2 Aspects of game design

2.1 Design features in games

Game design in today's world can be thought of as an art form that encompasses the process of creating game content and game rules and goals. Rouse considered game design as the content of the gameplay of a computer game under development (Rouse 2004), whereas according to researchers Shpakovsky and Danyliuk, the game design allows you to connect the context of a computer game with game mechanics (Shpakovsky 2018).

Martynov approached the issue of determining the content of game design more extensively than previous researchers and interpreted it as the development of the concept of a computer game and its mechanics (Martynov 2020). The difference is that, according to Martynov, a concept and mechanics are created in game design, and according to Shpakovsky and Danilyuk, the already created concept, and mechanics are synthesized and become a single organism.

From the point of view of Laritskaya, game design (in conjunction with the architecture of the game) seems to be the main effective tool that creates a visual image of the game, a game atmosphere. Thus, the design tells us about the created world, being its significant part (Laritskaya 2021).

Agree with Kazakova, we can say that game design is a type of project activity that includes the definition of artistic techniques in the development of game characters, the development of locations of the game world, and other visual aspects of the game (Laritskaya 2021).

In this regard, it can also be said that game design, as a project activity, answers the following questions and user requests:

- What is this game about?
- How do I play?
- How do I win?
- Why do I want to play?
- What do I need to do in the game?

The answers to these questions are completely opened up in the design of the game. Accordingly, the design "works" encouragingly, being a motive for the passage of the game in the user.

Developing this idea, it is possible to rely on the opinion of Kazakova clarified that its super-task is to completely immerse the user in the world of the game, the so-called virtual reality. The phenomenon of immersion Kazakova considers a conscious rejection by the user of any doubts about the veracity of the narrative (Kazakova 2016). In turn, J. Murray attributed the phenomenon of immersion to one of the most important aesthetic features of the digital space (Murray 1998).

Nazarov noted that the design in computer games is designed to minimize, as far as possible, any irritating and distracting factors of the player, which include plot logical inconsistencies, and ill-conceived style decisions that break the ethical component of the visual series. From the point of view of mechanics, the design of the game allows you to develop a game object world with which the player directly interacts. In a global sense, from the point of view of Nazarov, game design regulates all processes in such a way that any actions of the player receive an instant response from all components of the game world (Nazarov 2014).

In turn, game design practitioner S. Rogers emphasized the importance of such a phenomenon as the "flow state", which, in his opinion, denotes the limits of complexity that allow you to fully retain the attention of the player. In the design of the game, this was called the "pleasure curve" (Rogers 2010). Therefore, game design is the design of gameplay within the average curve of the game virtual world.

At this stage, the feature of game design is optimal to distinguish interactive immersion in the game, due to the level of the psyche.

Currently, in the design of games, it is customary to distinguish the following types of interactivities: interaction with technology; interaction with the game program; interaction of players within the framework of gameplay. Consider Fig. 1.

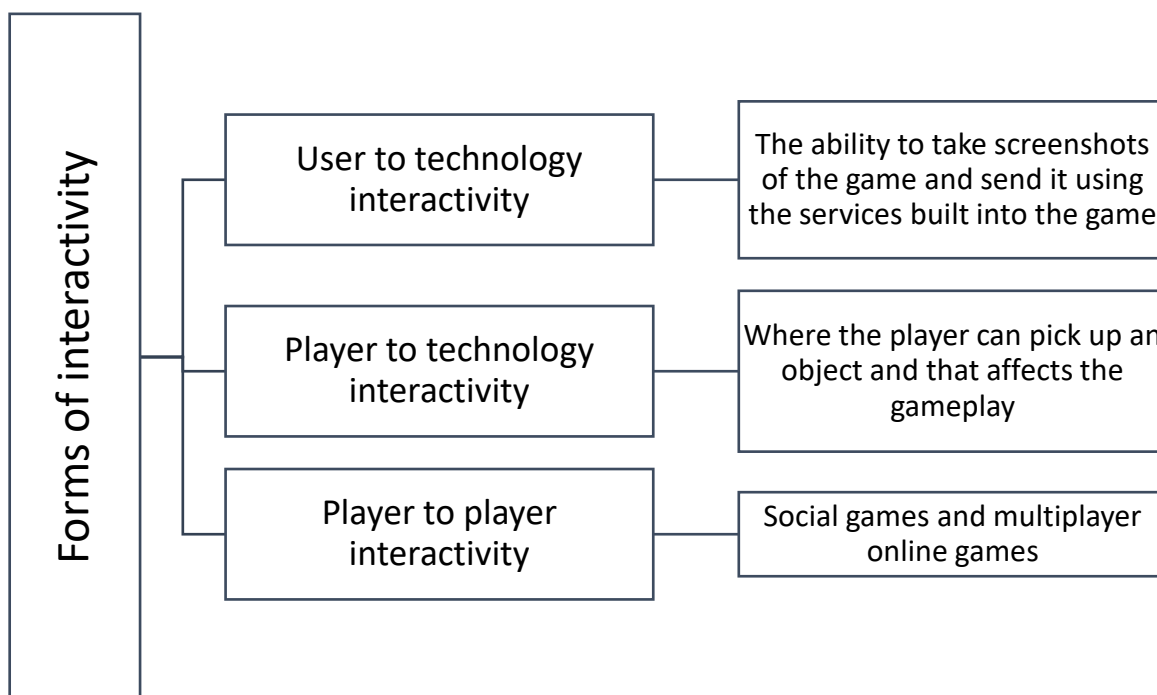


Fig.1. – Forms of interactivity (Mitchell 2012)

To study the features of the design in games, practicing game designers F. Dill and F. Platten proposed to consider a retrospective of the development of game design, dividing it into two stages:

- primitive computer games;
- multimedia games.

The development of primitive games was established along with the development of the industry. Such games include early arcade and text games, which were very limited in the hardware aspect. The visual component of these games was either completely absent or critically primitive, so to create a game world, the user had to use enormous amounts of imagination.

Gradually, game projects appeared that focused on high reaction speed and good hand-eye coordination. The gameplay of games gradually became additive (causing the desire to continue playing for the user).

The second stage was marked by the introduction of optical discs as a way to store information. In multimedia games, the possibility of interactive interaction between the user and the game world appeared (Mitchell 2012).

To this retrospective, classification can be added the third group of development of game design, identified by S. Gartner. This is a stage of high-

tech games, which is directly observed today. The first games with realistic visuals with three-dimensional game maps were console games developed for the PlayStation (Wikipedia 2022).

Kazakova focused on the fact that today the innovative technological trend is at a stage of development when the constant desire to increase realism in the graphics of the game does not lead to any significant changes in game design. This, according to the researcher, is a manifestation of the creative stabilization of the gaming industry (Kazakova 2016).

The design of any game has its own so-called "core" or, in other words, the basic game mechanics. It directly gives an atmospheric feeling to the visual of the game. The core is usually due to basic mechanics, that is, the main game action (walking, catching balls or flipping cards)."

The basic mechanics lead to the basic dynamics – the algorithm of the gameplay. This is the core of the game design. The design should be such that the user can answer certain questions without starting to play. These questions are presented in Fig. 2.

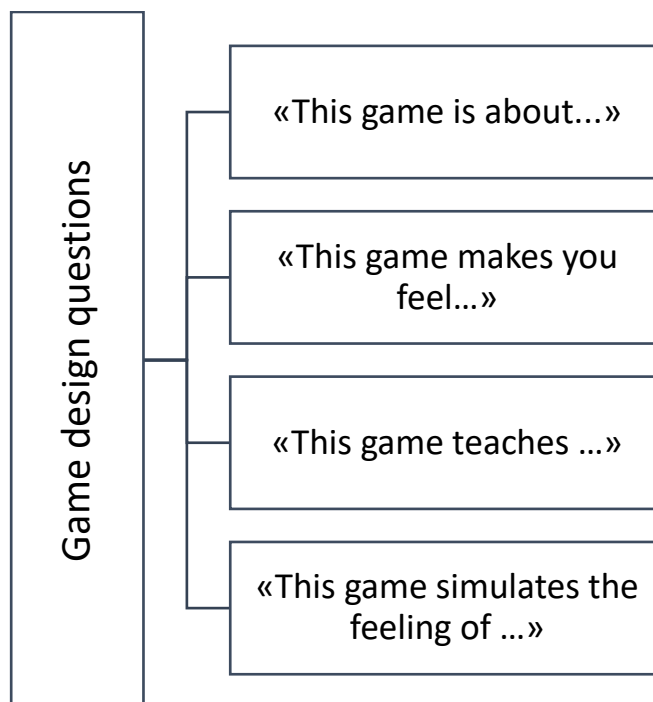


Fig.2. – Questions about the game design

Using the game development model "mechanics-dynamics-aesthetics", designers create aesthetic models of game designs. Aesthetics refers not so

much to the visual component of the game, but to the emotional response that designers and developers try to evoke through game dynamics.

Aesthetics is a factor of pleasure. Hence the assumption that a computer game with its design is one of the types of art belonging to the digital segment (Khokhlova 2015).

Game design and its features, which are listed, allow us to talk about three aspects of the artistic value of video games:

- the game is considered holistically, in the totality of visual graphics, animation, software mechanics, and program codes. The external form here demonstrates artistry;
- The degree of artistry is tracked in the gameplay since the process of the game itself is considered the implementation of artistic activity. The leading terms are such as interactivity, and immersiveness (involvement in the game space): they characterize artistic images;
- A video game is seen as an experimental form of creating some new art of the future, which has not yet developed its artistic language but is very eager for it.

Game design is thus a kind of building material in the game. The concept of the author's game design is also interesting. This is the focus of game design not on satisfying the user in recreation, but on the specifics of conveying the author's concept. And such games are valued more than others, the freedom of self-expression of the designer, innovation, and not the process of achieving the game goal.

As an example, let's cite the Belgian author's game "The Graveyard", where there is no particular goal, the game is meaningful. There, you just need to control the character, and to involve the user, the design is worked out to the smallest detail.

The content of the game is that the player brings the old woman to a bench that needs to sit down and rest. She sits for a few real minutes, and listens to a cemetery song, while the user examines the surrounding landscape and the character's face, covered with deep wrinkles. That is, such games are precisely the product of the designer's self-expression. It lasts only 10 minutes, which confirms our statement (Denikin 2010).

Thus, we can conclude that in the design of the game today, not only the set of graphic elements expressed by the technical and graphic skill of the designer comes to the fore, but also the ability to organize the overall visual component into the space of user actions, to tie the visual space into semantic reality. Game design is an aesthetic category of modern culture, otherwise, it is one of the types of contemporary art.

2.2 Aspects of Game Designs

In the gaming industry, several types of game design have been developed, each of which is a separate direction of a holistic concept. This implies that there is a separate approach to each of these types, a separate specialization, so each type has its characteristics and subtleties, not from an instrumental point of view, but a technical point of view.

In Fig.3. presents the types of game design that are relevant today.

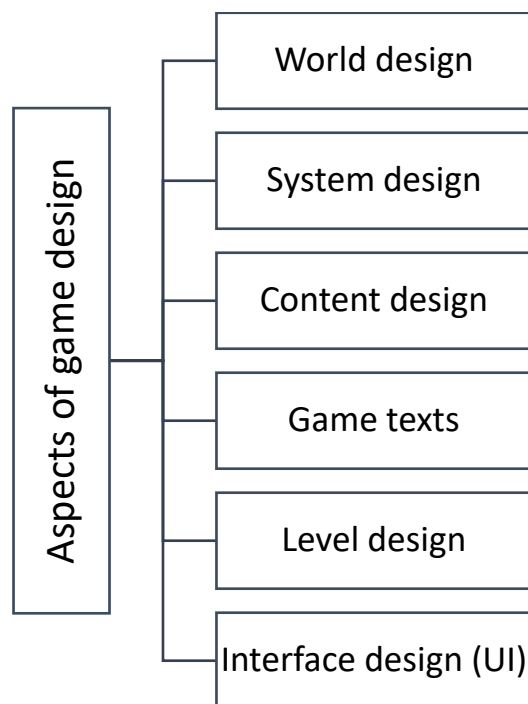


Fig.3. – Aspects of game design

First, you should pay attention to world design. This type is more like the creation of a common story, settings (game environment, space, "world"), and game theme. The solution to the problem of developing the design of the world occurs directly by the leading designer, while all other types of design are

already subordinate to the concept at this level. However, world design is not present everywhere, and the main component of the game concept is only when the game itself has a type of open game (Chuprina 2018).

System design is the creation of rules and related calculations for the game. This type of design is present in every game because the rules of the game, one way or another, are ubiquitous. In this type, balanced game systems and gameplay are developed. An example of systems design would be character movement or parkour, like in the game "Dying Light". The system game design of parkour in it lies in the height and distance of the jump, how and what the player can grab onto, and so on. In "The Last of Us", the system designer determined how low the player could crouch and what position they would take to calculate cover based on that. (Kazimirov 2021).

Content design involves creating characters, items, puzzles, and missions. Also, such a type as game texts stands out separately, that is, writing in-game dialogues, texts, and stories - this also requires visual adaptation for a holistic perception of the game by the user.

Level design that is, the creation of game levels directly, which includes the landscape of the map and the location of objects on this map. In level design, a location is designed to provide enough interesting game situations to apply each basic mechanic. Thus, operating with space, objects, and settings of the virtual world, the gameplay is created at the levels, which provides a unique experience of interacting with the game.

It is interesting to note here that, for example, in strategy games, levels are called maps, where the gameplay is created through various features of the landscape, the location of the players, and valuable resources. In racing games, levels are tracks with a wide variety of routes and obstacles. In adventure games, the gameplay is based on what obstacles, traps, puzzles, and enemies the player will encounter.

It follows from this that in games of different genres, levels in their structure and appearance can be radically different and have different names (maps, missions, zones, stages, tasks), but at the same time perform the same function – execute, develop, and create a variation of the basic gameplay. This is the essence of level design (Kadikov 2022).

Interface design (UI) consists of two elements: how the player interacts with the game and how the player receives information and reaction to his actions from the game. Every type of game has an interface design. Game components should contain information that is easy for the player to understand, use and interpret.

The game's aesthetically pleasing visual design makes users more tolerant of minor inconveniences. Here is the so-called "law of common space", when structural elements are perceived as belonging to the same group (Banerjee 1994). In addition to this law, there are others related to Gestalt psychology in interface design: the law of pregnancy (the perception of complex forms as simple, since the human eye likes to find simplicity and order in the complex); the effect of the serial position (G. Ebbinghaus effect, in which the first and last element of the series are memorized directly) (McLeod 2008), the Von Restorff effect (among the monotony, you need to visually highlight what is most important) (Parker 1998) and other laws (Shestakova 2021).

Thus, each of the considered types of game designs is a solution to complex system problems, which together make up an integral game world with all the realism of its visual block and coordinated actions. The types of game designs are important, respectively, both aesthetically, psychologically, and functionally.

2.3 Dimensions of the Game World

The standards of the game world are a certain system of sizes, which is based on the dimensions of the game characters. This system, in turn, ensures the correct functioning of all game mechanics.

Standardization of sizes is designed to provide visual consistency of game content, thereby making the game world more holistic and organic. This means that with the freedom of the designer and his flight of thoughts in creativity, there is also a technical side, inevitably subject to standards.

So, in game design, such a standard as the dimensions of the characters is very important. The basis of this standard is directly proportions. The

dimensions include the physical shell of the character model its height and width in all possible positions of the body (standing, sitting, lying, and so on).

Based on these data, it is possible to find out all the necessary dimensions for other elements of the game environment (the width of the doors, the height of the ceilings, the steps of the stairs, and so on). Such prototyping corresponds to the rule of ergonomics that operates in reality - all sizes must always be adapted to the person (or the hero who is the main one in the game: to understand that the game is played from the perspective of a giant, doorways must be disproportionately small and, conversely, from the face of an ant, all dimensions familiar to the human eye are unusually large-scale) (Khokhlov 2016).

In Fig.4. let's post an example of such ergonomic prototyping of dimensions.

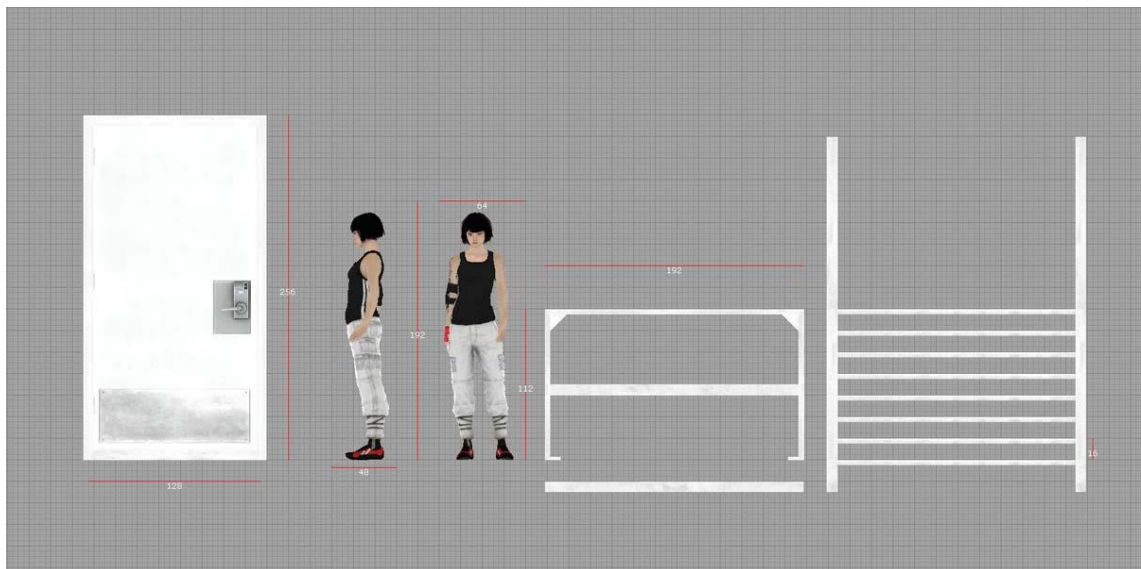


Fig.4. – Prototyping of character dimensions

In the example of characters from the game "Crysis 2" (Fig.5), you can notice that the choice of one or another type of enemy with its unique dimensions directly affects the layout of the level. The larger the enemy, the more space it will need for comfortable movement around the world of the game and the correct operation of artificial intelligence. It's useful to note that standards are tied to the system design of the game.



Fig.5. – The size of the characters from the game «Crysis 2»

It is also interesting that when monsters with impressive dimensions appear in the game, the stairs and corridors at the levels can immediately become much wider. For example, this happens in the game "Doom".

Another example: In the game "Titanfall 2", the natural rocky landscape and many various industrial objects in the form of game locations were created on purpose. The fact is that the natural landscape in the development of the industrial style occupies enough space for the comfortable movement of the robot. Therefore, visually, and functionally designed wide staircases and platforms, rocky gorges, and spacious caves. So, we can directly say that the dimensions of the characters have the most direct impact on the choice of setting for the game.

At the same time, it is important that the minimum playing space only guarantees that the character will not get stuck in the geometry of a particular level. The amount of space is necessarily planned with a margin, otherwise, the player or AI opponent (artificial intelligence) may become a hostage to their size without any possibility of maneuvering. The same goes for any doorways. It is rational to always leave a margin and make them a little wider so that the player does not get stuck in the grid, especially when he needs to move quickly in a mission.

Therefore, we can say that when planning the game space in game design, you need to pay attention primarily to the dimensions of the characters and consider the area necessary for comfortable movement.

The standards of the game world make it possible to design a favorable visual environment for the internal game space for the functioning of any game mechanics that are focused on ensuring that the player and the game environment exist in harmony. That means the game mechanics will be complete only if there is no distortion in the interaction between the player and the space in which he is located.

For example, in the mechanics of the game "Gears of War", which is strongly tied to the grid of the shelter system, the working gameplay depends on the game design standards, namely, on how correct the size of the objects is, that the character can hide behind. So, they must be of such a size that in a certain position the player wasn't visible. And even seemingly insignificant changes in the size of shelters in height can lead to a slight vulnerability of one another. This will make the gameplay itself unfair, which, ultimately, will lead to a loss of trust and interest of users.

As an example, we bring the game "Dishonored 2", where the architectural style is characterized by its high ceilings and spacious halls, which have become, in fact, a very beneficial game atmosphere for mechanics. The ceilings in all residential premises are quite high, this height contributes to the fact that the space is rationally allotted for communications that serve as hidden observation positions in the plot. On the covered yard areas between the floors, there are wide cornices everywhere, there is space for chandeliers and balconies.

In the game "Prince of Persia" mechanics are based on jumping. From here, the game design standard considers the ergonomic dimensions of the distances between the platforms, and the heights of the ledges that are necessary to be able to hook on them.

We can say that the design standardization of the scale of the game environment improves the performance of game mechanics, and at the level of non-verbal communication is a guide for the player, constantly directing one way or another, giving hints, and organizing certain games rules.

So, if a player once jumps over a pit, he will know that he can do it in the future. Therefore, when reaching the need to jump over platforms in the game "Prince of Persia", the player will jump already intuitively, without fear that the mission will be failed.

Basically, in the process of prototyping game mechanics, it is necessary to check exactly the requirements of ergonomics, based on the anatomical, and physiological features of the character, as well as on the architectural and technical capabilities of buildings. Such work involves the involvement of many related professions and relevant specialists.

Let's pay attention to how the concept from the game "Mirror's Edge" demonstrates the principle of interaction of gameplay mechanics in the immediate conditions of the game environment (Fig. 6).



Fig.6. – Interaction of mechanics and game space of the game «Mirror's Edge»

In Fig.7. it is shown how the actions of an already developed game character have something in common with the concept of game mechanics. In the layout, the movement along the slope is carried out dynamically, with a wave of the hands. All movements of the characters are programmed for different characters of the space in which the character is located at any given moment. This pattern allows you to create a system that later develops into a full-fledged game mechanic.



Fig.7. – The character of the game «Mirror's Edge» in the game space

After detailed documentation and the creation of concept art illustrating the idea, the game mechanics are implemented in the game code, and only then the designer assembles a test level where all innovations can be tested in action. Such a testing ground with a set of blanks for all possible elements of the game environment usually serves as a starting point for starting the development of other levels (Kadikov 2022).

Thus, the standards of the game world are directly conditioned by the need in terms of rationalization and ergonomics of the space and the character as a whole. They must exist in harmony.

It is interesting to note that if the designer will make a level for an existing game, then he needs to first know the standards of the game world. This leads to the need to study how games are created: are there any templates, or are they completely designed from scratch from the very idea. This problem will be covered in the next chapter.

3 The impact of design on the game

3.1 Design work: copying or from scratch

In a general sense, a video game is a huge collection of various properties, parameters, and functions that together formulate game logic. The whole range of abilities that the character has, thanks to the design of the game, is given out gradually, incrementally, and as the game plot develops. This is what allows progress to move and gives an understanding that behind each character there is always some kind of story, a narrative.

To create different games, you need a different number of specialists involved. For example, Tetris was made by one person - it was the Soviet Union programmer A. Pajitnov. But for example, the World of Warcraft team already had more than 500 people at the start, however, it would be strange to compare the production levels of these two games. In a more general sense, to develop the design of one small game, you need to involve 3 categories of people: game designers, artists, and programmers.

To create a game, it is always necessary to go through 6 stages, which are presented in Fig. 8. The first step is pre-production, in my opinion, it's quite important for a successful and smooth start. At that stage, you create a foundation, such as game type, gaming platform, game genre, the vision of gameplay, game mechanics, target audience, and so on. The second phase is production, which includes graphics and design, programming, and sound design. In the testing phase, you identify problems and check the accessibility of all areas, and that everything working as it should be. The fourth stage might be not so important for small games or companies. At that stage, you trying to promote your game, and notify the player that a new game coming. Next, you have a launch, which means the release of the game. And the last stage is post-production, also called maintenance activity, including bugs correction and the creation of patches and updates (Mozolevskaya 2021).

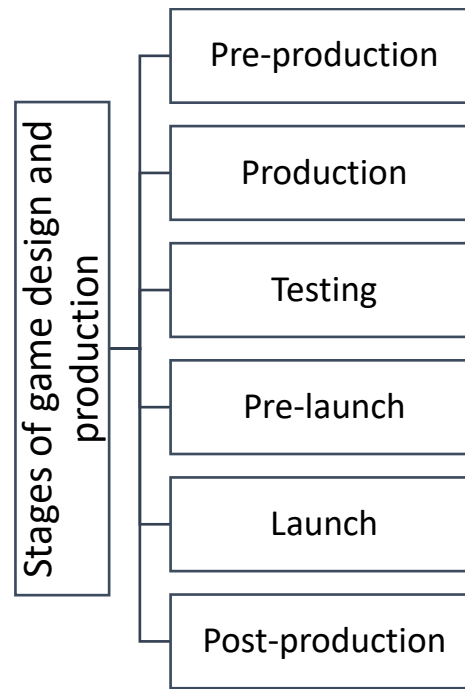


Fig. 8. - Stages of game design production

The game can be created both from scratch and with the help of specially designed templates or artificial intelligence.

Thus, work on templates has two directions: it is directly a package of wireframes or rendered elements that were created manually by someone, or it is the capabilities of an artificial intelligence platform that contains program data so that the user of this platform could create a computer game on its own.

Let's take a look at some platforms working according to a template point of view. The special software based on which computer games are created according to templates is a "game engine". The name speaks for itself: the engine already has basic mechanics, physics, and graphics support, which are programmed in a certain direction and volume.

Since the template is somehow limited, it is necessary to understand that the more complex the game engine is, the more opportunities are inherent in the creation of the game design.

You can use ready-made template solutions, in which, in essence, you only need to change the basic characteristic information, environment, and actions, however, the principle of the game will be preserved. It will be the same

for everyone who uses the template, even if it fills the engine with the “filling” of its game to the maximum.

For example, the Kodu Game Lab platform allows you to create 3D games on its base. The program has a very simple mechanism and principles of work since initially it is aimed at teaching children the basics of programming and game design.

The platform is presented as a map editor with a list of three-dimensional spatial models. In this case, the actions of the game are set through the interface. There is no third-party support on this platform it is not possible to download custom scripts, as well as additional characters. That is why, as already mentioned, it is somewhat simplified.

Another template platform - "Construct 3" provides opportunities for creating two-dimensional games based on HTML5. At the same time, as in the previous program, it is possible to give commands through the interface (you do not need to know to program, all this is already built into the engine). Management in this program is made as simple as possible, by dragging the individual necessary elements, followed by marking the trigger zone, as shown in Fig.9.

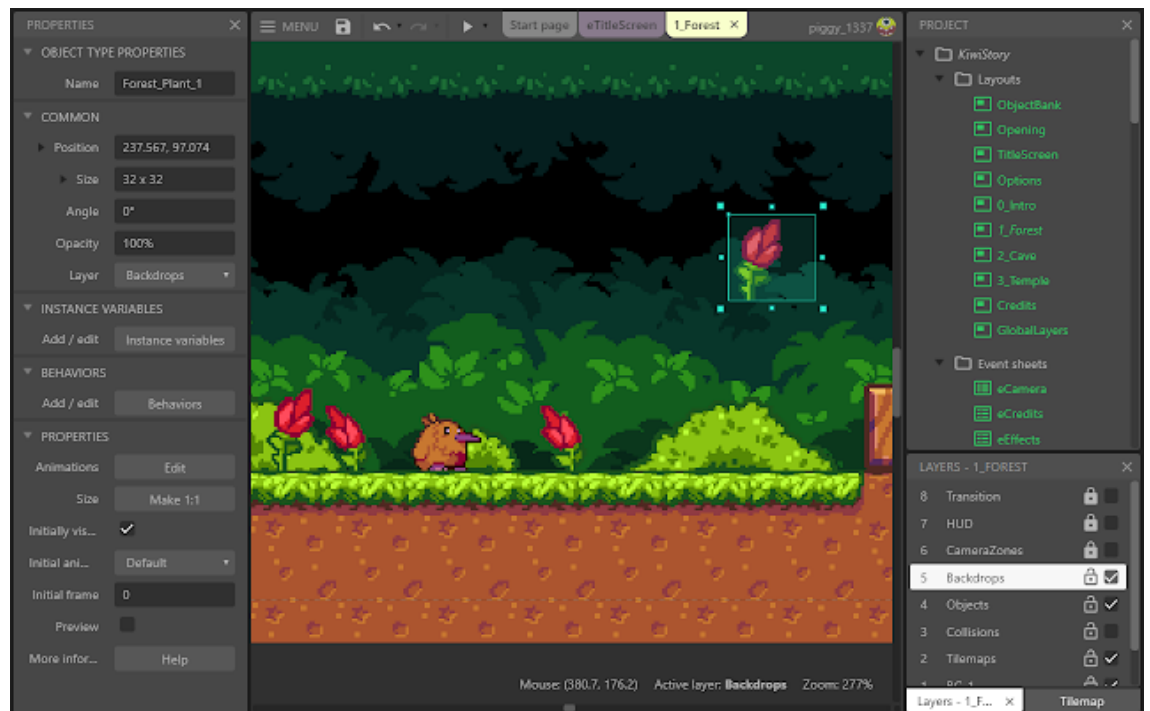


Fig. 9. – Customizable template elements in «Construct 3»

The program has an extensive collection of graphic elements, and, unlike the previous one, you can load third-party templates and design elements in it. When creating a game world in this program, a special script is created in text format, and if such a need is present, it can be edited, that is, the code is open, and you can still work on the template. There are also ready-made templates. This program allows you to create two-dimensional game spaces in any genre.

Another program - Torque 3D - is a full-fledged game engine for creating three-dimensional game spaces and models. Development is carried out in the interface, which eliminates the need for knowledge of the basics of programming. Functionally, this engine is weaker than the previous two, but as a fact, it is possible to create a game world (the design of the game will resemble games that came out at the beginning of the century) (Ozeryanski 2021).

This program has a very extensive set of tools and elements since it is focused on the creation of first-person shooters, tactical strategies, and racing. The code is open, you can create games in all genres, but here you need to know at least minimal knowledge of programming. And of course, I must mention programs such as Unity and Unreal Engine, they are the biggest and most popular if we are talking about game creation on an already existing engine. But again, there you need to know the basics of programming even if there you choose visual scripting.

Also, the ability to work with ready-made templates is in the Unity Microgames. Each template contains a full-fledged collection of resources with which you can make changes to the finished template, at the same time gradually developing the logic of interactions, visualization of the game world, and so on. This template-based program is very popular in the world, moreover, it should be clarified that more than 50% of all mobile games today are developed in it, as well as 60% of all visual content for augmented and virtual reality (Microgames 2022).

You can also use free 3D models that someone has previously created and posted on stocks. They are easy to download and implement into the needed game but be careful with the license on that model. These can be either separate elements, for example, trees or cars, or individual characters, both rigged and fully textured. It should be noted that these are only three-dimensional models, not tied to the dynamics of the game and not built into the mechanics. Consider in Fig. 10 an example of a free 3D model that can be used in your game.



Fig. 10. – Game character example

When you upload the model, you can easily customize its movements along with the main given points, to form its character.

In addition to individual elements of the game, you can also use world templates/3D models, an example of which is shown in Fig.11.

In fact, in such a model, an entire map is built out if individual blocks or several blocks are worked out in detail. It remains to populate them with characters and develop game mechanics and logic.

Based on the theory presented in the first chapter, it is worth saying that a world created just with random free 3d models, will miss the point, the idea, and the feeling of the game. It will be difficult to meet the feeling of the game world and ergonomics since the world is created randomly. It doesn't have a common thought/sense and idea. Harmony can hardly be achieved here.



Fig. 11. - 3D model of the world

From this, we can assume that the design of the game according to such an example is rather an occupation "for oneself" rather than an attempt to present some kind of serious game to the world. This is interesting from the point of view of improving skills and educational purposes.

Games can still be ported - that means, they can be created according to the patterns of an already existing game. Porting is the ability to transfer a game from platform to platform. For example, you can take this or that game, rewrite

or supplement certain elements of the code and fill the interface with your design.

Also, in terms of porting, you can copy maps from other games, and characters, use favorite animations, and so on. It turns out a game prototype is based on copying elements of the design of a particular game or full copying.

Creating a game design from scratch is already a more professional and labor-intensive work, which involves enormous efforts, professional skills, and abilities (Wyatt 2012).

When creating games from scratch, you need to understand the basic stages of their creation, master the basics of game mechanics and system design, the theory of interactive storytelling, 3d modeling, programming, animations, and other programs.

It is very common for video game creators to use 3ds Max, but there are others such as Blender or Maya. Interior designers, for example, actively use 3ds Max to model interiors and exteriors. Many game companies nowadays use Blender to create game characters, weapons, or environments. This program is free but quite powerful, you can do everything there, starting from modeling and finishing with animation. But of course, there are more specific and professional programs for sculpting, texturing, or animation.

Having acquired skills in working with 3D objects and their components (vertices, edges, polygons), you can create the design of any most complex character or interior model.

That is, to create a game from scratch, you need to know the principles of working in the field of low-poly modeling, be able to adjust and optimize the design topology, and constantly work on improving models.

Game design from scratch involves the ability to work with UVW (mapping in a coordinate system), create UV maps, generate UV maps, assemble textures, model characters and space elements, and so on.

This is a time-consuming process, which further implies uploading elements on a particular engine. Later on, all kinds of designers begin work on a game, who work in a common bundle. The game world rules completely make the whole design of the game co-dependent.

Thus, it is certain that creating a game from scratch is a detailed study, tied to game logic and concept. Serious games, which are popular everywhere today, were created from scratch and had prototypes of characters in the form of real people and animals. Template games are more simplified options that also have a place to be. In 2D modeling for gadget games, such designs are quite a in demand.

3.2 Analysis of game design

Let's look at some games in terms of their design, because it's interesting to look at how design affects the perception of the game, and how important these ergonomics and aesthetics, were mentioned earlier.

The video game *Gris* is a puzzle platform game with a strong focus on narrative and visual style. The game has a very low entry-level knowledge, and it is designed for a wide audience, including those who play for the first time. For a level designer, the game is interesting primarily because it has both very original fresh ideas for puzzles, as well as a conflict between visual style and level design.

What the developers have succeeded in is the connection between narrative and level design, according to this parameter "*Gris*" can be used as an example for other games. First, it is worth remembering the level with a storm, to overcome which the player becomes physically stronger with the help of a new ability to turn into a heavy stone. This symbolizes the character's resilience and strength to deal with her problems.

Secondly, you can pay attention to the arc of the whole game, and how skillfully the various levels fit into it. For example, while the tension builds up in chapters 2 and 3, and how the player moves higher in terms of ability progression, they also move up level design. Like literally - climbing trees in the forest, and then up the tower.

Also in this game, the level designers did a very good job with the interactivity of the environment with a relatively small amount of basic mechanics. Of the whole variety, it is more rational to focus on the two discussed below.

First can be conditionally combined by the concept of "mechanics based on physical interaction." By them, I mean those that act according to the laws of physics. These are riddles with a balloon descent and an inclination of a leaning tower (Fig. 12).

The best thing about it is that to solve them, the player needs to draw parallels with the real world and the rules that are encountered in everyday life (gravity, kinetic energy when falling, and so on).

No additional in-game tutorials or hints are not required - the player simply does what logic tells him to - and solves the riddle. Level designers seem to hint a little at the functioning of the object, moving it under the weight of the character. A similar "invisible tutorial" is successfully used, for example, in "Half-Life 2".



Fig. 12. - "Warm World" from "Gris"

The second type of mechanic was invented by designers and exists only in the game world. This is using your frozen silhouette to climb onto a higher platform, and swimming over water cubes and waterfalls (including up). Mechanics have a distant connection to the real world (everyone has seen how water and ice work) but they used it in the game in a very creative way.

Thus, by combining knowledge from the real world (ice is solid, you can stand on it; you can swim up and down in the water and jump out of it) and a

demonstration of in-game use (ice "photographs" the character in the last position before which the flash occurred; water can flow up and take the shape of a cube). The player easily understands what the rules are and lives inside the "magic circle", and how they can be used to their advantage.

This game is very pleasing aesthetically, as well as understandable in its logical design and mechanics. In my opinion perception of this game is very easy and light.

Let's take a look at very a popular game "Counter-Strike". The game has been holding the lead in the Steam rankings for several years, overtaking both PUBG and Dota 2. Here the aspect of popularity is the Dust 2 map, which is very spacious in its layout (Fig.13).



Fig. 13. – Map of Dust 2

The layout of Dust 2 is based on three main paths that players run: the path to the bombsite A, the path to B, and the middle line. These are the main roads where teams clash. The layout of the Dust 2 map is called "clover" or four squares. This is because the main roads form four conjugate squares. The peculiarity of the Counter-Strike maps is that they rarely resemble each other. They are united by well-established rules of balance and level design, but locally each map is unique (Kaleev 2020).

Level designers deliberately place paths on the map so that team collisions take place in predetermined places. Level designers calculate the time it takes for both sides to get to the checkpoints - down to fractions of a second.

An important feature of Counter-Strike maps is their visual simplicity. Designers intentionally keep the picture moderately simple so that what is happening on the screen is easier to read and perceive by users.

Also, the game has one of the most important design principles of multiplayer maps - visual contrast. Even if different parts of the level look different, it is easier for players to remember the environment.

Other visual landmarks also help to remember Counter-Strike maps. They can be present how outside the level - for example, the TV tower on Overpass, which is visible from everywhere - and on the map itself.

Counter-Strike game design and level design are based on predictability. There are very few random situations in the game, this is its immediate essence.

Next game I want to talk about it's a very popular story-driven video game - The Witcher. In this game, for example, the simulation of a realistic game world is not complete without a beautiful change of day and night, as well as the use of additional light sources in the dark. The same should be said about expressive weather phenomena and effects. For example, during a storm, trees bend from strong air currents, and during rain, surfaces get wet and become shiny. Weather phenomena also affect the main character - his hair flutters in the wind, his clothes become wet, and in cold locations with snow, you can see steam from his mouth.

Simulation of wildlife allows you to make the game world even more alive. In the game, you can meet a lot of wild and domestic animals. For example, giant whales in the ocean or cats that react very violently to Geralt (main character), shy away and begin to hiss in horror.

Players will subconsciously suspect a catch if the game does not respect the simplest things - a realistic scale of buildings one to one, functional architecture, and the correct proportions of characters in the environment. For

example, the fortress of Kaer Morhen is an excellent example of architecture impressive in its realistic scale and functionality (Fig. 14).



Fig. 14. – Kaer Morhen fortress in the game "The Witcher"

The Witcher universe has its script, which adds credibility and relieves developers of the need to localize in-game resources (replacing text on textures).

The most memorable missions are usually based on some kind of large-scale social event with a large crowd. An interesting detail is that the characters change quite actively throughout the game: they change clothes and change their hairstyles. The main character grows a beard, which can be shaved if desired. The game is full of examples of storytelling through the game environment (Kadikov 2022).

Thus, the Witcher game is focused on the user being completely immersed in the virtual world of the game, fully feeling it, social life, and relationships, so that they understand the era in which the actions take place. And thanks to all the design details, a small part of which are described, this was achieved: the game is very much loved and not just played, but lived through its plot, completely immersed. You can follow the course of events in the game without even playing but watching how someone plays.

Also interesting from the point of view of design in the game "Cyberpunk 2077". The game interface is made in the tradition of flat design. There are

diegetic elements in the game: weapon interfaces, hacking, and terminal monitors. Cyberpunk can be played like a walking simulator, because of how accurately the urban landscapes are worked out there. The city is full of life, and high dynamics. There is a complete feeling of an anthill (Goncharenko 2021) (Fig.15).



Fig. 15. – Dynamics of the game "Cyberpunk"

Very often, the user does not play, but simply watches the plot of the game. In general, the game is very realistic but since this game does not have such a well-thought-out design as in The Witcher, you cannot dive into the game completely. However, the atmosphere of the world of the future is very well represented.

As it is already clear, today the possibilities for game developers are very large. This statement compiles into the design of the Last of US game. It has such a high-quality visual component that it is difficult to understand whether the film or graphics are on the screen. The game is story-driven, you can watch it like a movie. Thus, the following elements of exposition move the game forward: characters, learning elements, and narrative devices. A popular technique uses the effect of filming. This is seen immediately in the first part of the game, where the player is introduced to the essence of the father-daughter relationship. Many furnishings serve to reference the father-daughter bond throughout the game's storyline.

In the game, the sound serves the benefit of the design, enhancing its perception. It helps to focus on the elements of the game. A perfect example of level design working in tandem with storytelling can be seen right at the start: Sara falls asleep, only to be woken up by a call from Uncle Tommy. When she stands up, we see a perfect example of proper exposure. The color of the lampshade is exactly what it should be. The warm color next to Sarah's things enhances the comfort of her bed and contrasts with the cold color of the night in the reflection. The images on the wall, or the clock, would later play a role in the development of Ellie and Joel's relationship. The birthday card connects this scene with the previous one and introduces the triangle button responsible for "hand interaction" (pick up an object, open a door, etc.). The entrance to the corridor is built on the classic principles of level design. The door leads directly to the stairs, and the light of the lamp below invites the player to go down (Fig. 16). It is clear that "Last of US" uses lighting to always guide the player.



Fig. 16. - A shot from the game "Last of US"

In the second part of this game, the design is even more improved. The main character of "TLOU 2" is more mobile than in the first part: she can jump, climb ledges, crawl under trucks, and squeeze through narrow openings. And, importantly, the locations themselves in the game are more spacious than the

corridor of the first part, that is, in theory, you can get lost in them. But this won't happen due to the well-built level design. So that the world looks realistic.

This is a very beautiful game visually (Fig.17). It uses very high-quality textures, thought-out lighting, shadows, and all the details down to the smallest. This allows you to immerse yourself in the game, feel it to the maximum, understand the pain of the characters, feel the same adrenaline, and, in general, live a full game life.



Fig. 17. - A shot from the game «TLOU 2»

Some other example is the game "Uncharted" 4. Especially hideouts, there are high hideouts (the character stands in full growth) and low (the character bends down and can look out from above to shoot). Between high and low hideouts there is a buffer zone - there should not be free-standing objects of such a height on the levels (at least in conflict zones). Otherwise, the player will not be able to subconsciously classify the cover, which will irritate (Fig. 18).



Fig. 18. – Principles of standards in the design of the game "TLOU 2"

So again, you need to design levels very wisely. Because the perception of the game directly depends on the quality and understanding of design. Since game design is much more than just graphic components and visual aesthetics, we can say that the overall set of game mechanics, through thoughtful interaction, involves the player in a virtual world created specifically to live in another reality.

Thus, to create a strong immersive effect in the design of the game world, it is very important to imitate reality as faithfully as possible. This is done to force the player to identify the virtual world with the real one and not cause any conflicts in his subconscious.

4 Conclusion

In the first chapter of the study, the features of the game design were analyzed in detail. First, we decided that the design of a video game is not only a visual and graphic component but also much more - a combination of all the

properties of game mechanics that interact to make the user experience as comfortable and understandable as possible.

That is, we are talking about the fact that in modern game design, the ability to organize a common visual component is very important, organically fitting it into the space of user actions, which allows you to comprehend what is visible, fill it with content that will arouse interest, attract attention.

It was also determined that game design is presented as an aesthetic category of modern culture, one of the types of modern art.

In game design, types have been developed, each of which solves its problems when developing a game. There are such types as world design, system design, content design, game texts, level design, and interface design. So, for example, system design is responsible for ensuring that the player's actions correspond to the objects and planes with which he interacts in one way or another, and level design fills the maps in such a way that the user understands where to go and why, how to solve the game problem. The design of the world is directly the space in which the action of the entire gameplay takes place. And, even though within these types there is a certain "creative" freedom, the whole process of creating a design somehow obeys the standards of the game world.

Usually, in game design, any "creative" processes of designers-developers need to be rationalized and brought into an ergonomic state of interaction between space and character. For the game to be perceived positively by the user, so they want to play it, it is necessary to adapt the game space and all its components to the psychology of the character and technical features as much as possible. For example, the need to comply with the scale, size, logic of movement, and so on.

Creating a game is always a complex process, but there are ways to simplify it. This is possible with the use of special programs, the so-called engines, which have built-in editable or non-editable templates and the ability to organize game mechanics and game 2D or 3D design. Some designers are engaged in copying (transferring content) other games. And of course, free models which can be bought on stock resources, that were previously created

by some designer and with which you can already work in the direction of giving mechanics.

Creating games from scratch is the complete creation of the game world with all its standards and mechanics, which template games are deprived of. They have a limited set of properties, which is why it is very difficult to achieve the construction of game logic in a single key, ergonomics, and a single concept in each game element.

After analyzing the designs of popular games, we concluded that the perception of the game directly depends on how well the design is worked out. Game design is much more than just a graphic component, visual aesthetics, based on which it is quite possible to speak of a general set of game mechanics that, through thoughtful interaction, involve the player in a virtual world created specifically so that the user can live a different reality.

Game design has a pronounced aesthetic property, often it allows you to over-emphasize the player's attention from unnecessary details. Some disadvantages for advantages. A well-thought-out world of elements, a rich objective world, and a developed social component - involves the game process, makes the story understandable and interesting, and forms the player's sense of belonging to other processes.

Answering the main question, we say that design in games today is extremely important. Moreover, without thoughtful and well-designed design, games would not exist in the form in which we can see them now.

Thus, the tasks of this work are solved. The goal has been reached.

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