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Mikhail Kadikov

INTUITIVE LEVEL DESIGN



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«Издательские решения»

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Good design is built around how people perceive the world and how their thinking works. This book will teach you to look at game development through the lens of the psychology of perception. You will gain a powerful tool for your arsenal — a system of universal principles of intuitive level design. With it, you will learn how to convey information to the player in a clear, readable, and easy-to-understand form. Read, learn, and apply it in practice!

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Intuitive level design

Mikhail Kadikov

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Why user oriented design is important?

Computer games are interactive by nature. Unlike books and films, they are built around the process of interaction, and the overall impression of a game depends on how comfortable that interaction is. Therefore, to create an engaging game, a developer must devote a significant portion of their time to ensuring **comfortable interaction** with each of its elements, whether it is the menu user interface, character controls, or the level environment.

The level of usability can be judged by the presence or absence of irritants that cause frustration. An inconvenient menu, unresponsive controls, or a confusing level — all of these prevent a video game from fulfilling its main function: entertaining the player.

Imagine that a game is a tool for extracting fun. Developers who ignore user comfort are doomed to create something incapable of performing its main function. After all, it is impossible to extract fun with a tool that causes pain and suffering to its owner during use. The life of impractical things ends in the trash, and games that cause irritation never become popular.

Do you want your game to entertain and bring enjoyment? Then you will need to figure out how to make interacting with it comfortable.

Space and comfort

Game space is the place where players spend most of their time interacting with the environment. For this reason, level design deserves the closest possible attention.

In game development, the design of space and the direction of gameplay events are handled by the level designer. It is their responsibility to ensure that the gameplay is not only engaging but also **comfortable**.

In level design, the comfort of gameplay depends on two criteria: ease of movement through the virtual world and the quality of information delivered through the environment.

Ease of movement is achieved by creating conditions for the smoothest possible, barrier-free motion. This means preventing the controlled character from getting “stuck in textures” and minimizing camera shaking while moving across uneven surfaces.

The **quality of information** a person receives from the environment is also an important condition for comfortable interaction with the virtual world. Based on this information, the player should easily determine what goal lies ahead, what obstacles must be overcome, and what opportunities are currently available for completing tasks.

If the information embedded in the environment is insufficient, the player feels discomfort. The game seems confusing and too difficult to learn. To prevent this, the space must be highly **informative**.

Information is useful only when it is **clearly visible** and **easy to perceive**. Otherwise, all the careful work of the designer will be wasted. And while players might tolerate a shaky camera, the absence of information necessary to progress will inevitably leave them stuck.

To make information simple, clear, and noticeable, we can rely on the psychology of human perception.

Psychology of perception and design

If we look at fields such as architecture, urban navigation design, interface design, or industrial design, we will find that all of them — without exception — are based on the psychology of perception. This is because **good design is built around how people perceive the world and how their thinking processes work.**

For example, an architect considers how people perceive architectural forms and spaces in order to create a safe and comfortable environment. A road navigation designer makes signs bright and noticeable so that drivers can recognize them accurately from a long distance. An interface designer takes into account the amount of information displayed on the screen, highlighting the important elements and hiding unnecessary ones. An industrial designer uses the shape of an object to suggest its purpose and the correct way to interact with it.

Universal principles

Studying the psychology of perception has led to the emergence of a number of **universal principles** that have proven effective in many areas of design, including video game development.

In level design, eight universal principles are commonly identified that help make virtual spaces **intuitive** and interaction with their interactive elements **comfortable**.

Next, we will examine each principle in detail and explore ways to apply them using examples from popular games.

Visual presentation

If we take a look at the urban environment around us, we will notice that it contains a large amount of visual information.

For example, drivers use road signs, lane markings, and traffic lights as sources of information about speed limits. Shops, cafés, pharmacies, and hair salons inform visitors about their goods and services through advertising signs, posters, and notice boards. A person who finds themselves in an unfamiliar part of the city navigates using street name signs and house numbers. In case of danger, people also receive vital information visually — where is the nearest emergency exit, first aid kit, fire extinguisher, or emergency call button?

Accordingly, human behavior in public spaces, on roadways, and in industrial settings is regulated through visual sources of information — such as signs, indicators, and directive placards.

Why is this visual method of conveying information so effective? Because it frees a person from the need to constantly store information in their memory. In any unclear situation, it is enough to simply look around and obtain all the necessary instructions directly from the environment — this is extremely convenient.

The same principle applies to everyday objects. Well-designed items intuitively communicate their function and proper mode of use through their appearance. In contrast, poorly designed objects fail to convey such cues and compel users to consult instruction manuals.

What conclusion can we draw? Good design is always **communicated through visuals**.

Show, don't tell

In real life, people use all their senses to obtain information from the environment — sight, hearing, smell, touch, taste, and the vestibular system. In computer games, this is limited mostly to sight and hearing. Because of this, many beginner designers try to convey information to the player through direct text instructions on the screen or voice-over messages. This method can work, but the problem is that reading hints or listening to speech requires focus, which distracts the player from full immersion in the gameplay.

So how can information be delivered to the player without pulling them away from the gameplay? The answer lies in the psychology of human perception.

Our brain is capable of instantly analyzing the surrounding environment and interpreting large amounts of data on a subconscious level. For this reason, a designer should learn to convey information indirectly, addressing the player's subconscious directly.

In this case, the player will not feel as if they are constantly being led by the hand or given the solution to a puzzle. If the environment provides enough information to complete the level, the player will feel that they figured everything out on their own, without anyone's help. In reality, their brain received all the necessary hints unconsciously in the background.

To summarize: embedding clear visual information into the environment allows the designer to communicate with the player on a subconscious level without distracting them from the gameplay. How is it implemented in practice?

In computer games, the principle of Visual Presentation is implemented through **visual language**. In level design, four types of visual language are commonly distinguished: the shape language, the symbol language, scripted scenes, and environmental storytelling.

Shape language

The **shape language** is the first type of visual language that uses simple geometric forms to convey gameplay possibilities to the player.

The shape language is intuitively understood even by young children and requires no instruction, as it is based on our real-world experiences.

If you take a look at the design of any modern playground, you'll find a full range of basic geometric forms such as steps, slides, bars, and so on.

On a playground, a child learns how to interact with their surroundings and begins to understand the physics of objects — they climb up the steps, slide down, hang from bars, and roll balls. Through play, a child develops an understanding of what to expect when interacting with objects of different shapes. The experience gained in early childhood becomes deeply ingrained and remains with a person throughout their life.

That's why it's so important for a level designer to build environments using simple geometric forms as a foundation — shapes that visually suggest how the player can and should interact with them.

Next, we'll explore examples of the most commonly used shapes, examine the feelings they evoke, and see how they influence player behavior.

Sharp shapes are subconsciously associated with pain and tend to evoke a sense of repulsion. Because of this, they are often used to define the boundaries of the game space, signal danger, and create a feeling of discomfort. Let's look at these uses one by one.

Pointed objects are most commonly used to mark the edges of the playable area.

For example, in urban environments, this role is effectively played by barricades made of construction debris, wrought iron fences with spikes, barbed wire obstacles, or wooden palisades (Fig. 1).



Fig. 1

The Last of Us © 2013, Naughty Dog

Dishonored © 2012, Arkane Studios

The Last of Us Part II © 2020, Naughty Dog

Shadow of the Tomb Raider © 2018, Eidos Montreal

In natural environments, space can be limited by sharp tree branches and roots, thorny bushes, icicles, stone stalactites, and similar features (Fig. 2).



Fig. 2

The Last of Us Part II © 2020, Naughty Dog

Shadow of the Tomb Raider © 2018, Eidos Montreal

In games with climbing mechanics, sharp environmental elements are used to mark ledges that cannot be grabbed.

For example, in the *Uncharted* series (2007—2017, Naughty Dog), level designers mark the boundaries of climbing routes using spikes and barbed wire (Fig. 3).

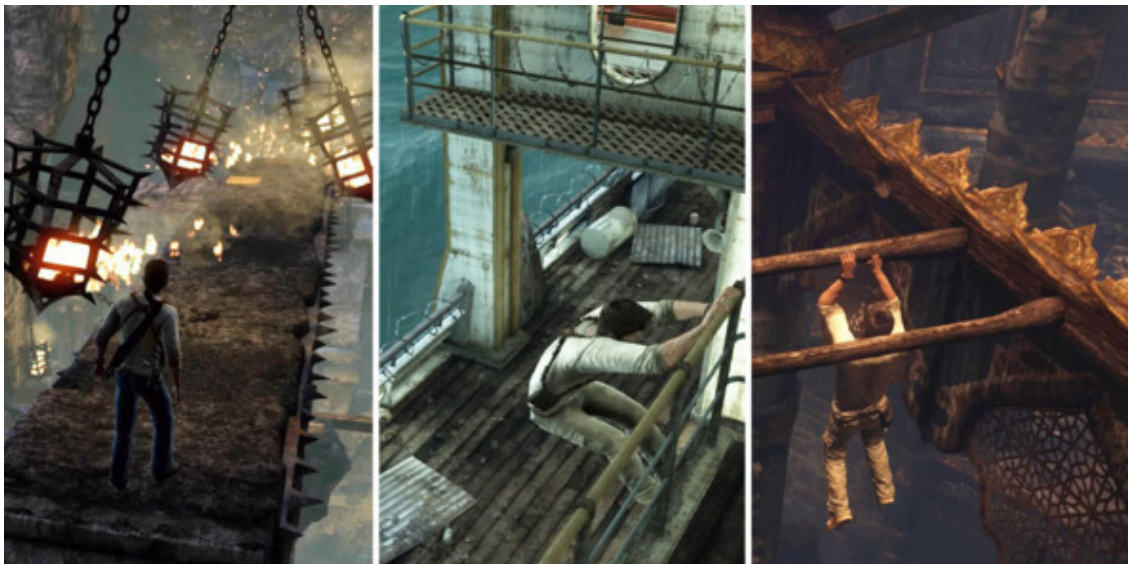


Fig. 3

Uncharted: Drake's Fortune © 2007, Naughty Dog

Uncharted 3: Drake's Deception © 2011, Naughty Dog

Sharp shapes are perfect for signaling danger. In most games, damage-dealing elements are designed using pointed and jagged forms. Since sharpness is instinctively perceived as dangerous, players tend to avoid physical contact with such objects.

For example, in *Shadow of the Tomb Raider* (2018, Eidos Montréal), the developers inform the player about the fatal consequences of falling to the bottom of a pit by placing sharpened spikes (Fig. 4.1 and 4.2). In another episode, when the main character is caught in a powerful stream of water rushing through the city streets, dangerous environmental elements are marked by piles of construction debris with sharp pieces of rebar sticking out of them (Fig. 4.3).

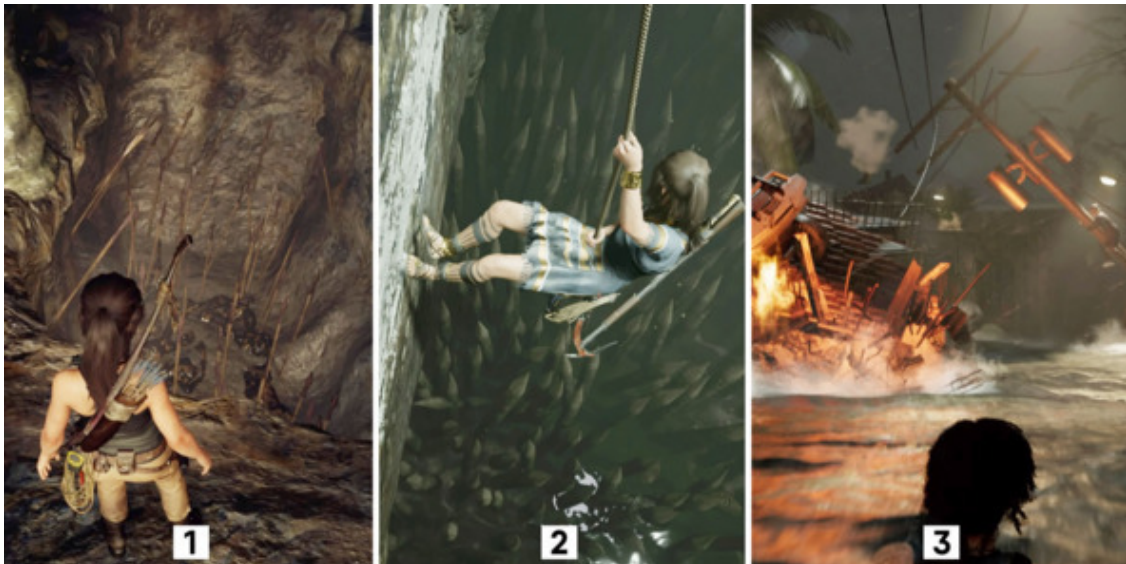


Fig. 4

Shadow of the Tomb Raider © 2018, Eidos Montreal

If a game includes mechanics such as kicking or throwing, players will immediately associate them with the gameplay possibility of damaging enemies using sharp environmental elements.

For example, one of the distinctive features of the level design in *Dying Light* (2015, Techland) and *Bulletstorm* (2011, People Can Fly) is the presence of a large number of pointed objects. The threatening appearance of these objects practically screams to players that they can deal with enemies by pushing them onto sharp spikes (Fig. 5).



Fig. 5

Dying Light © 2015, Techland

Bulletstorm © 2011, People Can Fly

Sharp forms can also be used to create a sense of discomfort. Environments filled with pointed elements generate a feeling of danger and hostility that seems to emanate from the surroundings themselves.

For example, the city of Yharnam in *Bloodborne* (2015, FromSoftware) is designed in a dark Gothic style, characterized by pointed towers with spires as well as wrought-iron fences with sharpened spikes (Fig. 6.1).

In the level design of *The Evil Within* (2014, Tango Gameworks), the developers use a large number of sharp elements — barbed wire, rotating blades, circular saws, spikes, and more (Fig. 6.2).

Bandit camps in *Horizon Zero Dawn* (2017, Guerrilla Games) are subconsciously perceived as dangerous places precisely because of their sharp decorative elements — dry roots twisting around buildings and barricades made of sharpened stakes (Fig. 6.3).



Fig. 6

Bloodborne © 2015, FromSoftware

The Evil Within © 2014, Tango Gameworks
Horizon Zero Dawn © 2017, Guerrilla Games

Steps are another key environmental element whose shape is easily recognizable from a distance, and whose gameplay function is immediately clear. The rectangular shapes that form steps visually suggest to the player that they can be climbed.

Upon closer inspection, nearly every level in a platforming game is filled with oversized steps (Fig. 7, 8).



Fig. 7

The Legend of Zelda: The Wind Waker HD © 2013, Nintendo
Fortnite © 2017, Epic Games
Rime © 2017, Tequila Works



Fig. 8

Assassin's Creed Unity © 2014, Ubisoft
Dishonored © 2012, Arkane Studios
Call of Duty: Warzone © 2020, Infinity Ward

The developers of *The Last of Us Part II* (2020, Naughty Dog) often use passenger cars and trucks as steps (Fig. 9).



Fig. 9

The Last of Us Part II © 2020, Naughty Dog

In natural environments, step-like shapes are often formed by terraces, sunken parts of the landscape, or ruins (Fig. 10).

In the flooded city sequence from *Uncharted: Drake's Fortune* (2007, Naughty Dog), the main characters ride a jet ski upstream along the river. The step-like shape of the river rapids visually guides the player, indicating the correct route upward (Fig. 11).



Fig. 10

The Last of Us Part II © 2020, Naughty Dog

Uncharted 2: Among Thieves © 2015, Naughty Dog



Fig. 11

Uncharted: Drake's Fortune © 2007, Naughty Dog

Using rocks that resemble giant steps improves navigation through the language of shapes. When moving through mountainous terrain, players naturally search for the most convenient walking route, subconsciously analyzing the rough forms of the landscape.

In *Genshin Impact* (2020, miHoYo) and *Death Stranding* (2019, Kojima Productions), developers shape rocks like giant steps to indicate the main path. Players will almost always prefer to climb upward along these natural terraces rather than scale a steep vertical wall (Fig. 12).



Fig. 12

Genshin Impact © 2020, miHoYo

Death Stranding © 2019, Kojima Productions

The step shape can also be used creatively to design puzzles, allowing the player to form a set of stairs using movable objects. Such as boxes, carts, dumpsters, and so on.

For example, in the *Uncharted* (2007—2017, Naughty Dog) and *The Last of Us* (2013—2020, Naughty Dog) series, designers often present the player with a puzzle involving an initially unreachable platform and a movable crate hidden somewhere nearby (Fig. 13).



Fig. 13

The Last of Us © 2013, Naughty Dog

Uncharted 4: A Thief's End © 2016, Naughty Dog

The Last of Us Part II © 2020, Naughty Dog

In the trial dungeons of *The Legend of Zelda: Breath of the Wild* (2017, Nintendo), the player uses the ability to move massive metal blocks to create steps (Fig. 14.1).

Similarly, in *Half-Life: Alyx* (2020, Valve), there is a classic crate-as-step puzzle, where the player must use a crate to climb into a locked house through a window (Fig. 14.2).

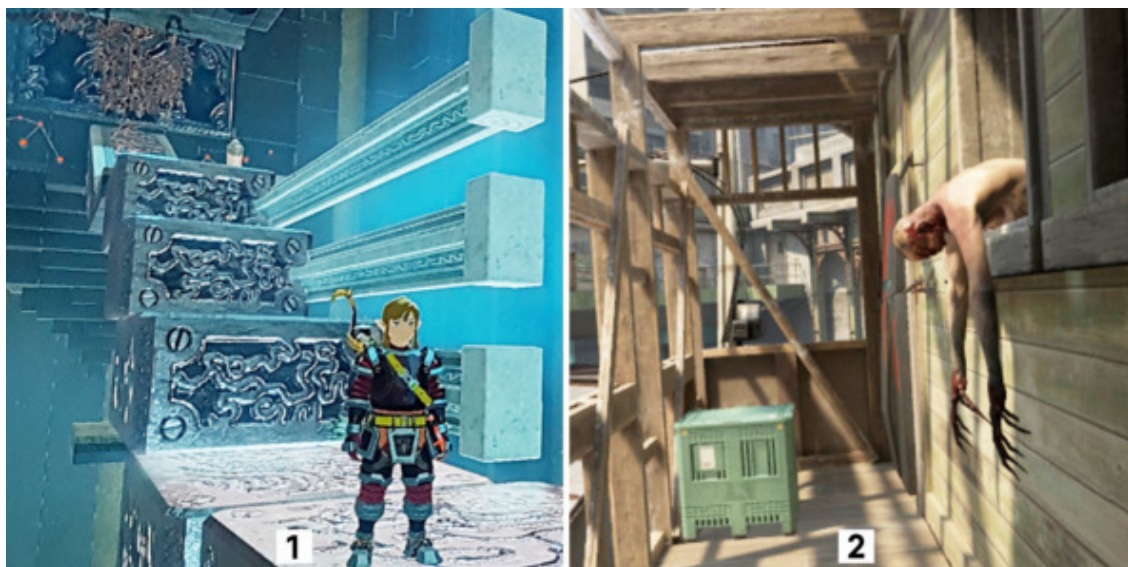


Fig. 14

The Legend of Zelda: Breath of the Wild © 2017, Nintendo

Half-Life: Alyx © 2020, Valve

The shape of a **ramp** — also known as a slope or incline — catches the eye and naturally guides the player's attention, encouraging them to run upward.

To climb a set of stairs, the player usually has to press the jump button several times and spend extra time. Ramps solve this problem by allowing continuous movement without loss of speed. At the same time ramps acting as natural guides.

When players need to move quickly through a level, they will usually prefer ramps over stairs.

For example, in games with parkour elements such as *Dying Light* (2015, Techland) and *Assassin's Creed Syndicate* (2015, Ubisoft), ramps are used to draw the player's attention to the main movement routes (Fig. 15).

Combat arenas in *Call of Duty: Warzone* (2020, Infinity Ward) are designed in a way similar to high-speed racing tracks. Players, like race cars, are expected to keep moving forward without slowing down. Fast, unobstructed vertical movement is achieved through the use of ramps (Fig. 16).



Fig. 15

Dying Light © 2015, Techland

Assassin's Creed Syndicate © 2015, Ubisoft



Fig. 16

Call of Duty: Warzone © 2020, Infinity Ward

In natural environments, the shape of a ramp appears in the form of mountain slopes, which are easy to recognize even from a distance.

The mountainous landscapes in *Genshin Impact* (2020, miHoYo) and *The Legend of Zelda: Breath of the Wild* (2017, Nintendo) are good examples of effective use of the language of shapes. Wherever the player goes, they encounter triangular mountains with ramp-like slopes leading up to their peaks (Fig. 17).



Fig. 17

Genshin Impact © 2020, miHoYo

The Legend of Zelda: Breath of the Wild © 2017, Nintendo

In the “Volga” location from *Metro Exodus* (2019, 4A Games), two harbor cranes can be found with their booms tilted downward, resting against nearby buildings. This creates a ramp-like shape, allowing players to easily notice the possibility of climbing onto the crane tower even from a very long distance (Fig. 18).



Fig. 18*Metro Exodus* © 2019, 4A Games

In *Shadow of the Colossus* (2018, Team Ico), the main character must find a way to reach the weak points on the bodies of the colossi in order to defeat them. To indicate new, dynamically emerging opportunities, the developers skillfully use the Shape Language.

In the battle with the knight-like colossus, the player initially cannot climb onto the giant's body because its legs have a rounded shape that offers no grip. However, when the giant slams his sword down at the protagonist, the enormous stone blade briefly turns into an improvised ramp. This gives the player the opportunity to run up the blade, grab onto the colossus's arm, and begin searching for its weak point (Fig. 19.1).

A similar situation occurs in the fight with the flying serpent-like colossus. If the player destroys the air sacs on the creature's body, the monster begins dragging its wings along the ground. The wings form a ramp-like shape that invites the player to climb up onto the serpent's back (Fig. 19.2).

**Fig. 19***Shadow of the Colossus* © 2018, Team Ico

From a gameplay perspective, ramps can also serve as an engaging puzzle element. You can give the player the opportunity to create a ramp themselves by performing a certain action.

For example, in *God of War* (2018, SCE Santa Monica Studio), the developers use an interactive suspension bridge as part of a puzzle. After crossing it and reaching the control wheel, the player can rotate the entire structure and easily turn it into a ramp, gaining access to the upper level (Fig. 20.1).

In *Tomb Raider* (2013, Crystal Dynamics), one of the challenge tombs features a counterweight puzzle. To stabilize the swinging structure, the player must weigh down one side of the platform with objects. As a result, the platform forms a proper ramp that allows the protagonist to build momentum and jump to the required ledge (Fig. 20.2).



Fig. 20

God of War © 2018, SCE Santa Monica Studio

Tomb Raider © 2013, Crystal Dynamics

A **steep slope** is used to serve two main purposes: defining the boundaries of the playable area and creating one-way movement.

The boundaries of the playable world in *Red Dead Redemption 2* (2018, Rockstar Games) appear highly natural thanks to the smart use of landscape features. In the northern part of the map, players eventually encounter towering mountains with steep slopes that cannot be climbed. When attempting to ascend them — either on foot or on horseback — the protagonist inevitably slides back down. This approach creates a natural boundary without relying on invisible walls or out-of-place fences, which could otherwise break immersion (Fig. 21).



Fig. 21

Red Dead Redemption 2 © 2018, Rockstar Games

A steep descent is often used in combination with a water barrier. When players see a steep slope leading down into the water, they immediately understand that trying to swim across the river is pointless, since they would not be able to climb back onto land on the other side anyway (Fig. 22).

In urban environments, steep rooftops are often used to limit the playable space.

For example, in the Dishonored series (2012—2016, Arkane Studios), the choice of city architecture with sloped roofs was not accidental. If the player tries to teleport to the very top of a building, they will immediately slide back down. In this way, the boundary of the level appears as a natural and impassable obstacle (Fig. 23).



Fig. 22

Red Dead Redemption 2 © 2018, Rockstar Games

The Last of Us Part II © 2020, Naughty Dog



Fig. 23

Dishonored © 2012, Arkane Studios

Dishonored 2 © 2016, Arkane Studios

A steep descent is an effective way to organize one-way movement within a location.

In the Uncharted series (2007—2017, Naughty Dog), movement is often designed as a loop: the player runs toward a designated objective and then returns to the starting area via the shortest one-way route. To enforce movement in only one direction, designers use steep slopes that cannot be climbed upward but allow the player to quickly slide down (Fig. 24).



Fig. 24

Uncharted 4: A Thief's End © 2016, Naughty Dog

Uncharted: The Lost Legacy © 2017, Naughty Dog

From a gameplay perspective, a steep descent can be used as a type of acrobatic puzzle.

For example, in the episode with the cathedral ruins in Scotland from *Uncharted 4: A Thief's End* (2016, Naughty Dog), the protagonist encounters an obstacle in the form of a steep slope. To reach the other side, the player must calculate the timing of a jump while sliding downward and grab onto ledges on the stone pillars located in the center of the slope (Fig. 25.1).

In the plane crash scene from *Tomb Raider* (2013, Crystal Dynamics), the main character slides down a steep slope while maneuvering between tumbling pieces of a burning airplane. The gameplay is built around finding a safe path and avoiding dangerous objects, collisions with which result in the character's death (Fig. 25.2).



Fig. 25

Uncharted 4: A Thief's End © 2016, Naughty Dog
Tomb Raider © 2013, Crystal Dynamics

Round or cylindrical objects are inherently unstable. They can be easily pushed or rolled.

This feature is actively used by designers at Nintendo to create interesting ways for players to interact with the environment. For example, in *The Legend of Zelda: Skyward Sword* (2011, Nintendo), a huge stone sphere allows the protagonist to move across scorching lava. Meanwhile, a massive cylindrical log can easily be pushed down a slope to knock down several enemies at once (Fig. 26).



Fig. 26

The Legend of Zelda: Skyward Sword © 2011, Nintendo

Rounded shapes are often used as natural spatial barriers.

For example, in the train level from *Uncharted 2: Among Thieves* (developed by Naughty Dog), the developers use tanker train cars in places where they want to prevent the player from climbing up (Fig. 27.1).

In the museum episode from *Uncharted 3: Drake's Deception* (2011, Naughty Dog), semi-circular roofs serve as barriers (Fig. 27.2).

In *Shadow of the Colossus* (2018, Team Ico), rounded shapes are used to indicate areas on the colossi's bodies that the player cannot grab onto (Fig. 27.3).



Fig. 27

Uncharted 2: Among Thieves © 2015, Naughty Dog

Uncharted 3: Drake's Deception © 2011, Naughty Dog

Shadow of the Colossus © 2018, Team Ico

If sharp objects are associated with danger, rounded shapes are their complete opposite. They subconsciously attract and evoke a sense of safety.

Therefore, if you want certain environmental elements to be perceived by the player as harmless, use objects with smooth, rounded shapes (inflatable rings, pillows, mattresses, etc.) or “fluffy” vegetation (leafy trees, lush bushes, haystacks, etc.).

For example, one of the signature features of the *Assassin's Creed* series (2007—2020, Ubisoft) is the leap from rooftops into piles of hay or leaves (Fig. 28.1).

In *Dying Light* (2015, Techland), the protagonist can safely jump from dizzying heights onto plastic garbage bags and mattresses without taking damage (Fig. 28.2).

As soon as a player sees a soft, rounded object, it becomes immediately clear that the surface is not only harmless but may also cushion a fall from height.



Fig. 28

Assassin's Creed Syndicate © 2015, Ubisoft

Dying Light © 2015, Techland

In games with stealth elements, vegetation is often used as islands of safety where the player can hide from enemies. This works because, in dangerous situations, people instinctively run to hide in the nearest bushes.

For example, in *Horizon Zero Dawn* (2017, Guerrilla Games), the protagonist hides from mechanical dinosaurs in patches of tall, lush grass (Fig. 29.1).

In the underwater levels of *Shadow of the Tomb Raider* (2018, Eidos-Montréal), it is easy to hide from schools of piranhas in underwater plants (Fig. 29.2). On combat arenas, the player can also take cover from enemies by pressing against walls covered with dense vegetation (Fig. 29.3).

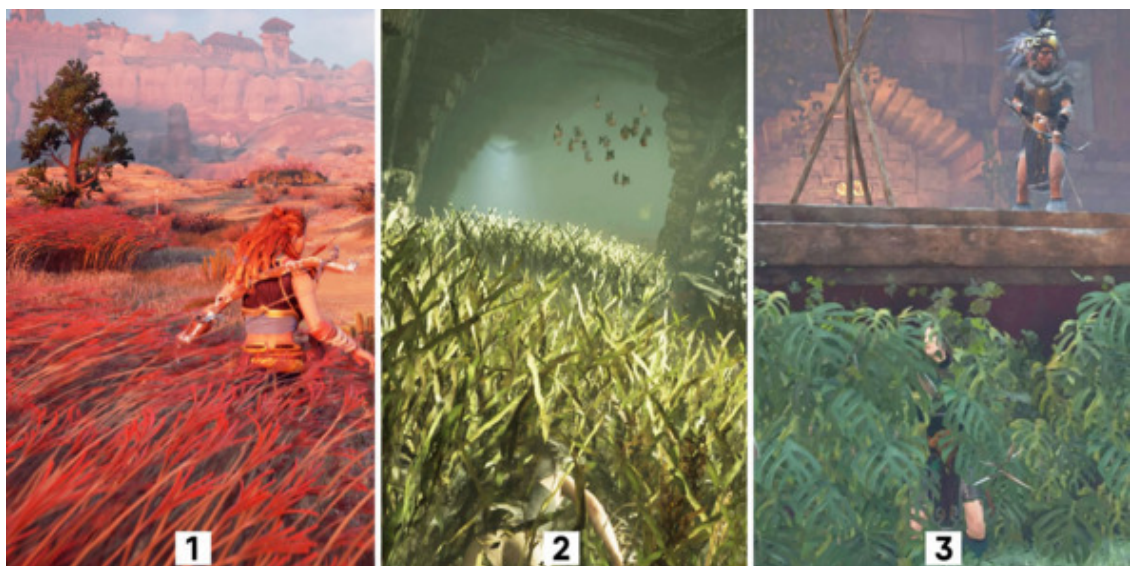


Fig. 29

Horizon Zero Dawn © 2017, Guerrilla Games

Shadow of the Tomb Raider © 2018, Eidos Montreal

In shooters, vegetation is often used as cover that blocks the line of sight. It does not provide physical protection, but in different configurations it can create interesting gameplay experiences.

For example, locations in *Red Dead Redemption 2* (2018, Rockstar Games) feature various types of vegetation, each creating a unique combat experience. In wheat fields, the player can hide by moving while crouched (Fig. 30.1). Orchards with bushes form multiple islands of safety, and moving between them exposes the player to the risk of being detected (Fig. 30.2). Cornfields with rows of corn, meanwhile, provide an excellent environment for a game of hide-and-seek (Fig. 30.3).



Fig. 30

Red Dead Redemption 2 © 2018, Rockstar Games

Bars or **horizontal rails** are ideal for indicating places the player can grab onto.

In *Assassin's Creed Unity* (2014, Ubisoft), crossbars in the form of sign mounts on building facades are part of acrobatic routes (Fig. 31.1).

In levels from *The Legend of Zelda: The Wind Waker HD* (2013, Nintendo), crossbars are used to visualize points that the player can latch onto with the whip (Fig. 31.2).

Meanwhile, the developers of *The Legend of Zelda: Skyward Sword* (2011, Nintendo) turned a crossbar into an interactive switch that can be activated by hanging from it (Fig. 31.3).

When several bars are arranged vertically in a row, they form the familiar shape of a **ladder**. This approach is typically used in situations where a traditional staircase wouldn't fit the context and needs to be substituted with other objects. (Fig. 32).



Fig. 31

Assassin's Creed Unity © 2014, Ubisoft

The Legend of Zelda: Wind Waker HD © 2013, Nintendo

The Legend of Zelda: Skyward Sword © 2011, Nintendo



Fig. 32

The Legend of Zelda: Wind Waker HD © 2013, Nintendo

Uncharted 3: Drake's Deception © 2011, Naughty Dog

Bars are also commonly used in the visual design of objects that can be pulled or pushed. A bar-shaped handle sends a subconscious signal that it can be grabbed in order to move the object. That's why in virtually every puzzle involving pushable objects, a handle is always present (Fig. 33).

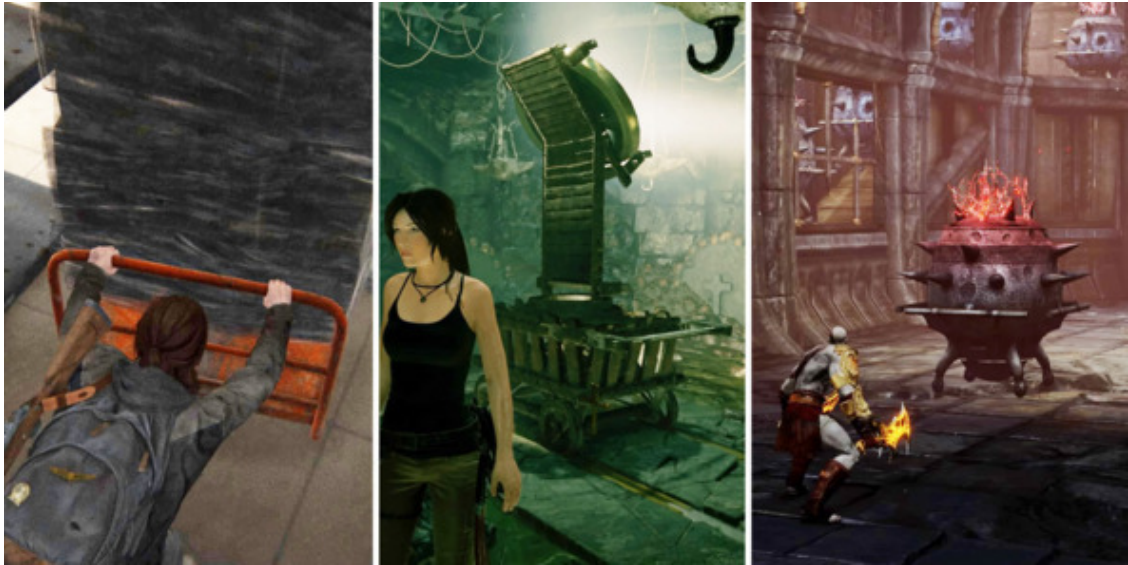


Fig. 33

The Last of Us Part II © 2020, Naughty Dog

Shadow of the Tomb Raider © 2018, Eidos Montreal

God of War III © 2010, SCE Santa Monica Studio

An **opening** of any shape naturally draws attention, encourages exploration, and is often perceived as a safe space.

Level designers of the Uncharted series (2007—2017, Naughty Dog) and the The Last of Us series (2013—2020, Naughty Dog) often block the main entrances to buildings, forcing the player to search for an alternative route, which frequently begins with a breach in a wall or a giant shattered window (Fig. 34).



Fig. 34

Uncharted 3: Drake's Deception © 2011, Naughty Dog

The Last of Us Part II © 2020, Naughty Dog

An empty window frame without glass is an effective way to communicate gameplay possibilities.

In the virtual London of *Assassin's Creed Syndicate* (2015, Ubisoft), all interactive windows lack window frames. This detail helps the player quickly identify which of the many windows on a building's facade can be climbed through — and which cannot (Fig. 35.1).

To hint where enemies might appear, the designers of *Call of Duty: Warzone* (2020, Infinity Ward) made all interactive windows single-pane, while static windows that block the line of sight are double-pane (Fig. 35.2).

The developers of *Uncharted 3: Drake's Deception* (2011, Naughty Dog) also use the window-without-a-frame technique to show the only correct way to enter a building (Fig. 35.3).



Fig. 35

Assassin's Creed Syndicate © 2015, Ubisoft

Call of Duty: Warzone © 2020, Infinity Ward

Uncharted 3: Drake's Deception © 2011, Naughty Dog

Openings of any shape visually invite the player to throw something through them. The shape of the opening itself often hints at which object is the right size or shape to fit through.

Designers at Nintendo use the language of shapes to visualize enemies' weak points. For example, the animated statues in *The Legend of Zelda: The Wind Waker HD* (2013, Nintendo) periodically open their mouths, hinting to the player that a bomb can be thrown inside (Fig. 36.1).

In the puzzle design of *The Legend of Zelda: Breath of the Wild* (2017, Nintendo), the developers deliberately add circular funnel-shaped openings in places where the player is expected to throw a round bomb (Fig. 36.2).



Fig. 36

The Legend of Zelda: Wind Waker HD © 2013, Nintendo

The Legend of Zelda: Breath of the Wild © 2017, Nintendo

Rectangular shapes convey a sense of confidence and stability because their physical characteristics allow for positive interaction. Platforms can be run across, ledges can be grabbed, and boxes can be used as cover.

Unlike spheres and cylinders, rectangular blocks are difficult to move and cannot be rolled. Because of this, they are subconsciously perceived as stable objects that can provide protection in dangerous situations.

In most shooters, rectangular blocks are the primary elements used to construct combat arenas. The rectangular shape of an object visually suggests to the player which objects can be used as cover and provide safety (Fig. 37).



Fig. 37

The Last of Us Part II © 2020, Naughty Dog

Uncharted 4: A Thief's End © 2016, Naughty Dog

Deus Ex: Mankind Divided © 2016, Eidos Montreal

Rectangular platforms communicate to the player which areas of a level can be walked on.

In one of the levels from *Shadow of the Tomb Raider* (2018, Eidos-Montréal), the protagonist runs through the streets of a flooded city while escaping a powerful water stream. Here the developers skillfully use the language of shapes: rectangular platforms form the only correct path, while sharp, pointed objects create a dangerous zone, thus limiting the playable space (Fig. 38.1).

In *Assassin's Creed Syndicate* (2015, Ubisoft), platforms are used to mark routes that help the player quickly cross the virtual River Thames. Floating platform-crates guide the player toward points from which they can jump onto a passing ship and then continue moving toward the opposite bank (Fig. 38.2).

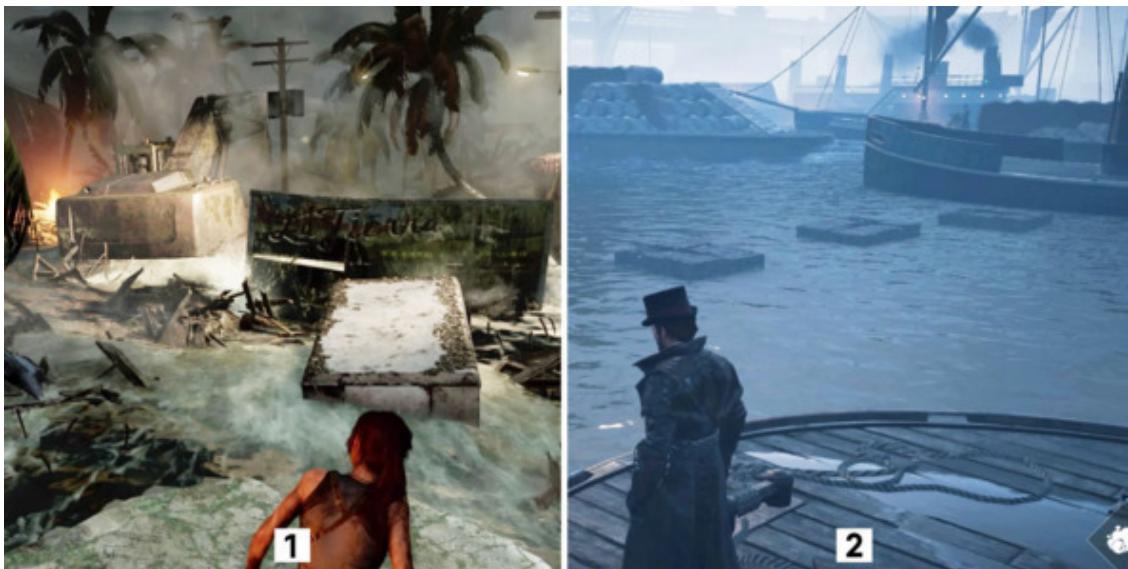


Fig. 38

Shadow of the Tomb Raider © 2018, Eidos Montreal

Assassin's Creed Syndicate © 2015, Ubisoft

In combination with blocking walls, platforms are an effective way to show the player a way out of the water.

In the “El Dorado” episode from *Uncharted: Drake's Fortune* (2007, Naughty Dog), the protagonist finds himself in a flooded courtyard. He can escape the trap only by climbing onto a platform that serves as the only accessible way back to land. Meanwhile, the surrounding walls rising from the water visually deny any possibility of positive interaction (Fig. 39.1).

A subconscious reading of the rough landscape shapes in *Far Cry* (2004, Crytek) allows the player to instantly understand which parts of the tropical island are accessible from the water and which are not. Here, white sandy beaches act as platforms, while steep cliffs descending into the water serve as barriers (Fig. 39.2).



Fig. 39

Uncharted: Drake's Fortune © 2007, *Naughty Dog*

Far Cry © 2004, *Crytek*

To summarize: by combining different shapes effectively, a designer can convey information about accessible and inaccessible areas, guide player movement, and mark safe or dangerous objects. When prototyping a level, begin communicating with the player using the shape language — and only then, if needed, add other types of visual language.

Symbol language

The **symbol language** is the second type of visual language that uses symbols to convey information to the player about their gameplay possibilities.

When the shape language is not enough, the symbol language comes into play. It allows designers to convey any information through three types of signals: **signs, markers, that confirm interaction** and **markers that deny it**.

The first type of signal is the **sign**. Signs are the simplest and most effective tools for visually conveying information. This category includes text and icon signs, maps, diagrams, murals, graffiti, and similar elements.

When it comes to designing the visual content of signs, using icons is usually the most effective approach. This is because someone who can't read or doesn't speak the game's language won't be able to understand textual information. In contrast, familiar visual symbols in the form of icons can be understood even by a child.

In *The Legend of Zelda: Breath of the Wild* (2017, Nintendo), there is a unique fictional writing system that appears on many signs throughout the game world. However, all gameplay-relevant information is conveyed through icons. Each shop features signs with recognizable symbols that reflect the goods sold there. As a result, players can easily determine which building contains the item they are looking for (Fig. 40.1).

A similar technique is used in *The Witcher 3: Wild Hunt* (2015, CD Projekt RED), where signboards include icons alongside text written in a fictional language. For example, at the location with the tavern “Seven Cats”, players can see the familiar silhouette of a cat (Fig. 40.2), which serves as the symbol of that location.

The faster the pace of the game, the more beneficial it becomes to replace text with icons. This explains why the developers of *Team Fortress 2* (2007, Valve) designed supply lockers using icons. Reading text requires mental effort and immediate concentration, whereas a visual image is processed almost instantly on a subconscious level (Fig. 40.3).

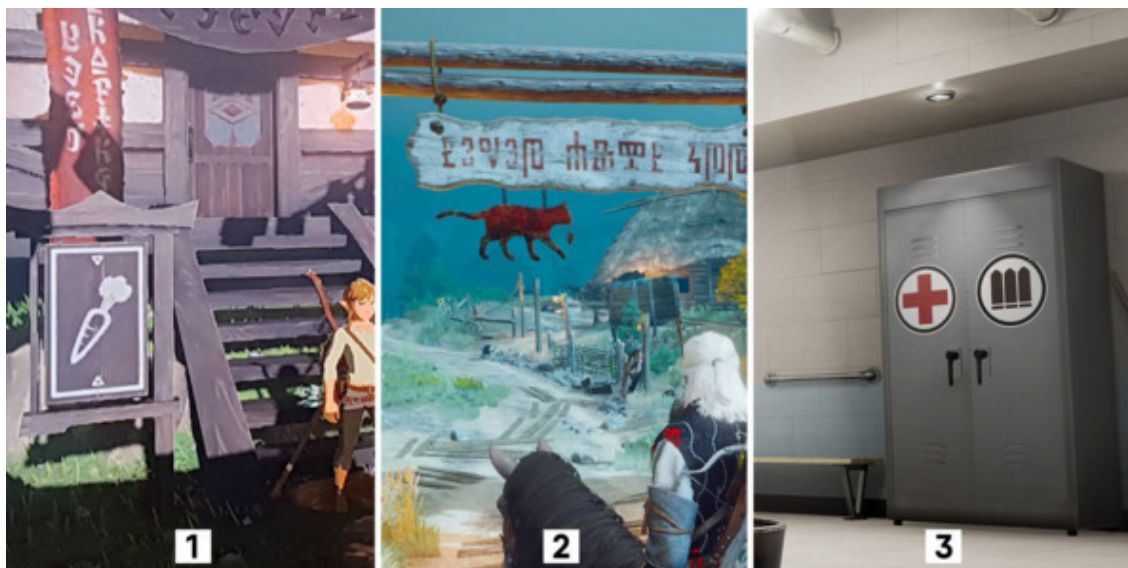


Fig. 40

The Legend of Zelda: Breath of the Wild © 2017, Nintendo

The Witcher 3: Wild Hunt © 2015, CD Projekt RED

Team Fortress 2 © 2007, Valve

Conveying information through embedded text messages in the environment works best in slower-paced games. Players are more likely to read signs if they serve a function. That is, if they provide useful gameplay-related information.

The world of *Red Dead Redemption 2* (2018, Rockstar Games) is an excellent example of the use of text-based signs. Here, every signboard provides the player with information about available gameplay opportunities. By simply scanning the facades of buildings, players can easily understand what activities await them inside.

At a roadside hotel, you can rent a room for the night; in a shop, you can buy supplies and weapons; and in a saloon, you can have a meal, play cards, or even get a haircut (Fig. 41).

In open-world games, signs are used to simplify navigation. Road signs and settlement nameplates help players avoid constantly checking the map (Fig. 42).



Fig. 41

Red Dead Redemption 2 © 2018, Rockstar Games



Fig. 42

Red Dead Redemption 2 © 2018, Rockstar Games

Call of Duty: Warzone © 2020, Infinity Ward
Prey © 2017, Arkane Studios

Signs with embedded maps help players form a mental image of the location's layout and the positions of key objects.

In the “The Bank Job” mission from *Dishonored: Death of the Outsider* (2017, Arkane Studios), the developers placed a sign with a building layout above a switch that remotely unlocks several doors at once. After interacting with the button, the player can immediately see where each door has opened thanks to glowing indicator lights on the map (Fig. 43.1).

In *BioShock Infinite* (2013, Irrational Games), there is no in-game interface that provides a map. For this reason, the levels often feature signs with location diagrams, allowing players to better understand the scale and layout of the game world (Fig. 43.2).

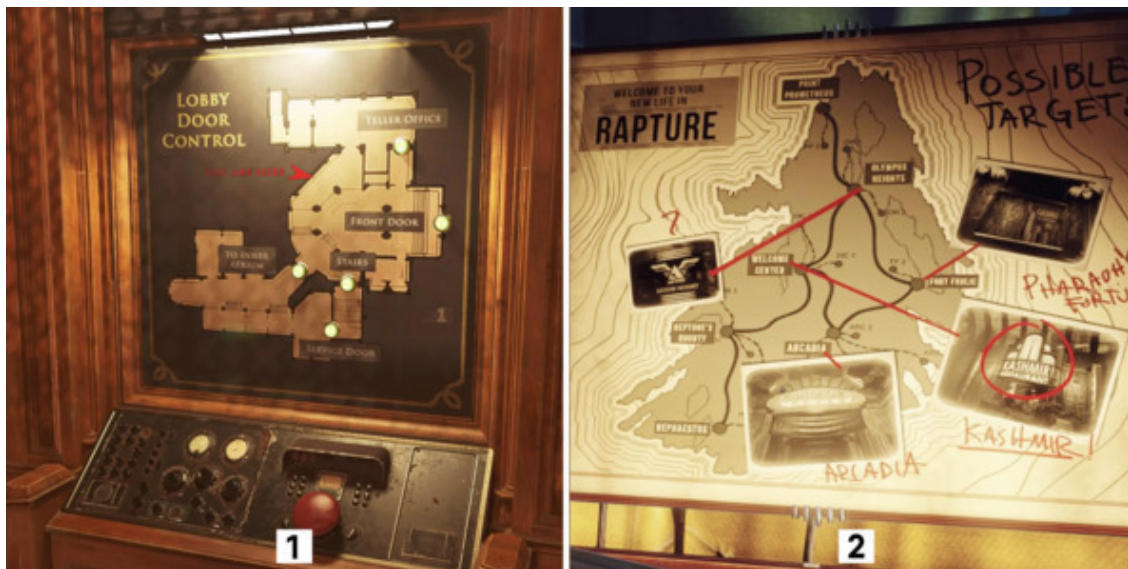


Fig. 43

Dishonored: Death of the Outsider © 2017, Arkane Studios
BioShock Infinite © 2013, Irrational Games

Just like in real life, signs in games can be used to warn players about danger. This gives attentive players a chance to avoid trouble or accidental death.

Each level in *Hitman* (2016, IO Interactive) is divided into zones that are extremely difficult to enter without the proper disguise. The boundary of a restricted area is always marked with special “No Entry” signs (Fig. 44.1).

A similar technique is used in *Red Dead Redemption 2* (2018, Rockstar Games). In locations where local residents are not welcoming to strangers, players can find warning signs indicating that trespassers will be shot on sight (Fig. 44.2).

In the desert level of *The Legend of Zelda: Skyward Sword* (2011, Nintendo), the protagonist travels along a complex rail track in a mine cart. To warn players about danger, the developers placed wooden signs with a bold red cross at the end of each dead-end track (Fig. 44.3).



Fig. 44

Hitman © 2016, IO Interactive

Red Dead Redemption 2 © 2018, Rockstar Games

The Legend of Zelda: Skyward Sword © 2011, Nintendo

The designers of *Dishonored: Death of the Outsider* (2017, Arkane Studios) integrated warning signs naturally into the environment. Players can learn that the floors in some areas of the bank are charged with high voltage through a notice from the administration (Fig. 45.1). To discourage players from trying to swim beyond the playable area, the developers also placed a sign warning about a dangerous, potentially lethal current (Fig. 45.2).

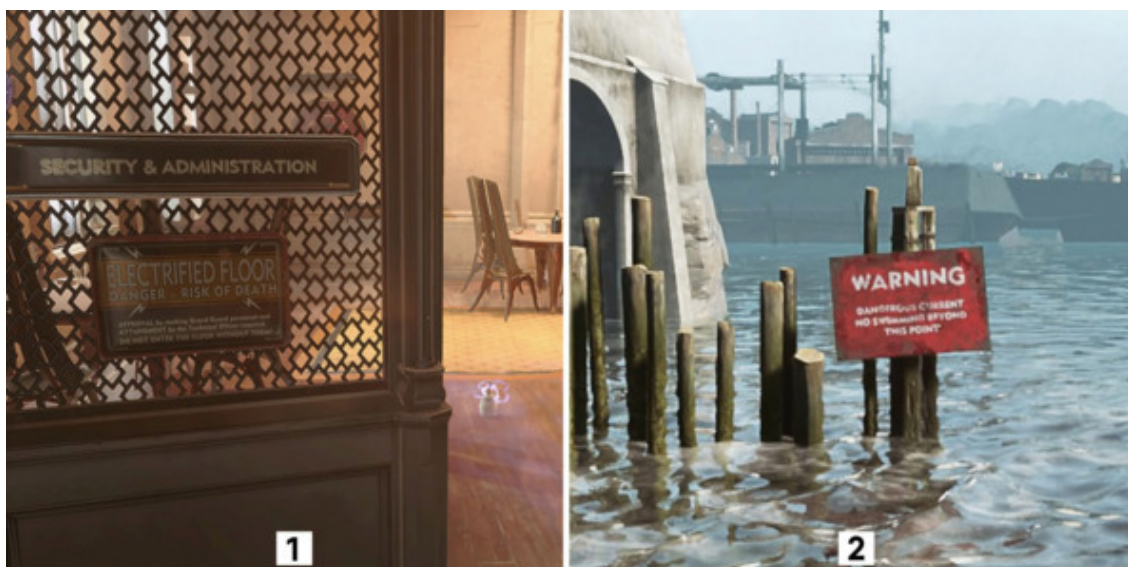


Fig. 45

Dishonored: Death of the Outsider © 2017, Arkane Studios

Well-designed signs can also serve as motivation to explore. This can be done by placing images of existing in-game locations along with prompts or invitations to visit them.

At railway stations in *Red Dead Redemption 2* (2018, Rockstar Games), players can find posters advertising the state's tourist attractions. These locations can indeed be discovered if the player carefully explores the game world (Fig. 46).



Fig. 46

Red Dead Redemption 2 © 2018, Rockstar Games

Another excellent example of functional signs that encourage exploration can be found in *Fallout 4* (2015, Bethesda Game Studios). In the game world, there is a chain of supermarkets called Super Duper Mart, which invites players to visit its stores through large advertising billboards (Fig. 47).



Fig. 47

Fallout 4 © 2015, Bethesda Game Studios

Signs with interaction instructions are an effective way to teach new mechanics without relying on the user interface.

In *Firewatch* (2016, Campo Santo), the player receives a special device used to locate hidden supply caches. The device emits sounds that become more frequent as the player gets closer to the target. The developers naturally integrated the usage instructions into the environment by placing them on the inside of the container's lid (Fig. 48).

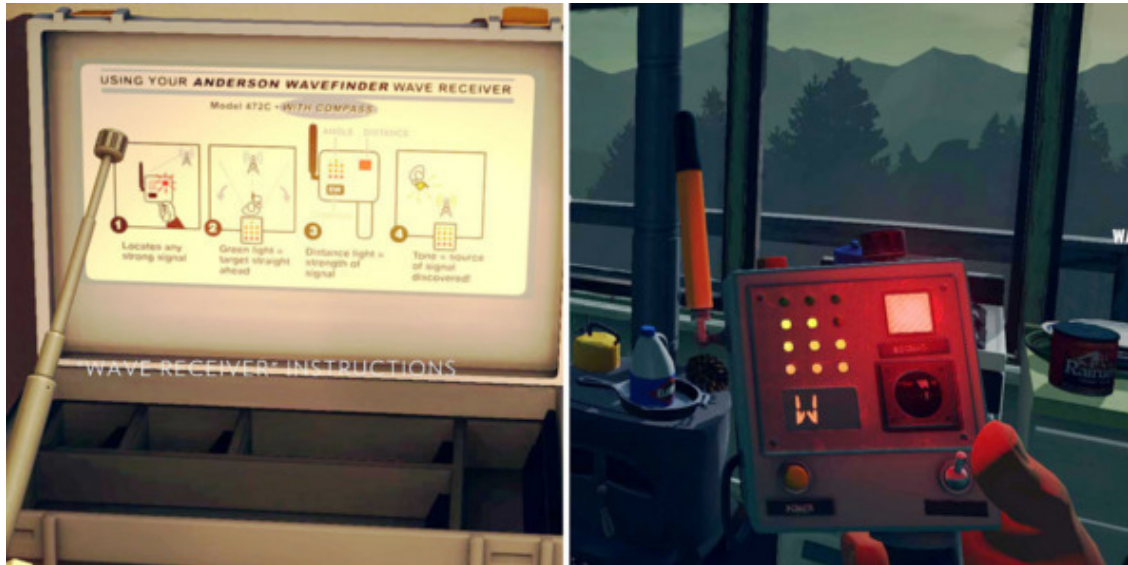


Fig. 48

Firewatch © 2016, Campo Santo

The developers of *Half-Life: Alyx* (2020, Valve) also use signs to explain the rules by which the virtual world operates. In the episode “Jeff”, set in an alcohol production facility, the player encounters a blind zombie wearing a hazmat suit. To explain why the monster can pass through force fields while the protagonist cannot, the designers added a sign labeled “Staff Only”. It depicts a character in a yellow hazmat suit freely passing through the barrier (Fig. 49.1).

All doors with magnetic locks in the game are equipped with signs showing interaction instructions. The developers use images of a keycard and a key as hints to indicate what type of access is required to unlock the door (Fig. 49.2).



Fig. 49

Half-Life: Alyx © 2020, Valve

In the opening of *BioShock Infinite* (2013, Irrational Games), the protagonist visits a fair with shooting attractions where he can fire an air rifle at targets. The instructions explaining the rules of these mini-games are presented as signs and are integrated naturally into the surrounding atmosphere (Fig. 50).



Fig. 50

BioShock Infinite © 2013, Irrational Games

Developers often use signs to give players hints for solving puzzles.

In the puzzles of *Rime* (2017, Tequila Works), designers mark the correct parking spot for a pushable crate with a special symbol that clearly resembles the object's silhouette. The crate itself, however, is hidden somewhere in the level and must first be found by the player. This works much like showing the player that a blue door opens with a blue key, while hiding the key somewhere in the level. The player intuitively understands the task and searches for the solution (Fig. 51).

In the puzzle involving a gate and a dumpster in *The Last of Us Part II* (2020, Naughty Dog), warning signs illustrate how each element of the puzzle works. The solution requires performing a risky action hinted at by these signs: the dumpster can slide down a ramp across a slippery floor and become wedged under the rising garage gate (Fig. 52).



Fig. 51
Rime © 2017, Tequila Works



Fig. 52
The Last of Us Part II © 2020, Naughty Dog

The second type of signal is the **marker, which confirms interaction**. These are symbols integrated into the environment that highlight interactive elements.

Interaction markers only work effectively if two conditions are met. First, the player must understand the connection between the appearance of an object and its gameplay function. Second, the principle of Consistency must be followed — all objects of the same type must respond to interaction in the same way.

The developers of Rise of the Tomb Raider (2015, Crystal Dynamics) mark all explosive objects in the level with the color red. The variety is quite large — barrels, diesel generators, fuel canisters, kerosene lamps, and more. As a result, players develop a strong association between the appearance of the object (the red color) and its gameplay function (an explosion) (Fig. 53).



Fig. 53

Rise of the Tomb Raider © 2015, Crystal Dynamics

In games with climbing mechanics, interactive ledges are usually marked as well. For this purpose, designers reserve a specific color that contrasts with the environment, using it to highlight all functional elements on the level (Fig. 54).



Fig. 54

Robinson: The Journey © 2016, Crytek

Uncharted 4: A Thief's End © 2016, Naughty Dog

Horizon Zero Dawn © 2017, Guerrilla Games

Cracks are an effective way to mark destructible elements in the environment. They are subconsciously perceived as a structural weakness and suggest that brute force can be applied at that breaking point.

For example, all breakable wooden structures in God of War (2018, SCE Santa Monica Studio) look fragile and unstable (Fig. 55.1). In The Legend of Zelda: Breath of the Wild (2017, Nintendo),

cracks mark stone boulders that can be blown up (Fig. 55.2). Similarly, weak sections of walls in *Deus Ex: Mankind Divided* (2016, Eidos Montréal) are also indicated by visible cracks (Fig. 55.3).

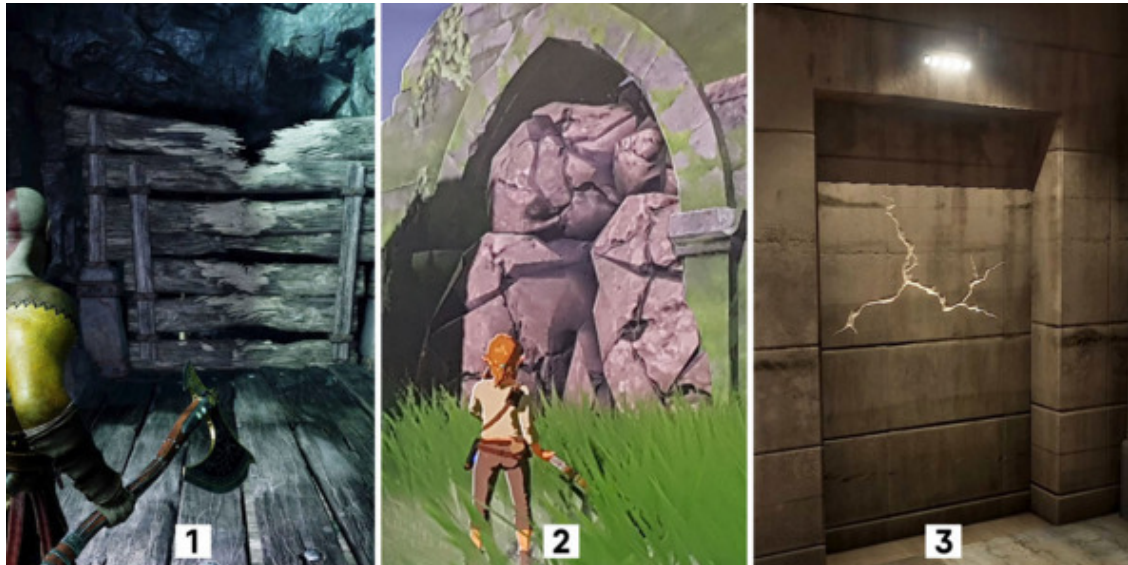


Fig. 55

God of War © 2018, SCE Santa Monica Studio

The Legend of Zelda: Breath of the Wild © 2017, Nintendo

Deus Ex: Mankind Divided © 2016, Eidos Montreal

To teach the player how to handle a sword, the developers of *The Legend of Zelda: Skyward Sword* (2011, Nintendo) let players practice on wooden logs. The strike points are marked with notches indicating where the blows should land (Fig. 56.1 and 56.2). Similar visual cues are integrated into the design of enemies. Horizontal lines on an enemy's body indicate a vulnerable spot and suggest the direction in which the player should strike (Fig. 56.3 and 56.4).



Fig. 56

The Legend of Zelda: Skyward Sword © 2011, Nintendo

The third type of signal is the **negative interaction marker**. These are symbols embedded in the environment that mark inaccessible areas or deny interaction with objects that might otherwise appear interactive.

To create obstacles or define level boundaries, designers often use threats. This category includes any elements symbolizing danger. Such as fire, lava, gas, electricity, toxic fumes, acid, and so on. Threats instinctively repel players and discourage any attempt to move forward (Fig. 57).



Fig. 57

Titanfall 2 © 2016, Respawn Entertainment

God of War © 2018, SCE Santa Monica Studio

When designing levels, developers frequently use windows with bulletproof glass to show the player the contents of locked rooms with valuable items inside. A metal mesh overlay has become a common visual marker indicating reinforced or bulletproof glass (Fig. 58.1 and 58.2). If a game is set in the future, force fields are commonly used instead of wire fences (Fig. 58.3).

Valve developers often use a simple and intuitive way to mark locked doors. An interactive door can be distinguished from a static one by the presence of a handle (Fig. 59.1 and 59.2). If the handle is missing, the door cannot be opened (Fig. 59.3 and 59.4).



Fig. 58

Control © 2019, Remedy Entertainment

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