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APPLYING GESTALT PRINCIPLES TO USER EXPERIENCE DESIGN IN COMPUTER GAMES

Abstract

The aim of the discussion is to explore how user experience design (UXD) in digital games can be shaped by applying the principles of Gestalt perceptual organisation theory. Starting from a definition of UXD as the process of building complex, immersive and emotionally engaging user experiences in digital environments, the paper develops the thesis that the effectiveness of this process in games is not limited to user interface design. Although the literature extensively describes the use of Gestalt principles in the context of graphic interface design, their potential as a tool for organising perception within gameplay and the visual environment of a game remains relatively inexhaustible. This paper proposes an extended perspective of UX in computer games as the synergistic effect of three components: gameplay mechanics, narrative and visual structures. In this theoretical framework, Gestalt principles are analysed as universal rules of perceptual organisation that can influence not only the ergonomics of the interface, but also the direction of the player's attention, interpretation of the game world and understanding of its rules. Particular attention has been paid to games without a classic UI, such as *Journey* or *Inside*, which, despite dispensing with conventional UI elements, effectively construct deep user experiences through thoughtful visual and narrative structure. The text is both a review of selected aspects of the literature on UXD and Gestalt theory and an analysis of selected examples of computer games in which principles of perceptual organisation play a key role in the construction of the player experience. The article is cognitive and theoretical and applied, offering a new interpretative framework for the design of user experience in the medium of digital games.

Keywords: computer games, Gestalt principles, user experience, visual storytelling, visual language

JEL: D83, L82

Introduction. The importance of user experience design in computer games

User experience design (UXD) is now an interdisciplinary field of research and practice whose main focus is the design of complex, multidimensional user experiences when interacting with a digital product. The contemporary definition of UX goes far beyond ergonomics and usability – it encompasses the design of perception, emotion, engagement and the aesthetic resonance that a product evokes in the viewer (Hassenzahl, 2010; Garrett, 2011). From a design perspective, it is therefore not only how the user uses the product that is crucial, but what they feel during the process and what meanings they derive from it. This approach is formally reflected in quality assessment systems, such as ISO/IEC 25010:2011, whereby the functionality of a product is defined as its ability to provide specific functions under given conditions of use, and its usability as the level of comprehensibility, teachability and attractiveness to the user in a given context.

In the context of computer games, the UXD approach is further complicated. The game as a digital product is not just a collection of interfaces and functions, but a media environment, generating immersive experiences through the integrated operation of mechanics, narrative and visuality (Schell, 2020). A game is therefore not an experience in itself, but a structure that produces this experience – by providing the player with tasks, interaction systems, spaces for exploration and means of expression. As Jesse Schell (2020) points out, a full understanding of the meaning and purpose of a game – necessary to engage the player – relies on the product's ability to convey this information in an intuitive, engaging and emotionally resonant way.

Consequently, when analysing user experience in games, one cannot limit oneself to examining the user interface alone. While its clarity and functionality remain important (Nielsen, Molich, 1990), visual storytelling, the composition of the game environment (level design), gameplay mechanics and the way attention is guided by visual means also have a fundamental impact on player perception. Significantly, a number of contemporary productions, such as *Journey* (Thatgamecompany, 2012) or *Inside* (Playdead, 2016), dispense with the classic interface altogether and yet offer exceptionally strong, emotionally saturated experiences. This confirms the hypothesis that the user interface is not a prerequisite for the existence of UX – it is merely one of the possible carriers of meaning.

In this paper it has been assumed that UX in computer games should be understood as the result of three fundamental components: gameplay mechanics, narrative and visuals. Only their coherent integration allows for the creation of a holistic, immersive player experience. Furthermore, the principles of visual perception, and in particular Gestalt perceptual organisation theory, can be an effective design tool not only in the context of user interfaces, but also in the structure of the game environment itself. Principles such as figure-background, proximity, similarity, closure or

continuity allow not only for the design of clear and organised interfaces (Kimball, Hawkins, 2021), but also for intuitively guiding the player's attention in the game space, structuring the visual narrative and supporting the perception of the designer's intentions.

In contrast to the classical approach to UXD, which focuses on the usability of the system and its functions (ISO/IEC 25010:2011), this paper proposes an extended – perceptual-structural – approach, in which the UX of a computer game is the result of shaping the visual environment in a way that supports not only aesthetics, but also understanding of the rules, mechanics and meaning of the game. This perspective shifts the focus from analyses of the interface to an analysis of the overall visual system, which – through the application of Gestalt principles – can act as a tool for organising the player's perception.

This article therefore aims to: outline a holistic definition of UX in the context of computer games; analyse the role of Gestalt principles in the design of interfaces, environments and visual narratives in games; and propose a model of user experience design in which perceptual theory plays a key function integrating gameplay, narrative and visual layer. As a result, the proposed approach can provide a theoretical framework for further research on visual semiotics in games, as well as a practical tool for game designers aiming to create engaging, cognitively coherent and aesthetically satisfying player experiences.

Methodology and criteria for selecting the games adopted for analysis in this study

The aim of this paper is to analyse the application of the principles of Gestalt perceptual organisation theory to the design of user experience in computer games, with a particular focus on environments that lack or strongly reduce the classical user interface. The analysis is not limited to the functionality of graphical elements, but focuses on their communicative potential – the ability to organise visual information in a way that allows the player to enter the game space intuitively and immersively. It is assumed that Gestalt principles have in this context not only a compositional function, but above all an epistemological one – ordering the reception of the game as a system of meanings.

The methodology of the paper is based on the concept of problem analysis, in which detailed case studies have an illustrative function in relation to the theoretical theses put forward, rather than an aim of analysis *per se*. The selection of empirical material was done purposively (purposive sampling), with a set of criteria adopted to maximise the functional and aesthetic diversity of the games analysed. Considerations included the presence or absence of a conventional user interface, the type of visual projection and direction of communication, the way in which

the game environment was organised, the degree of integration of game mechanics with graphical elements (diegeticity), the artistic and functional coherence between the visual layer and the gameplay structure.

The core of the analysis consists of the titles *Journey* and *Inside* – games considered representative of interface minimalism and the advanced use of visual narrative and spatial information mechanisms. Both cases provide an in-depth reflection on alternative ways of communicating information to the player – eschewing the classical means typical of UIs, minimaps or system icons. Supporting references are made to other productions in which the interface is present, but its form and function have been subordinated to the principles of perceptual organisation in line with Gestalt theory.

In methodological terms, the analysis is conducted on the basis of three complementary research approaches: visual analysis, semiotic analysis and heuristic analysis. This approach makes it possible not only to trace the way in which individual Gestalt principles operate in the context of computer games, but also to indicate their potential for immersive and effective visual communication design. Particular emphasis is placed on issues of the legibility of the game environment without textual or iconic support, as well as an analysis of the ways in which perceptual principles shape the player's emotional and cognitive experience of interacting with virtual space.

The approach taken in this study is part of a broader strand of interdisciplinary research on experience design in digital environments, combining elements of perceptual psychology, visual communication theory and UX design practice. The analysis of the application of Gestalt principles to digital games enables, in this context, a broader understanding of user experience as a phenomenon that goes beyond the interface layer and concerns how the player interprets, reads and internalises virtual worlds.

The assumptions of Gestalt theory

Gestalt theory, originating at the beginning of the 20th century and shaped by the work of Max Wertheimer, Kurt Koffka and Wolfgang Köhler, is one of the foundations of the contemporary understanding of perceptual processes. Initial research into the phenomenon of the illusion of movement showed that perception is not reduced to the sum of sensory stimuli, but is based on the active organisation of sensory data into coherent structures (Wertheimer, 1912; Palmer, 1999). This approach assumes the existence of universal cognitive mechanisms that determine how visual reality is perceived and interpreted (Goldstein, 2018).

In the context of new media research – with a particular focus on interactive environments such as computer games – Gestalt theory offers an analytical framework for understanding how projected visual stimuli can predictably shape a user's

experience (Behrens, 1998; Ware, 2020). Perception, as defined by the American Psychological Association (2015), is an interpretive process involving the organisation, selection and attribution of meaning to sensory stimuli. This approach emphasises not passive perception but the active modelling of reality by an individual's cognitive system. In light of the above, the principles of perceptual organisation developed within Gestalt psychology can be seen as tools in the creation of visual interfaces and media environments (Lidwell, Holden, Butler, 2010; Norman, 2013). Their application is particularly justified in the design of computer games, which are complex aesthetic-functional structures based on layered processing of images, symbols and narratives.

As an interactive medium, computer games are particularly well-suited for utilizing Gestalt theory in user experience (UX) design. UX, in this approach, is not reducible solely to interface ergonomics or navigation clarity; rather, it is a holistic construct encompassing the user's perceptual, emotional, and cognitive response to a dynamically generated game environment (Zimmerman, Forlizzi, Evenson, 2007). Therefore UX design in the context of games requires the use of perceptual principles as a means of managing attention, shaping visual hierarchy, and enhancing immersion. The approach proposed in this discussion extends the application of Gestalt principles beyond the classic areas of user interface (UI) design and applies them to the overall visual and aesthetic design of game environments. These principles are applicable not only to the organization of menus, HUD layouts, and iconography, but also to the design of the game's visual space, graphic narrative, character design, and the construction of complex scenographic and environmental compositions (Ware, 2020; Goldstein, 2018). For example, the principle of proximity can be used to visually group functional game components, while the principle of closure allows for the creation of fragmented but intuitively recognizable graphical structures that stimulate the player's cognitive engagement (Palmer, 1999).

It is worth noting that immersion in games – understood as psychological "immersion" into the game world – is not solely a function of narrative or sound, but is largely the result of coherent visual design that is consistent with perceptual mechanisms (Norman, 2013; Behrens, 1998). Gestalt rules for structuring perception enable designers to create visual environments that are not only aesthetically appealing but also cognitively optimal – supporting spatial orientation, information processing and emotional responses.

From a methodological perspective, the integration of Gestalt theory with UX theory in new media environments offers a transdisciplinary approach that combines cognitive psychology, visual aesthetics and design practice (Zimmerman, Forlizzi, Evenson, 2007; Ware, 2020). This approach enables a more precise modelling of user-media interactions, taking into account the biological determinants of perception and cognition. Moreover, it responds to the need to develop integrated UX models that go beyond engineering usability approaches to offer richer insights focused on aesthetic and emotional experience (Lidwell, Holden, Butler, 2010).

In conclusion, the application of Gestalt principles to the design of computer games as interactive environments exemplifies the productive translation of psychological theory into new media design practice. This indicates the potential for further research into the perceptual mechanisms of visual content reception in digital environments, as well as the need to redefine UX paradigms towards a more cognitively grounded and aesthetically informed approach.

Principles of Gestalt theory in computer game components and their translation into player user experience

The principle of similarity as a tool for organising meaning in player experience design

The principle of similarity, derived from the tradition of character psychology (Gestalt), assumes that the perceptual tendency of humans leads them to group elements that exhibit common features – regardless of their actual functional affinity (Wertheimer, 1923). This organisational mechanism, however simple in its essence, is a fundamental tool in interface design and information architecture (Lidwell, Holden, Butler, 2010), and its cognitive potential extends significantly beyond conventional applications. In interactive environments such as computer games, similarity serves not only a structural function, but also a semantic and affordance function, enabling the player to interpret complex sign systems and interaction rules in an intuitive and non-narrative way (Norman, 2013).

In analytical terms, this principle supports the formation of so-called pattern recognition – a process of identifying patterns that, in the context of gameplay, are crucial for the assimilation of game mechanics without the need for direct instruction (Marr, 1982). Design based on the assumption of mutual similarity of objects allows the player to recognise cause-and-effect relationships without having to verbalise them. As a result, the user acquires interactional competence through action and observation – which fits into the paradigm of procedural learning in digital environments (Gee, 2003; Schell, 2020). Pattern recognition can be observed, for example, in objects such as crates placed in the environment in a way that suggests their usefulness in gameplay (e.g. as an aid to overcome obstacles or as shields). They acquire meaning not so much by their appearance, but by their repeated context of occurrence (Salen, Zimmerman, 2004). Similarity then becomes not an aesthetic tool, but an epistemic one – organising the player's knowledge of the game world and possible actions (Hunicke, LeBlanc, Zubek, 2004).

In *Journey*, examples of the manifestation of the principle of similarity in environmental elements and interactive objects are the fabrics, ribbons and light symbols. Despite being separate objects, they are visually consistent and repetitive in

form and colour. The floating ribbons and fabrics with their wavy shape and warm, luminous hue suggest that they can be interacted with. The player intuitively learns that similar-looking objects perform similar functions – such as recharging a scarf (energy for flying) or activating mechanisms. In this way, the player does not need any verbal instructions or instructions expressed through interface elements – on the basis of the perceptual similarity of the forms, he recognises which elements of the environment are interactive and what functional consequences they carry, even though they are not the same objects. It can therefore be concluded from this example that the principle of similarity here supports intuitive navigation and the smooth acquisition of the rules of the game world, without the use of words or an interface.

Moving on to *Inside*'s gameplay, the principle of similarity can be found in environmental elements such as crates, levers or carts. They have a similar texture, shape and contrast, and are often distinguished from the background by subtle lighting or edging. The player quickly recognises that elements with this appearance can be moved or used to solve puzzles. In addition, the principle of similarity is used in the design of interactive objects that stand out through consistent visual and spatial features – even though the game is kept in a strict monochrome style. As such an example, the animation of object responses (e.g. levers that move platforms) can be mentioned, allowing the player to build a pattern of actions and anticipate the effects of interacting with subsequent, similar-looking objects. With this in mind, it can therefore be concluded that in Inside, the principle of similarity allows for the construction of a silent, visual grammar of interaction that supports exploration and puzzle solving without any textual messages.

However, an even broader view of the principle of similarity can be proposed. This will be to recognise patterns and similarity not within the environment of a single game, but to perceive a given element or object universally and between different games, focusing on its functional meaning. At the visual-interaction layer, analogous mechanisms can be seen in the design of iconography: once recognised, a medical kit retains its meaning throughout the course of a game, and even across different games of the same genre (Bizzocchi, Tanenbaum, 2012). Such repetitive components not only make the user experience more coherent, but also enable knowledge transfer between different titles – confirming the existence of visual "idioms" of playability, functioning analogously to linguistic idioms in verbal communication (Consalvo, 2009).

The relationality of similarities is also an important analytical aspect. The proximity of a first aid kit and another resource (e.g. ammunition or currency) in the game space can lead to an affordance interpretation of the whole as a "safe" or "positive" area for the player. Such an association – based not on graphic identity but on spatial and functional coexistence – illustrates how the perception of similarity can be conditioned by semantic context (Gibson, 1979). This means that design

coherence is not limited to visual uniformity, but extends to the level of system logic – the functional coherence of mechanisms and their representations (Nacke, 2009).

Moreover, the principle of similarity in computer games does not stop at the border of a single title. At the level of cross-genre design, the recognisability of the same or similar solutions – such as health bars, ammunition indicators or interface structure – translates into immediate player adaptation to the new product. In this context, one can speak of an emergent design standard that has not been top-down defined, but has developed in game design practice as an effect of the principle of similarity on a cultural scale. It is therefore not an exhaustively developed topic in the literature, but is used in the design process as a commonly understood way of game-player communication, applied by analogy between titles.

It should also be emphasised that this principle – although most often considered in visual terms – has potential as a design heuristic for interaction design. Interactive elements that exhibit a similar graphical style or behaviour when activated create a coherent visual language for the game. Thus, the design of the interface, levels or interactive objects becomes a semiotic process – the player learns about the game through the relationships between repetitive elements rather than through their individual characteristics.

It can therefore be concluded that the principle of similarity, although deeply rooted in the tradition of perception theory, finds a new field of application in the gaming environment as a principle for organising meanings, building procedural narratives and constructing a coherent user experience. Its application in the UX design of games not only enhances the effectiveness of the interaction, but also influences the epistemology of the player – making it not so much an aesthetic as a cognitive tool.

The proximity principle as a mechanism for controlling player perception and intention in a game environment

The proximity principle refers to the human cognitive tendency to group elements within a short spatial distance as parts of the same structure (Wertheimer, 1923/1938; Palmer, 1999). In the context of computer game design, this mechanism plays a role not only in ordering the visual layer, but also in shaping the user's cognitive processes, primarily in terms of inference, action planning and recognition of implicit design intentions (Lidwell, Holden, Butler, 2010). Central to this is the affordance dimension of proximity – its ability to suggest potential opportunities for action without the need for explicit instruction (Norman, 2013).

Among examples of the application of this principle within user interfaces such as skill trees, the proximity principle serves to organise information in a way that corresponds to a mental model of progression. The close positioning of icons or symbols allows the player to intuitively recognise hierarchical relationships or functional dependencies between successive stages of character development (Tondello,

2017). In this way, the spatial structure becomes a vehicle for procedural meanings: the player not only sees but "understands through the layout" what actions are possible and what conditions must be met to unlock them. Importantly, this representation fosters a cognitive map of the game system, supporting orientation and decision-making at the metagame level (Gee, 2003).

The most interesting cognitive and design applications of the proximity principle, however, occur outside the interface – in the diegetic space of the game, where the rules of perception co-construct the narrative and mechanical logic. The example of clustered crates as environmental elements can be read here not so much as an indication of what it is, but rather what can be done with it – suggesting potential actions such as climbing, overcoming an obstacle or bypassing an enemy, as well as hiding from them or planning an attack from hiding (Totten, 2014). This semanticisation of space through the arrangement of objects allows the player to construct their own strategies of action based on the observation of regularities in the arrangement of elements rather than their explicit labelling (Bakker, van der Hoorn, Dittmar, 2021).

In contrast to grouped structures, singularly distributed objects – such as an isolated box – have a different affordance function. Their separation weakens the association with vertical movement and reinforces the interpretation as shielding elements or temporary shelter (Norman, 2013). This differentiating function of proximity not only influences the dynamics of gameplay, but also models how the player interprets the meaning of space.

On the ground of the *Journey* game, we can refer to a group of objects in the void of the desert. In this case, the principle of proximity works primarily against the background of contrast with emptiness. When the player explores spaces devoid of detail and other objects, local clusters of elements – such as ruins, fabrics, columns or glowing symbols – attract his attention and are interpreted as functionally coherent. Their proximity suggests not only that they belong to a single structure, but also that they are sites of action: points of interaction, energy regeneration or narrative progression. In effect, grouping in space creates "cognitive islands of meaning" around which the player's attention and movement are organized.

The objects in the environment, arranged and grouped with each other in this way, suggest that not only that the player can find something of functional significance there, but also, without the need for signs or instructions, the player's path to follow in the space is mapped out.

Another example of the implementation of this principle is the paths of flying fabrics that occur in the game. In *Journey*, pieces of fabric placed in close proximity to each other are seen as a string – even if they are not physically connected. The player instinctively interprets this as a path of movement without having to include additional clues in the environment or player interface. Thus, based on the example given, it can be deduced that the proximity principle can also perform a structuring function at the macro-scale of game design. This is because it not only organizes

individual interactions, but also guides the player's perceptual and kinesthetic navigation in the open world. In the game Journey, the creators operate with contrast – local clusters of objects acquire directional meaning precisely by opposition to the omnipresent emptiness. Proximity here becomes a carrier of teleological information: it suggests a destination, paves the way, and constructs meaningful trajectories for moving through a world without words or signs (Keogh, 2013). This design procedure highlights that the proximity principle, although originally based on perceptual mechanisms, can be designed intentionally as a tool for shaping the player's experience at the cognitive and emotional levels.

The same is true in the game *Inside*. There, the principle of proximity manifests itself in the placement of environmental puzzle elements. Again, if several objects (e.g., boxes, platforms, coffins) are in close proximity, the player automatically recognizes them as functionally related, even if they are not identical in appearance. Dragging objects to overcome obstacles is based on the player's learned recognition of spatial relationships: elements that are close and therefore functionally related. In this case, proximity suggests that they serve a common purpose, such as activating switches, creating steps or manipulating water. Thus, proximity allows the player to understand which game elements belong to the same puzzle. In addition, the player understands that they can move them in an integrated way, even if the game doesn't explain it.

Another example is the player's ability to control a character through a mind control helmet. In scenes where the player uses the device to take control of other characters, the characters stand in groups, close together. Their proximity not only reinforces the impression of being one, but also makes it easier to control them as a group. The player recognizes by their proximity that they share a common function – they need to shift weight or synchronize movement, for example.

The application of the proximity principle in computer games thus goes beyond simple visual ordering heuristics. In modern UX design, it plays an epistemic role – it allows the player to form cause-and-effect inferences, recognize design intent, and integrate perceptual data with previous interaction experiences (Lidwell, Holden, Butler, 2010). Instead of merely a seen space, the player constructs an understood space in which decisions are the result of reading relationships, not just symbols.

In light of the above, the proximity principle reveals its full potential not as a static perception rule, but as a dynamic tool for designing behavior, intention and procedural narrative. Its integration with the language of playability makes it possible to create experiences that are cognitively coherent, semantically logical and strongly emotionally engaging – without the need to verbalize rules or explain mechanics.

The principle of closure as a perceptual and narrative mechanism of playability

The principle of closure refers to the cognitive tendency of the human mind to complete incomplete forms so that they are ultimately perceived as complete and closed structures (Wertheimer, 1923/1938). In practice, this means that even if visual stimuli do not contain complete contours or a complete layout, the observer seeks to mentally complete them, reconstructing the missing elements in accordance with the expected cognitive scheme. This mechanism, while fundamentally visual, is also applicable in a broader context – including the perception of narratives. Stories that leave implicit elements or endings open-ended can still be perceived as complete by the player – provided that the narrative structure provides sufficient signals to cognitively close the story sense (Bruner, 1991).

In computer game design, the principle of closure is applied in both the gameplay and aesthetic and narrative layers. In the mechanical layer, it manifests itself in games that require the player to arrange, complete or reconstruct certain spatial or logical structures. A classic example of this application is the game *Tetris*, where the player's task is to compose falling elements in such a way that they form continuous, complete lines, which then disappear from the board. The player, using spatial imagination and visual prediction, is able to recognize potential configurations to "close" the layout – even if its elements are abstract, irregular and fragmentary (Johnson, 2005).

A similar perceptual mechanism operates in the game *Candy Crush*, where the principle of closure appears in a more dynamic form. The player, by moving pieces to form specific combinations, strives to reach equilibrium states of the board by matching and eliminating them. Although the layout does not have a fixed framework, each successful combination represents a local closure that is rewarded with scoring, animation and progression mechanics (Salen, Zimmerman, 2004). The process is based on recognizing layouts and predicting their closure in the game space, even though it is constantly changing and open to new configurations.

The principle of closure can also have a psychological and experiential dimension, enhancing the player's sense of agency and competence. Both in *Tetris*, where the rate of falling blocks accelerates with each level, and in *Candy Crush*, where the complexity of combinations increases, the mechanics of closing structures provide a source of quick feedback and gratification. This type of gameplay engages self-regulatory learning mechanisms – the player does not receive instructions, but learns by observing, adjusting and correcting actions (Gee, 2003).

Trying to transfer this principle to the *Journey* game, we can see that it operates with a minimalist visual language. Objects, ruins and paths are often undefined, but suggest continuity. The player sees a fragment of a structure or corridor, and his mind guesses their function and direction. Even if the architecture or path is incomplete, the player is able to move along the ridges, thanks to the closure in his imagination of either the space of the building or ruins, or the path of the road

he follows. Therefore, it can be deduced that the principle of closure is realized here through various environmental clues. Thus, he can intuitively navigate the game world, and the perception of the whole is due to the completion of incomplete data.

However, the principle of closure in *Journey*, we can also relate to the game's abandonment of verbal narration. The plot – a journey through the desert towards the mountain – is only sketched through images, symbols and music. The player does not know the identity of the characters, does not know the destination of the journey, but through the arrangement of symbols, the rhythm of the game and the emotional mood, he independently closes the narrative, constructing a personal sense of the experience. Thus, the game thus creates a unique user experience design, for each story of the player playing the game will be at once highly personal, unique, special and unique. Also, the game's ending, which is open-ended and symbolic, remains a space for emotional and interpretive closure.

Thus, from the above, it can be deduced that from a design perspective, the principle of closure is not limited to the perception of graphic forms only. In particular, it thus reveals that the approach to user experience design in computer games is precisely a combination of gameplay mechanics, narrative and visual elements. The principle of closure itself need not be limited to graphics alone, and can function as a narrative tool to suggest the presence of meanings that are not explicitly expressed. Games that leave room for interpretation, fragmenting the plot or hiding the rules of action, allow the player to independently close the system of meanings through exploration and experience – without an explicit message (Jenkins, 2004). In this way, closure becomes not so much a completion as an act of participation in the narrative structure and a unique user experience.

We can find similar treatments in the game *Inside*. The player often encounters mechanical and environmental puzzles in its environment, which require the completion of a missing spatial layout. For example, in order to reach a higher platform, a chest or other object must be moved to the right place. Although the layout is incomplete, the player perceptually recognizes its potential closure by guessing how the pieces are to be put together. The player's mind thus anticipates the missing part and fills it in with action.

And, like *Journey*, the *Inside* game offers no text, dialogue or explicit plot. Thus, the considerations made above remain valid. All events are suggested by images, animations and sequences of events. The player independently constructs the sense of the story he perceives visually: escape, experimentation, fear and uncertainty. The missing narrative elements are cognitively closed by the player – he fills in the gaps with his imagination, based on the available data.

Thus, based on the two examples discussed above, it can be deduced that the principle of closure can have an epistemic function – the player becomes a co-author of the sense of the game he is playing, and does not remain a mere recipient of it. This is because the player acts in the design of the space and puzzle layouts,

and, even more, in the creation of a story without words, giving it a personal meaning that comes from the personal perspective of each user.

The continuity principle as a design tool in computer games

The continuity principle, one of the fundamental rules of Gestalt theory, refers to the natural tendency of the human mind to perceive lines, curves and spatial arrangements as continuing, even when their continuity is visually interrupted. That is, human perception is based on a preference for arrangements with a smooth, predictable course that suggest a direction of movement, order or development (Wertheimer, 1923/1938).

In the context of computer game design, this principle plays a key role not only at the level of visual aesthetics, but also in the area of user experience design, as it enables intuitive guidance of the player through the game space without the need for direct visual messages. Without UI elements such as arrows, markers or maps, the player understands how to navigate the game world. In this view, spatial continuity serves not only an organizational function, but primarily a cognitive one – it allows the player to process navigational and logical information based on the arrangement of environmental elements alone (Lidwell, Holden, Butler, 2010).

In the game *Journey*, the principle of continuity takes a particularly sublime form. The arrangement of fabrics, sand streaks, fluid spatial and visual compositions guide the player's gaze. The lines of the landscape – dunes, streaks of sand, narrow isthmuses – gently suggest the direction of movement. The rhythmic arrangement of architectural structures suggests the direction of movement, while introducing the symbolism of transcendence and travel (Chen, 2012). Textiles (such as floating ribbons) play a special role here, creating paths through the air. The player is guided not by a system of markers, but by the choreography of the space, which connects to his natural inclination to follow rhythm and movement. Direction is thus indicated by the rhythm of the space, colors, composition and light. Here, the fabrics serve not only a mechanical function (enabling flight), but also a visual one – as a guide to sight and emotion. A light beyond the horizon or an illuminated point in the distance reinforce this linear narrative, following the principle of continuity.

Similarly, in *Inside*, the application of the principle of continuity is expressed by moving objects or the rhythm of animation. They arrange themselves into an invisible but perceptible cognitive path. Even in the absence of a classic UI, the player intuitively knows where to go, because the environment communicates the player's path to him through its structure (Machon, 2013). The entire game space is based on an unambiguous axis of movement (from left to right), and every element of the scenery fits into this direction: light, perspective, direction of movement of background characters. Some light sources or movements of mechanisms clearly direct the player's gaze in a particular direction.

At this point of consideration, it is worth adding that the type and presence of the user interface significantly affect the way a game is perceived and its ability to shape immersion. In many contemporary titles, the interface is consciously designed as an integral part of the diegetic space – not as an information overlay (HUD), but as an element immersed in the game world, often in the form of so-called spatial UI, i.e. spatial interface components located directly in the environment.

However, in the games analyzed earlier – *Journey* and *Inside* – there is a radical reduction or even complete abandonment of visible UI elements. In *Inside*, despite the presence of environmental challenges, neither counters nor life indicators were used, nor even a spatial UI. In *Journey*, on the other hand, interactions and character development are expressed only through subtle visual and audio changes – not through an icon or metadata system. Not only does the lack of an interface not weaken immersion, but on the contrary, it enhances the sense of immersion by minimizing the barrier between the game world and the player. As immersive spatial interface researchers note: "spatial UI elements are used when there's a need to break the narrative [...] They still sit within the geometry of the game's environment to help immerse the player" (Raffaele, Silva, Carvalho, 2017). In this context, it is worth asking: what are the consequences of abandoning the interface altogether, even in spatial form? The answer seems to lie in the assertion that such a design solution not only eliminates distortions in the perception of the narrative, but also gives all cognitive control back to the player, forcing him to closely observe and actively interpret the world, thus immersing the player in the game world. The player no longer reads the game through data, but reads it through the movement, space and rituals present in the system of mechanics – so it feels closer to a real, actual experience. Instead of looking at the HUD, the player is looking into the game world. Indeed, as research on immersive interfaces indicates, "UI elements integrated into the game environment, instead of functioning as superimposed layers, increase the player's immersion and reduce the fourth wall interruption effect"(Raffaele, Silva, Carvalho, 2017).

Thus, the abandonment of classic UI is not a lack, but a conscious aesthetic-cognitive decision that redefines the rules of interaction: the reading of design intentions is not done through metadata, but through the knitting of the game world.

The figure/background principle as a mechanism for organizing perception in computer games

The figure/background principle refers to the basic mechanism of segregating sensory stimuli by identifying the relationship between the dominant element (figure) and the less important perceptual context (background). In an interactive environment such as computer games, this cognitive mechanism is transformed into

a design tool that determines how the game space is perceived and how the player's attention is structured (Wagemans et al., 2012).

The figure – as a semantically or functionally relevant element of the environment – must remain perceptually distinct from the background in order to effectively support decision-making and navigation processes. In this type of visual layout, user experience design is not just about aestheticizing the space, but actively managing the user's attention (Ware, 2020). Thus, this principle will find reference to the relationship of plans – foreground and background, the main figure and its background, while by design, the figure itself should be a smaller element represented on a specific larger plane. In the context of computer game design, understanding the relationship between the main element (figure) and what is the background will be important in all games, where there is a need for extensive analysis of the information and data provided by the game. This principle manifests itself particularly strongly in games requiring intensive analysis of visual data, such as turn-based strategies, city builders or economic simulations (e.g. *Civilization VI*, *Cities: Skyline*s, *RimWorld*). In these types of productions, the user operates on multi-level interfaces in which the figure (e.g., units, indicators, buildings) must be clearly distinguished from the background (map, static interfaces) to enable efficient scanning of space and selection of information. From a user experience perspective, clearly segmenting these elements reduces cognitive load (cognitive load), allowing the user to optimize perceptual and decision-making processes (Norman, 2013).

In *Journey*, the principle of figure and background is implemented mainly through strong color and compositional contrasts. The silhouette of the player's character (in a red robe) is always clearly visible against the background of golden deserts, blue caves or white snowy plains. This separation of color and shape makes it possible to immediately read what is the central focus of attention at any given moment – despite the fact that the game operates a very minimalist interface, and there are no classic UI elements on the screen.

Environmental elements that have functional significance (such as pieces of cloth, columns or magic bridges) are also clearly separated from the background by means of light, animation and texture contrast. As a result, the player does not look for opportunities to interact – they visually stand out on their own. Importantly, the game doesn't use sharp outlines or bright icons – but subtle perceptual procedures to indicate the figure in the background.

Trying to relate the above to *Journey*'s gameplay, one can see that it is mainly realised through strong colour and compositional contrasts. The silhouette of the player character in a red robe is always clearly visible against the background of golden deserts or dark caves. This separation of colour and shape makes it possible to immediately decipher what is the focal point of attention at any given moment Environmental elements that have functional significance, such as the already discussed fragments of cloth, columns or magic bridges, are also clearly separated from the background by means of light, animation and texture contrast. As a result,

the player is not looking for these elements themselves to visually signal their interactivity, without the player having to actively search for it. Importantly, the game does not use sharp outlines or bright icons to achieve this effect.

Another example of the use of colour contrast is *Dying Light 2*, where so-called safe zones are clearly distinguished through the use of strongly contrasting UV lamps. In this case, the light – which is a semantically charged information carrier – takes on the role of the figure, while the hostile, shadowy surroundings of the city form the background. Such a design intervention not only supports spatial orientation, but also operates on an effective level, offering the user moments of relief from the intensifying tension of the game. Colour as a factor modulating the figure/background relationship plays a special role here, performing a meta-informational function – delineating the structure of the game space, the hierarchy of interactions and the semantic meanings of objects (Lidwell, Holden, Butler, 2010). The repetitive use of colour to mark functionally identical elements not only increases the predictability of the environment, but also activates the principle of similarity, a complementary Gestalt rule. This arrangement enables the player to develop cognitive schemas (perceptual schemas) that allow them to recognise patterns and predict the behaviour of the game system more quickly.

In the game *Inside*, on the other hand, the figure and the background are also used in creating the narrative and building the overall atmosphere. The game is maintained in an almost monochrome colour scheme, but the boy's figure is always clearly outlined – thanks to light, contrast and position in space. The background, which consists of factories, forests and laboratories, remains static, dark and not very detailed, which makes every movement of the figure, i.e. the player, immediately catch the attention.

What's more, *Inside* often uses the trick of inverting the figure-background relationship: at certain moments, the background elements become alive, e.g. the people in the background follow the player, so that the boundary between what is important and what is merely decorative becomes fluid. This treatment creates tension and anxiety. It is an artistic procedure, but purely perceptual: the game forces the player to constantly switch attention between different visual levels.

In both titles cited, the figure and background principle serves not only an aesthetic or navigational function, but also a narrative and emotional one. Both games eschew classic interface cues, instead using perceptual mechanisms to guide the player's attention. This makes the game experience more intuitive and deeply immersive.

The figure/background principle in games thus has a dual function: cognitive-selective and emotional-navigational. At the cognitive level, it allows the player to extract information relevant to the current task situation, while at the emotional level it can shape the atmosphere or sense of security through visual contrasts. In such cases, the perceptual figure/background relationship is no longer dependent

on unambiguous interface markings, but is encoded in a spatial, luminous or auditory context.

This shift towards immersive design supports the postulation of integrated interfaces (spatial UI), which, according to the literature, maintain narrative continuity and avoid breaking immersion through intrusive information elements (Raffaele, Silva, de Carvalho, 2017). Moving the information layer from the symbolic to the perceptual level means that the user learns to navigate and make decisions not through textual messages, but through the internal dynamics of the game environment.

The figure and background principle in computer games is therefore not limited to simple visual contrast. Its role in UX design is systemic – it organises the relationship between interactive elements and the environment, supports decision-making processes, reduces cognitive effort and shapes the affective dynamics of gameplay. Its synergistic application with other Gestalt principles (such as similarity or continuity) provides one of the most effective mechanisms for designing user experiences in virtual environments.

For example, in strategy, turn-based games, where it is important for the player to make decisions, change the approach and dynamics of the game according to changing indicators, it will be important to see the figures against the background of a larger map or the whole of a specific location. Such relationships will also be evident in citybuilders or tycoons. At the same time, in terms of building a positive user experience for the player, this will have the effect of reducing the cognitive load on the player, who bears a significant burden of observation and simultaneous analysis combined with decision-making in these types of games. A clear separation of the interactive elements from the background sets the player at ease and focuses their attention on the things that are relevant to the gameplay. These remarks relate to the previously mentioned similarity of visual distinctions of interactive objects in the environment.

Colour will also play a very important role in this aspect – as a marker of structure and information hierarchy. And the repetition of identical use of colour in relation to functionally identical assets or locations will at the same time be an incorporation of the principle of similarity, which will create easily readable patterns. Here it is worth recalling again the discussed safe zones of *Dying Light 2*, distinguished in the city environment by the colour of the UV lamps. The stark contrast between these and the rest of the city not only affects the legibility of the environment, but in terms of the player's user experience, creates a sense of safety, respite and sometimes a destination for the player when the gameplay becomes too intense for them. In this case, although it is not obvious, light and colour take over the role of the figure, as it were, on the principle of contrasting with the background danger of the city.

The principle of shared fate as a mechanism for organising perceptual sequences in interactive game environments

The principle of shared fate refers to an individual's perceptual tendency to group elements moving in the same direction or according to the same dynamics as homogeneous structures (Wagemans et al., 2012). In interactive environments, such as computer games, this rule acquires a functional dimension, becoming a tool for directing the player's attention, organising their spatial behaviour and shaping their sense of coherence of the presented world.

Unlike traditional interfaces based on semantic labelling, the use of the rule of common destiny is based on the perceptual interpretation of movement dynamics as a meaningful message. An example of such an application in *Journey* is its navigation system based on animated sequences of fabric movement. These dynamic elements have a semiotic function – they not only point in a direction, but also constitute points of interest, e.g. destinations, plot sequences, suggesting their meaning through directional and rhythmic consistency. At the same time, their movements are harmonised with the movement of the character suggesting their functional belonging to the world and their assistance in the journey (e.g. regeneration of the robe). Here, the common fate is not only aesthetics but also mechanical synergy.

Similarly, we can read the other player's encounter – characters moving together, making synchronous movements are automatically interpreted as individuals acting together. Although there is no verbal communication between the players, a bond is created by moving together and following the same path. The principle of shared destiny here not only organises perception, but triggers empathy and a symbolic sense of shared journey.

In Inside, although we can find similar realisations of the principle in question, we experience the game with a different emotional baggage. The people the boy-player encounters are pacing figures moving in a rhythmic manner, and the player must match his movement to their pace in order to remain unnoticed. This collective movement is not the result of voluntary cooperation, but of compulsion. The player thus shares the fate of the game's "elements". A similar use of movements to draw the player's attention can be seen in a group of chicks, which directs the player's attention to the task at hand – to free one of them by performing a particular sequence of movements. By having the chicks begin to follow the player, adapting their pace and direction of movement to that of the boy, moving with him and responding to his presence as a point of reference – the player can more strongly feel being part of the world in which he is moving and which is "consciously" responding to him. From the perspective of the Gestalt principle, the movement of the chicks in the same direction as the main character causes us to perceptually begin to treat them as one group with the protagonist – as a unit of shared destiny. Their synchronised movement suggests a relationship – not just a mechanical one, but also an emotional one. Importantly, the chickens are not steered or

directly controlled by the player, yet they form a moving unity with him. This triggers empathy and projection of caring in the viewer – which is broken down later in the scene enriching the palette of experience and gameplay. This is particularly relevant to the use of this relationship and the subject use of chicks in gameplay afterwards. For in this example, the principle of shared destiny does not merely serve as a perceptual heuristic – it also becomes a multidimensional narrative tool that enhances the tone of the game.

In the inside game, we could distinguish another particular reinterpretation of the principle of common fate – the protagonist is absorbed by an amorphous mass of corporeal entities – human remains, limbs and torsos – forming a single, shared body moving in rhythmic, organic synchrony. In this scene, the principle of collective movement not only organises the perception of the system, but is radically materialised: the player not only follows with the others, but becomes part of them. This framing of the common destiny goes beyond the perceptual function of the Gestalt rule – the community of movement ceases to signify joint action and becomes an image of the total loss of individual subjectivity. The unity of movement here becomes a symbol of coercion and biological determination, and the player – previously the disposer of decision and movement – is reduced to a particle of the collective organism. This mechanism stands in clear opposition to the classical idea of games as a tool of causality and control: "Inside deconstructs the dominant model of player-world relations, stripping away subjectivity and incorporating the player into an ontology of oppression" (Backe, 2018). Thus, Inside uses the principle of shared destiny not only to build immersion or empathy, but also to evoke a sense of irreversible loss of control, making it a tool of transgressive procedural narrative.

Inside harnesses the player's perceptual potential: the paths through the frames, the lighting contrasts, the surprising but logical consequences of the action – all of this adds up to an immersive and organic experience that requires no additional explanation in the UI. Despite its absence, the player feels a full understanding of what needs to be done – not through instructions, but through contact with the space, movement and response of the game world. It is the UX, including using the Gestalt principles discussed, that becomes the vehicle for immersion and narrative, while completely eliminating the interface that could interfere with this immersion.

In *Inside*, the absence of UI does not mean disorientation, but allows the game world to speak for itself. The user experience here is refined from the movement of the characters, to the sound and light, to the drama of the scenes and their rhythm. Giving up the interface thus appears not as a limitation, but as a conscious aesthetic and functional decision that puts the user at the centre of the experience without interference from artificial information overlays. UX guides the player through a world that speaks not in words, but in composition, rhythm and image. It consciously uses the principle of shared destiny as a means of guiding attention, emotion and action. What in other games would be signalled by an indicator or

message, here is done through synchronised movement and visual phenomena, enhancing immersion and the sense of being part of the game.

This design approach demonstrates that, even in the absence of any visual interface cues, a game can effectively communicate intent and mechanics as long as it uses universal mechanisms of perception – such as Gestalt principles. In *Inside*, shared destiny not only guides the player's gaze and behaviour, but expands the narrative meaning of their presence in the game world – leading towards an inevitable bonding with others, physical and metaphorical.

From a user experience perspective, the principle of shared destiny plays an important role in the perceptual structure of time and space. The ordering of movement stimuli into homogeneous perceptual trajectories enables the player to anticipate events, facilitates orientation in the game space and supports the creation of mental representations of the environment (Palmer, 1999). Importantly, group dynamics – whether based on actual movement or on the suggestion of movement (e.g. synchronous leaning of objects) – activate the cognitive mechanisms of coherence and causality that underlie narrative immersion.

In this context, a common fate not only structures the perception of space, but can also encode plot sequences or the rhythm of progression. The clustering of moving objects around specific points in the game can act as a discrete system of checkpoints – meaningful nodes of space that do not require formal representation in the UI, but remain legible to the player through perceptual coherence. Thus, the cognitive recognition of a movement pattern becomes the basis for the organisation of exploratory and narrative behaviour, an example of an emergent interface in which function arises directly from perceptual interaction rather than from arbitrary markings (Raffaele, Silva, de Carvalho, 2017).

The fundamental cognitive value of this design strategy is that it eliminates the need for mediated instructional messages. The user is not obliged to consciously decode meanings on the basis of iconography, but learns about the game's intentions based on natural mechanisms of perceptual organisation. This type of solution is part of the trend of designing invisible interfaces (invisible UI), which – in line with the postulates of user-centred design – reduce cognitive friction and enhance the sense of presence in the game world (Norman, 2013).

The principle of common fate – as a rule of dynamic grouping – also makes it possible to operate subtly with mood and emotion. The group movement of objects can enhance the impression of harmony or anxiety, build tension or reduce it, depending on the rhythm, direction or amplitude used. For example, synchronous movements of NPCs can construct an impression of control, while chaotic but correlated movements can suggest unpredictability or anxiety.

This principle applied to the construction of perceptual cue systems in games lacking a traditional HUD such as *Inside*, *Journey* or *Limbo* use light, movement and animation rhythms as dynamic cueing systems in which consistency of trajectory – rather than semantics – is responsible for guiding the user. Thus, the principle of

shared fate acts as an information transfer mechanism, integrating the cognitive and aesthetic dimensions of the game experience.

Summary – Gestalt theory as an epistemic framework. Towards a cognitively integrated view of user experience in computer game design

Traditional approaches to user experience design in computer game design often focus on aspects related to the functionality of user interfaces – such as their clarity, ergonomics, information hierarchy or responsiveness. However, UX understood in this way remains narrowed to the technical layer and misses the essence of the player's experience as a recipient of a complex system of visual, spatial and narrative stimuli. In this view, UX is reduced to a problem of usability – as if the player's experience is a result of the clarity of the menu rather than a consequence of immersive immersion in the game world (Norman, 2013).

Analysis based on the assumptions of Gestalt perceptual theory allows us to go beyond such simplification. Principles of perceptual organisation, such as continuity, proximity or shared fate, are proving to be extremely apt tools not only for analysing the visual environment of a game, but above all – for UX design without UI. Games such as *Journey* and *Inside* dispense almost entirely with traditional interfaces – no UI, indicators, minimaps or text prompts – and yet offer an experience that is fluid, comprehensible and deeply engaging. They achieve this precisely by consciously applying rules of perception rooted in the viewer's cognitive architecture (Wertheimer, 1923).

In *Journey*, the principle of perceptual continuity organises the visual rhythm of the game – lines, light, wind directions or floating fabrics act as non-verbal guides that, without the use of any indicators, lead the player through the world. The trajectories of movement and the direction of the composition support spatial orientation, allowing for free but not chaotic exploration. At the same time, the principle of shared destiny is made present in the cooperative structure of the game – another player appearing in the world is only recognisable by the fact that he moves like us, subject to the same rules of physics, rhythm and environment. The community of movement becomes a medium of communication (Cavalcante et al., 2017).

In *Inside*, on the other hand, Gestalt principles reach an almost conceptual dimension. The principle of shared destiny not only organises the space and direction of actions – for example, when the player has to follow the group or synchronise with other characters – but is also radically materialised in the game's finale. There, the player is absorbed into an amorphous mass of organisms that moves as a single entity. The structure of the game forces the viewer to abandon their individual perspective – they not only move together with others, but become others,

symbolically losing their autonomy. This transformation emphasises that the UX in this game is not comfort or interface "convenience", but a narratively and effectively structured experience, designed through visual-motor mechanisms of perceptual organisation (Backe, 2018).

An analysis based on Gestalt theory reveals that many of the key design decisions are not about code or even storyline – but about how the player's perception organises and gives meaning to what they see and participate in. This makes it possible to design games that do not require interface support, yet still offer complex, emotionally and cognitively rich experiences. UX then ceases to be a category of usability and function and becomes a structure of meanings and impressions, organised on the basis of universal principles of human vision, attention and interpretation (Wertheimer, 1923; Norman, 2013).

The application of Gestalt principles to game analysis thus has not only a descriptive dimension, but also a design dimension. It can provide a heuristic framework for designers, as well as a basis for the development of procedural theories that link semiotics, perception and narrative experience. It also enables researchers to gain a deeper understanding of how games communicate, how they engage and, above all, how they organise the player's perception without the need for redundant, conventional interfaces (Cavalcante et al., 2017).

The conclusion of this analysis is therefore not only to confirm the effectiveness of Gestalt principles in the gaming environment, but also to show that UX can be constructed and directed even where UI is not present at all. This is not only important for design practice – it is crucial for understanding what the player experience actually is.

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