

Into the wonder - exploring the design of playables

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Abstract

This paper explores the concept of 'playables,' defined as tangible objects intentionally designed for immersive play, distinct from traditional utilitarian objects. It delves into how playables, unlike everyday items, transcend functionality, fostering creativity and curiosity in immersive play. It explores how playables differ from acknowledged design principles, drawing upon Dieter Rams and Don Norman. By recognizing the need for distinct design perspectives for playables, the paper contributes to unlocking their potential to enable wonder in immersive play experiences.

Keywords: *playables, toys, ergonomics, industrial design, aesthetics*

1. Introduction

The world of design has profoundly shaped human interactions and experiences, and the design tradition has delivered numerous examples of good design solutions, often followed by identifying the principles that constitute good design. Nonetheless, within these principles, specific refinements are necessary to distinguish particular categories of objects. Objects explicitly crafted to encourage play represent a category that would greatly benefit from this differentiation. [Heljakka \(2019\)](#) suggests there is a need to differentiate toys from other designed artifacts, noting that, "to differentiate toys from other designed artefacts, toys should mainly be given affordances that can be employed in play, and they should offer their players possibilities to use the toys in different acts of play." [Skovbjerg \(2021\)](#) notes that things used for play have qualities that are only apparent in the context of play situations, and that the quality of toys are thus evaluated according to the situations in which they are brought into play. When asked about the distinctions between designing toys and other objects, Nicolas Vas, who is Experience Design Manager at LEGO, Denmark, notes that: "Objects that are not toys can be designed more to facilitate an intended experience or perform a specific function. There is an intended purpose, and the quality of the design can be measured by how reliably and well the object can perform its purpose. Toys that leave less to the imagination become more like objects, and risk being measured as objects, where the physical qualities such as aesthetics, material strength, and tech specifications can be measured and compared." (Personal communication, September 20, 2023).

In the realm of play experiences, objects designed for play are intended for a non-utilitarian purpose, demanding approaches distinct from those of utilitarian objects. A myriad of classifications exists for the physical artifacts interacted with during play activities. We describe them as e.g. toys, games, play sets, costumes and playground equipment. Academics add further variety, referring to playthings ([Heljakka, 2019](#)), play media ([Skovbjerg & Johansen, 2010](#)), play materials ([Storli et al., 2020](#)), play props ([Sicart, 2014](#)), even 'tools of play' ([Fails et al., 2005](#)). Yet, despite the seeming comprehensiveness of this terminology, this article posits a novel concept, introducing the term 'playables', because it bears a distinct connotation compared to the existing terminology. A 'playable' accentuates the design intent of such objects. Playables are defined as as physical objects that are specifically designed to afford

wondrous play. They are intimately linked to the sense of wonder experienced during play (Legaard, 2023), which does not depend on achieving milestones or accomplishments. This stands in contrast to the concept of 'flow' (Cziksentmihalyi, 1990), focusing instead on the continuous exploration inherent in free play activities. These particular characteristics of 'playables' set the concept apart from most conventional industrial design objects, which both opens new opportunities for designers to explore and entails new requirements for the design to adhere to.

2. Core characteristics of playables

Legaard (2023) introduced the state of 'wonder' as a counterpart to 'flow' in order to account for the explorative nature of play experiences rather than a focus on task-related accomplishment. While during play, just as in the state of flow, one becomes fully immersed in the experience, play is described as an intrinsically motivated activity free of extrinsic goals or consequences (Caillois, 1961; Huizinga, 1949; O'Connor & LaPoint, 1980), and thus not directed towards a specific end-goal, which is a main requirement of flow (Cziksentmihalyi, 1990). Legaard (2023: 4) points out that "the fact that free play is not focused on an end-goal suggests that the concept of flow is not appropriate for describing the immersed state of explorative play experiences." He draws upon the two connotations of the concept 'wonder', one being the wonder of something (a passive state of allowing oneself to be wowed by some experienced phenomena), and the other being the act of wondering about something (an active state that encourages an exploration of a phenomenon).

The definition of a playable as a tangible artefact specifically designed to afford this type of wondrous immersion in play is intended to communicate the three core attributes of playables—physicality, intentional design, and the capacity to immerse and captivate the player by eliciting wonder and exploration:

- **Tangible artifacts:** Playables are objects or materials that can be interacted with in the real world, meaning that playables are distinct from purely digital or virtual play experiences.
- **Specifically designed:** Playables are purposefully crafted to serve the act of play. This intentional design aspect is fundamental to the concept of playables, separating them from e.g. cardboard boxes that may be appropriated to play, but are not designed for play.
- **To afford wondrous immersion:** Playables are not merely about facilitating play but also about immersing the player in a world of wonder and imagination. This concept aligns with the idea that playables go beyond functionality to create rich and captivating play experiences.

While playables include objects that align with established categories of play objects (most toys would also adhere to the category of playables), they also exclude certain elements from these categories, for instance objects that become toys but are not intentionally designed as toys. As Heljakka (2019) writes, toys can be either improvised (used for play but not intentionally designed for it) or designed (created specifically to afford play). The introduction of 'playables' as a distinct category serves to emphasize the unique design principles, intentions, and outcomes associated with objects designed to ignite a state of wonder during play. By distinguishing playables from conventional objects, we acknowledge the importance of specialized design perspectives and principles in creating immersive play experiences.

While the physicality of playables sets them apart from e.g. digital games, the heuristics in designing digital games aimed at immersive player experiences may offer valuable perspectives. Koeffel et al (2010: 240) highlight the critical role of engaging game mechanics and narrative coherence in sustaining player interest and deepening the immersion of digital games, noting that "integral factors of user experience are the state of flow and immersion, defining the level of enjoyment and fun".

While games often highlight the state of flow, some games also adhere to the state of wonder, allowing an immersive experience through the possible exploration of the game world. But while a game like Minecraft offers an open world that stimulates wonder and exploration, the experiences are ultimately confined to the pre-programmed capabilities of the game, and as such, the complexity inherent in design is crucial for crafting immersive experiences that captivate players, urging them to explore and engage deeply with the game world. Sweetser et al. (2012: 5) note that "game elements should build up a rich and detailed world that is more like visiting a fully realised location than a constructed map", exemplifying the required complexity of the designed game world.

This complexity, manifesting through intricate game mechanics, narrative structures, and interactive environments, is integral for fostering exploration and engagement (Sweetser et al., 2012). The design of digital games, therefore, demands a thoughtful integration of these elements to ensure a rich, multi-layered player experience. In contrast, physical playables, unbounded by digital constraints, offer a different kind of complexity rooted in the real world's limitless possibilities, inviting an unpredictable and creatively stimulating form of play. This also means that playables relate to the context in which they are experienced. As noted by Sicart (2014: 38): “Some toys open for appropriation by creating a world; others open for appropriation by occupying the world.” Despite these differences between digital games and playables, insights from digital game design, such as those related to intuitive controls, a cohesive narrative and engaging gameplay mechanics, may also offer insights for designing playables. The following sections delve into how the characteristics of playables necessitate a departure from traditional design norms, focusing on their alignment with experiential needs and their role in enhancing the wonder inherent in play.

3. Designing playables: enabling quality play experiences

It is important to increase our understanding of how to design playables (unfolded as toys, games, play equipment etc.) because they have a huge impact on the quality and development of play experiences (Trawick-Smith et al., 2014). Cankaya et al. (2023) note that children's play frequently involves objects, materials, or toys, and that play themes generally follow the ideas inherent in the materials and toys available. According to Trawick-Smith et al. (2014), quality play encourages children to be involved in critical learning and cognitive development elements such as self-regulation, make-believe, problem-solving, and creative expression, underlining the importance of quality play in children's lives, and its potential implications beyond childhood. The overall objective of playables is to enrich the play experiences, ensuring that they transcend everyday experiences and ignite the player's imagination. They are designed to afford moments of wonder, curiosity, and exploration, fostering 'wondrous play'.

When considering what makes a good playable/toy, Trawick Smith notes that toys provide two vital functions in play. First, they inspire, maintain, and enrich play and secondly they “function to draw peers together into a shared play theme, by helping them establish joint attention—a circumstance when children all focus on the same object or activity” (Trawick-Smith et al., 2014: 250). Chantal Drenthe, Toy Designer at Fuse Toys in London, describes a good toy as one that engages the player. She notes that they (designers at Fuse) “...usually include a surprise element like transformation or a reveal moment, something that will make the kid want to play with the toy over and over.” She further states that a ‘good toy’ gives the kid agency over the world they're creating in their imagination or reality (personal communication, October 24, 2023). Her insights align well with the core characteristics of playables, which aim to afford wondrous immersion in play and inspire curiosity and fascination. Good toys often excel in two phases: they captivate the player initially, sparking their interest, and then sustain that interest as the player delves deeper into the exploration of the play experience. Legaard (2022: 8) points out that “play experiences are explorative by nature. In order to start exploring, the player needs to have a familiar place to start exploring from, but also clues of what to explore and how to explore it, thereby enticing the player to start exploring.” With the intention of playables to afford explorative play experiences, a basic foundation is that they will support a state of wonder rather than a state a flow, by which they encourage exploration and the freedom of play, denoted here as wondrous play. Many toys, when used in situations of explorative play, relate to the state of wonder, affording the players to unfold and retain the play activity. As mentioned by Sicart (2014) a toy has no utilitarian function other than enabling the play experience in itself. A tool – as the counterpart to toys – is defined mainly by its utilitarian function. A hammer designed to be a tool is designed for optimal performance when punching a nail into a wall. A toy such as the hammer of Thor, is used in play experiences to create (imagined) lightning and thunder. As Thibault (2015: 993) also states: ‘Seen from outside play, toys are perceived as a commodity, an object covering the function of entertaining children. On the other hand, toys seen from inside play, have some ‘magic’ feature that transforms them into something else, something more.’ In the following sections, I will continue to explore the nature of playables, positioning the concept in relation to established principles for what is considered to be 'good design'.

4. Design principles for playables - what makes them ‘good design’?

The distinctive qualities of playables hint at a different set of considerations compared to typical design objects. Their imaginative and explorative nature suggests a departure from traditional design principles, necessitating a reconsideration of established design norms. To explore these principles for playables, this study turns to Dieter Rams' ten principles for good design (Rams, 1976) and Don Norman's approach to human factors and affordances (Norman, 1999), both widely acknowledged in the academic design discourse. Norman (1999: 4) explains that “affordances specify the range of possible activities, but affordances are of little use if they are not visible to the users. Hence, the art of the designer is to ensure that the desired, relevant actions are readily perceivable.” He further notes that affordances should not be confused with perceived affordances, underlining that affordances reflect the possible relationships among actors and objects: they are properties of the world. Norman's assertion that affordances should be visible to users aligns with Rams' principles of 'usefulness' and 'understandability'. The ten principles for good design defined by Dieter Rams (1976) are as follows:

1. Good design is innovative.
2. Good design makes a product useful.
3. Good design is aesthetic.
4. Good design makes a product understandable.
5. Good design is unobtrusive.
6. Good design is honest.
7. Good design is longlasting.
8. Good design is thorough down to the last detail.
9. Good design is environmentally friendly.
10. Good design is as little design as possible.

The aim of this study is to derive principles that best illuminate the distinctive features of playables, highlighting how they intentionally diverge from traditional design norms. I examine how Dieter Rams' ten principles of good design and Don Norman's work on user-centred design, specifically in regard to affordances and ergonomics, relate to the concept of playables, explicating how they align with or deviate from traditional design paradigms. The following sections examine four perspectives, drawing on Rams and Norman's insights, to provide a comprehensive understanding of how playables differ from mundane objects in terms of design principles.

Section 4.1 discusses the concept of innovation (1) which relates to the requirement of novelty concerning playables, but with a focus on the novelty of the experience rather than a novelty in terms of technological advancements. Section 4.2 investigates the themes of utility and usefulness (2), analysing the ways in which playables both adhere to and depart from these principles by allowing intended play functionalities and opportunities, yet being open for interpretation and allowing freedom for exploration. Section 4.3 focuses on aesthetic principles (3), including the principles of making the design understandable (4), unobtrusive (5), honest (6), attention to details (8) and ‘as little design as possible’ (10). These principles relate well to playables, where aesthetic appeal not only attracts but also communicates the playful possibilities of the object, guiding interaction through visual cues. But while simplicity and subtle visual clues in design may be valued, it must be balanced with the need to stimulate imagination, exploration, and discovery, reflecting - and extending - Norman's concept of affordances, creating designs that invite and facilitate user interactions. Section 4.4 examines the interplay between human factors, particularly through the lens of Norman's perspectives, and the freedom of play in playables, addressing how ergonomic considerations and affordances are balanced with the need for open-ended exploration, ensuring that playables are both user-friendly and conducive to imaginative play. Rams furthermore emphasizes that good design ought to be long-lasting (7) and environmentally friendly (9), principles that naturally extend to playables. As tangible objects designed to facilitate deep play experiences, playables, when thoughtfully designed, should remain relevant and engaging for many years.

4.1. Innovation and novelty

By identifying herself as a toy inventor, Chantal Drenthe highlights a prevalent term in the toy industry where a constant need for innovative products is a cornerstone (personal communication, October 24, 2023).

There is a focus in the toy industry on coming up with ideas aimed at creating the wow-effect that makes the toy sell in a very competitive market. [The toy association \(2023: 5\)](#) writes that “new ideas are the backbone of the toy industry. The need for innovative products is constant.” [Rams, \(1976: 3\)](#) states that “the possibilities for innovation are not, by any means, exhausted. Technological development is always offering new opportunities for innovative design.” When delving into innovation within the context of playables, it becomes evident that novelty should be rooted in the overall experience rather than reliant on technological advancements. For children, the dominant consideration revolves around whether a toy captivates them and how well its affordances align with the intended play experience. [Skovbjerg & Johansen \(2010: 6\)](#) illustrate this point by describing how boys, engaged in a Star Wars theme, incorporate both electronic lightsabers and wooden sticks in their play. They note, “the boys also drag with them numerous wooden sticks in different shapes and sizes, each representing the most wanted weapons of Jedis and Sith emperors. Electronic toy lightsabers and wooden sticks each hold different affordances.” When novelty is intricately tied to experiential aspects, allowing objects to ‘wow’ players through surprise and delight ([Heljakka, 2019](#)), it becomes a potent factor in enhancing the play experience. This aligns with [Trawick-Smith et al.’s \(2014: 255\)](#) observations that “novelty not only drew children to toys but inspired higher quality play with them.”

4.2. Potentiality beyond utility

Dieter [Rams \(1976: 4\)](#) asserts, “Good design emphasizes the usefulness of a product while disregarding anything that could possibly detract from it.” However, playables challenge the traditional fixation on functionality by accentuating their potentiality. In contrast to Rams’ principles, which underscore usefulness and understanding, playables pivot toward igniting creativity and wonder. This shift invites those playing to envisage possibilities beyond predetermined functions, fostering open-ended play scenarios. [Legaard \(2023: 9\)](#) notes that “a toy has no utilitarian function other than enabling the play experience in itself. A tool – as the counterpart to toys – is defined by its utilitarian function.” [Heljakka \(2019: 3\)](#) further writes that “toys are functional in two senses: First, they are functional if they can be used to play. Second, they can have different functions that can be employed in play. In other words, to differentiate toys from other designed artefacts, toys should mainly be given affordances that can be employed in play, and they should offer their players possibilities to use the toys in different acts of play.” So while conventional design principles dictate an optimal way of using an object, emphasizing clarity and understandability, playables embrace an approach that encourages exploration and autonomy in user interaction, aimed directly at the specific play experience. In her description of four dimensions of toys – these being physicality, functionality, fictionality, and affective dimensions – [Heljakka \(2019: 4\)](#) relates the functionality of a toy directly to its playability, writing that toys have a “mechanical and (increasingly) technological functionality, and they can be played as open-ended playthings (without instructions) or with rules of engagement in a game-like manner.” As an example she mentions how functionality may be related to poseability (making the toy sit and stand in different ways). So in cases where a playable has functionalities that afford specific play actions, it may adhere to the conventional idea of being “readily perceivable,” ([Rams, 1976](#)), but playables are, conversely, also made to allow interpretation, seeing that their value lies in unlocking imagination and embracing the explorative nature of play experiences. The definition of playables relates to [Heljakka’s \(2019: 4\)](#) four dimensions of a toy by emphasizing the importance of physicality, intentional design, and the capacity to immerse and captivate players in a world of wonder and play. These principles align with the physical dimension by ensuring playables are tangible and interactable, the fictional dimension by crafting narratives and themes that deepen immersive engagement, the functional dimension through purposeful design that serves play rather than utilitarian purposes, and the affective dimension by creating emotionally resonant experiences that evoke wonder.

4.3. Aesthetics - affording explorative imagination

Playables intentionally evoke curiosity and kindle imagination, acting as gateways to immersive play experiences. If we position aesthetic expressions along a continuum, one end may represent traditional design principles championed by figures like Dieter Rams who emphasize the significance of aesthetics, advocating for simplicity, transparency, and practicality, where the design of objects should be straightforward and discreet. These principles prioritize clarity, honesty, and functionality, suggesting that objects should be self-explanatory and unobtrusive. In his statement that products should be

unobtrusive, Rams (1976: 7) notes that “Products fulfilling a purpose are like tools. They are neither decorative objects nor works of art.” Norman & Ortony (2006: 133) advocate for a perspective further along the proposed continuum, emphasizing the role of visual appeal in a design's capacity to elicit positive emotions. They state that: “Emotion promotion is often focused on generating positive emotions, as in the design of jewellery or ornamental products, where the generation of positive emotions is obviously the goal.” Further towards the other end of the continuum lies the imaginative aesthetic approach that stimulate imaginary aspects of objects such as playables. Here, aesthetics go beyond mere visual appeal, departing from the utilitarian or decorative purposes served by everyday objects. The continuum extends from traditional design principles to a domain rich in imaginative exploration. Positioned along this continuum, playables like toy kitchen tools that mimic real utensils demonstrate the spectrum's initial point. While these toys resemble real-life utensils at first glance, their design may also incorporate imaginative elements, allowing children to venture into and shape an imagined adult world. This type of play moves beyond standard functionality to inspire exploratory role-playing. At the other extreme of the continuum, some playables significantly deviate from actual objects, displaying variations in materials, sizes, colors, and creative features, e.g., objects such as Magna-Tiles. This continuum illustrates the transition from classic design aesthetics to the innovative and engaging aesthetic principles of playables, accentuating their potential to transcend everyday items and become exceptional instruments for imaginative play. This balance aligns with the characteristics of a playable to be both ‘symbolic’ (enabling a recognition providing a familiar starting point) and ‘indicative’ (including inspirational elements that encourage extended exploration), described by Legaard (2022). Playables must evoke curiosity and kindle imagination, acting as gateways to immersive play experiences. They invite children to explore, invent, and immerse themselves in worlds of their own creation. Narrative affordances, as described by Legaard & Skovbjerg (2023), play a crucial role in connecting with children's imagination, reinforcing the perceived potentiality of playables. The design of playables thus requires thoughtful consideration of narrative affordances, ensuring that each element encourages imaginative exploration and contributes to the transformative potential of the intended play experience. Transformative potential in the context of playables refers to their capacity to profoundly impact and alter a child's play experience. It involves going beyond the ordinary and creating a space for imagination, exploration, and creative development. Playables, through their intentional design, possess the power to transform a child's playtime into something extraordinary, elevating it beyond routine activities.

4.4. Balancing human factors and the freedom of play

Within traditional design principles, interactions are often designed with considerable restrictions, especially when there is a focus on ergonomics, leading to designs that enforce very specific ways for users to interact with an object. Norman & Draper (1986) notes that designers need to take into account the interactions between the user and the artifact when designing the latter. For a product to be usable, it needs to fit the human's physical characteristics, and its uses must be perceptible with a minimal amount of cognitive deliberation, highlighting the concepts of affordances and ergonomics. Norman (2006: 45) describes human factors, including ergonomics, as important considerations to ensure that designed equipment becomes easier to use, more effective, safer, and more able to accomplish our underlying needs. Ergonomics typically dictate a singular ‘correct’ way of interacting with a product. For instance, a pair of scissors tailored for left-handed users demands precise usage for ergonomic principles to exert their effectiveness. While utilitarian objects often require specific and prescriptive ergonomic considerations, playables offer a broader spectrum of engagement possibilities. They are purposefully designed to stimulate unstructured play and playful exploration, where ergonomics dictating usage may impede creative and imaginative play.

The brief and rapidly changing nature of play also significantly influences how ergonomics and play relate. Unlike conventional design principles that often prioritize specific and prolonged interactions, playables acknowledge the dynamic and spontaneous nature of children's play. Considering that play experiences are often brief and can swiftly transition from one activity to another, also means that the traditional ergonomic focus on a singular ‘correct’ way of interaction may be less applicable. Playables, designed for unstructured play and playful exploration, need to accommodate the fluidity and unpredictability of children's play behaviours. While ergonomics in utilitarian objects might demand precision and adherence to specific usage patterns, playables offer a broader spectrum of engagement possibilities.

Consider a play scenario featuring a Gorilla warrior king; the sword's handle is designed not just for a firm grip but might also facilitate actions like hurling the sword at approaching zombies. Moreover, the sword could morph into entirely different objects, like helicopter propellers or a laser generating an invisible bridge. This flexibility in design goes beyond mere ergonomic considerations, instead enriching the play experience with diverse interactive possibilities that may unfold new narratives. In this complex context, maintaining a balance between ergonomics and the freedom of exploration becomes paramount, distinguishing the interactions with playables from traditional design practices, which tend to lean towards more prescriptive approaches.

Through the four perspectives described above, the study accentuates design differences between playables and traditional objects. The described exploration sheds light on how playables intentionally depart from established norms, highlighting their unique qualities as a distinct category in the design landscape.

5. Discussion

The distinction between playables and conventional design objects suggests a need for intentional design choices that transcend traditional paradigms, recognizing the unique characteristics of play experiences. This research underlines the importance of such intentional design decisions in creating objects that not only serve a functional purpose but also enrich human interactions and experiences through play.

The insights gained from discussions with toy designers indicate that many of the principles identified in this study are already being intuitively applied, though not always explicitly recognized as such. This underscores the potential of the current study to serve as a reference for more deliberate incorporation of these principles into the design process, enriching the development and experience of play objects.

The juxtaposition of playables with digital games further enriches this discussion, illustrating the complementary and contrasting aspects of tangible versus virtual play. While digital games offer expansive virtual environments and narratives, playables provide a tactile dimension that grounds play in the physical world, offering a different layer of interaction and imagination.

The concept of playables challenges designers to think beyond traditional notions of utility and functionality. By focusing on the experiential qualities of objects, designers are encouraged to consider how an object can provoke curiosity, elicit wonder, and inspire creative exploration. This shift towards experiential design is not only relevant for children's toys but can also inform the design of objects and environments for all ages, suggesting a broader application of these principles in design practice.

The design of playables is not merely about creating objects for entertainment. It is about crafting experiences that foster imagination, encourage exploration, and enrich our interactions with the world around us.

5.1. Limitations

This study's exploration into the design of playables is primarily theoretical and does not incorporate empirical validation from end-users. The insights derived from discussions with toy designers offer valuable perspectives but does not fully capture the diverse experiences and interactions users have with playables. As such, the study is intended as a starting point, acknowledging its scope is limited by a theoretical framework that might not encompass the full spectrum of play objects and experiences. Future research is needed to empirically test and refine the proposed design principles, ensuring they accurately reflect the nuances of wondrous play in varied contexts.

6. Conclusion and future directions

Through the exploration of design characteristics of playables, the study explicated how design principles are reliant on the type of objects that is designed. Playables, as intentionally crafted artifacts for wondrous play, stand in contrast to the utilitarian focus of conventional design. The findings suggest that playables transcend mere functionality, leading towards more open-ended and imaginative experiences, fostering exploration. This divergence is encapsulated in four key perspectives: the intentions of innovation and novelty, potentiality beyond utility, aesthetics affording explorative imagination, and balancing human factors with the explorative freedom of play.

The current study proposed distinctive design characteristics of playables as a pathway to enrich play experiences, setting the stage for future research and innovation in designing for the wonder of play.

It would be relevant for future research to focus on empirically testing the implementation of design principles for playables identified in this study, examining their practical application within the design process and their impact on user experiences. Such studies could furthermore explore diverse contexts and settings, broadening the understanding of how playables can enrich not only leisure activities but also educational, therapeutic, and social environments.

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