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The Many Views of Game-Related Experiences with the Experiential Tetrad

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Abstract

Discussions of game-related experiences are facilitated (and hampered) by the shared vocabulary and conceptual frameworks we have. Currently many such frameworks are heavily focused on players and mechanics, even though many other types of experience exist. The Experiential Tetrad (ExperT) is our conceptual framework encompassing a broader set of game-related experiences. ExperT is based on a synthesis of work on user, player and spectator experiences. We have used ExperT in our own work to help organize and classify existing literature, and it has also helped us find new avenues of research. While ExperT is not yet all-encompassing, we have already found it useful to clarify our discussions of experiential theories for games.

CCS Concepts

• **Applied computing** → **Computer games**; • **Human-centered computing** → **HCI theory, concepts and models**; *Interaction design theory, concepts and paradigms*; • **General and reference** → Design.

Keywords

Player Experience, Game Design, HCI, Spectator Experience, Conceptual Framework

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1 Experiences with Games

A lot of work has been done thinking about *player experiences (PX)* through constructs like *fun* [22, 60, 61, 64], *immersion* [3, 18, 39, 54], *flow* [24, 29, 69, 92–94], *engagement* [15, 74, 75, 104], and *presence* [8, 53, 95, 96, 106]. But, while there is agreement that PX is multi-dimensional, there is no agreement on its set of constructs, their definitions, scopes, interactions, and relationships to various game elements [13]. This makes it difficult to capture a variety of nuanced experiences. For example, immersion models (e.g. 3, 18, 39, 54) appear to prioritize gameplay/challenge-based immersion. Other constructs, like flow and engagement, overlap with immersion and so exhibit similar biases.

To make this concrete, we give three examples of game-related experiences; the reader is invited to consider whether these experiences would be adequately captured through constructs which are predominantly concerned with challenge-based metrics. We will then detail our own analysis of these examples and what is lacking in current frameworks.

Example 1. On an island in Animal Crossing: New Horizons (ACNH) [72], Player 1 sets up a tea party (Fig. 1a). They decorate their house with the perfect items, choose their favourite outfit, and invite their favourite villagers. They take pictures at their pretend party and have a great time. Across the island, Player 2 plots to harass their least favourite villager into moving out (Fig. 1b). Player 2 has heard a rumor that hitting a villager with a bug net enough times will cause them to leave. After being hit all day, Tank turns around to yell at the player.

(a) ACNH player hosts a tea party with their favourite villagers[102].

(b) ACNH player getting yelled at by a villager for hitting them with a net [100].

Figure 1: Vignettes of character interactions in Animal Crossing: New Horizons which highlight different play experiences.

Example 2. On YouTube, livestreamer Markiplier plays Five Night's At Freddy's Ultimate Custom Night (UCN) [86] (Fig. 2). His attention is split across all the resources he needs to keep in check. Noises and flashing lights overwhelm him, demanding attention. While addressing a problem, he is jumpscare-d by Chica the Chicken leading to a game over. As the game progresses he becomes less startled by these scares. The stream viewers, on the other hand, are here to be scared. They wait anxiously and jump with every noise and animation.

Example 3. Two siblings laugh about their games. One is playing Getting Over It With Bennet Foddy [41]. They recount making

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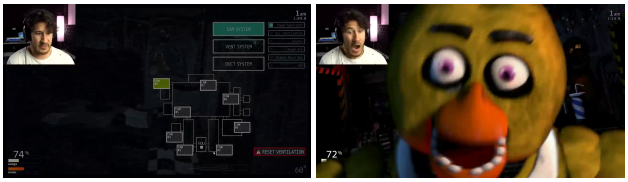


Figure 2: Screenshots from Markiplier's UCN run [66] showing the focus he has on the game tasks, and his jumpscare response one second later.

a bad jump, missing a hold, and falling all the way back down the mountain (Fig. 3a). They laugh about the absurdity of it, their frustration juxtaposed against the calm voice of the narrator saying "Oof, you lost a lot of progress. That's a real frustration, a real punch in the gut." The other sibling recounts their day playing The Longing [91]. They are in their Shade's home just waiting out the clock (Fig. 3b). They laugh about watching their Shade just sit there as the seconds pass by, and how there are only 393 days left of this.

(a) Player falling from the hill. **(b) Shade waiting in chair.**

Figure 3: Screenshots from Getting Over It with Bennet Foddy (3a) and The Longing (3b) highlighting frustrating and boring play experiences.

These experience snippets are familiar. We can understand the aesthetic and emotional pulls of moments in games like ACNH; feel the tension and fear watching games like UCN; experience the frustration of the slog in Getting Over It, and the boredom of The Longing. However, these aesthetic and emotional experiences are understudied, even though they have been shown to be large contributors to overall experience through game atmosphere [81] and character interactions [12].

This bias in construct focus becomes more problematic when considering PX measurement tools. Measures like the *Player Experience Needs Satisfaction (PENS)* [83] and *Player Experience Inventory (PXI)* [2], quantify experience by trying to capture these constructs, despite being unsure whether these constructs actually measure PX (e.g. PENS [101]) or if the underlying theories are suitable for all types of experiences (e.g. PENS [33, 76]). By design these tools imply high scores in a construct translates to "better" PX. This overlooks how negative emotional experiences (e.g. frustration, anxiety, tension) can enhance gaming experiences (e.g. 54, 58, 97), such as with horror titles like UCN.

There are also other experiences beyond PX which are not covered in our existing construct-based conceptualization. Our UCN example shows how live-streaming creates two different experiences of the same gaming session: player and spectator. Spectators do not have to focus on mechanics, giving them more leisure to appreciate aesthetics and socio-cultural components of the game. For example, Blackmore et al. [9] found horror game spectators have more intense startle reflexes compared to their player counterpart. While player and spectator experiences are notably different [50, 89], they are equally interesting game-related experiences.

With so many nuances, a modern understanding of game-related experiences should accommodate the variety of experience types (e.g. mechanics-based, aesthetics-based) and roles (e.g. player, spectator) one could have when interacting with a game. We are inspired by previous conceptual frameworks which sought to create unified understandings of broad concepts, like Aarseth and Grabarczyk's meta-ontology of games [1], Schell's Elemental Tetrad [85], and Wright et al.'s experiential framework [108]. From this inspiration, ***we aim to create a conceptual framework for an integrated understanding of game-related experiences from the point of view of different stakeholders***.

Paper Structure. We start with a high-level explanation of our methodology, and quick overview of the resulting conceptual framework: the **Experiential Tetrad (ExperT)**. We use that basis to explain our scope and intent of the work. We proceed to cover the method steps in more detail, alongside the data for each step. First, we cover our knowledge gathering process and the existing literature which forms our basis of understanding about experiences. Then we explain the synthesis process and present the components of ExperT in detail. With the framework explained, we pivot to highlighting ways we found ExperT to be useful in improving our understanding of game-related experiences. We also speculate about how it could be improved.

2 Method Overview, an ExperT Sneak Peak, and Scope

We approach this as grounded theory work [23], wherein the data we are grounded in is existing literature. We construct the components of ExperT through reflexive, iterative, and concurrent *knowledge gathering* and *synthesis*. During *knowledge gathering* we explore the existing literature about game-related experiences from a variety of sources, the details of which are covered in Sec. 3. From this we *synthesize* concept groupings, connections, and organizations that feed into our final framework. The details of this process, and results of this synthesis are presented in Sec. 4. We continue this concurrent search and analysis process until our understanding of the work stabilized (i.e. new work did not change our underlying conceptual model of the theory or significantly innovate in its measurement or impact). As the process was on-going and concurrent, authors equally contributed to the overall knowledge gathering and synthesis. Through this grounded theory paradigm, we engage in preliminary theory-crafting around game-related experiences resulting in ExperT (Fig. 4).

The Experiential Tetrad (ExperT) (Fig. 4) highlights four interconnected experience types (mechanical, aesthetic, emotional, and socio-cultural). These are time-oriented: from during play to out of play. The lines connecting experience types represent the relationships between them, and create space to visualize the complex experiences that arise from these relationships. Different experiential contexts arise from different experience types and time scales, giving us different lenses from which to view those experiences.

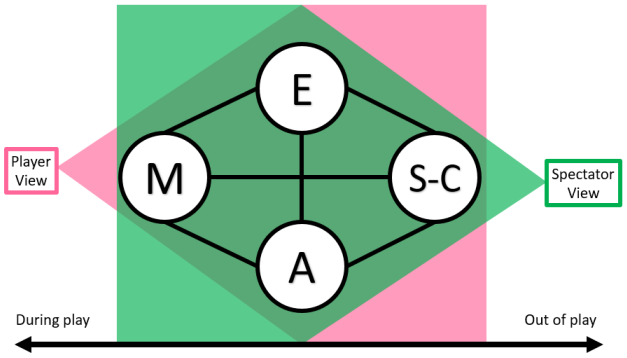


Figure 4: The Experiential Tetrad (ExperT). A conceptual framework that explores types of experiences, their relation, scopes and analysis lenses. Mechanical, Emotional, Aesthetic, and Socio-Cultural.

ExperT currently visualizes two lenses: the *player* (pink) and *spectator* (green). The details of these types and lenses are covered in Sec. 4.1 and 4.2, respectively.

We are not looking to replace existing models, frameworks, and understandings, but to augment them by exploring their connections and limits.

3 Knowledge Gathering: Related Work

We conduct a (non-comprehensive) narrative review of PX and game-related experience work to understand how it shapes game design and game research. The bulk of this search process took place between 2015 and 2019, with literature after that time being added in an ad-hoc manner.

We cast a wide net, starting with general game design textbooks (e.g. 3, 11, 16, 46, 84, 85), game studies books (e.g. 28, 56, 67), and industry-focused resources (such as GameDeveloper.com[1], and Game Developers Conference talks[2]), to identify concepts that transcend academia like game design frameworks (e.g. MDA [51], Elemental Tetrad [85]), player typologies (e.g. Bartle [5], Yee [109]), experience taxonomies (e.g. 60, 61), gamer identity (e.g. 44, 88) and culture (e.g. 45, 87), and constructs like "*immersion*", "*flow*", and "*fun*". We use these concepts as preliminary search terms for more specific literature, and our basic foundation for understanding the literature.

We then search the ACM Digital Library, IEEE Xplore, and Google Scholar (for grey literature outside of technically-geared venues) for "*player experience*" and "*game experience*" to give us a broad view of the literature. We examine this literature for other related terms and ideas, which we add to our search. We then repeat searching through these venues for the constructs, frameworks, models, and concepts found in the previously mentioned general resources and this specific literature. For the more generic search terms, we add "game" and "player" to scope the results; for example, "*immersion* & (*game* + *player*)" ensures that we were looking at papers about immersion in the context of games.

[1]Formerly Gamasutra
[2]via YouTube and the GDC Vault

We include in our review any literature exploring or applying these concepts. We use citation searching (i.e. looking at both works referenced by the literature, and newer works referencing the literature) to find related work to enrich our understanding and include in our review. We add new concepts from these works to our search terms, which further expands the scope of our review. The variety of concepts is partially reflected in the keywords of Table 1. We continue this search process for as long as we found new information to integrate into our conceptual model. While this allows our review to take a general overview of the field, this lack of strong inclusion/exclusion criteria and scoping boundaries means our approach is non-systematic and therefore cannot claim to be comprehensive.

For ease of presentation, we divide the literature into three categories based on their particular focus: Experience in HCI, Player Experiences, and Spectator Experiences. The HCI related work is useful in understanding how experience has been studied broadly, whereas the other works help focus our understanding on experience in a gaming context. We present this narrative assortment to highlight what we found to be important and recurring concepts in experience related work.

3.1 Experience in HCI

Bargas-Avila and Hornbæk's meta-review [4] summarized user experience (UX) as a holistic, multidimensional, context-dependent phenomena focused on positive aspects of interaction which required specific new techniques to understand. They reported that most work looked to evaluate a "generic" UX or unique constructs presented for the paper. As experience is still not clearly conceptualized [79], we need to explore existing conceptual frameworks.

There are experiential frameworks, each with their own philosophy. Wright et al. [108] thinks of experience as a sense-making process. They propose four intertwined aspects of experience: compositional, sensual, emotional, spatio-temporal. These aspects are integrated through six reflexive and recursive sense-making processes (anticipating, connecting, interpreting, reflecting, appropriating, and recounting). Forlizzi and Ford [43] views experience as a state of cognitive workload. They propose four, mutually-exclusive, kinds of experience (sub-conscious, cognition, narrative, and storytelling). They suggest that people shift between these experiences based on internal and external factors. Forlizzi and Battarbee [42] separate the concept of experience as the moment-to-moment "self-talk", from "an experience" (a particular interaction with well-defined beginning and end) and co-experience (the co-constructed experience). Hassenzahl [49] separates experience and meta-experience (simplified average of the user's many experiences with a product). They propose four constructs as a proxy for experience: product perceptions (hedonic and pragmatic), time, usage modes (goal or action), situated relevance, and global evaluation (i.e. good-bad satisfaction). Desmet and Hekkert [35] considers experience to be the resulting affect of a product-user interaction. They identify three levels of interaction to induce experience: aesthetic, emotional, and meaning.

3.2 Player Experiences

Like UX, PX is generally understood to be a multi-dimensional [2, 51, 52, 83, 85], context-dependent [70] phenomena. Borges et al.'s

Table 1: Overview of the aspects of game-related experiences.

Experience Type	Resulting from...	Related Concepts (Keywords)
Mechanical	Gameplay (e.g. mechanics, controls)	Mechanics, challenge, tactics, strategy, difficulty, hard, flow, control, competence, usability, and interactivity
Aesthetic	Art Direction (e.g. audio-visual elements in game, concept arts)	(Visual) Aesthetics, sensual/sensory, presence (spatial), environment, immersion (sensory), and audio-visual
Emotional	Dramatic Elements (e.g. game characters, Narratives, Lore)	Stories/narratives, fantasy, expression, imaginative/imagination, fun, emotion, characters, and involvement
Socio-cultural	Game's social and cultural impacts (e.g. fan communities, reviews, advertising)	Society, community, contexts, frames, lenses, social interaction, presence (social), previous experiences, empathy, relatedness, and meaning

meta-review [13] notes that PX is a competing term against *game experience* and *gaming experience*. This reflects different philosophies about experience and speaks to the types of conceptualizations that are currently in use. The difference in these philosophies becomes clearer when comparing early game frameworks against contemporary work with construct measurement.

Early frameworks follow a game experience philosophy; they aim to model the game as a way to explain how experience is formed from interacting with different parts. Hunicke et al. [51] model game experiences by ***M**echanics* (engineered by designers), the ***D**ynamics* of the interaction between the player and game, and the ***A**esthetics* (emotional responses) inspired in the player. While MDA is popular, it has multiple limitations (such as lack of clarity around aesthetics and the control of the designer on player experiences) which other frameworks have tried to address [36, 37, 103, 105]. Schell's Elemental Tetrad [85] divides games into four elements (mechanics, story, aesthetics, technology) and organizes them based on how apparent these elements are to the player during play. Ralph and Monu [80] and Bond [11] have proposed their own frameworks combining MDA and the Elemental Tetrad to try and account for the clarity issues of the original works.

Others have focused on constructs of experience like fun [22, 60, 61, 64], immersion [3, 18, 39, 54], flow [24, 29, 69, 92–94], engagement [15, 74, 75, 104], involvement [19], and presence [8, 53, 95, 96, 106]. While the terms for each construct resonate with informal player descriptions of experience, academically they are poorly defined leading to conceptual overlap. Borges et al. [13] found 70 different constructs studied by researchers, of which only 22 appeared more than once and in those there was significant overlap in their definition and scope.

Some work emphasizes the creation and application of measurement tools like PENS [83], the PXI [2], the *Games Experience Questionnaire (GEQ)* [77], the *Core Elements of the Gaming Experience (CEGE)* [21], the *Challenge Originating from Recent Gameplay Interaction Scale (CORGIS)* [31] and the *Game Engagement Questionnaire (GEngQ)* [17]. Many common tools are unvalidated (e.g. PENS and GEQ [33, 55, 59]). Without a consensus on the constructs that make up PX, it is hard to assess whether a tool's assumptions and measures are reasonable [13].

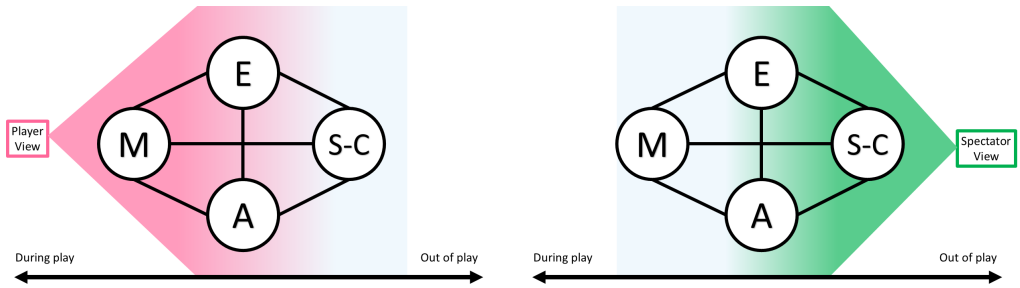
3.3 Spectator Experiences

SX work is still in its infancy, and does not yet have popular measures or frameworks; instead we highlight some notable groundwork. Cheung and Huang [25] define spectators, their socially-based experiences, and the elements of the *spectator ecosystem*, leading to design implications for games. Horton et al. [50] created a *Game Audience Survey* leading to a set of heuristics for designing more engaging SX. Hamilton et al. [47] highlight the ways that live streaming communities form and develop their own cultures. Works like this have lead to the creation of research guidelines for studying streaming sites [48]. As this body of work grows it draws from understandings of PX; so we anticipate it will soon run up against the same conceptualization issues.

4 Knowledge Synthesis: Experiential Tetrad

We code each piece of literature based on the explicit constructs discussed, the game elements that the work focuses on, descriptive keywords covering the core concepts of the work, and who the work focused on. For example, Nacke and Lindley [69] experimentally studied flow and immersion in modified gameplay conditions and we coded their work as focusing on flow, immersion (challenge), immersion (sensory), challenge, competence, mechanics, and players. We group seemingly overlapping concepts, refining and analysing them as new information was found in our knowledge gathering. We draw connections between coded concepts by comparing their goals, related game elements, similarities/differences, underlying assumptions and limitations, and common co-occurring concepts. These groups stabilized into four Experiential Types (ExpTypes, details in Sec. 4.1), summarized in Table 1 beside its related game elements and a sample of the keywords it represents. We then used our understanding of these elements and concepts we had just been immersed in to organize the ExpTypes and draw connections between them. We visualize the results of our synthesis through ExperT (recall Fig. 4).

To be clear, the Experiential Tetrad is the principal result of our exploration and synthesis of the literature: a framework of ***experiential types*** (ExpTypes) that are interacted with differently depending on the ***lens*** through which they are viewed. Thus we first need to explain our resulting ExpTypes and lenses as the framework's foundation before building up to ExperT.



(a) (b)

Figure 5: 5a: Player lens view, and 5b: Spectator lens view.

4.1 Experience Types

We identify four ExpTypes derived from existing literature (Table 1): mechanical, emotional, aesthetic, and socio-cultural. ExpTypes are named after the game "element"[3] which impacts it the most. For example, "mechanical" indicates that the experience involves the mechanically-moderated elements of the game. These types are recognizable in ways people describe or react to experiences, such as:

Mech: A player praising Celeste's [40] movement controls as being "tight";
Aesth: A player feeling creeped out by the "vibes" of a horror game;
Emote: A player crying as they realise the implications of putting our character's degree under the bed in Unpacking [107];
SocCul: A player posting a TikTok compilation of their favourite character pairing.

ExpTypes are naturally organized along a timescale from *during play* to *out of play*, indicating the dominant period for each experience. For example, mechanical experiences (like building a hoverbike in Legend of Zelda: Tears of the Kingdom [73]) happen during play, and socio-cultural (like posting a picture of your hoverbike on Reddit) happen out of play.

Complex experiences arise from the relationships between ExpTypes. Consider the *mechanical-socio-cultural experience* of "deforestation" in Stardew Valley [27]. In the game, players need large amounts of wood, which they can get by chopping down trees. Players often run out of trees on their farm and turn to logging the nearby Cindersap Forest, which also quickly runs dry for wood-hungry players. The players are procedurally enacting deforestation. The game does not punish the player for behaving in this way. In fact, the forest's trees repopulate at the start of every season (except winter). There are also no social consequences as the villager's friendships points are unaffected by these actions (even the environmentalist, Leah!). That wood is such an important resource would imply that the player is actually *encouraged* to play this way. And yet, we see players on Reddit discuss the feelings of guilt they have over this logging and the ways they self-impose limits or offset this guilt through restorative forestry[4]. Some community members even suggested there should be an "anti-deforestation event" added to the game to impose mechanical consequences. As players understand and discuss the procedural rhetorics of harvesting wood from the Cindersap Forest, their personal environmentalist values begin to affect how they understand and engage with the mechanics of the game. The player's socio-cultural experiences (discussing environmentalism in the game) changes their mechanical experiences (how they interact with the mechanics).

The time-context of these complex experiences depends on the weight of each ExpType in the relationship. Continuing our Stardew Valley example, this interaction is happening both during play and out-of-play, where the socio-cultural experience influences future mechanical experiences[5].

4.1.1 Clarifying Terminology. While we have explained that ExpTypes are named for their game elements, the choice of categories may be confusing as certain terms are used in multiple ways across literature. We want to quickly address some of our choices.

Combined social and cultural types. We make a single category from social and cultural experiences as they are so inter-linked. We consider social impacts to be the context of individual interactions, like participation in online forums, stream chats, personal communications with other members of the game community. Conversely we consider cultural impacts as the context of group actions and beliefs. Individual interactions (social impacts) are often dictated by group actions/beliefs (cultural impacts). We see these have more depth in game studies areas like discussing what is a game (e.g. 56), what are "real games" (e.g. 28), and who are gamers (e.g. 67).

What is emotion? All experiences inspire emotions in the player, however they occur in different ways. Mechanical and aesthetic experiences generate visceral emotions; a gut-response to stimuli. Emotional and socio-cultural experiences generate reflexive emotions that require context, knowledge, and reflection. *The "emotion" in emotional experience captures the empathetic and reflective relationship a person may have with the dramatic elements of the game at an individual level.*

What is aesthetic? Aesthetics has been used in games to mean sensory phenomena, shared elements of an art form, and emotive-expressive acts [71]. For our purposes we use aesthetic to cover

[3]Game elements can be internal (e.g. mechanics, characters) or external (e.g. advertisements, fan communities) to the game itself.
[4]Links to Reddit posts are not provided in order to preserve poster privacy, but are available on request.
[5]Notice the position of [10] in Fig. 11.

sensory phenomena. Occasionally this overlaps with the meaning of aesthetics as the collective set of patterns for a particular art form but only because audio-visual elements and style are heavily coupled with this meaning (e.g. Cyberpunk aesthetic).

4.2 Lenses of Experience

Experiences are contextualized by the situation of the person doing the experiencing. To this end, ExperT captures the unique perspectives of PX and SX through the *player* (Fig. 5a) and *spectator* (Fig. 5b) lenses. We leave the player and spectator as black-box systems that bring their own personal contexts to the experience.

Player lens. The primary timescale is "during play" (Fig. 5a), and the most immediate experience is the *mechanical* experience of a game. While a smooth mechanical experience may well disappear from the player's conscious recollection, a difficult one acts as a barrier. Imagine a player who cannot master the mechanics of a Souls-like game and so quits at the first boss. Their inability to play, means they cannot engage with the complex emotional experiences of the game's environmental and emergent storytelling. This may even lead them to have a negative opinion of the whole game series, which they might voice online — a negative socio-cultural experience.

Spectator lens. The primary timescale is "out of play" and the most immediate experience is the socio-cultural (Fig. 5b). This is because SX is characterised by its inherently parasocial and community building aspects [47]. While some spectating experiences are positive — such as when marveling at the a professional's skill, others can be negative — like being bullied in a Twitch chat. The socio-cultural experience can be a barrier to further experiences. Consider a young woman, new to gaming, who wants to develop her fan knowledge of eSports. She starts to watch a top-rated streamer on Twitch, and musters up the courage to ask a question about the game, only to be met with sexist jokes about how she should be back in the kitchen. Feeling unwelcome she turns off the stream and will not engage again. This woman is barred from engaging with the deeper emotional and aesthetic experiences of watching this stream. This negative socio-cultural experience characterises the rest of her interactions with the gaming community.

5 Ways We Use ExperT

We present two ways in which we have used ExperT: discussing specific game-related experiences, and reflecting on existing game-related experience work.

5.1 Discussing Specific Gaming Experiences

We revisit the three examples from the introduction, using ExperT to enrich the discussion. For each example, we highlight the influence of each experience type on the holistic experience, and identify concepts that should be a part of the discussion.

Example 1: Animal Crossing New Horizons. We described two experiences: Player 1 (P1) engaging in a pretend tea party, and Player 2 (P2) harassing a villager by hitting them with a bug net. A shallow analysis would classify these as similar: fun vignettes about player's pretending on an island. But consider where they fit in ExperT (Fig. 6). While both experiences are from a player lens (i.e. during play), P1 is using the mechanics to engage in pretend play while P2 is testing the specifics of game mechanics. This means their holistic experiences are being pulled by slightly different ExpTypes. P1's focus on pretend play through expressive personal choices (e.g. clothes, villagers, decor) highlights the pull of emotional and aesthetic experience here. This requires not just understanding how P1 interacts with the mechanics, but also parasociality in games via character attachment (e.g. 14). P2's experience is inherently socio-cultural, and understanding it requires integrating the understanding of moment-to-moment interaction with ideas like how paratexts affect player behaviour (e.g. 20).

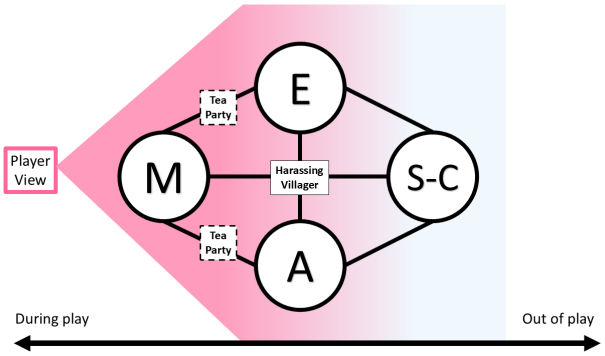


Figure 6: Placement of Example 1's experiences on ExperT.

Example 2: Markiplier Streaming Five Night's at Freddy's. We describe two related experiences: the streamer Markiplier playing UCN [66], and the viewers watching it. These simultaneous experiences must be discussed with two different lenses, the player (i.e. Markiplier) and spectator (i.e. viewer).

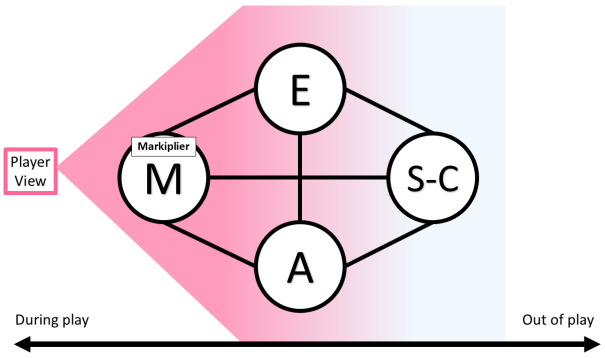


Figure 7: Markiplier's Player Experience

As Markiplier's experience (Fig. 7) is dominated by the mechanical difficulty of managing the moment-to-moment gameplay, existing PX constructs work well to describe his situation. When he fails to attend the auditory cue for changing music, he is jumpscared by Chica the chicken and (after a brief startle) responds with frustration "I'm sorry! Okay! Thank you, I forgot about the pots and pans bullshit over there". This fits what we would expect

from Flow theory [29], as the difficulty outpaced his skill leading to frustration.

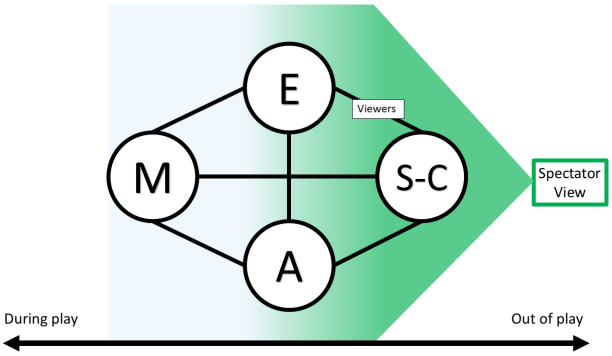


Figure 8: Stream viewers' Spectator Experience

The viewer's holistic experience (Fig. 8) is more influenced by their socio-cultural experience; as they interact more with game paratexts they develop robust cultural knowledge that changes how they watch the gameplay. In this case, players know the game mode is notoriously difficult. Since they are not actually performing the inputs, they do not experience the same overwhelm as players and so have capacity to follow the sensory elements. We see this when a viewer (jokingly) critiques Markiplier's failures in the comments (e.g. "1:03:30 WHERE COULD THE GUITAR BE after he checks the cam with the guitar"[6]). This capacity to pay more attention to the holistic game, coupled with the parasocial relationship with Markiplier creates a perfect storm for viewer frustration with his (poor) performance (e.g. "1:03:23 I saw the guitar next to Funtime Freddy and literally went from super relaxed to super frustrated in like a second"). While the viewer is not having a true mechanical experience, they respond as if they are. Understanding this fully may need us to integrate ideas from social cognitive theory about identification with streamers (e.g. 62). The viewer's game knowledge also affects their emotional experience of the game as it guides what to look for. Viewers anticipate UCN is filled with clues and secrets about the series lore. As such they are more likely to pay close attention to what is happening to find these hidden elements (e.g. "Anyone saw the child on 17:51??? Actually its golden freddy make the speed 0.25 and you will see it"). As they search for and share these kind of details, it raises the question of the participatory nature of viewership (e.g. 63) and how communities create narratives.

Example 3: The Longing and Getting Over It. . We describe two unconventional gaming experiences: The Longing and Getting Over It with Bennet Foddy (Getting Over It). In considering where to place these experiences on ExperT we realise that they are exceptionally complex (Fig. 9). While both games are discussed from a player lens, understanding why players have positive experiences with them requires unpacking and connecting the mechanical, emotional, and socio-cultural experiences of these games. Getting Over

[6]This is a comment from the video; username has not been provided for privacy but can be shown on request.

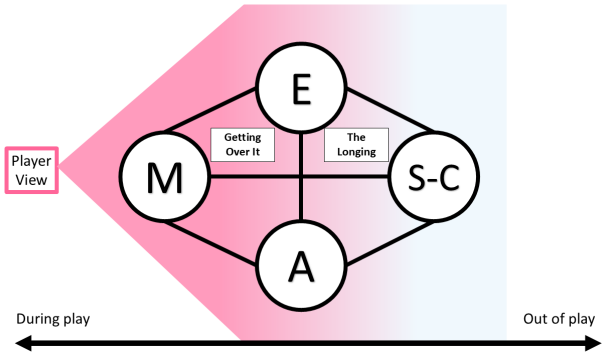


Figure 9: Placement of Example 3's experiences on ExperT.

It is frustratingly difficult to control and players frequently lose significant game progress. The Longing is incredibly tedious, requiring nothing of the player but to wait for up to 400 real world days. However, both games generated online discussion about their procedural rhetorics [10] and emergent narratives [84], creating a sense of these as transgressive in some ways to modern gaming. The positive experiences described in our example are only possible because the players' expectations about the games are socio-culturally shaped prior to start and so they view "poor" mechanical experiences as enhancing the play instead of being a barrier to it. Discussing The Longing from a player lens begs the question of how interactive a game must be for someone to be considered a "player", as the idle nature of the game is (in some ways) less participatory than something like Twitch Plays Pokemon.

Summary: While we can discuss all of the above experiences in ad hoc ways, we found ourselves at a loss on how to have a structured discussion based on existing constructs. Prior to having ExperT to orient our own discussion, various nuances of the experiences were unclear to us. The ACNH examples seemed equivalent, with just a difference in player aggression — but really they differ in the effects of socio-cultural experience. The spectator experience of UCN seemed to be exclusively socio-cultural, but we unraveled it as having strong emotional experience components and opened questions about the viewer's pseudo-mechanical experiences. Getting Over It and The Longing both are significantly affected by socio-cultural experiences that would be non-obvious looking at the gameplay alone; and even raise questions about games whose experience falls closer to "out of play" on the timeline. ExperT did not provide a model for these experiences, nor does it claim to. Rather, with ExperT we are able to augment exiting concepts by connecting them to others to more fully explore any specific experience.

5.2 Reflecting on Existing Gaming Experience Works

We found that ExperT let us look at existing work on experience in a different way. To illustrate this, we present two examples of how we used ExperT to compare specific works. The ExperT-enhanced analysis of the examples led us to ask questions about experiences that we would have been unlikely to ask without it.

1. Comparing work on immersion. We use ExperT to compare the models of immersion by Adams [3], Brown and Cairns [18], Ermi and Mäyrä [39] and Jennett et al. [54] (Table 2, visualized in Fig. 10). We take the components of each model and place them approximately where we think they fall on ExperT based on their descriptions in their original works. What emerges is that *immersion* as a concept is heavily based on mechanical experiences with some focus on emotional experiences. This distribution highlights the question: *are there socio-cultural elements of immersion*? From this exercise, we also realise that all of these models are implicitly from a player lens. This leads us to wonder *whether a player-focus will always emphasize mechanical experiences because of the context?* By extension we ask *what does immersion look like for a spectator?*

Table 2: Comparing different immersion models by their components via ExperT

Paper	Immersion Components
Adams [3]	Tactical Immersion Strategic Immersion Narrative Immersion
Brown and Cairns [18]	Engagement Engrossment Total Immersion
Jennett et al. [54]	Cognitive involvement Real world dissociation Challenge Emotional Involvement Control
Ermi and Mäyrä [39]	Sensory-based Immersion Challenge-based Immersion Imaginative-based Immersion

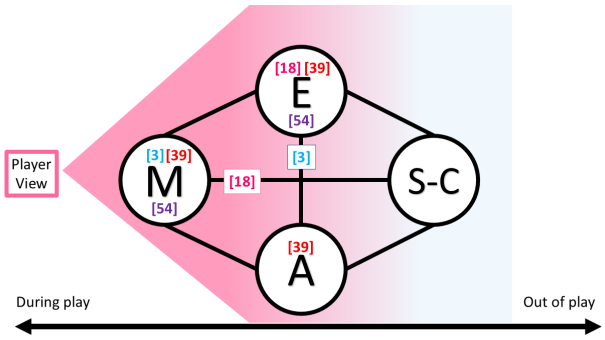


Figure 10: Colour-coded citations represent a component from the associated immersion model. Citations are placed on the Experiential Tetrad to show coverage of different experience types by immersion models.

While Fig. 10 is not a comprehensive comparison of all models of immersion and does not include models of overlapping constructs (e.g. engagement, presence, involvement, flow), it illustrates how this sort of visual comparison can reveal latent questions.

2. Work on Connected Aspects. We use ExpertT to visualize a sample of work that analyzes connected ExpTypes (see Table 3). Fig. 11 provides a rough indication of where we believe each piece falls based on its topic. From this organization we see that work tends to focus on either single ExpTypes, or the relationship between two ExpTypes. This leads us to wonder *what does research supporting the intersection of three or four ExpTypes look like?* Murphy's work on using ludonarrative dissonance for political commentary [68], and Thon's case studies of the aesthetics of horror [99] seem to tackle three ExpTypes. These take a broader view of games that is however harder to measure. This leads us to question *how can we systematically, measurably study the intersections of three or more ExpTypes?*

Table 3: Examples of work along different connections.

Connection	Example of Work
Mechanical-Socio-cultural	Accessible Play Experiences [6] Queer mechanics [65] Procedural rhetorics [10]
Mechanical-Aesthetic	Procedural game design [34] Mechanic/Aesthetic Genres [57]
Mechanical-Emotional	Affective gaming [82] Narrative mechanics [30] Emotional challenges [26, 32] Aesthetic gameplay patterns [7] Ludonarrative dissonance [38] Difficulty as aesthetic [98]
Emotional-Socio-cultural	Beyond empathy [78]

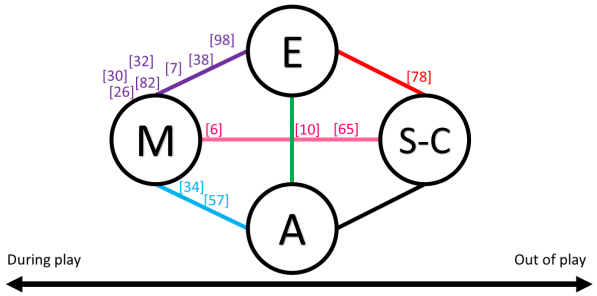


Figure 11: Placement of work on colour-coded experience lines, with reference numbers in matching colours.

While Fig. 11 is not a comprehensive view of *all* games-related research, a quick glance shows work clustering around mechanical experiences. While this could be due to our limited sample and scope, we wonder whether other work exists along the connections between just the non-mechanical experiences.

Summary: By visualizing existing works with ExperT, we can see patterns (and gaps) in experience-related studies. While many have argued that concepts of immersion were too challenge-focused, ExperT visualizes this focus and reminds us that some models do incorporate emotional experiences as well. This exercise also highlights the overall mechanical bias in player-focused work in general, like we see with multi-experiential literature. Overall, we believe this is helpful in making non-obvious connections between existing work and opens the door to creating new models of experiences that integrate these ideas.

6 Future Extensions

ExperT represents our current attempt at an integrated framework for understanding game-related experiences. We know it only addresses certain issues, while staying silent on others. While we find it quite useful as is, we see multiple avenues for future improvement.

How do we integrate more user context? At the moment we have left the Player and Spectators as black-boxes, without consideration for their personal gaming histories, literacies, and identities. From the existing work, we know that experiences and specific ExpTypes require reflexivity from the actor in the situation. For a simple example, two players engaging with Celeste may have completely different experiences because one of them has a lot of experience with platformers while the other does not. *What elements of the actor (e.g. player or spectator) are important to model for experience? How could we integrate this information into our conceptual framework?*

What other contextual lenses exist? The contemporary gaming landscape has at least two hybridized roles that may have their own unique experiences with games: streamers, and participatory spectators. **Streamers** engage with the mechanical experience of the game while simultaneously cultivating a socio-cultural experience for spectators. *Is their experience of the game also characterised through the mechanical experience like a player, or does it come from a more socio-cultural angle?* As streaming gets more popular, many games are also integrating the ability to post and stream directly through the game mechanics (e.g. the stream button on a Playstation 5 or Xbox One X). This further blurs the line between "during play" and "out of play" experiences. *How does the player lens adapt as socio-cultural moments become the game mechanics?* **Participatory spectators** engage in hybrid and restricted play. Popular instances like Twitch Plays Pokémon showed a desire for participatory spectator experiences, and the gaming industry is looking to explore that vein [90]. *From what angle does a participatory spectator approach experience?* Considering different types of spectators, what about co-located spectators (i.e. the other person on the couch with the player)? How is their experience different from these other forms of spectating? And what about **designers**, how do they experience a game? As creators, do they inhabit multiple lenses or rather take a more holistic view approaching experience almost from "above" the tetrad? As gaming continues to evolves more lenses will likely be created.

Should there be a more robust visualization of ExperT?. We wonder *would a 3D visualization of ExperT be more robust?* A tetrad is more faithfully rendered in 3D, after all. This would highlight the existence of faces (interaction of 3 aspects) as well as an interior (all 4 aspects). We could explore the gradients of influence between types across the faces. We see the need for this in better understanding cases like The Longing, as previously discussed.

7 Conclusion

We noticed our current tools for understanding game-related experiences do not seem to accommodate the broad types of experiences, nor do they accommodate different perspectives very easily. To have properly nuanced discussions of game-related experiences, such as the three we gave at the start of this paper, requires a conceptual framework that puts together many of the existing conceptual frameworks that have been created for each specific case.

To help navigate these more nuanced questions, we have created *ExperT* as an aid to guide such discussions. In particular, we highlight the time-orientation of two lenses, that of the player and that of the spectator. This in turn highlights the "fact" that players' experiences are mediated by their mechanical experience while that of spectators much more strongly influenced by socio-cultural aspects. In turn, this affects how each view the emotional and aesthetic experiences of the game. Beyond discussing specific game-related experiences, ExperT highlights questions about the nature of experience and suggests avenues for experience-related work.

ExperT is meant as an abstract analysis tool for thinking about experiences. Its components are simple, but can often be overlooked when we are busy trying to untangle experiences. By considering where an experience falls between these four ExpTypes, ExperT points us towards concepts that should be explored and questions that should be asked.

References

[1] Espen Aarseth and Paweł Grabarczyk. 2018. An Ontological Meta-Model for Game Research. In *DiGRA &#3918 - Proceedings of the 2018 DiGRA International Conference: The Game is the Message*. DiGRA. http://www.digra.org/wp-content/uploads/digital-library/DIGRA_2018_paper_247_rev.pdf

[2] Vero Vanden Abeele, Katta Spiel, Lennart Nacke, Daniel Johnson, and Kathrin Gerling. 2020. Development and validation of the player experience inventory: A scale to measure player experiences at the level of functional and psychosocial consequences. *International Journal of Human-Computer Studies* 135 (2020), 102370. https://doi.org/10.1016/j.ijhcs.2019.102370

[3] Ernest Adams. 2010. *Fundamentals of Game Design*.

[4] Javier A Bargas-Avila and Kasper Hornbæk. 2011. Old wine in new bottles or novel challenges: a critical analysis of empirical studies of user experience. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 2689–2698.

[5] Richard Bartle. 1996. Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of MUD research* 1, 1 (1996), 19.

[6] Jen Beeston, Christopher Power, Paul Cairns, and Mark Barlet. 2018. Accessible player experiences (APX): The players. In *International conference on computers helping people with special needs*. Springer, 245–253.

[7] Karl Bergström, Staffan Björk, and Sus Lundgren. 2010. Exploring aesthetical gameplay design patterns: camaraderie in four games. In *Proceedings of the 14th International Academic MindTrek Conference: Envisioning Future Media Environments*. 17–24.

[8] Frank Biocca, Chad Harms, and Judee K Burgoon. 2003. Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Teleoperators & virtual environments* 12, 5 (2003), 456–480.

[9] Karen L. Blackmore, William Coppins, and Keith V. Nesbitt. 2016. Using Startle Reflex to Compare Playing and Watching in a Horror Game. In *Proceedings of the Australasian Computer Science Week Multiconference* (Canberra, Australia) *(ACSW '16)*. Association for Computing Machinery, New York, NY, USA, Article 72, 7 pages. https://doi.org/10.1145/2843043.2843482

[10] Ian Bogost. 2008. *The rhetoric of video games.* MacArthur Foundation Digital Media and Learning Initiative.

[11] Jeremy Gibson Bond. 2014. *Introduction to Game Design, Prototyping, and Development: From Concept to Playable Game with Unity and C.* Addison-Wesley Professional.

[12] Julia Ayumi Bopp, Livia J Müller, Lena Fanya Aeschbach, Klaus Opwis, and Elisa D Mekler. 2019. Exploring emotional attachment to game characters. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*. 313–324.

[13] João Bosco Borges, Carmen Li Juy, Izac Sidarta de Andrade Matos, Paulo Vitor Angelo Silveira, and Ticianne de Gois Ribeiro Darin. 2020. Player experience evaluation: a brief panorama of instruments and research opportunities. *Journal on Interactive Systems* 11, 1 (2020), 74–91.

[14] Nicholas David Bowman, Mary Beth Oliver, Ryan Rogers, Brett Sherrick, Julia Woolley, and Mun-Young Chung. 2016. In control or in their shoes? How character attachment differentially influences video game enjoyment and appreciation. *Journal of Gaming & Virtual Worlds* 8, 1 (2016), 83–99.

[15] Elizabeth A. Boyle, Thomas M. Connolly, Thomas Hainey, and James M. Boyle. 2012. Engagement in digital entertainment games: A systematic review. *Computers in Human Behavior* 28, 3 (2012), 771–780. https://doi.org/10.1016/j.chb.2011.11.020

[16] Brenda Brathwaite and Ian Schreiber. 2009. *Challenges for game designers.* Course Technology/Cengage Learning Boston, Massachusetts.

[17] Jeanne H Brockmyer, Christine M Fox, Kathleen A Curtiss, Evan McBroom, Kimberly M Burkhart, and Jacquelyn N Pidruzny. 2009. The development of the Game Engagement Questionnaire: A measure of engagement in video game-playing. *Journal of experimental social psychology* 45, 4 (2009), 624–634.

[18] Emily Brown and Paul Cairns. 2004. A Grounded Investigation of Game Immersion. In *CHI '04 Extended Abstracts on Human Factors in Computing Systems* (Vienna, Austria) *(CHI EA '04)*. Association for Computing Machinery, New York, NY, USA, 1297–1300. https://doi.org/10.1145/985921.986048

[19] Gordon Calleja. 2011. *In-game: From immersion to incorporation.* MIT Press.

[20] Alexander Calloway. 2024. No Uglies: Rejection and Utopia in" Animal Crossing: New Horizons". *Replay. The Polish Journal of Game Studies* 11, 1 (2024), 65–77.

[21] E.H. Calvillo-Gamez, Paul. Cairns, and A. Cox. 2010. Assessing the Core Elements of the Gaming Experience. In *Evaluating User Experience in Games* (1 ed.), Regina Bernhaupt (Ed.). Human Computer Interaction Series, Vol. 1. Springer, London, United Kingdom, Chapter 3, 47–71.

[22] John M. Carroll and John C. Thomas. 1988. FUN. *SIGCHI Bull.* 19, 3 (Jan. 1988), 21–24. https://doi.org/10.1145/49108.1045604

[23] Kathy Charmaz. 2006. *Constructing grounded theory: A practical guide through qualitative analysis.* sage.

[24] Jenova Chen. 2007. Flow in Games (and Everything else). *Commun. ACM* 50, 4 (April 2007), 31–34. https://doi.org/10.1145/1232743.1232769

[25] Gifford Cheung and Jeff Huang. 2011. Starcraft from the stands: understanding the game spectator. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 763–772.

[26] Tom Cole, Paul Cairns, and Marco Gillies. 2015. Emotional and Functional Challenge in Core and Avant-Garde Games. In *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play* (London, United Kingdom) *(CHI PLAY '15)*. Association for Computing Machinery, New York, NY, USA, 121–126. https://doi.org/10.1145/2793107.2793147

[27] ConcernedApe. 2016. *Stardew Valley.* Game [Windows]. ConcernedApe, California, USA..

[28] Mia Consalvo and Christopher A Paul. 2019. *Real games: What's legitimate and what's not in contemporary videogames.* MIT Press.

[29] Mihaly Csikszentmihalyi. 1997. *Finding flow: The psychology of engagement with everyday life.* Basic Books, New York, NY, USA.

[30] Roe Curie and Mitchell Alex. 2019. &ldquoIs This Really Happening?&rdquo: Game Mechanics as Unreliable Narrator. In *DiGRA &#3919 - Proceedings of the 2019 DiGRA International Conference: Game, Play and the Emerging Ludo-Mix*. DiGRA. http://www.digra.org/wp-content/uploads/digital-library/DiGRA_2019_paper_201-min.pdf

[31] Alena Denisova, Paul Cairns, Christian Guckelsberger, and David Zendle. 2020. Measuring perceived challenge in digital games: Development & validation of the challenge originating from recent gameplay interaction scale (CORGIS). *International Journal of Human-Computer Studies* 137 (2020), 102383.

[32] Alena Denisova, Christian Guckelsberger, and David Zendle. 2017. Challenge in digital games: Towards developing a measurement tool. In *Proceedings of the 2017 chi conference extended abstracts on human factors in computing systems*. 2511–2519.

[33] Alena Denisova, A. Imran Nordin, and Paul Cairns. 2016. The Convergence of Player Experience Questionnaires. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play* (Austin, Texas, USA) *(CHI PLAY '16)*. Association for Computing Machinery, New York, NY, USA, 33–37. https://doi.org/10.1145/2967934.2968095

[34] Michael D'errico. 2016. Worlds of sound: indie games, proceduralism, and the aesthetics of emergence. *Music, sound, and the moving image* 9, 2 (2016), 191–206.

[35] Pieter Desmet and Paul Hekkert. 2007. Framework of product experience. *International journal of design* 1, 1 (2007), 57–66.

[36] Roberto Dillon. 2011. The 6-11 Framework: A new methodology for game analysis and design. In *Proceedings Game-On Asia Conference, Singapore*. 25–29.

[37] Roberto Dillon. 2012. Teaching games through the AGE framework. *IGDA Perspectives Newsletter* 2012 (2012), 1–7.

[38] Daniel Dunne. 2014. Multimodality or Ludo-Narrative Dissonance: Duality of Presentation in Fringe Media. In *Proceedings of the 2014 Conference on Interactive Entertainment* (Newcastle, NSW, Australia) *(IE2014)*. Association for Computing Machinery, New York, NY, USA, 1–4. https://doi.org/10.1145/2677758.2677785

[39] Laura Ermi and Frans Mäyrä. 2005. Fundamental components of the gameplay experience: Analysing immersion. *Worlds in play: International perspectives on digital games research* 37, 2 (2005), 37–53.

[40] Extremely OK Games. 2018. *Celeste.* Game [Windows]. Extremely OK Games, British Columbia, Canada..

[41] Bennet Foddy. 2017. *Getting Over It With Bennet Foddy.* Game [Windows]. Bennet Foddy, New York, USA..

[42] Jodi Forlizzi and Katja Battarbee. 2004. Understanding experience in interactive systems. In *Proceedings of the 5th conference on Designing interactive systems: processes, practices, methods, and techniques*. 261–268.

[43] Jodi Forlizzi and Shannon Ford. 2000. The building blocks of experience: an early framework for interaction designers. In *Proceedings of the 3rd conference on Designing interactive systems: processes, practices, methods, and techniques*. 419–423.

[44] Tobias Fritsch, Benjamin Voigt, and Jochen Schiller. 2006. Distribution of online hardcore player behavior: (how hardcore are you?). In *Proceedings of 5th ACM SIGCOMM workshop on Network and system support for games*. 16–es.

[45] Janine Fron, Tracy Fullerton, Jacquelyn Ford Morie, and Celia Pearce. 2007. The Hegemony of Play.. In *DiGRA Conference*.

[46] Tracy Fullerton. 2014. *Game design workshop: a playcentric approach to creating innovative games.* CRC press.

[47] William A. Hamilton, Oliver Garretson, and Andruid Kerne. 2014. Streaming on Twitch: Fostering Participatory Communities of Play within Live Mixed Media. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Toronto, Ontario, Canada) *(CHI '14)*. Association for Computing Machinery, New York, NY, USA, 1315–1324. https://doi.org/10.1145/2556288.2557048

[48] Erik Harpstead, Juan Sebastian Rios, Joseph Seering, and Jessica Hammer. 2019. Toward a Twitch Research Toolkit: A Systematic Review of Approaches to Research on Game Streaming. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Barcelona, Spain) *(CHI PLAY '19)*. Association for Computing Machinery, New York, NY, USA, 111–119. https://doi.org/10.1145/3311350.3347149

[49] Marc Hassenzahl. 2007. The hedonic/pragmatic model of user experience. *Towards a UX manifesto* 10 (2007), 2007.

[50] Matthew Horton, Janet C Read, and Christopher Willitts. 2020. InCuDe: heuristics for enhancing spectator experience in streamed games. In *HCI in Games: Second International Conference, HCI-Games 2020, Held as Part of the 22nd HCI International Conference, HCII 2020, Copenhagen, Denmark, July 19–24, 2020, Proceedings 22*. Springer, 97–116.

[51] Robin Hunicke, Marc LeBlanc, and Robert Zubek. 2004. MDA: A formal approach to game design and game research. In *Proceedings of the AAAI Workshop on Challenges in Game AI*, Vol. 4. 1722.

[52] Wijnand IJsselsteijn, Yvonne De Kort, Karolien Poels, Audrius Jurgelionis, and Francesco Bellotti. 2007. Characterising and measuring user experiences in digital games. In *International conference on advances in computer entertainment technology*, Vol. 2. 27.

[53] Wijnand A IJsselsteijn, Huib De Ridder, Jonathan Freeman, and Steve E Avons. 2000. Presence: concept, determinants, and measurement. In *Human vision and electronic imaging V*, Vol. 3959. International Society for Optics and Photonics, 520–529.

[54] Charlene Jennett, Anna L. Cox, Paul Cairns, Samira Dhoparee, Andrew Epps, Tim Tijs, and Alison Walton. 2008. Measuring and defining the experience of immersion in games. *International Journal of Human-Computer Studies* 66, 9 (2008), 641–661. https://doi.org/10.1016/j.ijhcs.2008.04.004

[55] Daniel Johnson, M. John Gardner, and Ryan Perry. 2018. Validation of two game experience scales: The Player Experience of Need Satisfaction (PENS) and Game Experience Questionnaire (GEQ). *International Journal of Human-Computer Studies* 118 (2018), 38–46. https://doi.org/10.1016/j.ijhcs.2018.05.003

[56] Jesper Juul. 2011. *Half-real: Video games between real rules and fictional worlds.* MIT press.

[57] Veli-Matti Karhulahti. 2011. Mechanic/Aesthetic Videogame Genres: Adventure and Adventure. In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (Tampere, Finland) *(MindTrek '11)*. Association for Computing Machinery, New York, NY, USA, 71–74. https://doi.org/10.1145/2181037.2181050

[58] Christoph Klimmt, Albert Rizzo, Peter Vorderer, Jan Koch, and Till Fischer. 2009. Experimental evidence for suspense as determinant of video game enjoyment.

Cyberpsychology & behavior 12, 1 (2009), 29–31.
[59] Effie L.-C. Law, Florian Brühlmann, and Elisa D. Mekler. 2018. Systematic Review and Validation of the Game Experience Questionnaire (GEQ) - Implications for Citation and Reporting Practice. In *Proceedings of the 2018 Annual Symposium on Computer-Human Interaction in Play* (Melbourne, VIC, Australia) *(CHI PLAY '18)*. Association for Computing Machinery, New York, NY, USA, 257–270. https://doi.org/10.1145/3242671.3242683
[60] Nicole Lazzaro. 2008. *The Four Fun Keys*. Morgan Kaufmann, 317–343.
[61] Marc LeBlanc. [n. d.]. 8 Kinds of Fun. http://algorithmancy.8kindsoffun.com/
[62] Joon Soo Lim, Min-Ji Choe, Jun Zhang, and Ghee-Young Noh. 2020. The role of wishful identification, emotional engagement, and parasocial relationships in repeated viewing of live-streaming games: A social cognitive theory perspective. *Computers in Human Behavior* 108 (2020), 106327.
[63] Jih-Hsuan Tammy Lin, Nicholas Bowman, Shu-Fang Lin, and Yen-Shen Chen. 2019. Setting the digital stage: Defining game streaming as an entertainment experience. *Entertainment Computing* 31 (2019), 100309.
[64] Thomas W Malone. 1981. Toward a theory of intrinsically motivating instruction. *Cognitive science* 5, 4 (1981), 333–369.
[65] Jess Marcotte. 2018. Queering control (lers) through reflective game design practices. *Game Studies* 18, 3 (2018), 1–16.
[66] Markiplier. [n. d.]. Five Night's at Freddy's: Ultimate Custom Night - Part 1.
[67] Frans Mäyrä. 2008. *An Introduction to Games Studies: Games in Culture*. Sage.
[68] David Thomas Murphy. 2016. Hybrid moments: Using ludonarrative dissonance for political critique. *Loading...* 10, 15 (2016).
[69] Lennart Nacke and Craig A. Lindley. 2008. Flow and Immersion in First-Person Shooters: Measuring the Player's Gameplay Experience. In *Proceedings of the 2008 Conference on Future Play: Research, Play, Share* (Toronto, Ontario, Canada) *(Future Play '08)*. Association for Computing Machinery, New York, NY, USA, 81–88. https://doi.org/10.1145/1496984.1496998
[70] Lennart E Nacke, Anders Drachen, and Stefan Göbel. 2010. Methods for evaluating gameplay experience in a serious gaming context. *International Journal of Computer Science in Sport* 9, 2 (2010), 1–12.
[71] Simon Niedenthal. 2009. What we talk about when we talk about game aesthetics. In *Digital Games Research Association (DiGRA), London, UK (2009)*. DiGRA Online Library.
[72] Nintendo EPD. 2020. *Animal Crossing: New Horizons*. Game [Switch]. Nintendo, Kyoto, Japan..
[73] Nintendo EPD. 2023. *The Legend of Zelda: Tears of the Kingdom*. Game [Switch]. Nintendo, Kyoto, Japan..
[74] Heather L. O'Brien and Elaine G. Toms. 2008. What is user engagement? A conceptual framework for defining user engagement with technology. *Journal of the American Society for Information Science and Technology* 59, 6 (2008), 938–955. https://doi.org/10.1002/asi.20801 arXiv:https://asistdl.onlinelibrary.wiley.com/doi/pdf/10.1002/asi.20801
[75] Heather L O'Brien and Elaine G Toms. 2010. The development and evaluation of a survey to measure user engagement. *Journal of the American Society for Information Science and Technology* 61, 1 (2010), 50–69.
[76] Susanne Poeller and Cody J. Phillips. 2022. Self-Determination Theory — I Choose You! The Limitations of Viewing Motivation in HCI Research Through the Lens of a Single Theory. In *Extended Abstracts of the 2022 Annual Symposium on Computer-Human Interaction in Play* (Bremen, Germany) *(CHI PLAY '22)*. Association for Computing Machinery, New York, NY, USA, 261–262. https://doi.org/10.1145/3505270.3558361
[77] K. Poels, Y.A.W. de Kort, and W.A. IJsselsteijn. 2007. D3.3 : Game Experience Questionnaire: development of a self-report measure to assess the psychological impact of digital games.
[78] Teddy Pozo. 2018. Queer games after empathy: Feminism and haptic game design aesthetics from consent to cuteness to the radically soft. *Game Studies* 18, 3 (2018).
[79] Mirjana Prpa, Sarah Fdili-Alaoui, Thecla Schiphorst, and Philippe Pasquier. 2020. Articulating experience: Reflections from experts applying micro-phenomenology to design research in HCI. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems*. 1–14.
[80] Paul Ralph and Kafui Monu. 2020. A Working Theory of Game Design - First Person Scholar. http://www.firstpersonscholar.com/a-working-theory-of-game-design/
[81] Giovanni Ribeiro, Katja Rogers, Maximilian Altmeyer, Thomas Terkildsen, and Lennart E Nacke. 2020. Game atmosphere: effects of audiovisual thematic cohesion on player experience and psychophysiology. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*. 107–119.
[82] Raquel Robinson, Katelyn Wiley, Amir Rezaeivahdati, Madison Klarkowski, and Regan L Mandryk. 2020. " Let's Get Physiological, Physiological!" A Systematic Review of Affective Gaming. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play*. 132–147.
[83] Richard M Ryan, C Scott Rigby, and Andrew Przybylski. 2006. The motivational pull of video games: A self-determination theory approach. *Motivation and emotion* 30, 4 (2006), 344–360.
[84] Katie Salen, Katie Salen Tekinbaş, and Eric Zimmerman. 2004. *Rules of play: Game design fundamentals*. MIT press.
[85] Jesse Schell. 2014. *The Art of Game Design: A book of lenses*. CRC Press.
[86] Scott Cawthon. 2018. *Ultimate Custom Night*. Game [Windows]. Scott Cawthon, Texas, USA..
[87] Adrienne Shaw. 2010. What is video game culture? Cultural studies and game studies. *Games and culture* 5, 4 (2010), 403–424.
[88] Adrienne Shaw. 2012. Do you identify as a gamer? Gender, race, sexuality, and gamer identity. *new media & society* 14, 1 (2012), 28–44. https://doi.org/10.1177/1461444811410394 arXiv:https://doi.org/10.1177/1461444811410394
[89] Max Sjöblom and Juho Hamari. 2017. Why do people watch others play video games? An empirical study on the motivations of Twitch users. *Computers in human behavior* 75 (2017), 985–996.
[90] Chris Stamp. 2019. Games designed for streaming need to include spectator interactivity. https://venturebeat.com/pc-gaming/games-designed-for-streaming-need-to-include-spectator-interactivity/
[91] Studio Seufz. 2020. *The Longing*. Game [Android]. Application Systems, Stuttgart, Germany..
[92] Penny Sweetser, Daniel Johnson, and Peta Wyeth. 2012. Revisiting the GameFlow model with detailed heuristics. *Journal of Creative Technologies* 2012, 3 (2012), 1–16.
[93] Penelope Sweetser, Daniel Johnson, Peta Wyeth, Aiman Anwar, Yan Meng, and Anne Ozdowska. 2017. GameFlow in Different Game Genres and Platforms. *Comput. Entertain.* 15, 3, Article 1 (April 2017), 24 pages. https://doi.org/10.1145/3034780
[94] Penelope Sweetser and Peta Wyeth. 2005. GameFlow: A Model for Evaluating Player Enjoyment in Games. *Comput. Entertain.* 3, 3 (July 2005), 3–3. https://doi.org/10.1145/1077246.1077253
[95] Ron Tamborini. 2000. The experience of telepresence in violent video games. In *86th annual convention of the National Communication Association, Seattle, WA*.
[96] Ron Tamborini and Paul Skalski. 2006. The role of presence in the experience of electronic games. *Playing video games: Motives, responses, and consequences* 1 (2006), 225–240.
[97] Thomas Terkildsen, Lene Engelst, and Mathias Clasen. 2023. Work Hard, Scare Hard? An Investigation of How Mental Workload Impacts Jump Scare Intensity. *Proc. ACM Hum.-Comput. Interact.* 7, CHI PLAY, Article 375 (oct 2023), 18 pages. https://doi.org/10.1145/3611021
[98] Mateo Terrasa-Torres et al. 2021. Difficulty as Aesthetic: An Investigation of the Expressiveness of Challenge in Digital Games. *Acta Ludologica* 4, 1 (2021), 94–111.
[99] Jan-Noël Thon. 2019. Playing with Fear: The Aesthetics of Horror in Recent Indie Games. *Eludamos: Journal for Computer Game Culture* 10, 1 (2019), 197–231.
[100] Abi Travis. [n. d.]. No, Smacking Your 'Animal Crossing' Villagers With Your Net Won't Make Them Leave. Online.
[101] April Tyack and Elisa D. Mekler. 2020. Self-Determination Theory in HCI Games Research: Current Uses and Open Questions. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems* (Honolulu, HI, USA) *(CHI '20)*. Association for Computing Machinery, New York, NY, USA, 1–22. https://doi.org/10.1145/3313831.3376723
[102] u/ssaphiremoon. [n. d.]. what villager would compliment my current villagers? r/acnh.
[103] Wolfgang Walk, Daniel Görlich, and Mark Barrett. 2017. Design, Dynamics, Experience (DDE): an advancement of the MDA framework for game design. In *Game Dynamics*. Springer, 27–45.
[104] Eric N. Wiebe, Allison Lamb, Megan Hardy, and David Sharek. 2014. Measuring engagement in video game-based environments: Investigation of the User Engagement Scale. *Computers in Human Behavior* 32 (2014), 123–132. https://doi.org/10.1016/j.chb.2013.12.001
[105] Brian M Winn. 2009. The design, play, and experience framework. In *Handbook of research on effective electronic gaming in education*. IGI Global, 1010–1024.
[106] W Wirth, S Bocking, T Hartmann, C Klimmt, H Schramm, and P Vorderer. 2003. Presence as a process: Towards a unified theoretical model of formation of spatial presence experiences. *Unpublished manuscript* (2003).
[107] Witch Brema. 2021. *Unpacking*. Game [PC]. Humble Bundle, California, USA..
[108] Peter Wright, John McCarthy, and Lisa Meekison. 2003. Making sense of experience. In *Funology: From usability to enjoyment*. Springer, 43–53.
[109] Nick Yee. 2006. Motivations for play in online games. *CyberPsychology & behavior* 9, 6 (2006), 772–775.