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EXTENDED ABSTRACT

It Takes Two to Tandem: Tandem Analysis as a Novel Method for the Critical Analysis of Games

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Many players engage in 'tandem play' with others, usually close friends, who talk about what they play as they play it - particularly in cases of single player videogames where one player plays and the other observes. Begy et al. (2017, p.149) have studied 'tandem play' extensively, however, this practice of tandem play has not up until now been suggested as a formal method for analysis, directly carried out by the analysts themselves.

Proposed here is a novel form of critical analysis, tandem analysis, that makes use of a pair of analysts who engage in tandem play of a videogame together, recording live discussion of the play session and then conducting a thematic analysis of the recording for qualitatively different insights to those provided by other analytical methods. Observations may be more accurately expressed in-situ so that the analysis is more direct in its expression. While three or more researchers could theoretically conduct a tandem analysis, the focus for now is establishing a functioning method with a dyad.

Formal game analysis commonly privileges the perspective of a single player-analyst, frequently analysing a single player game as an artefact or text. Consalvo & Dutton (2006) and Carr (2019) have noted that game analysis often makes use of methods such as close textual analysis, content analysis, interviews, ethnographies, frame analysis, or studies that situate the content of a game in a specific cultural context for discussion e.g. gender representation. Many proposed methods or methodologies, specifically for game analysis, are actually theoretical models that list features, layers or strata of games that the analyst should generally consider as topics for discussion, in some cases exhaustively (Konzack, 2002; Consalvo & Dutton, 2006; Zagal et al., 2007). Aarseth (2003, 2015) bemoans the lack of methodological disclosure in game analysis papers, however, there are serious discussions of specific research methods that could be applied to games (Lankoski & Björk, 2015; Carr, 2019), and so a goal of this paper is to provide a 'method-first' approach.

Methodologically, a concern for the most common forms of game analysis is that they may primarily offer opportunities to reflect on the game *after* the analyst plays. In some cases, analysts may rely on recorded notes, video recordings of their own play sessions, or even their own memory of a game. They are unlikely to be expressing themselves at the moment of play except through written or dictated notes which distract from play. Even then, the discourse is one of internal reflection which is not challenged until the analyst later discusses the game with a friend or colleague or receives feedback on their written analysis from a peer-reviewer. Researchers such as Taylor (2006), Fine (1983), Kolos (2010), Begy et al. (2017) and Pearce (2009) have remarked on the benefit that breaking down the walls between participant and observer brings to ethnographic observation; tandem analysis proposes a similar methodological shift for critical game analysis.

Taking Suits' (2014) definition of a game which frames games as activities ("To play a game is to engage in activity directed towards…"(Suits, 2014, p.36)), the proposed analytical method doesn't necessarily privilege the game as the text for analysis but rather includes the game-as-text alongside the game-as-discursive-play that characterises so many analytical discussions of games between players - often friends or communities. This will inevitably lead to a methodology that is subjectively dependent on the people playing and their social context.

The main example that serves as an inspiration to the method is think aloud protocol, originally a testing method derived from usability testing (van Someren, Barnard & Sandberg, 1994; Nielsen, 2012; Knoll, 2018; Louvel, 2018). In the method, a tester encourages the user to think 'out loud' their thoughts as they use a product or service. Although time consuming, the benefit of the method is that deeper insight is acquired into the thought process of the user as they use a product. However, the method can be cognitively demanding of the user especially if the product requires a great deal of skill or concentration (as with a complex or difficult videogame). The cognitive load can be mitigated, and depth of insight be extended, through variations of the method such as retrospective think aloud (Knoll, 2018), retrospective verbalisation (Kumar, Yammiyavar & Nielsen, 2007), or the mind tape method (Nielsen & Christiansen, 2000) whereby a user session is recorded and then watched back with the user to discuss what decisions they made and why. However, although the cognitive demand is lessened, the live, moment to moment experience may not be as accurately captured with retrospective think aloud or mindtape method and neither method necessarily frames the findings as discursive in both the live and recorded cases (naturally because they are forms of usability testing, not game analysis). Thus, tandem analysis may derive a mixture of benefits (and drawbacks) by allowing for a multi-stage analysis where play-discourse is recorded, then thematised post-play and reflectively analysed again.

Although Begy et al.'s studies of tandem play are mainly ethnographic in nature, they raise relevant methodological considerations for analysing tandem play including game selection, recruitment, negotiating player roles and time limits. Tandem play is also challenging to study because of biases such as feeling the need to be entertaining or a general awareness of the social context of play (Begy et al., 2017; Consalvo, 2017; Scully-Blaker, et al., 2017). Yet the benefits of similar forms of pair practice show the potential promise of the method.

Pair programming, for example, is a technique used in software development where two programmers sit side-by-side on the same machine using intra-pair communication to reach their goals (Williams et al., 2000; Zarb, Hughes & Richards, 2013; Zarb, 2014). Other analogous practices exist elsewhere such as the practice of *chavrusa* (alternatively *hevruta, havruta* [Aramaic word meaning 'friendship']) learning within Jewish religious study as an activity involving the paired reading of a religious text (Gottlieb, 2015; Tedmon, 1991; Kent & Cook, 2012; Chung & Lee, 2019). Williams et al. (2000) have noted that "pairs consider many more possible solutions to a problem and converge more quickly on which solution to implement" a benefit widely understood to result from rapid collaborative peer-review of the problem at hand. Although critical analysis of a game is not a 'problem' as such, analysis may benefit from a pair since descriptive or analytical observations may be more quickly challenged or refined.

The method is proposed as follows:

Tandem analysis is a research method for pursuing textual analysis of videogames through the benefit of active discourse between a researcher pair. It is a mixed method made up of three stages that are, in essence: interpretation – organisation – interpretation.

In the first stage a pair of researchers record their verbal discourse as they analyse their playing a videogame, that is, a rally or extended exchange of interpretations about, and during, the tandem play of a videogame. The method should allow highly freeform discourse as long as it primarily concerns the game in play. The goal is to play until a pre-agreed 'significant portion' of the game has been played, or until completion if applicable and reasonable

In the second stage the recorded verbal exchange is subject to a thematic content analysis (TCA) whereby the exchange is scrutinised for common themes and points of interpretative difference between the two researcher's observations and statements (Martin and Hanington, 2012, p.40; O'Sullivan et al., 1994, p.62). Thematic content analysis was chosen in large part due to its ability to descriptively distil the common threads across a large-scale multi-participant discourse.

This distilled set of themes from the TCA of tandem play is then subject to a third stage of reflective textual analysis for new insights into the chosen game. The method therefore analyses the play-discourse that arises from the game as well as the game-text itself.

Thus, tandem analysis can be epistemologically considered an organised interpretative method whereby paired engagement in textual analysis generates critical discourse to build new insights, which are then subject to thematic analysis and subsequently a second order textual analysis.

Although this abstract offers no practiced example so far, and it is yet unclear what counts as successfully using the method, potential weaknesses of the method should be considered:

- Tandem analysis is likely very time consuming.

- Researchers may need 'matching' to ensure significant discourse can be achieved.

- The method may only work (well) for certain types of games. Discourse may be prevented by dialogue or cutscene-heavy games or games which require particularly intense concentration.

- Being recorded may affect the quality of the analysis and there is a risk of the analysis being distorted by a pressure to perform (Begy et al, 2017)

- TCA should involve limited interpretation and so it is debatable whether a third-party should conduct the second stage of the analysis.

Despite the benefits raised by analogous paired practices, game analysis has not yet considered ways in which the game analyst(s) themselves might formally benefit from two (or more) people (specifically two researchers/coauthors) approaching the same analysis in tandem to derive insights from discourse during play. So far, some of the questions such a methodology may raise have been broached and the method outlined. However, the method must be practically carried out to demonstrate and interrogate its potential.

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EXTENDED ABSTRACT

Ludomythologies: Using mythanalysis to analyse the structures and themes of games

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The project "Myth and ideology in contemporary video games (*LUDOMYTHOLOGIES*)", funded by the Spanish government and currently in its first year, analyses myths, mythemes, and mythical structures in games from a double perspective: as an update of a transcendent cultural heritage and as a mythical fabric shaped by ludic rituals and common affordances. The recurrent nature of myths establishes, through transcendent and immanent structures, old and new, a cultural space where our societies negotiate their fears, aspirations, and concerns. The main hypothesis of the project is that myths, both from a transcendent perspective (*myths in the present*) and from an immanent one (*myths of the present*), have in games a space for ideological and narrative development that helps in understanding contemporary society. We aim to show not only the validity of myths even in the most contemporary forms of culture, but also the constant creation of new mythical structures to make meaning from the world. To do so, our project uses mythanalysis as its main methodological tool, placing our view of games firmly in the Humanities. In this presentation, we aim to explore and unpack the specificities and affordances of this methodology of analysis.

The continuity of cultural traditions throughout the centuries found one of its main vehicles in stories. Motifs, symbols, and structures tend to coincide in the history of different civilizations throughout time, generating a tendency towards cultural sedimentation that helps explain the origins of the world, the meaning of being human, and eschatological speculation. Myths can be understood as stories about the exploits of supernatural beings (Eliade, 1999, pp. 13-14) transmitted through tradition and ritual (Kerényi and Jung, 2004, p.17), but also as "any story that can transcend, be repeated, give rise to new stories, or even be the origin of new myths." (Martínez García, 2017, p. 29). For Karen Armstrong, the power of myths lies in their recurrence: a myth is "an event which, in some sense, had happened once, but which also happened all the time" (2005). Myths are then not closed things but cultural processes of meaning-making (Fernández Díaz, 1996) where the historical repetition reaches us like an echo from the past.

We consider both myths *in* the present and myths *of* the present. The first would be reinterpretation of existing myths in games, where the great myths of the past reverberate in modern texts through a process of repetition (Bolter and Grusin, 1999) where myths close the circle that begins with archetypes, continues with themes, and are singled out in symbols

(Losada, 2010). The myths of the present establish the immanence of the foundational fact, the social, political and cultural bond that is conceived in reality as a new mythical genesis. From this perspective, myths can not only transit and mutate between historical periods but can also be born out of a specific context. This was the contribution that Barthes (1999) made when

considering myth as an indeterminate and changing infinity of social representations based on a relationship of deformation.

Within our field, games have been linked to mythopoeia or myth-making (Cirilla, Rone, 2020; Cragoe, 2015), to regenerative play through mythical structures (Farca, Lehner, and Navarro, 2020), and to repetitions of existing myths within new settings (Yoon, 2021), and described as “contemporary mythology” (Asimos, 2019). From the perspective of myths in the present, the few approaches that have been made from Game Studies have done so through the analysis of games whose theme is literally mythological (Cassar, 2013), so there is little research specifically focused on the mythical character of games. There are brief approaches to analogue games (García and Del Canto Nieto, 2019), to the context of production in the conformation of myths, or to the generation of new mythical worlds from previous elements (Guyker, 2016; Galanina and Salin, 2016; Galanina and Baturin, 2020). From the perspective of the myths of the present, we see how the repeated use of motifs from our time, such as recurring actions and motivations, ends up creating a structural substrate with potential of a mythical nature. Contemporary games recurrently incorporate the fears and concerns of our time. The climate crisis, pandemics, refugees, citizenship, populism and totalitarianism, disability, the place of minorities, technological solutionism, or the collapse of socioeconomic structures are themes found in games from *The Last of Us* to *Bury Me, My Love*. This representation of pressing issues is sometimes only cosmetic, but it is often built upon repeated patterns of play and design, archetypical mechanics, minimal game units, and storytelling.

Structuralist and culturalist approaches, even with their notable differences, allow myths to be perceived as a system of relations, an articulated combination of different elements that end up forming both a structure of meaning and a field of discussion between social and cultural agents. Mythanalysis allows us to study that structural and cultural dimension of games. It is a methodological process proposed by figurative structuralism (Gutiérrez, 2012, p. 181) and, more specifically, by Gilbert Durand (1982). Whereas myth-criticism seeks to study the work through its mythemes (or minimal units of meaning in myths, according to Lévi-Strauss, 2009) and "mythical settings" (Durand, 1982), mythanalysis seeks to discover "the patent or latent myths that go through, 'work', or sustain a certain cultural moment" (Gutiérrez , 2012, p. 183). Mythanalysis looks for the (explicit and/or latent) connections between the myths and the era to which that product belongs, in order to offer a sociological and cultural interpretation that goes beyond the object of study itself (Planells, 2021). Mythanalysis is not close reading and, as a methodological tool, allows us to carry out a study of myths in games in its aforementioned double nature, in and of the present.

We will focus our presentation on how we understand and apply mythanalysis in our project. Using this methodology, we analyse themes in games considering all game elements (Zubek, 2020), from fiction to mechanics, dynamics, experience and loops. Game and fiction structures can have recurrences and be interwoven through these recurrences and contribute to meaning-making. The data we gather includes these structures and recurrences but also information on the contexts of production and reception and analysis of implied players (Aarseth, 2007). Close readings and comparative analysis are the main touchstones of this project, focused on managing mythemes and mythical structures We plan to play a corpus of games ourselves, and each game will be preferably played by different members of the project and compared with available online playthroughs, to gather as much information as possible on dynamics/gameplay and aesthetic experiences. Game selection is based on a double thematic filter: straight adaptations of myths and relevance to a set of contemporary social issues; and also on a two-phase approach, with a first phase based on a pre-understanding of these themes and a second one where the key criteria of the corpus have been set. We aim to cover the aspects of each game that contribute to their thematic construction. We look for recurrences, mythemes, and tensions with issues of the present expressed through classical or new structures. For this, we combine a myth-to-game approach (identifying pre-existing myths or specific associations of mythemes) with a game-to-myth one (identifying new mythical structures). Especially for the second part, we include contemporary perspectives such as postcolonial theory. We will consider we have arrived at a sound analysis of the data when these old and new structures have been identified in the games we pre-select and compared among the corpus, when we have identified recurrences that deal with tensions of contemporaneity.

In this presentation, we will briefly discuss two examples with a myth in the present, *Hellblade: Senua's Sacrifice* (Ninja Theory, 2017), and a myth of the present, *Distraint* and *Distraint 2* (Jesse Makkonen, 2015; 2018). We aim to show mythanalysis as a valid tool for the ludofictional and thematic analysis of games, a methodology that, when combined with other tools of the field, allows to conduct comprehensive studies of mechanics, rules, dynamics, fictional components, aesthetics and other game elements that contribute to complex processes of meaning-making that are never closed but exist in tension, recurring among a single game and a shared cultural space, a set of game loops that have happened before but also happened all the time.

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EXTENDED ABSTRACT

Platforms and Texts, Rules and Play: Teaching game design and game analysis

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During our previous work on games and meaning we have noted the strategic advantages of drawing a distinction between claims about 'meaning' and claims about 'interpretation' (Carr and Puff, 2019). One way to summarise this would be to think of 'meaning' as a noun that exists somehow, somewhere 'in the game', and interpretation as a verb – something that is done by somebody, somewhere, during some form of playful entanglement with a game. In this presentation we reflect on the usefulness of this distinction for addressing some of the challenges that arise when teaching game design and game analysis.

We teach two different game studies modules within the same programme. One of us teaches a module on game design, platform studies and research by making; the other teaches critical perspectives on game analysis and player studies. Both modules are on MAs based in Media Studies and Cultural Studies. More than half the cohort identify as female, most are International students working in a second language, and few would identify as 'white' or 'western'. Many have an undergraduate training in film production or mass communications (journalism, advertising, etc.). Many share an interest in cultural politics – gender, race and representation, sexuality and queer studies, orientalism, nationalism, and disability discourses - while some of the production students are also interested in 'using games for a particular topic' (e.g. serious games), and skills acquisition (e.g. learning Unity3D). Our modules mix 'newbie' with 'expert' player-students (as in Zagal & Bruckman, 2008; Waern, 2013; Bergstrom, 2021). Both modules have seen issues with framing (e.g. rotating from 'mass communications' towards 'cultural studies'), and with moving past generalisations about players (e.g. the player as 'susceptible other'), and beyond descriptive or evaluative accounts (classifying games as 'good' or 'bad'; describing 'what happens' and how a game is played - Zagal & Bruckman, 2008; Rouse & Corron, 2020). The approaches that we have developed over time to address these issues involve a mix of hands-on play, group tasks and journal keeping (see Wearn 2013 for an in-depth account of similar strategies). A common thread – across the modules, and between these issues – could be characterized as a pull between meaning and interpretation. Perhaps this resonates with orientations found within games scholarship: towards platform, design and procedurality, structures or materiality; or towards textuality, ephemera, context and contingency. To help negotiate through these possibilities, we have engaged in forms of destabilization: dismantling the apparent stability of the software and platform through an engagement with debates about the social and cultural construction of technology, for instance, and destabilizing the notion of 'the player' (and the

player analyst) by inviting students to explore the connections between play, experience, context and interpretation.

Our game design-oriented teaching has a strong focus on the practical development of playful digital artefacts that are reliant on game engines. It is pedagogically informed by practice-based research (Westecott, 2020). Students work towards the production of a final (collaborative or individual) project of their choice. Their project work is supported by a series of different pedagogical activities, ranging from the demonstration of coding/design techniques to short practical design exercises based on problem-posing. Throughout the term, students keep a reflexive journal of this work, documenting their learning journey. To support the journaling process, we rely on game studies literature to provide students with a conceptual toolkit to critically engage with videogames and gaming culture. As this suggests, we look for ways to support students' practical work and professional aspirations, while at the same time productively challenge any assumptions about games and players. The aim is to promote a critical perspective onto gaming and game design (Geyser, 2018; Bergstrom, 2021), including here challenging modes of production traditionally linked to the industry (see Keogh, 2019; Westecott, 2020; Prax, 2020). Our ultimate goal is to support the constitution of a gaming repertoire while at the same time rejecting the idea of a 'gaming canon' (Zagal, 2012). As a practice-focused, collaborative course, one of the main challenges we face involves a need to move beyond deterministic models in order to analyse and discuss the outcomes of gameplay. In the classroom, it is our experience that a reliance on design-oriented models (e.g. Schell, 2019), as criticised elsewhere (Koenitz and Eladhari, 2021) risks naturalising a mechanistic, determinative approach to discussing games and 'the player'. As Waern and Back (2015, p. 342) remind us, some game design methods rely on "abstracting the player […] requir[ing] that we already know something about how players are expected to behave". These kinds of abstraction prove tempting to our students, apparently because it offers a predictable, compliant player, and suggests an all-powerful designer; a puppeteer capable of leading the player through a choreographed experience.

Our current approach is intended to disrupt any such assumptions via a critical stance towards game design and production. We ask our design students to engage in multiple reflections on the context and conditions they themselves experience when producing their artefacts (e.g. Nicoll and Keogh, 2019), or when playing games. Such reflections on the game engine – where they, as users, are placed in a position somewhat analogous to their players – has proven useful because it emphasises context, and by doing so, helps to undermine an attachment to deterministic accounts of meaning, especially to students focused on developing technical skills. We have found that by bringing reflexivity (de Paula, 2021) and criticality to their work with platforms, students themselves experience the instability and ephemerality of conditions of game production: features are added/removed; functions are deprecated or subverted for new finalities, different than those envisioned by engine developers. This experience, combined with other guided activities where students reflect about their own experiences as designers and players in tandem – e.g. playtest activities where students play simultaneously the role of researchers and participants and write short reflective texts on their experiences (see Waern, 2013) – supports students towards an understanding of the ways in which meaning-making, in games, is contextual and subject to the heterogeneity of play. These activities, therefore, promote a more nuanced model to produce particular arguments about 'meaning' (e.g. a stabler version encoded by the designer

such as a game critiquing '996' work culture in China) while recognising that such 'meaning' is not absolute, and that players might 'interpret' the same game in many different ways, destabilising the idea of an ever compliant, susceptible player.

This emphasis on reflexivity and the experiential is also present in our work in our module on digital games and play. As in our game design module, we have moved towards teaching strategies intended to destabilize pre-existing notions of 'the player', and disrupt deterministic accounts of meaning. Recognition that game-play (and thus game analysis) is culturally situated, embodied and experiential is long established in game studies (e.g. Lammes 2007; Kirkland 2007, 2012) yet the notion of a predictable, programmable, universal player waiting 'out there' persists in the classroom when attention turns to claims about meaning. To help address this, we open the module with a discussion of the knowledge that students bring, based on their memories and experiences of games and play (digital or otherwise). Building on these discussions, students are then required to keep a 'game diary' in which they write about playing games while testing out the concepts and arguments introduced in class. Playing, 'slowing down' and reflecting on fragments and feelings, the diary-keeping increases their familiarity with games, and helps leverage that experience (see Zagal and Buckman 2008). Our students tend to construct an unpredictable, erratic and emotional player in the diary. In keeping with frameworks that emphasise the relationships between experience and knowledge (including feminist, critical race and disability studies perspectives, etc.) we encourage students to reflect on the experiences documented in their diaries when they begin to explore the role of 'player analyst'. Yet these kinds of destabilization (these productive yet uncomfortable instabilities) can prove difficult to sustain. To help offset any such difficulties, we design collaborative activities that involve the reiterative application of key concepts to games, combining co-play and collective analysis. This might entail, for example, taking turns to play the opening scene from The Last of Us, while testing out arguments about affect and agency. It might involve taking turns to enact distinct versions of Lara Croft – Lara as athlete, Lara as lost arsonist, Lara as accident prone, or human/insect hybrid – and debating what that means for questions of representation. Our aim is to encourage students to keep bringing reflexivity and the experiential to their experiments with games analysis. We discuss if there are grounds for provisionally constructing a 'stable' version of the player-analyst, who produces a version of the game that foregrounds specific aspects of the rules, characterization or setting, in order to make a particular argument about 'meaning' possible. We also discuss what it might mean to foreground the ephemeral, distributed, contingent, chaotic and unruly aspects of games and play; to ask if a focus on interpretation as a situated and embodied process helps to highlight the potential for playful subversion and resistance. The point is not to argue that one of these options is 'more correct' than the other. The point is, rather, that opting to adopt one of these orientations rather than the other is a decision that has consequences for the analysis that is generated, and for the version of 'player analyst' that is being performed.

Contemporary digital games often are, as argued by Lankoski and Bjork (2015, p. 28) "too big to be described as whole" – from the required material conditions represented by the platform, to the actualization of a game during gameplay. This claim is compatible with approaches to analysis that foreground the epistemological (i.e. if the strategies we adopt provisionally construct the object we examine, as discussed in Carr 2019). In our teaching, we encourage criticality and reflexivity, and propose that all design (including research design) involves necessary and strategic omissions (Law 2004). All perspectives are partial,

and ‘one size’ does not fit all. In our classes, we have found that when seeking to disrupt the kinds of assumptions that result in deterministic approaches to both design and analysis, it is useful to ask our students to reflect on the possible differences between claims about meaning and interpretation. This is one way, we would argue, to help prepare students to question the idea that 'the meaning of the game' exists in a stable, authorised form, shaped by the intentions of a designer, undisputed by a compliant player, and ‘revealed’ by an analyst. Playing reflexively and playing together has helped to ‘make visible’ the messiness and multiplicity of play, and in the process, has helped unsettle lingering assumptions about what games are, and what players do. In this presentation we will discuss the kinds of destabilization that we foster in the classroom to support moves towards less deterministic accounts of meaning. These approaches help foreground reflexivity, while supporting an engagement with theoretical resources that potentially enrich critical analysis. The outcome is fewer generalizations about impact and effects, and more nuanced accounts of the relationships between game design and meaning, play, players and interpretation.

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EXTENDED ABSTRACT

Unplayable:
Why Games Can't and Won't be Played

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Nicholas Baer et al.'s 2019 book, *Unwatchable*, asks, "what does it mean to proclaim a media object 'unwatchable': disturbing, revolting, poor, tedious, or literally inaccessible? And unwatchable to whom?" (2019, pp. 3-4). Using this book as inspiration, this presentation examines unplayable games for similar reasons. *Unwatchable*, "refrains from offering a single, unified definition of the unwatchable, allowing its essays to deploy the word in an exploratory and often conflicting manner" (Baer et al., 2019, p. 6). Similarly, this presentation does not define "unplayable." It does, however, argue that unplayability does not limit game analysis. On the contrary, the "unplayable aspect" of a particular game or genre of games is what must be analyzed. In confronting unplayability, game studies will be able to identify why some may refuse to play or why others simply cannot play. In this way, play can be understood in a unique manner, different from how it has been thought of as many of the academic definitions of games emphasize playability as essential to the understanding of the term "game."

After reviewing academically accepted definitions of the word, "game," Eric Zimmerman and Katie Salen concluded that an accurate description of a game is "a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome" (2004, pp. 79-80). This definition implies that players must play for a resulting outcome. More recent scholarship like Jakko Stenros' article, "The Game Definition Game: A Review," considers sixty-three definitions of games. In every definition cited, playability is considered as part of the description of the word "game" (Stenros, 2017). Similarly, Espen Aarseth and Paweł Grabarczyk consider nine well regarded theorists' definitions of the word "game," all of which discuss play in their definitions (Aarseth & Grabarczyk, 2018, pp. 9-12).

Jonne Arjoranta argues that there cannot be an exact definition of the word "game" (Arjoranta, 2019). Arjoranta relies on the work by Ludwig Wittgenstein to discuss the similarities between games rather than a definition of the word "game." Wittgenstein theorizes that games cannot be defined, "but that language works by a 'complicated network of similarities' that Wittgenstein calls *family resemblance*. If this thesis/claim is applied to

games, it means that they should be understood as a family of related concepts that share family resemblances" (Arjoranta, p. 114, Arjoranta's emphasis). As the definition of "game" is in flux, identifying the similarities that games share may be more productive than repeatedly defining the word "game." According to Arjoranta, "New examples of games or new practices around games need new definitions… There are also philosophical reasons why we need new game definitions: because games are a cultural phenomenon, they keep changing. Even if our games do not change, our perspective on games keeps changing as the culture around them changes" (2019, p. 118).

Even as games change and our perspectives on them do as well, game studies, as a field, has not considered what happens when a game becomes unplayable. Some scholarship does intersect with the concept of unplayability, especially as it might relate to alternative play. *The Dark Side of Game Play: Controversial Issues in Playful Environments* (Mortensen & Brown, 2015) discusses "subversive," or "dark" play. "At the Edge: Periludic Elements in Game Studies"

discusses preludic elements in video games to analyze the "infrastructures that players must negotiate to gain access to the gameplay experience" (Gardner & Tanenbaum, 2021, n.p.). In Alexander Galloway's recent book, *Uncomputable: Play and Politics in the Long Digital Age*, he refuses to offer a "general theory" choosing instead to "narrate a series of historical episodes. These stories are drawn from the archives of computation and digital media, broadly conceived. The goal is to show how computation emerges or fails to emerge, how the digital thrives but also atrophies, how networks interconnect while also fraying and falling apart" (2021, p. 20). Galloway's book is a starting point for examining the limitations of technology, and specifically, the obsolescence of electronics. Although *Uncomputable* examines the effects that technology has on games (Galloway, 2021, pp. 219-229), the book does not provide a general theory of unplayability.

Game analysis must consider unplayability as becoming increasingly relevant because games are deteriorating. Arcade cabinets are difficult to maintain. Many were manufactured in the late 1970s. They are now commonly restored, which is to say that they do not contain all their original parts: for instance, joysticks and buttons have been replaced. Could these aging video games ever be experienced in the ways that they were meant to be? Eventually, arcade games will meet their demise and become unrestorable (see Lee, 2018; see Newman, 2012; Suárez, 2021). Power creep can make card games obsolete (Magruder, 2022). As the polygon count increases, videogames become more life-like, thus the violence in them may be deemed too real (Galloway, 2004). People refuse to play videogames because some are deemed too violent. These are approaches to examining games that are becoming unplayable.

Game studies can look at historical accounts of unplayability as well. Some games are unplayable due to bugs, glitches, or poor gaming mechanics. These are faults in the developer's software. *Superman 64* (Warner Bros. Interactive Entertainment, 1999) is a notorious example of this as many players were unable to complete the game due to the errors in Titus Interactive's source code. Many found *Call of Duty: Modern Warfare 2*'s (Infinity Ward, 2009) mass shooting mission, "No Russian," too disturbing to play (Hornshaw, 2020). Local state governments have banned videogames (Jensen, 2018). For instance, "The

Oklahoma City Council unanimously approved a resolution…branding 'Custer's Revenge' ([Mystique, 1982]) and other adult video games as [they were] 'not in the best interests of the community'" (Paschal, 1982). *The Guy Game* (Topheavy Studios, 2004), a trivia-based game, rewards the player with footage of topless women when the gamer answers the trivia questions correctly. The game was recalled shortly after it debuted because it showcased a seventeen-year-old minor exposing her breasts (Surette, 2005). Retro videogame stores that sell out of stock games (games that are not sold by major retailers) refuse to sell *The Guy Game* (Game Over Videogames, 2021). This game cannot be played literally.

Scholars can adopt a range of approaches when investigating why a game is unplayable: from archival issues to government policies, to corporate decisions, to morals. By exploring how games have been defined and how game studies has included play as part of the foundation of game studies, this research would aim to expand game analysis by considering what is unplayable and why.

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EXTENDED ABSTRACT

Attract Mode: Analyzing the Ideological Game Apparatus

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When they're not being played, arcade machines frequently run in an "attract mode" to lure passers-by into parting with a coin or two. The mode's looping content previews its attractions—material crafted to set it apart from rival machines in spaces where gaming options are plentiful but where tokens are precious. Yet the attract mode does more than grab a would-be player's attention. Rather, the attract mode specifically and video games broadly have a loftier goal: to hail individuals as subjects at the center of their pay-to-play experiences. Following a cabinet's directive to "Insert coin to play," the game constructs an identity position into which a newly-christened player can slip. Suddenly, arcade machines transform individuals into powerful spaceships, or terrifying monsters, or heroes ready to spring into action. "Here comes a new challenger" and "Ready player one" aren't simply indications that a new game is about to begin; these declarations likewise signal that an ideological process is already well underway.

Video games and ideology are messy things. The variability of how people encounter games (i.e., context of play), the multifarious state of the gaming object itself (i.e., content of play), in concert with a player-scholar's choices that inform their insights (i.e., method of playful research; Aarseth 2003), beguile efforts at pinning down games for analysis. Not to be outdone, ideology too poses considerable theoretical and methodological barriers because of its contentious intellectual history and debates over how best to craft ideological critiques.

This paper answers two questions related to games and their connections to social power. First, how can we conceptualize games and their wider technical apparatus as ideological systems? And, second, what steps can game scholars follow when conducting their own ideological analyses? The essay is organized into two parts to field these questions; part one is focused on theory-building, while part two outlines an interpretive approach.

This paper begins from the premise that video games are "desire machines" (Krzywinska 2015) that cultivate a range of gameplay attractions and affective pleasures (Anable 2018) when inviting players to achieve their win-conditions. But before individuals can respond to these solicitations, they must be successfully hailed or interpellated (Althusser 1971) as potential players. A video game is more than its rules, graphics, sound design, and other textual elements; it is an interactive constellation of ideas and affordances that work to attract and hold one's attention by creating a virtual subjectivity that earns consent vis-a-vis play. Properly conceived, a video game is a *ludic apparatus*.

First conceptualized by film theorist Jean-Louis Baudry (1974), apparatus theory argues that cinema's ability to convincingly present unreality as reality gives the medium its unique power. In particular, cinema's indexical relationship to the real—worldly images are captured

on celluloid, soundtracks faithfully reproduce actors' voices—in concert with the spectator's fixed viewing position before a large theater screen in a darkened room create the ideal circumstances for cinema to exert its ideological force. Baudry fused Louis Althusser's take on Marxism (and specifically his "ideological state apparatus" idea) with Jacques Lacan's psychoanalysis to arrive at this framework. Apparatus theory has since been challenged, updated, and rejected; see Mulvey 1975, Thompson 1981, Penley 1989, and Fuchs 2019.

One can certainly anticipate game scholars' protests at this point: "Playing games and watching films is not the same thing!" Such responses are, of course, correct. The differences in form and context are as numerous as they are obvious: linear and fixed images projected onto a screen in a darkened room is a far-cry from interactive technologies crafted for commercial and domestic spaces that rely on user input. Thus, what utility might apparatus theory hold for game studies? Once properly modified to reflect its medium specificities, apparatus theory can aid us in assessing how systems of play create attractive subjectivities that reproduce and reinforce wider systems of power. But how do games manufacture consent through active play rather than spectatorship alone? Or, "modding" Althusser's terminology for game studies, how might *ideological game apparatuses* (IGAs) be properly theorized and studied?

There have been sporadic attempts at adapting apparatus theory for game studies since the late 1990s (Cenci 2017, Champlin 2012, Garite 2003, Tuominen 2020). This tepid scholarly investment is likely owed to several factors. The most obvious of which is the ontological and experiential gulfs between cinema and games. Another reason is that Althusser's brand of Marxist analysis is guilty of subordinating personal agency to social structures (Fuchs 2019). A third reason for its lack of adoption is because apparatus theory had, by the 1980s, largely fallen out of favor in film studies, being perceived as an influential but dated intellectual-political response of the 1960s and 1970s. Despite these hurdles, ideology is still with us as is the need for making sense of it. Play's precociousness doesn't eliminate ideology; rather, it changes how it functions in media systems predicated on sustained user feedback. Game studies is in need of a flexible but reliable methodology for studying IGAs.

This essay's second goal is to present a practical heuristic for crafting ideological critiques through the careful analysis of one's own gameplay. I'm using the term "critique" and not "criticism" here because, as Terry Eagleton (1991) rightly notes, if criticism is authored from some external, transcendental position, ideological critique "seeks to inhabit the experience of the subject from inside, in order to elicit those 'valid' features of that experience which point beyond the subject's present condition" (xiv). Gameplay is an inescapably personal phenomenon because games require players to, well, *play*. Whereas Baudry's cinematic apparatus is a coercive system of control that posits an idealized spectator who's on the receiving end of a deterministic system of signification, the ludic apparatus is a consensual system that invites continuous interactions to maintain and advance that experience. Furthermore, rather than viewing the gaming apparatus as some airtight theoretical construct (ala Baudry), IGAs and the experiences they foster are necessarily beset by gaps and tensions. This state of affairs isn't incommensurate with ideology. Indeed, one of the most crucial interventions has been Antonio Gramsci's notion of cultural hegemony, which explains how beliefs are naturalized as common sense. Hegemony is useful for game studies because it reminds us that, like games, ideology is the result of historically-specific processes of contestation and re-negotiation (Cassar 2013). Similarly, the friction between a player's

choices and the horizon of possibilities established and delimited by a game's affordances reveal explicit and implicit values that constitute a game's attractions; attractions which may earn the player's approval and continued investment, or which may give rise to negative feelings that result in terminated play.

Understanding how IGAs reproduce social reality through gaming fictions requires us to investigate how a title's gameplay loop is created and maintained. The gameplay loop, or those actions undertaken to perpetuate play while working toward a win-state, should be examined in light of two conditional clauses: (1) a game's "as-if" fantasy propositions, and (2) its "if-then" gameplay interactions. Reminiscent of Jesper Juul's (2005) "half-real" concept of games where we abide by real rules in fictional realms, these two axes posit that a game's ideological power unfolds through its cultivation of consent via the player's *attitude* and *aptitude*.

First, players must adopt a "lusory attitude" (Suits 2005) to facilitate gameplay. This means players should act "as-if" certain fictions are true. They should act as-if they are a ruler in *Civilization*, or perform as-if they are a rock star in *Guitar Hero*. Methodologically, we should examine these fiction-building "as-if" propositions as they are encountered, moving from the game's exterior (context of play) to its interior (playful content). Returning to our arcade example, how does the cabinet's side art and marquee hail the player (Guins 2015)? What about its form factor or haptic feedback? What are these choices (and more!) inviting the would-be player to imagine before depositing a coin?

Second, gameplay loops are sustained only if players demonstrate an aptitude for the game's "if-then" demands (if there are fail-state conditions). Quite simply, what is the game asking the player to do, and what mechanisms incentivize repeated engagement? By carefully considering a game's "as-if" fantasy propositions in tandem with its "if-then" gameplay demands, one can craft ideology critiques that make clear the game's preferred (i.e., its dominant or hegemonic) structures of play (Shaw 2017).

Games operate according to their own rules, figuratively and literally. Yet they nevertheless require "nontrivial effort" (Aarseth 1997) from players to function as games, and it is this concentration of human agency (Nguyen 2020) which engenders meaningful connection and immersion (Murray 1997). Moreover, because games make us collaborators in their operations (Frasca 2003), it is imperative that we understand how they reproduce larger social values. This proposed methodology embraces critical commitments around power and play rather than offering a prescriptive list of steps. Such a tack achieves several goals: it avoids the totalizing tendency of the cinematic apparatus; it offers flexibility for player-scholars examining divergent games; and it acknowledges the scholar's central and necessary role in the interpretation of IGAs and the games that ideology plays.

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FULL PAPER

Retrospective on Teaching Game Analysis for Games Engineering Students

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Keywords: Game Analysis; Meta-Analysis; Teaching; Computer Science; Qualitative Game Research

Abstract

Approaches for analyzing Games are studied in Games Studies for more than two decades now. Moreover, Game Analysis promises to offer a methodological possibility for computer science and game engineering and might become an important building block for our qualitative toolkit in human-centered computer science. However, the approach is still under-represented in fields of game-related computer science. As a first indicator of which research interests in games engineering could be approached with Game Analyses, this paper offers a retrospective of five sessions of a game analysis seminar with 94 seminar papers written by undergraduate students. It identifies retrospectively regions of interest and methodical tendencies. It shows anecdotally common pitfalls computer science students stumble upon and by describing the seminar structure, it gives an example, of how Game Analysis can be taught in a games engineering curriculum. This retrospective aims to open a dialogue between researchers from social studies and engineering fields and to add our perspectives to the discussion. This is our contribution toward defining a common ground for Game Analysis as an interdisciplinary method.

Introduction

Video games are nowadays a subject of research in many scientific disciplines. They became relevant for games studies as a special kind of text, for humanities because of their cultural impact, for computer science and software engineering as a special kind of program, and for human-computer interaction as a plethora of insights on interaction and visualization metaphors. This broad field of perspectives on video games came with its challenges. Deterding (2017) reflected the evolution of the field of game research and showed concerns about the missing interdisciplinary nature of the field. The author showed that there is not much dialogue between games studies, HCI, and computer science, hinted at interdisciplinary conflicts (for example concerning gamification), and argued that for many researchers, it feels much easier to specialize than to achieve interdisciplinary communication.

Nevertheless, since 2015, we offer a seminar on the traditionally game studies based approach of Game Analysis at a technical university for games engineering students. This paper serves as a retrospective of the last five iterations (held from 2017 to 2021) to help academics in the field of computer science through our lessons learned in teaching this method. Additionally, this paper is to illustrate our perspective for other disciplines as an

attempt to achieve collaboration on developing a universal game analysis toolkit. For this purpose, we describe our teaching method, discuss informally common Games Engineering topics focused in the seminar and show parts of our teaching quality statistics with relevance to the research question.

Theoretical Fundament of the Seminar

The seminar is based on the two editions of the book "Introduction to Game Analysis" by Clara Fernández-Vara. The book was chosen originally due to its low entry hurdle (good for interdisciplinary researchers and undergrad students alike) and the high amount of references at the end of each chapter that can serve as an entry point for specific topic research. Furthermore, the material is more abstract than the four lenses by Consalvo, M., & Dutton, N. (2006) and therefore, for our opinion more applicable to Games Engineering specific research goals. So, we presented our students the building blocks of a Game Analysis that Fernandez-Vara proposed, introduced the importance of contextual and formal elements, showed the different analysis types such as interpretative analysis and illustration of a theory, the structuralist and post-structuralist approaches and the aspects that are relevant to achieving a proper game overview. (Fernandéz-Vara, 2019)

Educational Concept of Teaching Game Analysis for Computer Scientists

This section describes the concept of the seminar and its evolvement during the five iterations. The Game Analysis seminar is designed for undergraduate students in the third year of computer science with a specialization in games engineering. In general, these undergraduate seminars at our university have the mission to teach the students how to work scientifically and individually on a given research topic before the start of their first final thesis. The discipline of games engineering focuses on the engineering process and technical aspects of developing video games. One can compare the difference between a game designer and a game engineer with the difference between an architect and a civil engineer - game designers or architects focus on the designing, aesthetics and concepts, whereas games engineers or civil engineers have more expertise in technical realization and processes during the development of their product.

The seminar is organized and patronized by a professor of computer science with a team of doctoral candidates as mentors. These mentors all specialize in mixed reality applications but have very different expertise beyond that. There are mentors with a human-computer interaction background, those that have studied games engineering, information systems or computer science themselves. Also, the recent research topics differ. Some mentors focus on mixed reality applications like serious games or super-human sports and others study the evolvement of distributed mixed reality systems. The reasons for mentoring students in the seminar range from recruiting students to the mentor's research topics, to exploring new topics, to specifically researching a topic across multiple game analyses. This range of motivations must be reconciled with the interests and knowledge of the students and the games known and available among students and mentors.

This matching process has changed multiple times because we often run into the issue that students and mentors have yet to clarify their research topic, even up until the middle of the semester. At first, students used to propose the topics based on a list of games given by the mentors and were matched based on both the student´s and mentor´s top three preferences for topics and game combinations. In the next iteration, mentors also proposed topics to the students to give them exemplary topics and find new students for the mentor´s research fields. Furthermore, we added an elevator pitch two weeks after the start of the seminar,

where each student has to declare their research question, work plan, and introduce their game in a 60-second elevator pitch in front of the class, followed by a small group discussion to identify possible pitfalls early.

After the first two synchronous sessions where we delivered the theoretical input and matched the student-mentor couples, classes stop and students work independently but meet with their mentors regularly. In the middle of the semester, the students upload a draft (i.e. at least one chapter and the structure of the final paper) and get feedback from their mentor. At the end of the semester, after the fourth month, the students upload their written seminar work and present their results in a 10-minute talk with a subsequent Q&A session. Since some students underestimate the amount of work necessary for producing a high quality game analysis, we implemented milestones to help avoid procrastination. These milestones are the elevator pitches, the mid-term draft and the student tandem-review sessions. We experienced that there is no difference in whether or not these milestones are mandatory to pass the seminar. Especially in the first half of the semester, most students are motivated to fulfill non-mandatory deadlines and procrastination seems mostly caused by a lack of focus.

In the first iterations, the mentors were responsible for the scientific writing quality, but in 2019, to design the process of teaching scientific writing basics more efficiently, we have added a scientific writing workshop that takes place after the draft submission. To give the students even more formative feedback on their writing styles, a divide and conquer principle is applied. Here, we are using student tandem-reviews, where each student reviews another's paper to help increase their writing skills. Moreover, due to the interdisciplinary of the topic, the level of adaptation in-between the proposed methods by Fernandez-Vara (2019) and the common research methods in computer science is immense for undergraduate students. Often, we have to answer questions “well, game studies use this strategy and computer science that”. This leads to the concern that maybe our seminar might be insufficient in teaching scientific methods necessary for the final thesis of our students. So, we integrated also a “scientific work” lecture in the middle of the semester to show the students the diversity of scientific disciplines and methods and talk about basic criteria (reliability, trustworthiness, objectivity, and so on) all research has to stick to. Especially during the Covid-19 pandemic online semesters, we shifted our lectures to an asynchronous format by lecture videos with small online exercises to get more time during the synchronous lectures for individual feedback and discussions.

Because of the broad field of possible topics, methods, and types of papers, we have started with broad grading categories (that is “language”, “references”, “content”). This uncovered high variances in the standards between reviewers that had to be discussed in long sessions amongst the mentors and lecturer. Even if these sessions were very valuable moments of communication and were necessary to define a shared set of values, this method is not efficient. Therefore, we implemented so called *Badges* as a set of quality criteria and scale the grade based on the number of Badges a student has obtained. The term is borrowed from video games and is also often used in the context of gamification. Simply recalling a usual teaching mechanism might not count as gamification and for now, we have no indication, whether this naming has any positive or negative effects. However, with these *Badges*, we have the chance to communicate our expectations and this communication in the beginning of the seminar caused very positive verbal feedback from the students. Badges are for example “appropriate amount of sources”, “running the extra mile” (a badge for those students that add more effort than expected), “Game Overview” (each Game mentioned is described in a way that others can follow the text without knowing the game) and many more. Some Badges

do not fit every kind of paper. For example, if the student is doing quantitative analysis for more than 20 games, it is not fruitful to provide an in-depth Game Overview for each of these games. Therefore, the students do not need obtain every badge for the best grade.

A specific Badge, we want to highlight is the "impact" Badge. Even in one research domain, it is multifaceted which aspects are relevant about a game (see the ludology vs. narratology debate). Also, a student might fail to communicate the motivation and relevancy of their analysis in the abstract or at the beginning of a paper. Then the readers might miss the relevancy and perceive the paper to be irrelevant. This is one of the most common reasons for discussions during the grading process. So, as a quality criterion for our seminar, we stated "Other students can learn something relevant for their future as Games Engineers by this work". We ask the mentors and lecturers during the grading process to search for such nuggets of new insights instead of discussing the scientific relevancy.

The search for related academic work is another challenge for undergraduate students that costs much time. So, we give the students additional material about research in general and offer help for structured literature review and a list with tools like Google Scholar, the Games Studies Journal, and the DIGRA webpage. Since students learn a lot about Literature Research by just watching what the mentor is doing, we plan to add a hands-on walkthrough of the literature research as a screencast similar to what we already have done for using LaTeX. For our next iteration, we plan to add a keyword brainstorming during the elevator pitches based on a collaborative word cloud program to help students find the right keywords for their literature search.

Finally, there is one lesson every lecturer knows but that needs to be communicated especially for young mentors at the beginning of their doctoral career. We can give our students the most optimized program and help them whenever possible, but this does not mean that they will all be equally motivated. Some students do not like writing texts, some will decide to give the seminar a low priority due to the workload in other classes or private issues we do not even know. This can be disappointing for the mentors, especially since individual mentoring is a labor-intensive task. It is at this point where it is good to have a team of mentors to be able to talk about these frustrations. The lecturer might have to work as a mediator during the seminar and also during the grading process, which always is done by a team of at least two reviewers. The mentor-student conflicts can also be reduced by emphasize in the future is the role of the mentors. Students do not always know how they can use the knowledge of the mentor, and how much time the mentor can invest. So, we plan to verbalize a communication protocol with a checklist on how to prepare for mentor meetings as a student and how often a student can expect such meetings.

All optimizations were implemented based on evaluation questionnaires filled out by the students in the middle of the semester and the lessons learned communicated by the mentors at the end of the semester. To summarize, the key aspects from our Game Analysis Seminar are a clear time schedule with milestones, lots of focus and support during the topic definition phase, information about scientific work and writing, support for the literature and source material research, clear communication of expectations and quality criteria, as well as support for the mentors and clear communication of the role of a mentor.

Reoccurring Topics and Research Goals in the Seminar

To allow a closer look on how Games Engineering might benefit in the future from Game Analysis, we will now show some reoccurring topics and research goals we have observed during teaching the seminar. To protect the intellectual property and the privacy rights of our

students, all clarifying examples in this chapter are artificial and not taken directly from a student's work. There were several key factors that have influenced the choice of a research topic: First, there was the student's intrinsic interest in a topic, the mentor feeling comfortable mentoring it (expertise of the mentor), the strata of student and mentor regarding the game, the availability of the game either by being owned by the student or by being available in our lab, and the mentors' interest to broaden their expertise in a specific field. It is not possible anymore to reconstruct the mixture of these motives for all resulting analyses - but in some cases, the mentor's research interests are visible.

A reoccurring phenomenon was that our students' works focused on in-game success factors or reasons of failure for specific games, often by comparison with prominent titles from the same genre. Retrospectively, this trend seems obvious since our students should have an intrinsic motivation to know such factors for their future as games engineers. It might even be called one core focus of games engineering and is not equal to the why and wherefores mentioned by Fernandéz-Vara (2019) for game studies including the development of a common academic language to talk about games. Identifying best practices from successful games might be a noble goal, but it often causes rather superficial and sometimes biased analyses since the reasons for the success of a game can be very manifold. So, for this kind of analysis, a proper investigation of related sources is vital to understand, why the game was perceived as a success.

A second group produced reviews of their favorite games with no clear research question - this was a trend we tried to mitigate over the years by forcing the students at the beginning of the seminar to verbalize their research questions. The drawback of doing so was an increased level of insecurity about whether they have to stick to the original research question in case it turns out to be insufficient for a 4-month seminar, or it cannot be answered by close reading of a game. An advantage of this change was that we have talked more about the difficulty of defining the scope of research for a study. But even now, we struggle with defining it before the research starts. Often, the process is more agile, and the research question shifts during the seminar.

Another group of students focused on topics with interdisciplinary character for example monetary systems in the games, audio composition, moral aspects, and historicity. These topics were often driven by the interdisciplinary knowledge or interest of one of the mentors. In our opinion, these works are very valuable since they give the students the possibility to think out of the box and learn about fields not captured by their curriculum. Apart from that, this topics complicate the peer-review based grading process since the expertise of other mentors and the lecturer in the specific topic might be limited. Here, asking the student to perform a structured literature review with games as examples instead can be a helpful tool.

Historicity (that is historical correctness) might seem like an exotic topic for a computer science seminar. Therefore, we want to explain it in more detail here. This cluster of papers is caused by the expertise of one mentor who has studied computer science with a specialization in augmented reality and history with a focus on ancient history. He has mentored 20 students analyzing the historical background in games. While in many games, there are only some stereotypical aspects depicted, like sand and pyramids for an Egyptian theme - our students looking for these examples where more historical aspects are depicted. They were especially interested in aspects where historicity is sacrificed since it would mitigate the entertainment factor. Sometimes, this is necessary to ensure playability. In games like *Age of Empires 2* (Ensemble Studios, 1999), specific troops are needed for game balancing purpose, even if they have not existed in an historical army. Another example is, if the player would play a

historical character in a known scenario, there would be no choices for the players if they have to play the accurate historical timeline. Often, games invent new characters in historical scenes without making clear that this is not historically accurate. In contrast, there are situations, where facts like annual data are wrong without reason. The game analyses aim for distinguishing intended missing historicity from simple mistakes. Furthermore, the game analyses can serve as additional material to educate players and our students about these inaccuracies and mistakes in historical architecture, clothing, the appearance of historical figures and historical sequences of events. This information is seldom delivered by game developers directly and therefore relevant to avoid the replication of mistakes.

We also had clear Games Engineering-related topics as interactive storytelling, world and level design and video-game adaptations of other kinds of media. The motivation behind these topics is manifold. By analyzing successful games, games engineering and game design related patterns can be found and formulated. Using level design as an example, one could analyze the dungeons of games to find typical patterns in the dungeon structure. A famous example for such a pattern is the circularity of dungeons in *The Elder Scrolls V: Skyrim* (Bethesda 2011) where there is always a secret door back to the entry of the dungeon so that the player does not have to walk through the whole dungeon again. This is not equivalent to searching for best-practices, since patterns are not always good or bad. But by verbalizing them, we can analyze in a second step which kind of player would appreciate such a pattern and what consequences we can expect from specific patterns. And, if these patterns occur in popular titles or game series, the patterns need to be identified because they might cause expectations on new games in similar genres. Pattern analyses have a comparative nature. A pitfall here is to compare games and identify patterns without investigating the socio-economical, technological and historical context as well as the target group of the game beforehand – so these analyses need to be performed with classical game analyses of the compared games at hand – either written by Games Studies scholars or (if none is available) by predecessors in the seminar.

The second aspect that games engineering related game analysis can help with is identifying discrepancies between theory and praxis. For example, for 3D user interfaces, one could compare the selection and manipulation techniques described in the scientific literature with the techniques actually used in casual entertainment applications. And if a pattern is already described, game analysis can be used to find other Games related to the pattern. This relationship is only visible to people who know the pattern and have played the game. So, if such people share their experience and insights, others can pick a game from the list and play it themselves to experience the impact of a pattern. Like the quest marks in the top-navigation compass in *The Elder Scrolls V: Skyrim* (Bethesda 2011) for wayfinding. Lecturers can tell students thousand times that a direction-based wayfinding cue can be problematic in some scenarios like open world games, but it is much more impressive if students stand in front of a mountain or a cliff and the indicated quest target is not reachable, because a large detour around the mountain is necessary to reach the quest goal. We need those experiences verbalized and archived to make games more citable - especially since they might not be available anymore in the future.

A third aspect, games engineering related game analyses can help with, is the lack of development standards and universal methods and tools for game design and game engineering. Here, compared with the clear standards in software engineering, there is a gap between academia and the gaming industry. The key challenge is to develop standards and universal methods and tools that follow clear principles while addressing the needs of

industry so that they are adopted eventually. If video games were analyzed in detail, games engineers might be able to reengineer parts of them based on standard processes to see how this can improve existing processes. Also, by looking at prototypes and other secondary artifacts, such as documentation and developer interviews, opportunities and challenges in the development process can be identified. A tool applied by our students is to analyze speed runs and known glitches in games as they offer insights on implementation characteristics of the game.

Finally, we want to mention works that have integrated other scientific methods than game analysis to their thesis. These works include literature reviews with games as examples, textual data mining from chats, statistics about specific mechanics in a genre and many more. Even if not directly Game Analyses, we appreciated this creative enhancement of our methodical toolkit. A lesson for the future to broaden our scope to include qualitative methods like literature reviews with game examples officially and communicate that quantitative research is not part of our seminar.

To sum up, there are many games engineering related research topics that can benefit from analyzing existing games. Since this section is based on observations during the seminar, the given examples are incomplete even with respect to our students works, so in the future it might be fruitful to analyze the seminar papers again with methods of structured thematic text analyses.

Seminar Quality Assurance

This chapter gives an overview of statistical data captured in the process of our annually seminar quality assurance. Note, that for this research paper, we analyzed pseudonymized and statistically summarized data and have not collected or processed any personal data of our students. Over the last years, during our teaching retrospectives, we collected the analyzed games, the topic, the number of references with sub-categories for academic literature and games from the submitted student works. We furthermore clustered the papers concerning a modified version of the categories of game analyses by Fernandéz-Vara (2019).

The clustering of categories was done since, after the first iteration of the seminar, we noticed, that we will need different grading criteria for different kinds of seminar works. Most of these categories are adopted by Fernandéz-Vara (2019). During the clustering, we noticed that the clusters are sometimes ambivalent or not directly identifiable by skimming the student's paper. In particular, the transitions between "illustration of a theory" and "journalistic review" were fluid. We decided that, if we have an in-depth analysis of few game elements and a clear research question, the work belongs in the category of "illustration of a theory" (41.5 percent) and if there are many game elements listed and the research question is vague, it belongs in the category of "journalistic review" (18.1 percent). Therefore, the classification could occasionally be subjective but nevertheless informative. Also, we had only two works that could be classified as "historical analysis" (note, that historicity is a topic belonging to the category of "illustration of a theory" and not "historical analysis" since Fernandéz-Vara (2019) meant the historical context of the time of development of the game and not the historical accuracy of game elements) but we had many works that needed to be classified as comparative analyses (25.5 percent), a sub-category for "historical analysis" (Fernandéz-Vara, 2019, pp. 222). These comparisons were often driven by the goal to figure out how different games have solved specific issues, for example balancing – but never based on the same aspect in different historical epochs. So, we separated the two categories. Furthermore, there were four analyses with a focus on a specific

topic and a high amount of literature review (4.2 percent) instead of a focus on a specific game. We categorized these works as "literature reviews with games as examples". "Interpretative Analysis" and "personal account" each accounted for only 2.1 percent of the papers. Note that "journalistic review" and "personal account" were both banned from the seminar in 2019 - since we felt uncomfortable with grading them and the skills needed for this kind of analysis seem more important for scholars in game studies than in games engineering but nevertheless "journalistic review" remains popular afterwards.

One of the demands of a seminar is to teach students how to use and reference academic sources. For game studies and game analysis, an additional challenge is to deal with games as references. For the game citations, we investigated, how many students have at least delivered the game studio, publishing year and title of their games. In the winter semester of 2017/2018, twelve out of nineteen students (63 percent) delivered this information, in the winter semester 2020/2021, eleven out of seventeen students (64 percent) have done so properly. These numbers indicate that we have to emphasize the importance of proper game citations more, since this formal aspect should not be an issue at all. Furthermore, in the next iteration we plan to teach the results of Kaltman, Mason, & Wardrip-Fruin (2021).

An early finding of our annually seminar retrospectives in 2018 was, that students are indeed referencing a lot of sources, but mainly non-academic sources, for instance blog articles, YouTube videos and materials directly related to the game for instance release notes and manuals. This chapter compares the amount of reliable sources in the winter semester 2017/2018 with those in the winter semester of 2020/2021. Since we are teaching undergraduate students, we are using a very open definition of reliable sources here, including educational books, serious journalistic publications with given authors in journals with editors and scientific paper in academic journals. Here, the numbers were more promising: in 2017/2018 the median of cited academic sources was 1, in 2020/2021 the median was 8. Possible reasons for this positive trend could be the new emphasis on literature research, the clearer research questions and the increased amount of existing papers. Note that we have chosen to present the median, not the average since in 2020/2021 a literature review with a high amount of academic sources would have distorted the expressiveness of a comparison of the averages.

The overall number of citations was with 13 as a median in 2017/2018 and 16 as a median in 2020/2021 rather stagnant. We interpret this as an indicator of an existing fundamental willingness of our students to perform related work research with a positive trend in integrating academic sources. If there is a high amount of own contribution in a game analysis, the amount of literature review drops naturally without necessarily limiting the quality of the analysis. But, since we need to teach our students literature research as well, we have integrated in the winter semester 2021/2022 the "Appropriate amount of background research" Badge for at least three properly reviewed academic sources.

This chapter has shown exemplary how a statistical seminar quality evaluation in a game analysis course can be implemented. Obviously for now, the proposed evaluation categories cannot cover deeper insights on, for example, how many students provided a proper essay and argumentation structure – but by evaluating, how many students gained the according badge, we might also be able to evaluate these aspects in the future and adapt our lecture accordingly.

Challenges and Open Questions

We strongly agree with Fernandéz-Vara (2019), a very common challenge is that our students know many texts from the game business and marketing. So, they copy the style of these texts and some students have few ideas, which words might not be familiar for readers. Here, we implement learning by example, a draft system, and a partner review strategy: First, we deliver as many research texts about games as possible, and then, we implemented a partner review system, where two students correct each other's texts and a draft milestone, where the mentor corrects a chapter of the paper.

There are very few Game Research publications written by Computer Scientists that could act as models for our students (Deterding, 2017). A reoccurring question by our students was whether we can provide example game analyses. In the end, we use three strategies: first, we reference as many papers and sources for Games Studies and DiGRA as possible. If no related work can be found, we asked students to start with a broader search and to read and cite chapters from educational books about video games. And third, we ask our students to voluntarily upload their papers in a database where future participants of the seminar can read them.

Due to the department structure and even scopes of universities, we have few connections for discussions with Game Studies researchers. This makes it hard for the mentors to help students with interdisciplinary topics since we might not know the relevant related work. For this reason, we allow students to perform Literature Reviews instead of Game Analyses in the seminar to achieve the missing knowledge collaboratively.

During the seminar, we have to deal also with legal problems such as what if games are banned in our country, and how to use in-game screenshots correctly in scientific publications. Furthermore, we are aware of ethical problems. To avoid them, we have a policy of not asking students to work on games with violence hints if they do not propose these games themselves as already known and do not allow our students to work on banned games.

Moreover, during this retrospective, we noticed that our grading criteria are still much more based on general research quality measures instead of grading good game analysis practices. We plan to further develop and specify our grading criteria as the game analysis best practices become more specified themselves in game research related fields. A first step in this direction could be to include a description of the students level of expertise with the analyzed game as proposed by Aarseth (2003).

There are still some open questions, such as: How do we achieve a broad enough overview of games to evaluate the origin of a game element in one field? How can we achieve a common media language for both social studies and games engineering and maintain the dialogue between the fields? How do we evaluate the scientific relevance of a game analysis for being published to a conference?

Conclusion

Game Analysis has high potential as an explorative and qualitative approach for Games Engineering. It can serve as a medium of communication, for presenting research topics to students and articulating yet fuzzy topics to colleagues. By analyzing games, we can also find flaws for gaming experiences and in the development process as well as successful, reusable mechanics for new games and serious contexts (that is navigation or serious games).

The broad knowledge of our students is a resource for us for identifying new games with relevance for specific patterns like level design. And the students can reuse game analysis as

a requirement and expectation analysis. During their final thesis, our students often produce games with a specific goal like serious games for healthy habit development or language learning - here, before creating a concept, the research might start with analyzing games as related work to identify expectations of future players. We can conclude that game analysis is a starting point of new interdisciplinary and specialized research projects for Games Engineering students.

Teaching game analysis as a seminar is a first step for us to approach games as case studies and to broaden the existing theory about games for games engineering. We have redefined the toolkit of methods by distinguishing Literature Review based, Game Observation-based, and Player Observation-based studies and therefore will rename our seminar in 2022 to „Qualitative Game Research“(including Game Observations and Literature Reviews, but excluding Player Observations). Game Observation is the term we will use to distinguish our method from humanities methods like post-structuralistic game analyses (Personal Account, Journalistic Review, Interpretative Analysis). For the structuralistic methods (Comparative Analysis, Illustration of a theory) and regarding the practical hints on how to approach games we will go on with teaching the methods by Fernandéz-Vara (2019) and emerging work from fields of game studies. Additionally, we have added a lecture on how to conduct research in general and scientific paper writing.

If we want our students to produce games in the future that deal with ethical concerns, mature in their quality, and depict less bias of the developers, we need more easily approachable literature from the fields of social game studies and humanities. We, especially, need the interdisciplinary discourse on how to increase the quality of the media, we all relate to. The small amount of such fundamental literature might be based on the young field but presents a major challenge to our teaching.

Analyzing the work of undergraduate students and doctoral candidates is in itself not a reliable method for defining the research scope of an emerging scientific field - so this paper should be seen as a lesson learned retrospective and an attempt to open the dialogue with the field of games studies to evaluate, discuss and improve our methods of teaching and performing qualitative game research.

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EXTENDED ABSTRACT

Towards Reproducibility in Game Analysis: Some Reflections on the Study Design and Methodology of Loot Box Prevalence Studies

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Introduction

Game studies is interdisciplinary [1] and the implication of which is that a mix of methodological approaches from various disciplines (each with different expectations) are acceptable. Many methods for studying games are available at the disposal of the 'game analyser': ranging from playing the specific games themselves, *e.g.*, close reading [2], to collecting data from other players about their gameplay experience with specific games [3] or all games in general[4], to measuring more abstract aspects of players' gameplay experience, *e.g.*, engagement with violent video games [5]. On this spectrum of available methodologies, the former (from, *inter alia*, literary studies) tend to be more subjective, whilst the latter methods (from the social sciences) tend to be more objective. Those former methodologies, which this abstract focuses on, and which seek to have individual researchers analyse specific games, often involve subjectivity because idiosyncratic researchers bring their own insights (and biases) to the analyses. This inherent subjectivity is conceded by the proponents of those former methodologies who also recommends ways to inject some degree of objectivity back into their analysis, *e.g.*, in relation to close reading [2(p. 275)].

Objectivity allows research to be more easily reproducible. Reproducibility in science is now widely accepted as of utmost importance because the credibility of the research depends entirely on it. Reproducibility is also increasingly important in game studies in relation to game analysis because video games are becoming more deeply scrutinised by society, *e.g.*, in regards to whether gambling-like game design elements known as loot boxes should be regulated [6]. Game studies research often now has wider implications: for example, a game analysis project conducted by Zendle *et al.* (2020) examining the prevalence of loot boxes in video games has been cited by, *inter alia*, the Spanish gambling regulator and is already affecting policymaking [7]. Such studies should be reproducible and adopt open science principles to allow for more transparency, easier accessibility, more active public critique, and enhanced public trust [8].

The reflections herein relate to video game loot box prevalence studies (*i.e.*, how frequently are loot boxes implemented) and mainly stem from my attempted replication of Zendle *et al.* (2020) as presented in Xiao *et al.* (2021a) [9] and Xiao *et al*. (2021b) [10] and also reported in Xiao *et al.* (2022) [11]. I plan to use the same methodology again for Xiao (2022) [12]. I cannot claim that my recommendations below are widely relevant, and some may seem obvious; however, by continually giving more thought to my own study design and seeking ways to improve further, I believe I have incrementally enhanced the quality of each attempted use of the same methodology. This abstract does *not* dismiss subjectivity as not valuable (because it is part of many disciplines that game studies interacts with) and, indeed, true objectivity is perhaps never achievable. Instead, this abstract outlines a number of important considerations for game studies researchers that might help them to more objectively design their future studies to be reproducible where appropriate, such that their research conclusions might be
more convincing to wider audiences, *e.g.*, the public and policymakers.

Selecting the game analysis subjects using external sources

One manner by which subjectivity is inserted into game analysis is at the very outset: by choosing to study certain games that the analyser is already familiar with, the analyser has already biased the sample before 'analysis' or 'data collection' has even begun. Therefore, if objectivity is a goal, then the game subjects that will be studied should be derived through an external source that is not coloured by the researchers' own selection biases. For example, the researchers might decide to study the most popular games as determined by which games' Reddit subreddits have the most followers or by which games are grossing the most amount of money. Technically, these selections are still biased and not absolutely representative in the sense that whether less popular games or worse financially performing games would reflect the same results could not be known. However, the research team can set that out as a limitation and argue that what most stakeholders (players, parents, and regulators, *i.e.*, the target audiences of the research conclusions) would be concerned with would be the situation amongst the most popular or highest-grossing games. This shows that achieving absolute objectivity is not necessarily required and is probably impossible: some reasonable and practical concessions to subjectivity can, and should, be made.

Loot box prevalence studies generally based their sample selection on the highest-grossing lists of games obtained from authoritative external sources, *e.g.*, the app stores' national rankings[e.g., 9,10,13]: this allowed conclusions as to the loot box prevalence rate amongst highest-grossing games on specific platforms (*e.g.*, Apple iPhone) in specific jurisdictions (*e.g.*, the UK or Mainland China) to be drawn. This also allowed for the various studies to be comparable with each other. However, in contrast, one loot box prevalence study conducted in Australia used a sample that was selected by researchers from a variety of online lists[14]: although the researcher admirably shared in detail how they selected their sample; justified their selection; and identified the relevant limitations, this relatively idiosyncratic sample selection of 'popular games' meant that it was not possible to conclude what the prevalence rates on specific hardware platforms in Australia were (a previous study having found that the prevalence rates on varying platforms could differ from 36% to 59%[13]). It was also more difficult to compare this particular Australian national sample to other national samples.

Using objective definitions to enhance reproducibility

Another way to improve objectivity is to use specific definitions derived from external sources, rather than to allow the analyser to rely on their own subjective decision-making. If

the subject matter being studied is novel and yet undefined, the analyser can create and develop any definitions themselves, as long as they ensure that the definitions are not changed between analyses of different games (or if a definition has been amended, that they return to any previously analysed games to conduct a reanalysis using the newer definition). This was relevant to loot box prevalence studies because there was, and remains, no complete agreement as to what game mechanic constitutes a 'loot box.' In the context of Xiao *et al.* (2021), this meant that the definition for a 'loot box' was not left to the analyser's own judgement and was instead reproduced from a third-party, specifically, the work of Nielsen & Grabarczyk[6], which specifically considered how to define loot boxes. In contrast, Zendle *et al.* (2020) used a less detailed definition that the study itself invented. When Xiao *et al.*'s replication was compared to the original Zendle *et al.* study, there were a number of overlapping games that the two studies disagreed as to whether or not they contained loot boxes. It became evident that simulated casino games in which players can spend real-world money to buy more stakes to continue participating in simulated gambling (whose results are randomised) were not recognised as containing loot boxes by Zendle *et al.*, and this was not disclosed by that study. Zendle *et al.* therefore arguably potentially underestimated the prevalence of loot boxes[11]. It is therefore crucially important that which definition was adopted and any design decisions to include or exclude are clearly explained.

A valuable resource in this context would be a codebook or a coding manual, in which the definitions for various concepts are set out and how various concepts would be identified (*e.g.*, how long the analyser should play the game for and which aspect they need to examine) are recorded. The analyser should always refer to the codebook when experiencing games. This codebook may be treated as a living document and allowed to develop alongside the study (again, as long as the analyser would eventually return to reanalyse any games previously analysed using outdated methodologies using the final, revised methodology). This codebook should be shared alongside the publication resulting from the study to enhance reproducibility and assist in any replication. Therefore, the codebook should be written in such a way that any other person should be able to refer to it and experience the game just as the analyser originally did.

Within the study itself, the game analysis could involve multiple game analysers to assess the 'reliability' of the codebook and the game analysis process. A certain percentage of all games studied could be analysed by two (or even more) researchers using the same codebook. The two sets of results can be compared to calculate for inter-rater reliability (*e.g.*, Cohen's kappa coefficient). Achieving a high inter-rater reliability would allow the researchers to be confident that their results were reproducible. Inter-rater reliability could also be provisionally calculated during the codebook development process to check whether certain aspects need to be revised and clarified. For example, certain aspects might not be capable of being reliably assessed and other methods should be considered to answer research questions relating to those aspects.

'Performing' a specific player experience

On the point of replicating a certain gameplay experience, as documented by the codebook, it is important to recognise the limits of achievable objectivity and embrace subjectivity in the form of 'performed subjectivity.' It is likely not possible to reproduce an identical gameplay experience amongst two analysers if no further instruction is given to them. The codebook would set out how exactly to analyse a game for a particular study. Part of developing that codebook should involve the analyser deciding on a specific player experience that they

would like to replicate. In the context of close reading, Bizzocchi and Tanenbaum (2011) refer to getting the game analyser to pretend to be the 'naïve gameplayer' (p. 275) or some other 'performed player stereotype' (p. 277). 'Performing' in this context means experiencing the game whilst pretending to be a specific type of player: for example, when performing an inexperience played, choosing to view the gameplay tutorial in whole rather than skipping it. Bizzocchi and Tanenbaum (2011) suggest that these specific, potentially diverging performed experiences are subjective, as compared to the distanced game studies scholar who would analyse the game objectively (p. 275). That might be true, but this imagined stereotypical subjectivity is actually more replicable than the so-called 'objectivity' of the individual game studies scholar. The codebook or the publication can disclose which imaginary sterotype the analyser performed (such that someone else can also adopt and reproduce that same, imaginary experience when they re-analyse the game), whilst how the individual game studies scholar experienced the game cannot be so described and repeated. When choosing which specific, imagined player stereotype to adopt, the researchers can consider whose experience their intended audience most care about, *e.g.*, inexperienced players. Note that different analysers might not necessarily understand or perform a certain 'player stereotype' in exactly the same way, but having some guidance would help to make the analysers' experiences more similar.

In the context of loot box prevalence studies, the original Zendle *et al.* (2020) study reviewed online videos recorded by other players to determine loot box presence and, if unable to decide, then through personal gameplay. In contrast, Xiao *et al.* (2021a; 2021b) determined this firstly through gameplay and, if unable to decide, then through online resources. This design change with the Xiao *et al.* studies were justified on the basis that gameplay more closely replicated how a new player would encounter the game, which is likely what relevant stakeholders (*e.g.*, potential players, parents, and policymakers) are most concerned about. Additionally, gameplay, as compared to observing other's gameplay experience, also allowed for more in-depth scrutiny of the games in this context. Once again examining the overlapping games that Zendle *et al.* (2020) and Xiao *et al.* (2021a) both studied, it appears that Xiao *et al.* (2021a) was able to identify a few more hidden loot box implementations with complex purchasing procedures that Zendle *et al.* (2020) might have missed[11].

Publicly Sharing Screenshots and Other Records

Lastly, it must be recognised that video games, particularly online ones, are frequently updated and are therefore not immutable objects that can necessarily be studied in the exact same form at a later date[15]. Recovering older versions of the software to verify the results of a previous study is likely often impossible. Given constraints on the public deposit and sharing of video games (*e.g.*, copyright law and practical concerns, such as file sizes), taking screenshots or video recordings of gameplay and publicly depositing those as data (which copyright law would highly likely permit under fair use/fair dealing provisions) alongside academic publications would be a compromise that can help to ensure that the original game analysis experience would at least be partly preserved so that interested parties can attempt replications or at least identify differences between various versions of the game. Indeed, detailed comparisons between the results of Zendle *et al.* (2020) and Xiao *et al.* (2021a) were possible because Zendle *et al.* openly shared the names of all games it studied.

Final notes

The reflections above originated from the development of one particular research design that was used to answer specific questions. Not all of the above would be applicable to, or need to

be adopted by, other studies. However, even just a bit of objectivity might be beneficial to game studies projects by making them more reproducible and authoritative. Indeed, there are other ways to make one's game analysis more objective and reproducible that this abstract did not discuss. Although potential approaches to 'objective' or 'empirical' game analysis have been suggested herein, it must be reiterated that game studies is a multidisciplinary and interdisciplinary field (likely because game studies remains a nascent field such that most scholars came to game studies from other disciplines, rather than having been trained in game studies *per se*[16]). Therefore, it must be recognised that objectivity and reproducibility is not a goal that every project that involves game analysis necessarily requires. Indeed, research from literary disciplines is inherently subjective, and different interpretations are valuable precisely because they are subjective. Notwithstanding, when game analysis crosses with certain domains, such as regulation and governance, replicability and provability are achievable goals with appropriate study design and are, indeed, required to make convincing policy arguments. Every researcher should consider whether they can provide more information about their underlying study design choices and data, so that others can better understand the context in which the study was conducted and attempt to improve upon it.

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EXTENDED ABSTRACT

Bringing the Economy into the Cybermedia Model: Steps towards a Critical-Materialist Game Analysis'

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This presentation advances methods of game analysis to include questions of production that can capture the meaning-making processes at play in games more fully. Inspired by Stuart Hall's (1973) encoding/decoding model, we argue that an understanding of games and their play cannot be wholly divorced from the contexts of production from which they derive. We build upon established research on game ontology and analysis as exemplified in the cybermedia model (Aarseth and Calleja 2015; Debus and Grabarczyk 2017; Aarseth and Grabarczyk 2018) by proposing the method of critical-materialist game analysis (CMGA) to highlight the relation between profit-orientation, structuration of game companies, and homogenous meaning potentials brought forth by generic mechanics, narrative, characters, and conflict resolution strategies. By engaging in a productive dialogue with the cybermedia model and the cybermedia metamodel, we argue for the significance of a production perspective for a better understanding of the dynamics of games, play, and politics.

The cybermedia model outlines the *semiotic*, *material*, and *mechanical* aspects of what Aarseth and Calleja (2015) define as the cybermedia object, as well as the *process* that denotes the activity of an agent interpreting and configuring the cybermedia object i.e., the player. Additionally, Aarseth and Grabarczyk (2018) introduce a meta-model which accounts for the *physical*, *structural*, *communicational*, and *mental* layers of what amounts to an ontology of games and play. We advance these findings by bringing further attention to how cybermedia objects and their layers are contingent upon the contexts of production from which they derive. For example, Aarseth and Grabarczyk briefly mention the importance of an economic layer, but state that "it is often the case that a game changes its economic model (for example gets ported from arcade to home machines) without changes to most of the other layers" (ibid., 6). Our contribution offers an approach that precisely identifies how aspects such as economy affect the different layers of the cybermedia object and the meta-model. For instance, Aarseth and Grabarczyk ask if the monetization schemes in free-to-play games "determine other aspects of games (from example its mechanics) or can they be understood as independent from them" (ibid. 6-7). It is precisely the former option that serves as the motivation for our approach in the sense that we account for the significance of the material dimension of the production of games to better understand the semiotic aspects of games and play as well as their political and societal implications.

It is here that Hall's cultural communication model allows for further inquiry into precisely the underprioritized material aspects of game production, such as relations of production and available technologies (Shaw 2017). Hall combines these with semiotics and practices of intentional encoding and decoding of mass mediated messages to explain the circulations of meaning in contemporary societies. Taking Hall's insights into the analysis of games, we see that games' manifestation appear the way they do because of questions of investment, funding, and profit-expectations together with available technologies and established socio-cultural and historical frames of meaning and practice. One can think of the various factors that predispose how a game is made, such as cost-benefit ratios/profit orientation (Nieborg 2015; Srauy 2017), received ideas and tastes of dominant consumers as the target audience (Fron et al. 2007), the gendered, national, and racialized nature of game makers (Johnson 2018; Bulut 2020) that all predispose mechanical systems, material components, and meaning-bearing signs of games (de Wildt and Aupers 2018; Hammar 2020). For instance, not only are questions of monetization relevant for understanding why some games are designed to encourage player engagement and retention, but also questions of structuration in terms of gender, race, language, age, and nationality within the game companies and how such hierarchies predispose such factors as characters and perspectives that comprise the sign of the cybermedia object. This means that an approach to how the cybermedia object is *encoded* and composed provides important data that allows for a better understanding of the material frames that predispose form and content of mass media products, and that entail and reproduce specific ideological biases. For instance, drawing connections between ideological meaning potentials of specific aesthetic forms and these interests (Pötzsch 2019; Hammar 2019), the influence of economic considerations and profit interests on media content can be mapped, before audience responses and their ideological and political directions are assessed that either activate and further disseminate this content or actively resist and attempt to suppress it. The model therefore does not assume players as slavishly bound by game structures and neither posits a total empowerment of players to resist any encoded ideological message. Games do not determine players but cautiously nudge them in particular directions beneficial to certain interests. This means that the cybermedia object as semiotic form emerges as a variable dependent upon additional material factors. These material factors within a critical-materialist analysis of a cybermedia object would be:

1. Ownership and economic system
2. Structuration along gender, race, age, nationality
3. Labor conditions
4. Technological conditions, systems, and knowledge
5. Dominant hegemonic perspectives versus counter-hegemonic struggles and destabilization
6. Global class relations and supply chains
7. Ecological conditions and ramifications

Thus, production predisposes the aesthetic form produced at any given moment in history. This form again, together with certain material aspects predisposes play and other forms of game reception.

Some might argue that contexts of production and political-economic approaches are wholly irrelevant for the understanding of games and play. This counterargument usually relies on the notion that interpretation and configuration are entirely disconnected from whatever the

contexts of production are, i.e., audiences interpret the encoded meanings of a game regardless of how it was intended by game makers. Here we argue that the means through which a game creates potentials for certain meanings can be described and systematized to show how they invite certain sets of potential practices of play. This does not mean that we describe what a specific game objectively means, but only what the intended, possibly dominant, potentials for meaning encoded in a specific game (or other cultural product) are. These dominant potentials are then subjected to practices of play and 'reading' that actively negotiate these potentials in varying contexts of reception. The formal properties of the cybermedia object, such as a game's mechanical system, invite, motivate, demotivate, or make difficult. They function like systemic patterns of support and restraint that, with varying degrees of closure, predispose certain readings and make others more difficult, but they do not determine the receiver (Pötzsch 2013).

Here, our approach follows the political economist Vincent Mosco (2009, 223–24) in that equating players with game makers neglects fruitful inquiries such as just how powerful are players as coproducers of meaning? To what degree can and do game makers consider established practices and adapt their productions accordingly? What is the relationship between control over the means of game-making and player's production of meaning? Rather than wholly dismiss the importance of production for the analysis of games and play, these are questions that offer grounds for useful exchange. Similar connections between political economy of production and ideologies implied by dominant meaning potentials of cultural products have productively been explored earlier in relation to television, films, and videogames (de Smale 2019; Bockwoldt 2019; Alford 2011; Pötzsch 2019; Hammar 2019)

Our contribution highlights not only the situatedness of play, but also the conditions upon which play is contingent and that are shaped by the mechanical system, sign, and materiality – the latter, as we argue, including contexts and relations of production. This is not to argue an overly deterministic relationship where structures determine individuals (Mosco 2009, 188). Rather our aim is to identify the mutual constitution between the two realms through a political-economic approach to game analysis that we term critical-materialist game analysis (CMGA). This fundamental claim serves as the starting point for the analysis of games and play across production, cybermedia object, and contexts of play. Indeed, as Murdock & Golding (1979, 226–27) state, "to describe and explicate these [economic] interests is not to suggest a deterministic relationship, but to map the limits within which the production of mediated culture can operate". It is this mapping that our proposal advances as a way of game analysis. An integrated interdisciplinary framework that includes attention to production, text, and reception can generate and subsequently corelate data along all three instances proposed in this contribution and in this way contribute to an enhanced understanding of the cultural dynamics and medial processes as seen in the cybermedia model and its meta-ontology.

This presentation invites researchers and students of play and games to consider how economic frames of production predispose the reproduction of specific (dominant) forms within the cybermedia model. Like Aarseth and Grabarczyk (2018, 2), we invite more detailed 'granular' studies of one or two elements of the model and show how they could further game analysis that includes considerations of the contexts of production. We explicitly encourage the analysis of games and play within a political and economic context that considers the modes of production that in large parts predispose the mechanical system, the materiality, and the sign layer of cybermedia objects that players in turn interpret and configure in specific contexts. We call this method Critical Material Game Analysis.

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EXTENDED ABSTRACT

Let's (Not) Play Research: Analysing the Fluid Game

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In "Playing Research: Methodological Approaches to Game Analysis", Espen Aarseth writes that "[i]n gathering information about the game, we should use as many sources as possible. Playing is essential, but should be combined with other sources if at all possible", such as reviews and walkthroughs (2003, 7). In this paper, I argue that one of the other essential sources of information for game analysis is *not playing,* in the sense of engaging with the game artefact in a way which it was not intended to be engaged with by players. To illustrate the value of this kind of engagement for game analysis, in particular digital game analysis, I discuss Let's Play-like videos that showcase aspects or functionalities of games that players were never meant to see. They show players who do not just play games, but rather play *with* games (Newman 2008), and thus allow their viewers a look 'behind the scenes' of games, revealing the underlying, hidden workings of games as imperfect, coded artefacts. The specific, analytical value of these videos lies in the fact that they reveal sides of games other than the one that is overtly presented to players. They do this by juxtaposing the intended fiction and challenge of the game with alpha versions of game environments, cut content, out-of-boundaries perspectives and explorations, as well as malfunctions and ways to exploit the game code.

To clarify the role that these aspects and versions of games can play within game analysis, I will leverage John Bryant's concept of the "fluid text". He writes:

> Literary works invariably exist in more than one version, either in early manuscript forms, subsequent print editions, or even adaptations in other media with or without the author's consent. The processes of authorial, editorial, and cultural revision that create these versions are inescapable elements of the literary phenomenon, and if we are to understand how writing and the transmission of literary works operate in the processes of meaning making, we need first to recognize this fact of fluidity and also devise critical approaches, and a critical vocabulary, that will allow us to talk about the meaning of textual fluidity in writing and in culture. (Bryant 2002, 1)

According to Bryant, text analysis should not be focused on texts as static works, but rather on the construction of meaning of texts within their dynamic process of creation and interpretation, represented by the existence of many different versions of texts (2002, 61).

In this paper, I suggest taking up Bryant's challenge with regard to games, establishing game analysis as fluid-game analysis. As interactive works of fiction that are grounded in (almost invariably imperfect and often frequently updated) digital code, videogames arguably exist in even more shapes than the traditional, literary texts that Bryant talks about. Yet, within game studies, scholars have sometimes tried to isolate one specific way-of-being of a game as the chosen object for game analysis. Aarseth mentions that "to show that we understand a game, all we have to do is to play it well" (2003, 5), and argues that the "real game" is the ideal or implied game object, which "does not exist, but is imagined by the player as what the game *is*, or ought to be" (Aarseth 2011, 66). Similarly, Nguyen argues that games have "prescriptive ontologies", stating that games "are a set of materials as approached in some particular, prescribed, way. Those prescriptions help to fix a shared and common object of attention. You have to play by the rules to even encounter the game" (Nguyen 2019). Leino deems this normative focus on prescribed or ideal games problematic when faced with the actual materiality of digital games. He writes: "Unless I am doing game design research, my object of study is not the 'ideal game': i.e. the assumed designer's assumed intentions fallibly manifested in the playable artifact, but the playable artifact as it exists in the world" (2012).

Within these discussions, one can discern a debate that is typical for any hermeneutic research of communicative artefacts. On the one hand, there are game scholars who state that game analysis should focus on the implied game, which is determined by authorial intentions and prescriptions. On the other, there are those who argue that game analysis is about the encounter with the material artefact, with all its mistakes, possibilities for subversive use, and technological malfunctions included. In this paper, I argue that *both* perspectives are necessary. Following Bryant, I believe that "we can and need to dispense with such terms as *intentionalist* and *materialist*, for materialists do not deny the relevance of intentions, and intentionalists ground their work in material objects" (2002, 60). Game analysis, just like text analysis, needs to account for the fluidity of games, acknowledging the ideal game object, as well as the role it plays in different interpretations of the material game artefact, and the way author's intentions are fallibly manifested in different versions of this artefact.

To illustrate the value of such a fluid-game analysis, I discuss three Let's Play-like videos. These showcase how a game artefact is always more than what it was intended to be, and even more than what players encounter when playing right (Nguyen 2019) or playing transgressively (that is, performing actions that are not part of the game's "intended repertoire", cf. Aarseth 2014, 132). First, I elaborate on the phenomenon of Let's Plays in which players play transgressively, and their relation to the concept of the implied game object. For this purpose, I compare SmallAnt's Let's Play videos in which he plays *Super Mario Odyssey* (Nintendo 2017) "wrong" with his attempts to play this game "exactly as Nintended" (or: as Nintendo intended it). Based on these recordings, and the simultaneous discussions between SmallAnt and the people in his chat, I discuss how the multifaceted nature of digital games makes it hard or even impossible to identify one "intended" or "implied" version of a game.

Secondly, I describe Lance McDonald's elaborate investigations of the alpha versions and cut content of *Dark Souls III* (FromSoftware 2016) and *Sekiro* (FromSoftware 2019), and clarify

how they, similar to how manuscript research contributes to literary analyses of texts, have played a decisive role in arguments about what is 'canonically fictional' in these games. At one point, for example, McDonald changed the camera angle in the last cutscene of one *Sekiro's* multiple endings. He thus revealed an object that, for anyone who plays through the game normally, would have remained outside of view: the severed head of one of the game's characters. Although McDonald only unearthed this knowledge not by playing through the game, but by engaging with its code, it can be considered as proof of the death of this character within the canonical fiction of the game.

Lastly, I discuss Limit Breakers' documentary-like series on so-called "useless data" about the *Dark Souls* series. These videos allow players to realize the inherent contradictions between the fictional world of these games and their coding. At the same time, they contribute to players getting a clearer vision of how designer intentions can go lost throughout different game versions, or get distorted and misrepresented because of the limits and fallibility of the designers or the technology that they use.

In the end, I suggest that academic digital game analysis could take a cue from these examples, and not focus on the implied game object or on the game as played, but rather investigate how digital games consist of versions, intentions, and interpretations that mutually interact, contradict, and inform one another.

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FULL PAPER

From Analysis to Systemic Modelisation of Games: The Equilibrium Gameplay Loop

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Keywords: Systemics, System thinking, analysis, complexity, game systems, game design, gameplay loops

Abstract

As stressed in the call for papers, analyzing games in their epistemological, methodological, and ontological dimensions has been a challenge for years. Focusing on the methodological dimension, this paper posits that these difficulties are actually linked to the very definition of the word "analysis". While commonly the term "analysis" implies a deep understanding of games, it also relates to many philosophical trends and some methodological approaches. In those methods, "analysis" refers to the mechanistic deconstruction of an object into parts to understand their nature. However, this vision of analysis comes with limitations, especially when attempting to understand the relationship between those different parts. In order to better comprehend games, we suggest following a different paradigm, namely complexity, and using systemic modeling to describe game systems. We then elaborate on systemic gameplay loops as a promising way of envisioning gameplay by examining *Tetris*, *Paper.io*, *Five nights at Freddy's* and *Pure Hidden* as examples.

Game Designers Need to Explain Their Games

Game design is often one of the most appealing, yet unclear, steps of the game creation process (Lankoski & Holopainen, 2017). Despite general guidelines, designers tend to pursue personalized methods. Processes vary from game to game, but generally, as Koenitz et al. stress, "Game design is concerned with how the elements interact and how players can use the resulting system" (Koenitz & Eladhari, 2021, p.67). Game designers want to create what we call gameplay: "the formalized interaction that occurs when a player follows the rules of a game and experiences its system through play" (Salen & Zimmerman, 2003, p.303).

However, novice designers often produce games that lack unity and consistency, resulting in a sum of disjointed mechanics or parts rather than well-rounded, compelling gameplay.

For these novices, the analysis of games might sound like a practice reserved to game scholars foolishly spending their time quibbling on complicated game typology. But as game design instructors, we argue that such an image could not be further from the truth. Indeed, studies on game design skills stress that analyzing games lies at the heart of game creation (Jeffries, 2010). It is through these "analyzing skills" that game designers understand the gameplay they are constructing.

Thus, analyzing games is all the more important in educating future game designers. Yet, tools that adequately represent games and gameplay are lacking, as the "portfolio" challenge indicates: what can an aspiring game designer present to his or her seasoned peers in order to convince them that he or she is capable of making games? This broad question can be linked to the idea of analysis: how do you demonstrate understanding for an existing game, and how do you present a new game idea to others? Overall, how do you show off your analysis skills?

Recently, a paper presented at the Digital Game Research Association Conference questioned the way we conduct gameplay analysis and stressed the turn toward a systemic vision in game design: "Put simply, frameworks originating in the analysis of static objects are limited in their ability to capture dynamic, systemic behavior" (Koenitz & Eladhari, 2021, p.72). Indeed, games--even some of the simpler ones like *Tetris* (Alexey Pajitnov, 1984)--are systems more than mechanisms, as this paper argues.

First, we will define the practice and limitations of gameplay analysis. Then, we will explain the systemic vision we adopted, building on the French current of systemic and complexity theory (Joel De Rosnay, 1979; Le Moigne, 1977; Morin, 2008). Thus, we will suggest systemic modeling as an alternative to classic analytic methods by introducing systemic gameplay loops. Different from the loops previously presented in game studies, systemic gameplay loops hope to represent games as systems that maintain themselves through time. We hope to give academics and game designers a new tool to describe games and complement existing ways of envisioning gameplay.

From Analytic to Systemic Game Design

Recently, Koenitz and Eladhari stressed that "In game education, it is tempting to adopt a mechanistic view where we teach that making a game system is mainly about rules and causality, e.g., 'if you do A, then B happens'" (Koenitz & Eladhari, 2021, p.66). They show how the "rules approach" dominates game design analysis. Indeed, the mechanistic approach seems to have taken up a large part of game design books: "In the practice of game design, we are used to thinking in terms of mechanics. […] Yet, the very idea of mechanics assumes a Newtonian world model in which all parts combine to form a whole as the sum of its parts." (Koenitz & Eladhari, 2021, p.73).

In mechanistic approaches of the world, the term analysis has a precise meaning:

a process of isolating or working back to what is more fundamental by means of which something, initially taken as given, can be explained or reconstructed. The explanation or reconstruction is often then exhibited in a corresponding process of synthesis (Beany, 2021, online).

This definition of analysis can be traced back to Aristotle, though it rose to prominence in the sciences with the work of René Descartes (Schuster, 1993). Indeed, Descartes carefully theorized a "method" for analysis that durably impacted the natural sciences and is famous for its second principle: "to divide each of the difficulties under examination into as many parts as possible, and as might be necessary for its adequate solution" (Descartes, 1909 [1637]). Descartes articulated two steps in the "analysis-synthesis" method. The goal of the first is to break down an object into its smallest components (analysis). Secondly, those parts should be delimited in a way that allows for coherent and logical reassembling (synthesis).

The Cartesian method is possible only when we view the whole world and all its phenomena as machines. Deconstructing an object in this manner is like opening up a clock and understanding each of its components. Descartes is indeed famous for his conception of the human body as a clock, composed of cogs and wheels (Descartes, 1970 [1664]). This is the foundation of the reductionist approach, which, as its name suggests, reduces phenomena to their basic components in order to understand them. For Le Moigne (1994, 1995), classic linear and analytic modeling, like tables or flowcharts, dominates our thinking. Thus, the main and most important part in game analysis is the break up of a game's various elements. We find this type of modeling in Stone Librande's "One Page Designs," presented at the 2010 Game Developers Conference, and in many game design books: "Taking *Pong* as an example, we can separate it into specific 'tokens': the bat, the score, the ball, the walls, and the goal zones" (Rollings and Morris, 2004, p.482). Yet, this thinking does not describe the dynamics of gameplay. Such game design methods try to "scientize" the design process: "the scientific approach is associated with the positivist model and its analytical dimension, which drove researchers to look for the "elementary particles" of their object, in the fashion of natural sciences" (Chiapello, 2017, p.20).

As Koenitz and Eladhari recall, the mechanistic view of the world fails to "explain the complex world around us" (Koenitz & Eladhari, 2021, p. 73). Indeed, many phenomena resisted the mechanistic approach. Given the complexity of organ transplants, we realized that body parts are interconnected and not separated like a clock. Due to pollution issues and climate change, we realized that our planet is complex and formed of "ecosystems" (Durand, 2017). Because of this resistance to reductionist, mechanistic models, philosophers stopped seeing all phenomena as machines with pieces that can be easily replaced and fixed.

Among the many critics of the mechanistic vision, "system thinking" or "systemics" is gaining traction (Durand, 2017). Systemics was a specific method of studying systems, but nowadays, it is understood as a scientific approach that views phenomena (from biological to social ones) as systems, relating to the paradigm of complexity (Durand, 2017). The birth of systems thinking can be traced back to the founding work of Ludwig von Bertalanffy (1968), who stressed the importance of relationships between elements of a system. What is too complex to be understood through a reductionist approach can be understood through a systemic one, which considers the relationship between elements. As De Rosnay states in his seminal book *The Macroscope: A New World Scientific System*, "a system is a set of interacting elements that form an integrated whole. A city, a cell, and a body, then, are systems" (De Rosnay, 1979, p.59). A systemic approach is therefore a way of viewing something as composed of parts *that influence each other dynamically*.

Most authors in game studies situate the origin of systemics and complexity in cybernetics (Koenitz & Eladhari, 2021; Sellers, 2017; Zubek, 2020), but they also cite Einstein's relativity theory, quantum physics, and biology. However natural sciences do not have a monopoly on the subject— systems thinking is also related to structuralism in linguistics

(De Saussure and Chomsky), anthropology (Lévis Strauss), and psychology (Piaget) (Durand, 2017). Moreover, Durand stresses the importance of information and communications studies: if information theory started as a branch of cybernetics, it turned into a full-fledged field (Van Foerser, Bateson). We can also add Forrester's book, *Urban Dynamic* (1970), which inspired Will Wright in creating the game *SimCity* (1989) (Ashley, 2021). All these different researchers and many more stressed the importance of relationships between elements of a system.

In game studies, certain attempts are being made to convert game design into a more systemic thinking process, and some game design books contain the seeds for a systemic turn. Most game design books do not fully adhere to the strict Cartesian definition of analysis anyway (Chiapello, 2017), somewhat studying the interaction between game parts through systemics. Starting in the early 2000s, Salen and Zimmerman introduced "games as cybernetic systems" (2003). Traces of systemic thinking can also be found in the book *Andrew Rollings and Ernest Adams on Game Design* (2003), under the term "transitive relationships", which:

are mainly used in games with a need to continually drive the player forward toward a goal. The player responds to that need and is rewarded with upgrades and progress, until eventually she reaches the goal, and the game is over… They are rarely (if at all) used in open-ended games without some way of closing the loop and returning the player back to square one (Rollings & Adams, 2003, pp.251-253).

We can note that these authors are close to the idea of "feedback loops" (a concept we will return to later). Adams defines feedback loops as "a common phenomenon occurring in the balance of a game so that the player's successful efforts make the game easier or harder" (Adams, 2014 [2009], p.638). Richard Rouse (2005) evokes systemic thinking by describing feedback loops as well: "it is better if your game is designed so that players never feel like all hope is lost. One way to accomplish this is through employing negative feedback systems to give players who are falling behind a better chance of catching up." (Rouse III, 2005, p.243).

The topic of feedback loops is developed more thoroughly by Tracy Fullerton in *Game Design Workshop, Second Edition: A Playcentric Approach to Creating Innovative Games* (Fullerton, 2008) in a chapter entitled "Working with systems dynamics". There, she explains the concept of "systems" in detail and describes games as systems: "Now we will look at how the elements of games fit together to form playable systems and how designers can work with system properties to balance the dynamic nature of their games" (Fullerton, 2008, p.111). She talks about feedback loops, complexity, and emergence.

More recently, two books were dedicated to a systemic approach of game design: *Advanced Game Design: A systems approach* (Sellers, 2017) and *Elements of Game Design* (Zubek, 2020). In *Advanced Game Design: A systems approach (2017)*, Sellers discusses specific components that loop within a game, such as economic systems in MMORPGs, and proposes a gameplay loop that seems to be inspired by Forrester's work (1970) on causal gameplay loops. In *Elements of Game Design* (Zubek, 2020), Zubek starts by presenting the concept of mechanics and then asserts that "we can turn to discussing how mechanics work together and how they can be analyzed as dynamic systems which encapsulate a variety of mechanics and their interactions" (Zubek, 2020, p.76). This author explains feedback loops very accuralety but goes back to causal linearity when explaining how to "tune" systems. Moreover, he uses the term "complex" loosely, mostly as a synonym of "complicated," and without many links to the complexity paradigm.

In their paper, Koenitz and Eladhari conclude that : “yet, a common trend emerges from these books – that game design is stuck in a mechanistic world view” (Koenitz & Eladhari, 2021, p. 73). Overall, we agree but think that there is a promising systemic trend emerging. Therefore, we suggest fostering this trend by following the French systemic school (Joel De Rosnay, 1979; Le Moigne, 1977; Morin, 2008) where several phenomena in physics, biology, and sociology are considered as systems; more specifically, we aim to further systemic graphic representations.

Systemic Modeling

While systemic thinking looks promising for understanding games, systemic modeling has been a challenge. Le Moigne quickly grasped this difficulty and dedicated a book to the question in 1990. Nowadays, graphic representations are considered to be the best way of modeling systems, far better than discursive language or mathematical notation (Durand, 2017). In systemic thinking, modeling a system using graphic representation is considered an art more than a science. In a pragmatist way, the model is just an instrument, a tool to help us think about the world rather than represent it exactly. Given these challenges, we will start by presenting some major aspects of the systemic approach, then conduct a reflection on gameplay loops as models for representing core game systems.

De Rosnay dedicated a portion of his work to explaining the difference between the mechanistic approach and the systemic approach: “The systemic approach, as opposed to the analytical approach, includes the totality of the elements in the system under study, as well as their interaction and interdependence” (De Rosnay, 1975, p.59). He described how the systemic approach unifies elements and studies the interactions between them, as well as their effects--it gives us a clear vision of the whole, but unclear details. Contrarily, the analytical approach isolates elements to focus on each one individually--it acknowledges details but may poorly grasp the entirety.

Moreover, analytical approaches tend to modify one variable of a system at a time to make predictions and thus rely on linear causal chains with simple, predictable interactions. Systemic modeling implies modifying several variables at the same time in order to grasp dynamic, non-linear aspects, where feedback happens (also meaning the system is fluctuating and can go back to a previous state, maintaining itself, or changing deeply) (Joël de Rosnay, 1979).

This is where the importance of the concept of feedback emerges: “One must keep in mind that open systems and ecosystems (or environments) are in constant interaction, each one modifying the other and being modified in return.” (De Rosnay, 1979, p.66). Feedback loops are found in any system and regulate interactions. These loops can be of two types: “Positive feedback loops contain the dynamics for change in a system (growth and evolution, for example); negative feedback loops represent control and stability, the reestablishment of equilibriums and self-maintenance.” (De Rosnay, 1979, p.71). These loops help regulate, maintain, or disrupt the changing elements of a system.

Examples of feedback loops can be easily found in games. For instance, the gameplay of *Mario Kart 8 Deluxe* (2017) contains negative feedback loops that help maintain a balance in the system, supporting poorly performing players with power-ups, such as the bullet bill, and hindering players in first place with the famous blue shell. Contrarily, Monopoly (1935) features a positive feedback loop in which the lead player will continuously progress ahead as

the game advances, forming a significant advantage over all other players and guaranteeing his or her success.

But the systemic approach goes further than feedback loops: it is actually linked with ideas of emergence and complexity. According to Le Moigne, systemics are a way of representing complexity. Complexity, as theorized by Edgar Morin, is born from a wish to avoid the "mutilation" of phenomena and instead understand the way things are "woven together" (Morin, 1995). In his preface to the English translation of Morin's work, Alfonso Montuori says:

We need a kind of thinking that reconnects that which is disjointed and compartmentalized that respects diversity as it recognizes unity, and that tries to discern interdependencies. We need a radical thinking (which gets to the root of problems), a multidimensional thinking, and an organizational or systemic thinking (Montuori in Morin, 2008, p.1).

One of the best know principles of complexity is the adage, "The whole is greater than the sum of its parts". This conflicts with analysis-synthesis, where the whole is exactly the sum of the parts, and where it is theoretically possible to isolate and even change a part (like a bike) without affecting the other parts.

However, despite this strong initial opposition between analytical and systemic approaches, De Rosnay progressively nuancized his views, declaring, "the analytic and the systemic approaches are more complementary than opposed, yet neither one is reducible to the other" (Joël De Rosnay, 1979). Indeed, systemic modeling implies defining some elements of a system to decompose it. However, the emphasis is not on those elements, but on the global behavior of the system. De Coninck, a professor specializing in complexity, often used an analogy to explain the difference between the two approaches during one of his courses: In studying a goldfish, for instance, a mechanistic approach would dissect the fish to learn about its parts, whereas a systemic approach would allow it to live to study its behavior and interactions with its environment. So, our goal in modeling game systems would be to give a global idea of the core system of a game, not a thorough breakdown of all its rules and specificity.

To sum up, complexity and systemic thinking are new ways of envisioning our "uncertain and ambiguous world" (Montuori in Morin, 2008, p.15), which games are a part of. System thinking is a way of understanding dynamic phenomena, such as gameplay. The common vocabulary and concepts used in game studies, articulated around the metaphor of game mechanics, should be put aside. In the systemic vision, games are not closed machines composed of elements articulated in causal chains. Instead they become open systems focused on feedback (circular causality) and interactions. Thus, instead of analyzing games (breaking them into small elements) in a Cartesian fashion, we, as game scholars and designers, should focus on modeling those interactions happening within a game's "core" gameplay.

Gameplay Loops as Systemic Modeling

The importance of feedback looping evoked earlier conducted us to reexamine "core gameplay loops". The idea of gameplay loops arose as a way to guide game design. These loops are supposed to help designers visualize how different parts of a game repeat and function within a "system" to clarify the central concept of gameplay. In a simple diagram, loops can represent the core gameplay and help weed out flaws and imbalances. The

challenge of a core gameplay loop is making the results of a game system tangible to help create better experiences. However, if the term "game loop" has often been used in the game industry, as well as in game design literature, its meaning varies greatly. We will examine a few definitions of "gameplay loops" before introducing the systemic gameplay loop.

Mechanistic, Analytical Game Loops

First, we would like to set aside some loops that are not related to game design. In their book *Game Architecture and Design: A New Edition* (2004), Rolling and Morris discuss a first form of gameplay loop: the programming game loop. These types of loops describe the technical inner workings of the game code. While this is valuable for understanding game making, these are not the type of loops we are interested in as game designers. In the same vein, feedback loops are discussed in game studies to mean the actual output given by a game to a player (Arsenault & Perron, 2008). This is not exactly the type of systemic feedback that we are studying.

Second, we would like to describe a major model of gameplay loop, namely the OCR (Objective-Challenge-Reward) loop, which is commonly used in the video game industry (Berube, 2019; Francillette et al., 2017; Guardiola, 2016). An example of such a loop is reproduced in Figure 1 for the game *Toto Temple Deluxe* (Juicy Beast, 2015). In this fast-paced multiplayer game, players steal a goat from their friends with the goal of holding it on their head for as long as possible in order to earn points.

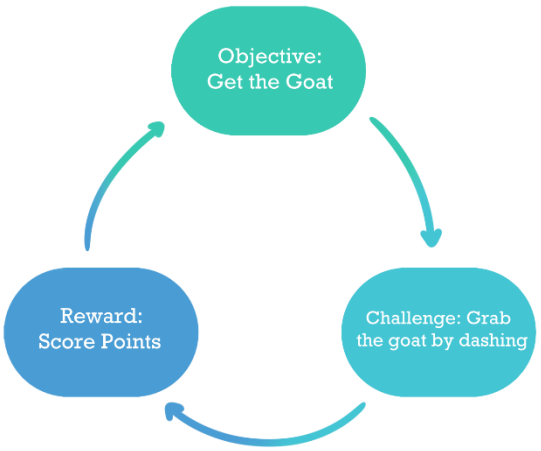

Figure 1. OCR gameplay loop for *TotoTemple Deluxe* (Juicy Beast, 2015).

The OCR loop describes the game's objective, the challenge faced to reach this objective, and the reward the player receives when the objective is attained.

Despite its wide use, this game loop has been criticized, especially by Emmanuel Guardiola (2016), who does not find it appropriate for design: "OCR is often described as a gameplay loop, but it represents the game from a very macro point of view. It can be useful for

discussing games on a conceptual level, but not for concrete gameplay design" (Guardiola, 2016, p.2).

Instead, Guardiola strives to utilize a loop that aids design. He suggests a different gameplay loop, one that hopes to "convey the state of the player in the game system as accurately as possible, and to visualize the circulation between actions" (Guardiola, 2016, p.3).

Guardiola offers a global method to constructing the desired gameplay loop: "The overall goal is to list a certain number of player actions, represented by verbs and minimal context. These sparse depictions of action are then connected in the form of a flowchart" (Guardiola, 2016, p.3). As a reminder, flowcharts are diagrams used to represent a process introduced in engineering in 1921 (Gilbreth, 1921) and adopted to describe computer algorithms in the fifties (Hartree, 1949). Flowcharts describe linear, causal chains of instructions and are thus mechanistic representations, not systemic ones.

As illustrated in Figure 2, Guardiola proceeds to give an example of a gameplay loop using the hidden objects game *Pure Hidden* (Ouat Entertainment, 2009).

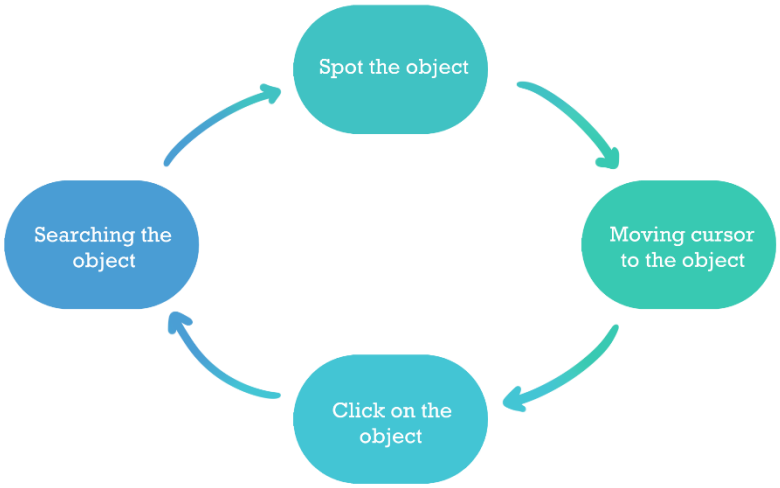

Figure 2. Gameplay loop of *Pure Hidden* (Ouat Entertainment, 2009), recreated from Guardiola (2016).

However, with *Pure Hidden* (Ouat Entertainment, 2009) as an example, we can see that this loop does not fully aid us in understanding what is challenging or pleasurable about the game. *Pure Hidden* is an object-searching game in which the sole objective is to find and click on specific objects in a scene. The core actions of the player are correctly represented in Guardiola's gameplay loop, but they might feel incomplete. The appeal of playing *Pure Hidden* may come from the varied, illustrated scenes or the way objects playfully blend into them, giving players a sort of optical illusion they work toward defying. It is not so much about clicking, but more about observing. These aspects cannot be illustrated using the gameplay loop as presented by Guardiola.

In light of our previous explanations on systemics, we can assert that Guardiola's gameplay loops are linear and lack some of the feedback we wish to represent. Because his loops do not

convey the interactions between elements of a system, they do not exemplify the players' experience. The same can be said of OCR game loops. These game loops communicate only part of the information necessary to understand game systems. While OCR loops are compact and simple enough for quickly learning basic elements of any game, they fail to properly represent the effects of player actions, as well as the reasoning behind them. Thus, while these loops are promising, we need to go further to create systemic gameplay loops.

Systemic Gameplay Loops

As evoked earlier, Zubek (2020) and Sellers (Sellers, 2017) give several good examples of positive feedback. Inspired by their work, we tried to further it and suggest a way of envisioning a balanced game system using the French systemic school of thought.

In *The Macroscope*, De Rosnay (1975) introduced a diagram that represents "regulatory mechanisms". We now try to avoid using the term "mechanism" while studying systems as it refers to two conflicting philosophical approaches, as explained earlier, but the idea of "regulation" or "balance" is of high interest—it shows us a method of representing a balanced system. Indeed, while we have the classic circular loop to represent positive feedback, the negative feedback allowing a system to maintain itself is more challenging to grasp graphically.

De Rosnay offered a balanced way of visualizing systems. He chose to do so using the infinity symbol (also called a lemniscate in mathematics), which seems particularly coherent as that system will maintain itself forever if nothing disrupts it. De Rosnay exemplifies this visualization system using mice population regulation, which we have reproduced in Figure 3.

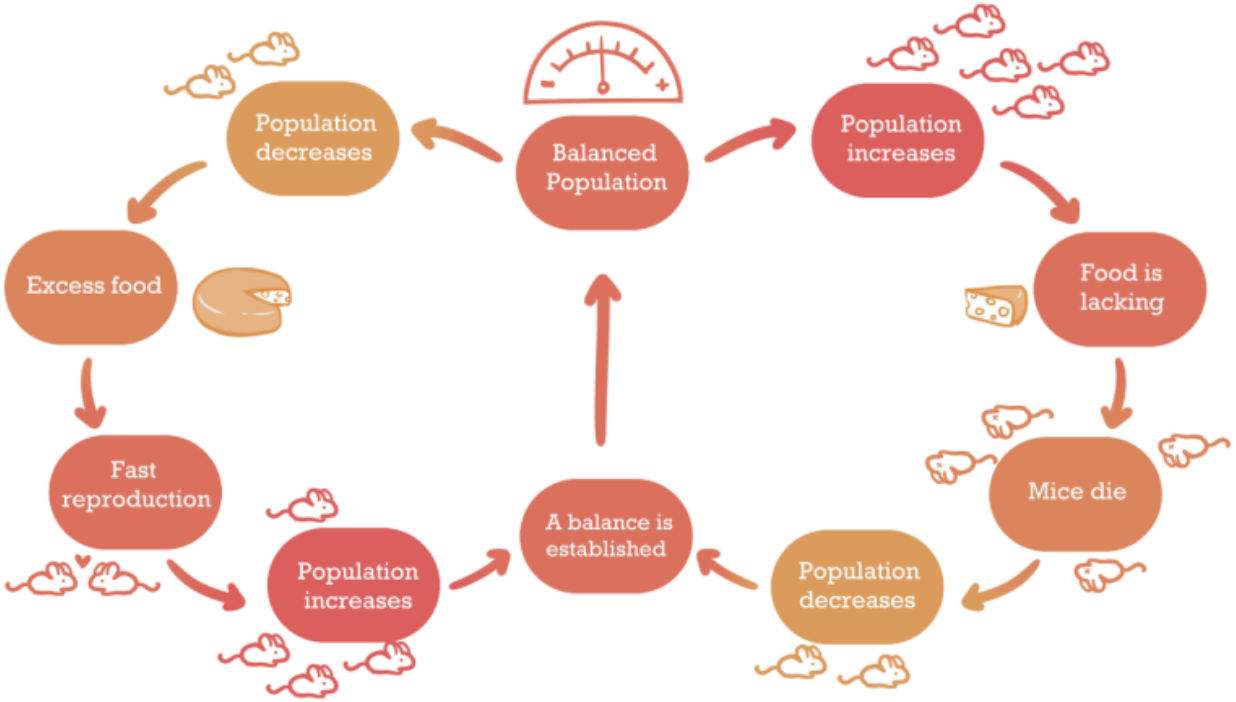

Figure 3. Systemic loop describing the regulation of mice population, reproduced from De Rosnay (1975).

This diagram shows how balance is established in a mouse population: an increasing population causes food scarcities, which in turn causes mice to die and therefore, a decrease in population. The system rebalances itself for a short while, followed by a pattern in the opposite direction. If the mouse population decreases enough, the mice will have an abundance of food and reproduce more, which in turn increases the population, leading it to repeat this cycle continuously. Note how the two loops compensate each other, and how the last item on the left loop is the first item on the right side, and vice versa. It means that taken separately, the left and right part of the representation are positive loops, which would lead to problematic outcomes (the death of the colony or its overgrowth) but combined, they allow us to represent a balanced system.

According to De Rosnay, the structures that compose a system are:

a limit that describes the boundaries of the system and separates it from the outside world … elements or components that can be counted and assembled… Reservoirs in which the elements can be gathered … and a communication network that permits the exchange of energy, matter, and information among the elements of the system and between different reservoirs (De Rosnay, 1979, p.70).

The example given of the mice is accurately modeled and easy to understand. The conditions for change are present, as well as the interactions between and the effects of changed elements.

De Rosnay also describes the economic system of supply and demand and the variation of calcium concentration in blood as examples of balanced systems. In all of these examples, there is a resource (mice, goods, or calcium) that fluctuates while searching for equilibrium. There is also a notion of time, which is not represented linearly, but as an infinite loop. Finally, while those systems are supposed to maintain themselves forever, De Rosnay notes that they are often unbalanced and artificially maintained, especially the economic system. Thus, there is an idea that it is possible to exit the loop.

Using this infinite loop model, we suggest representing core gameplay as a balanced system. We will use four games as examples: *Tetris* (Alexey Pajitnov, 1984), *Paper.io* (Voodoo, 2018), *Five Nights at Freddy's* (Scott Cawthon, 2014) and *Pure Hidden* (Ouat Entertainment, 2009), illustrating each of these systems as gameplay loops. These games were voluntarily chosen for the fact that they are small and do not tend to be immediately considered as "systemic" (especially by students, who immediately think about complicated games like Dwarf Fortress (2006), a game whose representation is a challenge that we are not necessarily ready to face).

Tetris

Tetris (Alexey Pajitnov, 1984) is the first game we visualized as a loop. Tetris is a classic puzzle game in which pieces (tetriminos), fall vertically on a rectangular playing area and can

be moved sideways or rotated to fit in the specific locations or gaps players choose. The goal of the game is to clear the board by creating horizontal lines of tetriminos while avoiding the creation of empty spots on the board. But the real challenge resides in making a "Tetris": making 4 lines disappear at the same time using the 4-block straight bar. Since *Tetris* is an endless game, players show their mastery through high scores, and making a Tetris is crucial to accumulate the most points in the shortest amount of time. However the 4-block straight bar (I-piece) does not always appear at the ideal time to make a Tetris, and the players often have to use another piece, missing their Tetris and leaving "gaps" on the board.

We have recreated this gameplay in the form of a systemic gameplay loop in Figure 4, representing the elements as a balanced system.

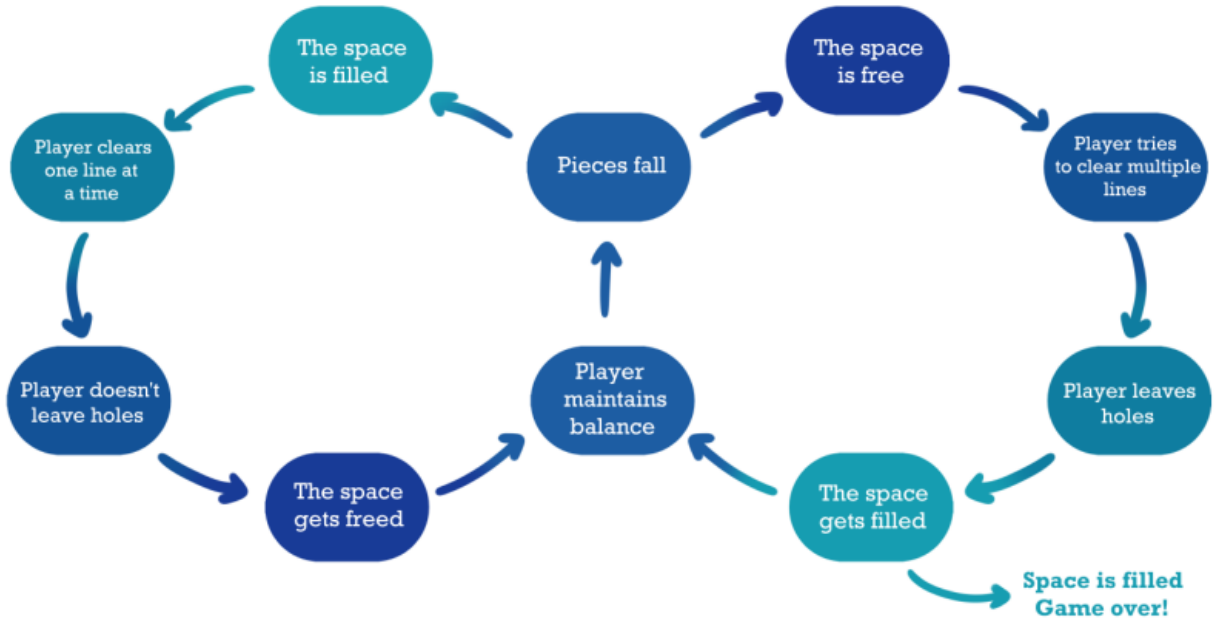

Figure 4. Systemic gameplay loop for *Tetris* (Alexey Pajitnov, 1984).

In this diagram, players begin with free space that we can use to fill up with tetriminos. As players place pieces trying to clear multiple lines at a time (Tetris), this space will fill and might leave holes in the process. If the space becomes too full, players may begin to clear one line at a time to remove each gap in the playing field, which causes the space to free up and so on. It is important to consider that the game also speeds up over time, requiring quicker actions, increasing the risk of mistakes until eventually, the playing space fills up and the game is over. As the game is infinite, the only "exit" is for the player to lose.

This gameplay can be summarized using a systemic gameplay loop to represent more than just the player actions, but the reasoning behind them, as well as the game's core experience. It also aids us in understanding how certain actions affect and modify each other depending on the situation and the methods the game uses to keep itself balanced. As such, systemic gameplay loops represent a transaction between the player and the game (and indirectly, the game designers).

Paper.io

The second game we present is *Paper.io*. In this game, the player navigates in all axes on a limited terrain in order to cover as much space as possible. This space is acquired by traveling in straight lines and closing squared areas, starting from the player's own colored safe area and returning to it (looping) to claim a new section of traveled space. This game is also filled with bots that are hardwired to covet the same goal as the player and can take back acquired territory. As the player progresses, he or she is covering more and more territory, leaving only a small portion for opponents, who should be avoided at all costs while players expand their territories. As written by Olmstead, "as you conquer space, you naturally make the game more difficult for yourself. It's really quite elegant." (Gamasutra, October 25, 2018). We have illustrated this game as a systemic gameplay loop in Figure 5.

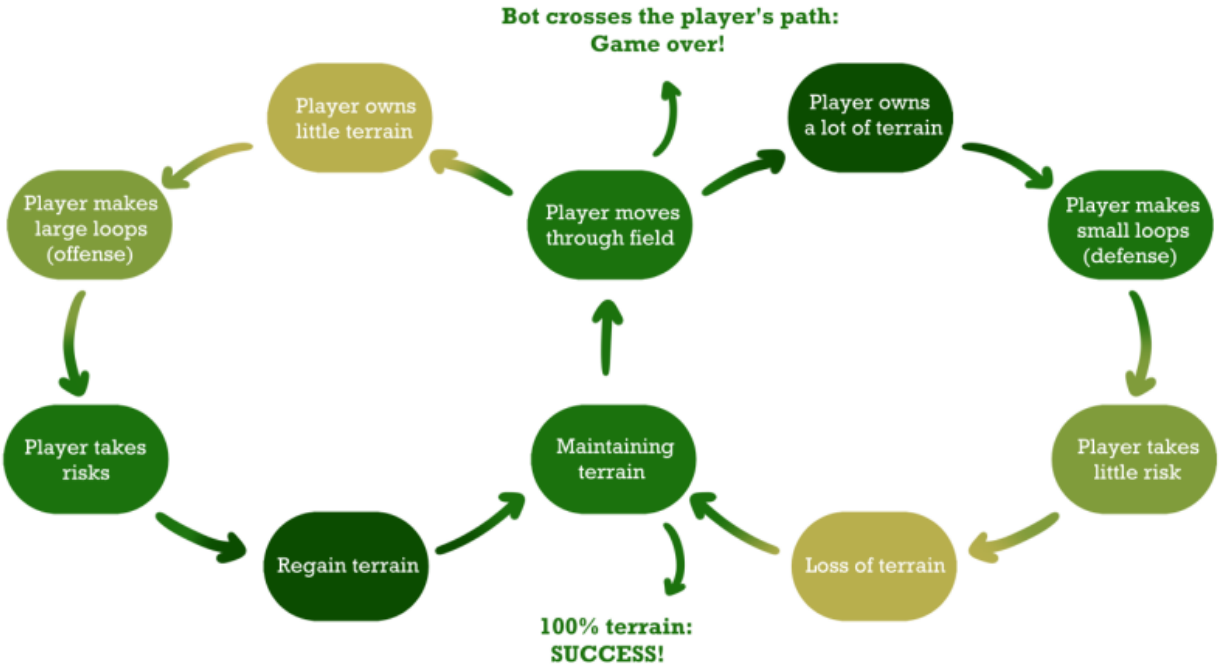

Figure 5. Systemic gameplay loop for *Paper.io* (Voodoo, 2016).

In this game, if the player has covered an expansive amount of terrain, they will play more defensively, making small loops and taking fewer risks as to not lose their progress. "If you own 50% of the arena and there are still 10 bots, then they are in the other 50%, a much more concentrated area. This makes it harder to venture out of your territory without bumping into someone else" (Olmstead, 2018). Making these small loops may cause the player to lose terrain to others rapidly. Having less terrain will then incite them to make larger loops and take risks, which in turn will help them gain terrain again.

Paper.io has a method of balancing its game experience. If making big loops were enough and your sole goal was to cover the playing area, the game would be a system with positive feedback: the player would keep making big loops to win easily. But there are enemies, and the playing space is limited. Once players have amassed ground, they want to keep it and will restrain themselves to taking fewer risks. However, with only small loops, they will soon lose ground to other players who can attack and take back the conquered space. So, staying in a defensive mode cannot lead to victory and the player will have to take risks again. Therefore, there is negative feedback that prevents the system from exploding both from being too

greedy and too cautious. The game is therefore balanced and can be easily represented and understood using a systemic gameplay loop. In this scenario, there are two "exits" from this loop. The first is ending the game in a victory (conquering all of the possible space), and the second is losing the game when a bot crosses the player's path.

Five Nights at Freddy's

The third game presented is *Five Nights at Freddy's* (Scott Cawthon, 2014), the first installment in an ongoing franchise, and it was suggested by students in our game design course. In this game, the player's goal is to survive five nights at a security job inside a pizzeria filled with dangerous animatronics. Each night follows the same guidelines: during their shift hours, the player has a limited supply of power and can use this power to check cameras, close the two doors located on each side of the room they are sequestered in, and turn on lights in the adjacent two hallways. These methods are the only ones the player has for protecting him or herself from the animatronics, which roam around the facility and may occasionally get close enough to the player to cause a jump scare and "game over" screen. Players must carefully manage their power supply by predicting when to close the doors to safely reach the 6 a.m. mark, completing the level. We have illustrated the gameplay loop in figure 6.

Figure 6. Systemic gameplay loop for *Five Nights at Freddy's* (Scott Cawthon, 2014).

As we can see in our gameplay loop, the player is in a constant state of waiting in the control room. As the animatronics approach, the player may choose the ideal moment to close the necessary door(s), consuming power rapidly in the process, but ensuring safety. Once the animatronic has left the doorway, the player would reopen the door, entering a more power-saving state. This process is repeated throughout the five nights of the game, and tactics may be slightly altered to fit the increasing danger as levels progress. In our loop, we have mainly represented the power usage in regards to the doors. However, the player may

waste power by checking the cameras and turning on the lights in the nearby hallways as well.

This game keeps itself balanced using the "limited power supply" feature. Players are required to learn to regulate their power usage on their own, for the sole purpose of making it to 6 a.m. and completing the game.

Pure Hidden

The three games presented thus far were chosen for their clear representations of systemic gameplay loops. But what happens when a game is linear and without a clear resource like space or energy to balance? We tried to model the system of *Pure Hidden* (Ouat Entertainment, 2009), the game previously discussed by Emanuel Guardiola. *Pure Hidden* is a hidden object game. As the name suggests, the game features nothing more than scenes with hidden objects: no story, no mini-games. It is a "pure" succession of scenes without any common theme in which the player must search for and find numerous objects. The scenes are particularly appealing and refer to the form or "purity" of the relaxed mind—a state the game attempts to induce. Thus, the player is supposed to feel pleasure just by looking at them. Modeling this game is more of a challenge, but we suggest the loop in Figure 7.

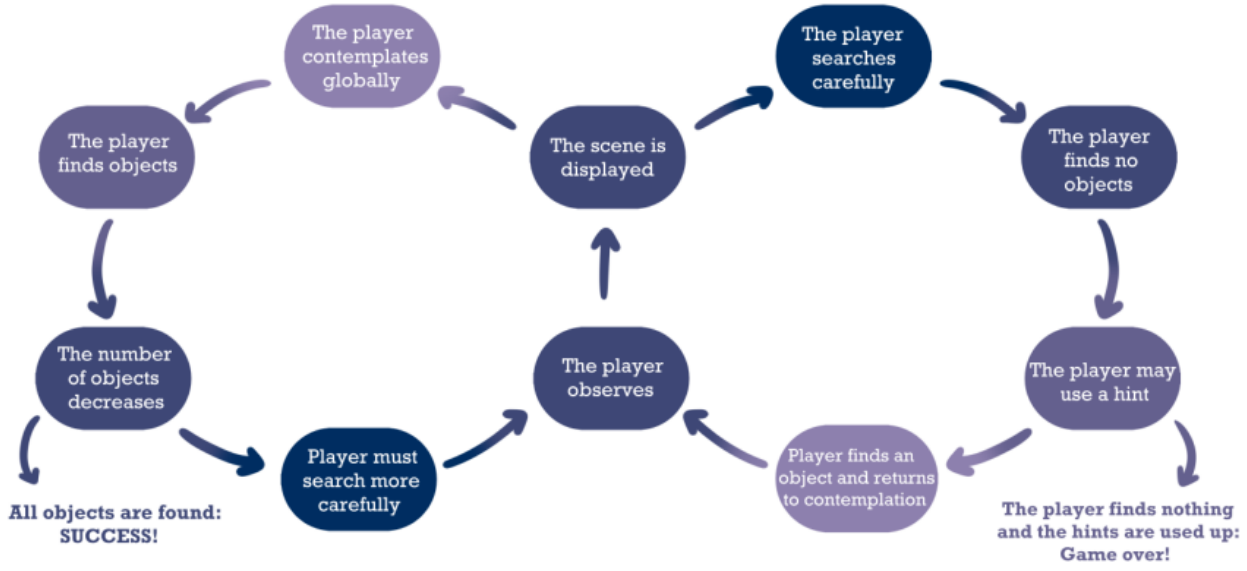

Figure 7. Systemic gameplay loop for *Pure Hidden* (Ouat Entertainment, 2009).

Contrary to Guardiola's loop, the game's emphasis is not on clicking, but on the importance of observation. Observing consists of the main gameplay, with two "variations": global contemplation and scrutinization. This alternate builds the pace at which the game is played. However, a player can make several turns on the left of the loop before going to the right side, and vice versa. Other loops for this same game are possible, for example, focusing on time or relaxation. But globally, this loop gives us a sense of the main experience of *Pure Hidden* (Ouat Entertainment, 2009).

Conclusion

In this paper, we advocated that games are being recognized more and more as systems. Philosophically, this means that games are not machines and should not be studied in an analytical, mechanistic way. Therefore, we followed a systemic approach, using the work of French philosophers De Rosnay, Le Moigne, and Morin on complexity and system thinking. Building on De Rosnay's modeling of systems in their equilibrium state, we demonstrated a few examples of systemic core gameplay loops. By representing central game systems in their balanced state, we provided an overview of gameplay; it is a macro vision, but a dynamic one.

These equilibrium gameplay loops have limitations: first, we focused only on the core system of games, which means it might be difficult to understand the specificity of some games. This is even more challenging on larger games that pertain to a specific game genre: focusing only on the core loops might make all the games of this genre look alike. Second, systemic gameplay loops might not be applicable to linear narrative games due to lack of repeated actions or the absence of failure, for example.

In regards to failure, these loops rely on the idea that players will seek to maintain equilibrium, but this might be considered an idealized version of the activity of playing. Thus, further research is needed to connect these loops with existing works in game studies concerning the idea of balance, equilibrium, and interaction. We can first think of the work of Sweetser and Wyeth (2005) regarding flow. More recently Olli Leino's concept of "gameplay condition" (Leino, 2009, 2012), as well as Sebastian Möring's balance between "fear and boredom" (Möring, 2014), might be a good framework to understand the dynamic swinging between the left and right part of the equilibrium loop.

Furthermore, we can stress that building these loops may prove difficult. Indeed, changing one's mindset from a mechanistic to a systemic one can be quite challenging. Turning toward a systemic view would also imply revisiting well-established concepts in game studies, like game mechanics, which is another major challenge.

All in all, the systemic gameplay loops we presented are not an ultimate solution, but they are well rooted in systemic thinking. We believe that making use of systemic modeling will prove to be worthwhile in the game design field, and we will try to expand this modeling to many types of games in order to test its limits. We also hope that systemic gameplay loops can become a common and useful part of any game design documentation or student portfolio. We believe gameplay loops to be a promising path toward "analyzing" games in the global sense of understanding them to enhance our game-making skills.

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The authors would like to thank Sarah Dumitrascu for her English vocabulary and grammar corrections, and her precious comments on the paper.

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EXTENDED ABSTRACT

Unloading 'truc(s)'s meanings: poiesis and pragmatics of a creative shell word

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The Seed Crew

Following the interdisciplinary approach put forward in the call for paper, our work relies on the blending of two disciplines, linguistics and research-creation, in order to suggest a new methodology for game analysis focusing on design processes and more precisely on communication in game studios during production. Picking up Bogost and Monfort's goal to study "the connection between technical specifics and culture" (2009), we are focusing on the use of the French word "truc" in the context of indie game creation (Keogh, 2019) and we aim at delivering an interpretation of this small unit of work for independent game creators, which would encompass the socio-cultural uses of the word. Following the recent attempts in game studies to shift the gaze on video game cultures outside of the English-speaking area (Therrien, 2012 ; Blanchet & Montagnon, 2020 ; Derfoufi, 2021), this study is not anglo-centric.

In order to unfold the technical and the cultural aspect of the use of "truc", we anchored our analysis in existing linguistic research on "shell nouns" (Legallois & Grea, 2006). "Shell nouns" are defined as emptied nouns whose relative meaning is only understood through common culture and knowledge between the utterer and the co-utterer, when they are used in context. Rather than a simple linguistic analysis, this work posits the appearance of "truc" and other shell words like that one as traces of mental operations linking the creative team together and showing how their connivance in recreating common ground (Cerovšeke, 2021) is central. The corpus mainly consists in written, online interactions by members of a game studio. This base material is compared to uses found in public discourses available on internet. The word "truc" is polysemic in all its acceptances (Kleiber, 1987). In general, it is either the ability to do something (and this brings it closer to the word "trick" (going as far as being used in the same videogame context of "tips and tricks" ('trucs et astuces', Ducard, 2017), or a shell word describing an object or something (more abstract) that one loves doing. The use of "truc" is important when it comes to quantities "10 000 trucs à faire" ("10 000 things to do) and to quality, with post-modifiers or adjectives ("des trucs à tester", "un petit truc", etc.). As a shell noun, it is completed by both premodifiers (for quantities) and postmodifiers (for qualities), making the "truc" unique in each of its uses and identifiable in

almost 90% of all its uses. “Truc” can also be used as a euphemistic way of negotiating identity, especially in contexts where the activity or element at hand is perceived as difficult: requesting help with “un truc” puts the request in the forefront, not the actual task at hand.

Engaging with the creative process, this study takes over some inquiries developed in the fields of research-creation (Gosselin, 2006 ; Chapman & Sawchuck, 2012), mainly the issue of (auto)poietic processes (Lelièvre, 2018). The euphemizing use of “truc” as a relative, atomic unit makes it a powerful design tool, i.e. a generic unit pertaining to creation. It is close to a “ludeme” (Hurel, 2020), a small unit of game elements used as a frame of interpretation and creation, but “truc” is less defined, and used here in the context of indie development. We hence propose the term “workeme” to qualify “truc” and shell nouns behaving the same way . The trend consisting in labeling and dividing creative skills highlights the difference between Narrative Design, Game Design and Game Writing (Mauger, 2018; Maloney & Stirpe, 2018). This constitutes a symptom of a growing standardization of the creative process in the video game cultural industry (de Peuter & Dyer-Witheford, 2009). On the contrary, We aim at showing that “truc” allows for blurred, chaotic and undetermined creative processes. It removes the pressure to do well (Detambel, 2005) or to succeed (Poulot-Cazajou, 2021). This values the act of making through the inspiration of practice-led research (Webb & Brien, 2008 ; Leavy, 2020) and design processes which are close to radical design (Flanagan, 2009 ; Flanagan & Nissenbaum, 2014). The design method “truc” implied in this paper was tested during a local game jam for students. The main guideline was to create “un truc” on Twine and the results were particularly heterogeneous. Because of “truc”’s vagueness, the students experimented new forms and adapted to the creation tool. Aspects of the students’ works can also be interpreted as an association of “trucs”. “Truc” is a way of reintroducing uncertainty, and thus rekindling the impulse of creation. Uncertainty being central to the pleasureof playing, we consider that this reintroduction is beneficial to both creating and experimenting.

We deem this study of “truc” as an important exemplification of the potentials of blending linguistics and research-creation in order to provide a powerful framework, beneficial to further game analyses. This preliminary work also allows us to highlight the importance of the perspective of creation processes when analyzing games, without forgetting they are objects-in-making.

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EXTENDED ABSTRACT

Cuteness and the Popular Aesthetics of Videogames

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Keywords
aesthetics, popular, cuteness, playfulness, Nintendo, Keita Takahashi

INTRODUCTION

Many aesthetic theories have regarded the videogame from the perspective of a modernist theory of art. Jagoda's (2020) rich analysis of videogames as experiments on neoliberalism, Flanagan's (2009) *Critical Play*, Kirkpatrick's (2007) reception of Adorno's modernist aesthetics, and the numerous texts on the so-called 'art-game' suggest that the aesthetic quality of the videogame is found in its avantgarde or critical potential. Such an understanding however marginalizes a large portion of videogames often poorly labelled as 'mainstream' and tends to forget the richness of aesthetic experience a producer like, e.g., Nintendo provides. Taking seriously Henry Jenkins's (2007, 21) plea that "something was lost when we abandoned a focus on popular aesthetics", the goal of my project is to investigate the specifically *popular* aesthetic qualities of the videogame through one of its most recurrent judgments of taste: cuteness.

Research Questions

The project takes the following question as a point of departure: What is the 'popular' of the popular aesthetics of videogames? Today, the colloquial sense of the term 'popular' means that something is directed more towards the many, the general public, and less towards specialists or intellectuals. Popular videogames have a broad appeal across all levels of society, thanks to their developed economic apparatus of production, distribution, and consumption. While objects of the culture industry are usually frowned upon by modernist theorists, recent efforts aim to think aesthetic experiences departing from their occurrences from commodified objects. (Baßler and Drügh, 2021)

Such an aesthetic category is cuteness. Described as "sentiment objectified and commodified" (McVaugh 1997: 306), the cute represents a specifically popular judgment of taste "that speaks to our desire for a simpler, more intimate relation to our commodities" (Ngai 2015: 31). First introduced to the consumer society through commodities of play (e.g., puppets and toys), cuteness entertains fruitful affinities to playfulness. It is therefore no coincidence that cuteness stands at the very core of the videogame industry as well. From the icon of early videogaming *Pac-Man*, to one of the most influential game and console producers Nintendo (e.g., *Yoshi* series, *Animal Crossing* series), to the idiosyncratic games of

Keita Takahashi (*Katamari Damacy*, *Wattam*), and countless celebrated indie games in the West (*Undertale*, *Minit*, *Super Meat Boy*, etc.), the cute shapes the aesthetics of the popular videogame industry substantially. What is its structure of judgment? What are its affinities with the mediality of videogames? How can play experiences be conceptualized as cute? And in what way can it guide an aesthetic criticism in search of the specifically *popular* qualities of the videogame?

Methodology

The project follows a strictly aesthetic approach to delineate a theory of the popular taste judgment on the example of the cute in order to develop a form of criticism for the specifically popular aesthetic qualities of the video game. While in today's colloquial understanding, the word *taste* refers only to the subjective preferences of an individual, the critique of taste and its judgments is a central philosophical operation for aesthetic theory: it aims to distinguish the aesthetic from the non-aesthetic; it investigates the specific quality of 'sensible cognition' in its interplay of sensual perception and cognitive reflection, and its consequences for the collective sensibility (*sensus communis*). (Zangwill 2021) The most complete theory of taste, Immanuel Kant's (2000) *Critique of Power of Judgment*, includes a theory of art, marking the beginning of the modern understanding of aesthetic criticism. The project's main challenge consists in deriving an aesthetic criticism of the popular video game departing from Kantian aesthetics and connecting it at once with recent findings of video game phenomenology (Bakels 2020, Keogh 2018, Nitsche 2008, Swalwell 2008 amongst others). In a second step, this form of aesthetic criticism will be used for the analysis of popular videogames in the taste of the cute.

For a popular video game aesthetics

Kant begins by distinguishing three types of judgments from one another: the beautiful, the agreeable and the useful. While the useful, similar to the good, often occurs within economic and ethic contexts, the judgment of the agreeable follows from potent affective and sensory experience, hailed by Jenkins (2006) as the strengths of popular art. A problem here arises, as the judgment of the beautiful, for Kant (2006, 107) the judgment proper of aesthetics, "is independent from charm and emotion", it follows not from a strong sensory experience but instead from the cognitive play of imagination and understanding. It is "appearance in its greatest intensity" (Figal 2016, 62).

Finding the place of the cute in Kant's theory of taste is not hard. In his antiquated catalog of judgments of agreeable sensations, Kant (2000, 91) lists veritable precursors of the cute: "graceful, lovely, delightful, pleasing". Often occurring in everyday life, agreeable sensations have indeed been greatly differentiated through the contemporary consumer society, with the cute being one of its most dominant proponents. Through concepts such as 'adherent beauty', Kant introduces specific constellations of the useful, agreeable, and beautiful, making his theory in many ways compatible for aesthetics without autonomy claims (as shown in Forsey 2013: *The Aesthetics of Design*).

Another of such concepts is Kant's (2000, 206) 'play of sensations'. On the example of the beautiful musical piece, he writes, that it is a "coherent whole of an unutterable fullness of thought, corresponding to a certain theme, which constitutes the dominant affect in the piece." (Ibid.) A perspective on aesthetic criticism arises from the fact that a critic is needed to unfold the 'unutterable fullness of thought' in relation to the affects modulated by the piece. The analysis of a play experience could be similar. The analysis of the cute in

videogames would have to show what specific constellation of the beautiful, agreeable, and useful emerges in the aesthetic experiences of the cute video game.

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