Designing Fun: A Method to Identify Experiential Elements in Analog Abstract Games

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ABSTRACT
To play a game, players interact with the game system by following rules. Upon interaction, different properties emerge. The experience of fun is one of the fundamental emergent properties that players seek from a game. There are many conceptual viewpoints of fun; yet, little research on how a rule system's qualities help create fun. We present a qualitative empirical method that connects the players' fun experience in context to the rule system.

We describe the protocol for the method and its rationales. Two case studies employing our method on abstract analog (non-digital) games are presented. Our method helps researchers identify experiential elements of games and design-attributes to modulate them. The design-attributes also aid in interpreting the conditions generated by the rule system for fun to emerge. Lastly, we discuss the method's strengths in terms of findings and potential applications in research and practice.

Keywords
Fun, Game Design, Rules, Player Experience Design, Board Games, Empiricism in Games, Formalism.

INTRODUCTION
Players know if and when they are experiencing fun. They know what to expect from the experience of fun. Players also know how to create fun while playing games. Despite such an intuitive understanding of fun in games, the experience has bothered game designers and researchers. It is trivial yet nuanced, intuitive yet complex, and multi-faceted, and it is subjective–to both–games and players. To capture such deep-seated and complex understanding, scholars have articulated the concept of fun and its crucial aspects.

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Fun as a concept

Historically, fun has been under-theorised when compared to other aesthetics (Sharp and Thomas 2019). It was considered a trivial experience, and scholars shied away from it. However, recently, to resolve the problem of trivialisation and establish fun as an academic concept, there have been a lot of philosophical presentations on the topic, especially in the domain of games. Falstein argues that fun has an evolutionary role (Falstein 2004). He presents a Darwinist viewpoint of fun—where fun has a purpose—and associates purpose of fun as learning. He classifies fun as Mental, Physical, and Social Fun. Each type of fun is associated with learning skills that were necessary for human survival in Palaeolithic times. Physical fun helps one to hone the physical competence needed to survive in the wild. Mental fun helps to evaluate different situations and improve cognitive abilities. Lastly, Social fun is a way of learning to build social relationships in the community. In his theory of Natural Funativity, such skills, competencies, and abilities offered by fun are applied to games, mostly video games.

Bogost takes a linguistic route to propose fun as the act of finding the uncommon within the common and familiar settings (Bogost 2018). By explaining the linguistic roots of fun in "fon" and "folly", he articulates how medieval fools were the ones who were able to see and present novel solutions to kings in seemingly familiar situations. While this fun as folly view is more fundamental to understanding fun, it misses several aspects of fun.

For example, Bakhtin's carnivalesque captures the voluntariness aspect of fun (Taylor 1995). After toiling hard, the civilians of a kingdom let go of the mundanity of their life and celebrate the carnival with madness. The effort of putting up a carnival is finding pleasure in novelty echoes Bogost's articulation, but the voluntariness to find novelty in otherwise familiar situations is better articulated in Bakhtin's account. Thus, finding novelty is not enough; one needs a voluntary act to find novelty in a familiar situation. However, this shows that fun comes after work. However, is fun only an outcome?

McGowan applies the Lacanian triad of the Imaginary, the Symbolic, the Real and to understand enjoyment in society to stress on the role of prohibition in creating enjoyment (McGowan 2012). Within a society of prohibitions, fun is rationed, and not a single individual has access to all available fun. Prohibitions push access to fun from the Real to the Imaginary realm. Now, to access fun, individuals look towards the Other to have fun, thus giving rise to interactions. Such interactions need work to transcend the prohibitions and achieve fun in the Imaginary realm. Individuals need to do work that is fun.

Another aspect of fun that is captured in sociological accounts of pleasure and leisure is that fun is interactional. Kelly suggests that one can enjoy alone, but one needs a presence of the Other to have fun (Podilchak 1991b; 1991a). This critical distinction helps in developing the so-called 'frivolous and trivial' notion of fun in design. Blythe and Hassenzahl consider fun an inferior counterpart of enjoyment and a mere 'spectacle'(Blythe and Hassenzahl 2018). However, as Kelly articulates, fun is active engagement, not passive consumption like Debord's spectacle.

Such philosophical understanding helps in understanding the concept of fun. However, to apply the concept in games or to operationalise fun, several frameworks have been developed.

Fun in games

Frameworks of around pleasures, player experiences, and game aesthetics have varied goals. Most studies in player experience aim to *evaluate and measure* the player experience (Cowley et al. 2014; Wiemeyer et al. 2016). They approach fun to be caused by other psychological experiences like flow (Sweetser and Wyeth 2005), immersion (Laura et al. 2005), enjoyment (IJsselsteijn et al. 2008), involvement (Takatalo, Häkkinen, and Nyman 2015), engagement (Cairns 2016; Brockmyer et al. 2009), need satisfaction and motivation (Ryan, Rigby, and Przybylski 2006; Deci and Ryan 2012). For instance, in frameworks of flow, it is considered that players derive fun when they experience flow. Similarly, in other frameworks, it is assumed that another psychological construct like engagement, satisfaction, or involvement leads to players' experience of fun. Such studies help us identify different forms of fun a player can experience by playing the game and operationalise the complex experience. While they provide us with viewpoints and tools, there are two shortcomings from a design research viewpoint.

First, the approach of operationalising fun through another construct risks what Sharp and Thomas call fragmentation into "smaller aesthetics" that limit the range of fun experiences (Sharp and Thomas 2019). For example, the conflation of flow into the experience of fun in games results in lonesome focus on in-game challenges and game goals. While these aesthetics are necessary from a particular design viewpoint, they make sideline concepts like fun considering them as trivial and frivolous.

Secondly, the approaches do not guide us in understanding *creation* of those experiences (Sweetser and Wyeth 2005; Cowley et al. 2008; Järvinen 2008; Wiemeyer et al. 2016). The goal of game design research, as suggested by William and Alexander, is to study "the ultimate particular means" to achieve "the ultimate particular ends" (William and Alexander 2017). In our case, the players' experience of fun is the ultimate particular end, and such approaches do not aid in detailing out the ultimate particular means to the player experience.

The MDA framework provides a viewpoint where the game's mechanics are the ultimate particular means to achieve fun (Hunicke, Leblanc, and Zubek 2004). As per the MDA framework of Hunicke et al., the aesthetics are created by dynamics which in turn are created by the mechanics of the system. The framework considers fun an aesthetic but attempts to "move away from the words like fun and gameplay" and focuses on more direct words. The framework provides an overall formal approach to imagine games as a system that help create aesthetics. Several projects detail the design of games using such a formal approach. Notable among them are "The 400 project" ('The 400 Project' n.d.), "The Lens of Intrinsic Skill Atoms" (Deterding 2015), "Patterns in Game Design" (Bjork and Holopainen 2005), and "Building Blocks of Tabletop Games" (Engelstein and Shalev 2019). Such languages and grammars capture the structural design of the elements in great detail. They provide designers with a shared vocabulary to articulate different aspects of games. Although the pattern collection, grammars and ontologies are focused on creating fun, they primarily identify formal elements of the games and only touch upon how they help players create fun. They provide in-depth detail about the game structure, but the formalisation of how the structure provides necessary ingredients for fun as a player experience is scant (Järvinen 2008).

"Characteristics of games" attempts to capture a game's experiential elements (Elias, Garfield, and Gutschera 2012). Those characteristics are experienceable by players and also controllable by the game structure. These are the game characteristics through which players' experience. However, these characteristics do not identify the ontological attributes through which the characteristics can be varied to create different

experiences. For example, for the characteristic 'downtime', what are its attributes that can control the experience of downtime? What are the qualities of downtime that affect fun? In this way, the identified characteristics are not linked to the player experiences of fun. These semi-formal characteristics are articulated through observations; however, given the multi-faceted nature of fun as the prime game aesthetic, more "smaller game aesthetics" can lead to fun; hence, discovering more such characteristics is possible. As a domain, we need a method to systematically discover more such characteristics of games and identify attributes that can vary the characteristics and subsequently the experience of fun.

Methodologies to study player experiences

Several methods attempt to connect player experiences with game structures. Applied Ludology offers a set of hands-on methods to analyse a game as a system with respect to players' experiences (Järvinen 2007). It allows design researchers to go further towards the ultimate particular means of player experiences. However, despite strengths of this methodology, Järvinen's question to design domain–"How could one set combinations of such [experiential] variables as 'design drivers'–i.e. conduct emotion-centred design that proceeds from psychological principles to design and implementation of game elements and their interaction[?]"–remains unaddressed. The experiential variables obtained through methods of Applied Ludology are embodied in the form of rules of the games. This line of thought echoes the suggestion by Aarseth that game design research methodologies should focus on the design rules as they embody the game structure (Aarseth 2005; 2007). Thus, in this paper, we take a ludological stance to identify the experiential variables and articulate how are they embodied in a game's rule system. Järvinen's question suggests that there should be propositions around design drivers that contain the player experiential variables and the elements of the rule system.

Mallon and Webb use a phenomenological interview approach to arrive at design propositions for game narrative design (Mallon and Webb 2000; 2006). They use an inductive qualitative approach to show the potential of the paradigm of phenomenology in studying design aspects of player experiences. The strength of the method lies in the empirical method of data collection. It allows researchers to capture and discover phenomenon beyond the existing theoretical frameworks and build design theories. Their case studies also demonstrated the establishment of narrative game elements with emergent elements of the game, like player experiences. They demonstrate how to systematically arrive at testable design propositions for the game's narrative. However, there are two conjectures from a ludological stance. First, there is little evidence provided around the ludological aspect of propositions. One can ask questions like: can the method analyse games driven solely by the rule system and not by the narrative structure? Can the method help researchers arrive at testable propositions for games like Azul as opposed to a game like Tomb Raider?

Another conjecture is around the data sources. The method analyses "loose conversations" after players have played the game to identify designable engagement criteria in games. There are two sub-problems around this way of execution for studying games:

1. The method uses only one source of data to arrive at designable propositions. For a rigorous empirical qualitative approach to arrive at design propositions and principles, it is recommended to use multiple data sources (Mason 2006). Multiple data sources allow us to evidence insights through empirical data and validate them through other data sources.

2. As mentioned above, since design sciences strive for "the ultimate particular" (William and Alexander 2017), the design propositions should be derived from in-game experiences of such games. The current methodology analyses "loose conversations" after the game, thus distancing players from experience. Several cognitive effects like the recency effect, peak-end effect of experiences are discounted in the method. While this might suit the approach of phenomenology in its "broad sense", such discounts take us away from the "ultimate particular" propositions.

Our stance

We propose a method to overcome limitations with the player experience evaluation approaches and methodologies in approaching towards the ultimate particular means to create emergent player experiences. In this paper, we neither factorise fun into constituent elements nor conflate the experience of fun into similar constructs. Instead, we consider fun as the "larger aesthetic" emerging from the interaction of players with the game system.

Our method analyses player experiences, not in isolation but in relation to the rule system. Moreover, it identifies and finds "the ultimate particular means" of creating fun experiences. These means are Järvinen's experiential variables that are embodied by the rule system. We take a methodological scaffold from Mallon and Webb's phenomenological interviewing and analysis method to arrive at design propositions. Hence, we collect empirical data of the player's experience and the rule system through a novel method.

Game Selection

To approach the rule system of games through qualitative empirical data, we chose abstract board games. Abstract board games can be considered as pure rule systems (Eskelinen 2001). Their gameplay is not driven by any narrative, solely by the rules of the game. Moreover, the choice of board games allowed us to focus purely on the fun created by the rule system rather than other non-structural elements like interface, materiality, and so forth. Further we scope our study to orthogames–games where there is a performance metric for players. In this study, we use *Jenga* ("Jenga Rules:," n.d.) and *Ludo* ("Ludo Rules," n.d.) as two simple abstract analog orthogames.

METHOD

As suggested by (Bevan 2014), to perform phenomenological analysis on data, the participant must be taken through three phases: 1. Contextualisation 2. Apprehending the phenomenon, and 3. Imaginative variation. The contextualisation phase ensures that the researcher understands the background and context of the participant concerning the research goal. In the second phase, the researcher attempts to approach the core research focus through descriptive questions. In the last stage, she attempts to clarify the phenomenon by asking the participant to vary the aspects of the experience.

Conventionally, all three phases are operationalised through different types of questions in a single interview session. The participant performs imaginative variations as per the researchers' questions. The researcher then analyses data to identify characteristics of the context through induction and interpretation. Data from the contextualisation phase provides a baseline of the experience and validates the interpretation rigorously. However, to go towards "the ultimate particular means" of fun, the grounded empirical data of rule systems is needed. To achieve empirical data on the rule systems, we modified the phenomenological method of interviewing;

however, it broadly followed Bevan's phases. Table 1 shows the overview of the phases.

Eight children of age 10-12 years participated in this study. They were approached in a school setting with their teacher's presence permitted by the school setting. Informed consent forms were distributed to be taken home. Parents were free to contact us regarding the study. Informed parents brought and picked up students from the venue (the experiment venue at the university different than their schools) at designated times. Four (three females, one male) children played and modified *Ludo*; the other four (all males) played and modified *Jenga*. In a single session, players entered the room where the allotted game was placed on a table with chairs around it. Audio recorders were placed in the centre. Once players settled, researchers briefed them about the study and the game they would be playing.

A. Contextualisation

Players played the game using the conventional rules (Step 1, Table 1). This step ensured that if some players had not played the game, they get as familiarised as players who played it. This ensured equal participation of all players in the study and kept the experience fresh in their minds.

B. Apprehending the phenomenon

Once they played the game, researchers began asking questions about players' familiarity with the game, critical moments that they considered fun, and interactions in that game instance that created fun. These types of questions are categorised as Interview type 1 questions. Such semi-structured questions served two purposes: First, they helped them notice the game structure that created their experiences. Through these questions, players' focus was directed towards the emergence of fun by attributing it to different game elements. This alertness grounded in their experience is required in the next phase called 'imaginative variation'. Second, this also helps establish a conceptual baseline of fun for that game in context to given players and gameplay. Players who played the game for the first time can use the recent experience from the contextualisation phase. Other players can use their previous experiences as well.

	Phases	**Participant tasks**
A.	Contextualisation	Play the game
B.	Apprehending the phenomenon	Interview Type 1
C.	Imaginative Variation	Game modification task to increase the fun
D.		Interview Type 2
E.		Game modification task to decrease the fun
F.		Interview Type 2

Table 1: Overview of phases of our proposed method.

C.—F. Imaginative Variation

We asked the players to increase and decrease fun as a stimulus for the imaginative variation in the proposed method. The phase has two tasks:

> 1. Modification exercise to decrease fun: Each player was asked to suggest at least one change in the rules that made the game less fun than the game with original rules.
>
> 2. Modification exercise to increase fun: Each player was asked to suggest at least one change in the rules that made the game more fun than the game with original rules.

Here, the sequence of stimuli is crucial as players. If researchers asked players to modify game rules to *increase* fun first, then the players who had lost that game instance would suggest modifications only around win conditions. However, when researchers asked players to modify game rules to *decrease* the fun first, the stimulus made them recall all the smaller fun instances.

The suggested modifications were noted by the players in the form of a rules sheet. The best modification was rewarded in both exercises as per the researchers' judgement. Rewards provided incentives to create better modifications. A stimulus to reduce fun and increase fun made the players think about the game elements, rules, and the parts of gameplay that created fun for them. We found this manifestation of imaginative variation to be grounded in their experiences and the rule system.

A short semi-structured interview (Interview type 2) was conducted to explicate players' rationale for their suggested changes. This interview clarified their intention behind the modification and helped them articulate relationships in terms of their experience. It also provided data that strengthened the validity of the researchers' interpretations during the analysis phase. Instead of isolated interviews with players, we interviewed players together; group interviews allowed players to negate each other, and build upon each other's ideas. Final ideas were recorded in the form of a rule sheet. This rule sheet contained rules that are agreed upon by all the players modifying the game. The three phases of phenomenological interviewing assisted with a game modification exercise yielded data, as shown in table 2.

	Phases	**Player tasks**	**Data collection method**
A.	Contextualisation	Play the game	Field notes and player observation
B.	Apprehending the phenomenon	Interview Type 1	Audio recording
C.	Imaginative Variation	Game modification task to increase the fun	Rules sheets
D.		Interview Type 2	Audio recording

E.		Game modification task to decrease the fun	Rule sheets
F.		Interview Type 2	Audio recording
G.	Validation	Play the game modified by others	Participant observation, field notes
H.		Interview Type 1	Audio recording

Table 2: Data collection methods across phases of the study

G.—H. Validating the effects of variation

Now, the players were asked to pass on both games with modified rules to other players. In return, they received two games with modified rules. They were not informed about the intended effects of the two rule sets. Hence, the players were unaware about which ruleset would increase the fun and which one would decrease. They play games with both rule sets and are asked questions of type 1 — about their experience, critical moments of fun, and articulate what caused those moments. They also identify the rule set that created more fun than the other.

This step was crucial in the method as players when they modified the rules of original games, since games are complex systems, the intended effects might not be the same as the actual effects. To verify if the modified game is increasing or decreasing fun as intended by the players, data collected from this step provided further grounding to researchers about their interpretations of rule sets. Table 2 shows the phases of the data collection and their methods.

Analysis Method

To identify the formal elements of the gameplay experience, we use the inductive approach as suggested by (Mallon and Webb 2006), aided by the three types of coding strategies (Adu 2019). Table 3 shows coding strategies corresponding to the outputs.

	Output	**Data**	**Coding Strategy**
1	**Description of the changes made**	Rule sheet from Step C and E	
2	**Intentions behind those changes**	Audio Recording from Step D and F	Description focused coding
3	**Constituents of gameplay**	Clustering and abstracting codes from step 2	
4	**Attributes of the constituents of gameplay**	Audio Recording from Step D and F, Play session of the modified games (Step	Interpretation focused coding

		G and H)	
5	**Conditions offered by the rule system**	Audio Recording from Step D and F, Play session of the modified games (Step G and H)	Presumption focused coding

Table 3: Coding strategy for each phase and output obtained.

Combining codes from all phases, the following table 4–6 were prepared. The table explains the column headers in the first row, and an example from the data is shown in the second row.

Table 4 helped in identifying the categories of the modifications. These become Järvinen's experiential variables. In the example shown, the event (of "tower swaying") is the experiential variable that players found fun. Once the abstract category of modifications was identified, we looked at the interpretation focused codes. This aided us to identify the attributes of those categories using which players modulated the category. Table 5 helps in identifying the attributes of identified experiential variables.

Modification	**Id**	**Modification focus**	**Modification intent**	**Category of the modified element**
Player suggested modifications	Id associated internally for analysis. Here the first letter comes from the game and the second letter from the modification task given–increase fun or decrease fun.	The field indicates the aspect of gameplay the modification focused on	This field indicates the players' intent to suggest the modification	Abstracted category of the modification focus.
`Players can only remove the blocks from the lower half of the tower`	`JI2`	`Tower swaying`	`Increase the amount and number of times the tower sways in a game instance`	`Event`

Table 4: Structuring the modifications towards the category of modification. Sample modification of increasing fun in *Jenga*.

Modification	**Id**	**Category of the modified element**	**Attributes of the category**	**Designable elements**
			Properties defining the constituent element that were manipulated through modification	Elements are used to manipulate attributes. These elements are designable and

				experience-able elements.
Players can only remove the blocks from the lower half of the tower	JI2	Event	Frequency; Intensity of experience	Player actions; Feedback

Table 5: Template table with a sample modification to identify attributes of the categories of modified elements

Here, the experiential variable–event of tower swaying has attributes of frequency and intensity of the experience. Higher the tower, the more it will sway (intensity). Also, the frequency of swaying throughout the game increased through this modification. Moreover, in *Jenga*, these attributes are controlled by player actions and feedback offered by the game system.

After researchers identified designable and experience-able elements, we used presumption-focused coding to identify the conditions created by the modification to sustain the new experienceable element. For example, in the above table, player actions were used to create feedback and increase the intensity and frequency of the event experienced. We use presumption focused coding to understand ways in which new player action is creating more fun. In this case, the rule prohibits players from removing any block, thus restricting their agency to perform actions. The identified condition, in this case, will be the *prohibition* of player actions. The below table structures this process. Additionally, players focused on creating conditions of uncertainty of the outcome of the tower falling. The event of tower swaying and falling is sustained by the player-created uncertainty of outcomes.

Modification	**Id**	**Category of the modified element**	**Attributes of the category**	**Designable elements**	**Conditions offered by the rule system**
			Attributes defining the constituent element that were manipulated through modification	Elements are used to manipulate attributes. These elements are designable and experience-able elements.	Conditions created by the new rule for modulating the category
Players can only remove the blocks from the lower half of the tower	JI2	Event	Frequency; Intensity of experience	Player actions; Feedback	Prohibition to player actions Uncertainty of outcomes

Table 6: Template table with a sample modification to identify conditions used by the modifications. These conditions are provided by the rule system, which players utilised to modulate the level of fun.

Using the above systematic analysis, we analysed modifications of two simple, rule-based, abstract analog orthogames–*Jenga* and *Ludo*. Results and synthesis are presented in the following section.

RESULTS

Jenga

Jenga has a game structure of single loser, where players take turns to remove a block from stacked layers of blocks. The player who makes the tower fall loses. *Jenga* was played by four children, three females of age ten and one male of age 12 years. While they had not played the game, they were quick to grasp the rules upon explaining.

Players playing *Jenga* with standard rules (*Jenga* Rules, n.d.) enjoyed the "thrill" while pulling out a block from the layers. This feeling of "thrill" increases with the height of the tower, and players consciously choose difficult to remove blocks. In this game instance, players waited and aimed for the tower to get high enough to "wobble and sway". They intuitively felt that this would increase the feeling of "thrill" and frowned upon players who were reckless about choosing the block initially. Some players instructed the careless players and accused them of being uninterested in the game—"Hey, pull out the block properly in your next turn. We should make the tower higher. You are ruining the fun"(P1). In this sense, they accumulated fun towards the expected event of the tower falling. The most fun aspect of the game seemed to be the "tower swaying" caused by pulling out the blocks.

Modification	**Id**	**Modification focus**	**Modification intent**	**Category of modified element (Constituent of the ludic form)**
Increase the number of blocks	JI1	Tower swaying	Increase the amount and number of times the tower sways in a game instance; Delay the event of the tower falling	Event
Players can only remove the blocks from the lower half of the tower	JI2	Tower swaying	Increase the amount and number of times the tower sways in a game instance	Event
Players can only pull out the blocks which were not pulled previously; until all the blocks are used.	JI3	Making choices	Make the choices difficult	Player actions
Reduce the number of blocks by half	JD1	Tower swaying	Decrease the amount and number of times the tower sways in a game instance	Event
In any layer, players can only remove the middle block	JD2	Tower swaying	Decrease the amount and number of times the tower sways in	Event

			a game instance;	
			Make the choices easy	Player actions

Table 7: Categories of modifications to *Jenga*. Players focused on events and player actions to modulate fun. The experiential variables for *Jenga* are thus events and player actions.

In the modification exercises, players seemed to focus on three key experiences while increasing and decreasing fun—the event of "tower falling", the phenomenon of "tower swaying", and the act of making a choice of pulling out blocks from the tower. While the three experiences are interconnected in terms of cause and effect, the common element they modified was the feedback of the game. In this sense, fun in *Jenga* is primarily because of the feedback. Reducing the number of blocks (JD1) will lead to a lower tower, and hence less "tower swaying", leading to lesser situations wherein the event of tower falling can occur. In addition, less number of blocks also means fewer options to choose from and thus leading to a reduction in the perceived value of choices–"Players of my new *Jenga* will only be able to remove some blocks, and this will be boring" (P2). A similar logic was applied to increase fun: "Increase the number of blocks (JI1). It will make the tower shakier, and players will have to be extra careful to pull out the blocks. It will be so much fun". Similarly, another modification suggested that players should only remove middle blocks from a given layer (JD2). While the core intention is to reduce the feedback of the game state and reduce the chances of the event of the tower falling, the new rule (JD2) attempts to reduce the feeling of "thrill" associated with the player action of removing the block. The feeling of the thrill is reduced as the middle block in any layer is usually the safest. This change in rule affects the number of choices a player has to make as well. Like previous modifications, players of this rule will not make choices but merely perform actions. In contrast to JD2, introducing a prohibition to only remove the blocks from the lower part of the tower (JI2) increases the feedback. Players realised that removing blocks from the lower part of the tower is difficult for them and makes the tower shakier. In this modification, although the number of choices a player makes is reduced, yet, the feedback amount of feedback is increased.

Modification	**Id**	**Category of the modified element**	**Attributes of the category**	**Designable and experiential elements**
Increase the number of blocks	JI1	Event	Frequency; Intensity of experience ↑	Feedback by the system
Players can only remove the blocks from the lower half of the tower	JI2	Event	Frequency; Intensity of experience ↑	Feedback by the system
		Player action	Difficulty (Physical) ↑	Player actions
Players can only pull out the blocks which were not pulled previously; until	JI3	Player	Difficulty	Player actions

all the blocks are used.		actions	(Cognitive)↑	
Reduce the number of blocks by half	JD1	Event	Frequency; Intensity of experience ↓	Feedback by the system
In any layer, players can only remove the middle block	JD2	Event	Frequency; Intensity of experience ↓	Feedback by the system
		Player actions	Difficulty (Cognitive)↓ Difficulty (Physical)↓	Player actions

Table 8: Attributes of the experiential variables of *Jenga*.

Modification	Id	Category of the modified element	Attributes of the category	Designable and experiential elements	Conditions offered by the rule system
Increase the number of blocks	JI1	Event	Frequency; Intensity of experience ↑	Feedback by the system	Uncertainty of outcomes
Players can only remove the blocks from the lower half of the tower	JI2	Event	Frequency; Intensity of experience ↑	Feedback by the system	Uncertainty of outcomes
		Player action	Difficulty (Physical) ↑	Player actions	Prohibition of player actions
Players can only pull out the blocks which were not pulled previously; until all the blocks are used.	JI3	Player actions	Difficulty (Cognitive)↑	Player actions	Prohibition to player actions
Reduce the number of blocks by half	JD1	Event	Frequency; Intensity of experience ↓	Feedback by the system	Uncertainty of outcomes
In any layer, players can only remove the middle block	JD2	Event	Frequency; Intensity of experience ↓	Feedback by the system	Uncertainty in player actions
		Player actions	Difficulty (Cognitive)↓ Difficulty (Physical)↓	Player actions	Prohibition to player actions

Table 9: Conditions fun for *Jenga*.

While most modifications were directed towards manipulating different properties of feedback of the game, players proposed one modification to increase fun that was cognitive in nature. Players suggested remembering the blocks that were moved and only moving the blocks that were not removed previously (JI3). This increases the cerebral component of the games significantly, and it makes it difficult for players to choose blocks. Through this rule, players attempted to increase difficulty in the cognitive process of choosing the blocks. The cognitive processes of players seem to be in focus as working memory is loaded with game progress, but indirectly, it reduces the "tower swaying", and hence fun from feedback is also affected.

Ludo

Ludo is a turn-based strategy game where players move their pegs on a board using a dice roll. Initially, players start from a home zone where four pegs per player are positioned. During the movement of pegs, static capture is used to kill a peg, and the peg has to start over. The player with all four pegs in the destination zone wins. The game was played by four males of age 11. They had played the game many times on a

board as well as on phones. Rules were known to them, and the session began with the play session of the game with original rules.

Players playing *Ludo* reported that fun in *Ludo* is provided by the dice roll and interaction with players in the form of static capture. The stat check mechanic using dice-roll for initiating the game increases the anticipation aspect of fun as it increases or reduces the idle time of players. “I hated it when I was not getting six when Akash was already halfway through the game. I felt left out. But when I got, it gave me more fun.” In this instance of a *Ludo* game, fun was accumulated by the randomiser. During the game, dice roll based movement induced anticipation because the strategy depended on the result of the randomiser—“I feel bored when dice gives me small numbers. I do not like moving in small steps” and “I don’t like when I have to wait for dice to tell me when I can kill a peg”. However, most players seemed to like the act of chasing the opponent’s pegs and sending them home. “I hated it when he killed my peg” and “My favourite part of the game is to send my opponents home”. In this sense, fun in *Ludo* depended strongly on the interactions with players.

Modification	**Id**	**Modification focus**	**Modification intent**	**Category of the modified element**
Players can kill remotely based on the collected cards, allotted randomly through shuffling at the start of the game	LI1	Killing	Increase the frequency of killing opponent peg	Event
		Movement		Player action
Players can go back (in the opposite direction) to kill a peg during a chase	LI2	Killing	Increase the frequency of killing opponent peg	Event
		Movement		Player action
End the game once any player enters the destination zone	LI4	End conditions	Increase the value of completing the game	Event
Given half steps in marked on the board, can take half steps to approach and take out the opponent peg	LI5	Killing	Increase the methods of killing an opponent’s peg	Event
		Movement		Player actions
Players cannot kill other pegs in the game	LD1	Killing	Remove the possibility of killing	Event
Increase the number of safe zones	LD2	Killing	Reduce the frequency of killing	Event

Table 10: Categories of modifications to *Ludo*. Players focused on events and player

actions to modulate fun.

Modification	Id	Category of the modified element	Attributes of the category	Designable and experiential elements
Players can kill remotely based on the collected cards, allotted randomly through shuffling at the start of the game	LI1	Event	Frequency↑; Interactions	Player action
		Player action	Range of interaction↑	Choice of interaction ↑
Players can go back (in the opposite direction) to kill a peg during a chase	LI2	Event	Frequency↑	Player action
		Player action	Direction of interaction↑	Choice of interaction ↑
End the game once any player enters the destination zone	LI4	Event	Frequency ↓ End conditions	Access to end conditions
Given half steps in marked on the board, can take half steps to approach and take out the opponent peg	LI5	Event	Range of interaction↑	Resolution of player movements
Players cannot kill other pegs in the game	LD1	Event	Existence	Choice of interaction
Increase the number of safe zones	LD2	Event	Frequency of interaction ↓	Choice of interaction

Table 11: Attributes of the experiential variables of *Ludo*.

Since players were familiar with the game and had played the game very much, there were more ideas for modification than other games. However, most ideas revolved around manipulating player actions. Player actions are majorly directed towards interacting with players rather than interacting with the game system (like *Jenga*). This interactivity is manifested through the conflict resolution method of kill and replace. Players considered the process of killing fun, which includes getting the desired number through dice roll, chasing the peg, and killing the peg. Players suggested four modifications around the killing mechanic—Players can kill remotely based on the collected cards, allotted randomly through shuffling at the start of the game (LI1). They expected that this would increase the fun experienced in *Ludo*. While killing becomes the central element, defending against the attack during a chase gets focused in LI2 and LI5 modification—Players can go back (in the opposite direction) to kill a peg during a chase (LI2) or given half steps in marked on the board, can take half steps to approach and take out the opponent peg (LI5). In contrast to increasing opportunities and agency

to kill other players to increase the fun in *Ludo*, players introduced a rule not to kill anyone during the game to reduce fun (LD1).

Other modifications dealt with player interactions where they attempted to kill and replace elements. To increase the fun, players introduced a rule to block the pegs coming from behind. In other words, pegs cannot overtake even though players receive a higher number through the dice roll (LI3). While this is put in the category of increasing fun, players thought of individual fun; players who are ahead will have fun as the player behind will feel the frustration and is ripped off the agency assigned by the dice roll to move ahead. Similar to this modification, players suggested increasing the number of safe zones where players cannot kill each other (LD2) to decrease fun. This modification "will decrease the fun, as the dice roll numbers will not be of that much value". Another modification attempted to reduce the fun associated with coming first (or winning the game). While *Ludo* allows players to continue the game even when one of the players has reached the destination zone first, players introduced a rule to end the game once any player enters the destination zone (LI4). They cited that it will reduce the motivation to play further in that game instance, and it is better to begin a new game than come second at *Ludo*.

Modification	**Id**	**Category of the modified element**	**Attributes of the category**	**Designable and experiential elements**	**Conditions offered by the rule system**
Players can kill remotely based on the collected cards, allotted randomly through shuffling at the start of the game	LI1	Event	Frequency↑; existence	Player action	Uncertainty of occurrence
		Player action	Range of interaction↑	Choice of interaction↑	Uncertainty of player actions; Agency
Players can go back (in the opposite direction) to kill a peg during a chase	LI2	Event	Frequency↑; Existence	Player action	Uncertainty of occurrence
		Player action	Direction of interaction↑	Choice of interaction↑	Agency; Uncertainty of player actions
End the game once any player enters the destination zone	LI4	Event	Frequency ↓ End conditions	Access to end conditions	Inequality among players
Given half steps in marked on the board, can take half steps to approach and take out the opponent peg	LI5	Event	Frequency ↑	Resolution of player movements	Agency to interact;

		Player actions	Range of interaction ↑		
Players cannot kill other pegs in the game	LD1	Event	Existence	Choice of interaction	Prohibition to interaction
Increase the number of safe zones	LD2	Event	Frequency of interaction ↓; Existence	Choice of interaction	Prohibition to interaction

Table 12: Conditions fun for *Ludo*.

EXPERIENTIAL VARIABLES–THE MEANS TO FUN

Players focused on controlling events through player actions or changing elements of the rule system to modulate the experience of fun in the games. For example, in *Jenga*, players modified the event of tower swaying in different ways. By reducing the number of blocks, by prohibiting players from removing only the middle block of any layer, and so forth. However, the focus was always on the event of tower swaying. Similarly, in the case of *Ludo*, players modified the event of killing a peg by introducing different rules. However, the nature of events focused on was different in both games.

In the *Jenga*, the event is created by interaction with the game through player action. The act of removing a block caused the tower to sway. In other words, players interact with the system to create events. While in the case of *Ludo*, the event is created when players kill the opponent's peg. The event, in this case, is created when players interact with each other. The act of killing can be considered as a form of interacting with other players. Thus an event is generated when players interact with the system or with other players; respectively, they can be called system-generated events and player-generated events. The difference in how the events are generated showcases different attributes of the events.

For example, in the case of *Jenga*, the modifications made the event of tower swaying more frequent and more intense (JI1, JD1, JI2, JD2). The modifications use systemic properties like feedback offered by the system. However, in the case of *Ludo*, players modulated the occurrence of events by their existence. In *Ludo*, players have the agency to create the event of killing or not killing; in a way, of interacting with the players or with the game system. The rule modifications like LI1, LI2, LD1, and LD2 showcase that the frequency of the events in gameplay can be controlled by allowing players to generate events.

When players are able to create events, modifications like LI5, LI2 suggest ways to control them in *Ludo*. Range of interaction, resolution of movements to interact and direction are some attributes of player-generated events. In the case of *Jenga*, the JI2, JI3 and JD2 modifications suggest that the ability of the player to create the events that were fun can be modulated by controlling the difficulty of player actions. The difficulty introduced in the modifications were of two types–difficulty to perform the action and difficulty to make choices.

LI4 modification suggests the sequence and position where the event is occurring. The frequency of the event is controlled by if the players are allowed to create such events. By making the event last in the sequence of events, players tried to make the event rarer. In *Jenga*, the tower falling is the end-event which players consider important for fun– "Hey, pull out the block properly in your next turn. We should make the tower higher. You are ruining the fun" (P1). The modification of LI4 in *Ludo* also suggests events should lead to accumulation towards the final and rarer event.

Thus, events and player actions are the means, the player experience variables through which players experience fun. They are embodied by the rule system–player actions are governed by the rule system, while events are generated when players interact with the rule system. These variables can be varied through their attributes which can be identified through this method.

DESIGN ELEMENTS OF SYSTEM IN RELATION TO FUN

For modification in each game, players focused on certain design experiential elements to control different attributes of events. For example, in the case of modifying *Jenga* to control the event of tower swaying, players attempted to focus on feedback by the system. All the modifications to increase fun focused on increasing feedback offered by the system, while the modifications to decrease fun focused on decreasing the feedback by the system. Thus, in the case of *Jenga*, feedback can be considered as the central experiential element to control the event of tower swaying and the event of the tower falling as a means to achieve the fun. While in the case of *Ludo*, to control the act of killing, players focused on the choices offered by the system to interact. Player actions were made more agential to make it more fun. But, player interaction remained the central goal of the modification. Making the interactions more agential was considered more fun than having no agency over interactions. Thus, player interactions are the central experiential elements through which occurrences of events are controlled. The experiential elements are modulated, while the design elements are used to achieve that modulation of increasing or decreasing fun. They are positively or negatively varied to increase or decrease fun. However, the aim of players while modification remains constant. Interpretation of this aim helps to derive conditions of fun for the players with respect to the games they played.

CONDITIONS OF FUN

Conditions of fun are a set of principles achieved through various design elements which are kept constant across different modifications in the game. In the case of *Jenga*, the uncertainty of outcomes is reduced to decrease fun, but the same is increased to increase the fun. This is achieved through designing the feedback offered by the system. Similarly, in the case of *Ludo*, the player interactions are made less agential to decrease fun but more agential to increase fun through various modifications. Thus, the conditions of uncertainty of outcomes and the players' agency to interact can be considered as conditions of fun. Similarly, JI3 suggests that the prohibition of player actions is another condition where fun can increase, given the uncertainty of outcomes. LI4 suggests that establishing inequality among players also increases the fun. Such conditions are created by the rules of the games. Players interact with elements of the rule system and with other players through the rule system through player actions. This interaction creates events through which players experience fun.

Gameplay is created when the player interacts with the game structure. It is a dynamic property that emerges when the player interacts through rules. From the current study, we can argue that players experience fun through a sequence of events. Anthropy and Clarke conceptualised it as a sequence of events or scenes; Jarvinen considered events to be building blocks of gameplay and player experience (Anthropy and Clark 2014; Järvinen 2008). If the gameplay is conceptualised as a sequence of events

experienceable by players, then gameplay can be considered as a ludic form–an essential ingredient of fun, as per Sharp and Thomas.

DISCUSSION

The ludic form is conceptualised as the structure within which fun emerges. They facilitate structured yet open designed interactions with the game structure for game players. This viewpoint has several implications.

Gameplay as a ludic form

Within such a view, we propose that gameplay can be seen as a ludic form. While gameplay has been conceptualised in many ways, each carries the conceptualisation in at least two aspects in varying strengths: Formal aspects and experiential aspects. The formal aspect attempts to explain the *emergence* of gameplay through players' interaction with the rule system (Guardiola, n.d.). The way the game is played is by following the rules (Salen and Zimmerman 2004) and the structures of player interactions (Bjork and Holopainen 2005). Experiential aspects of conceptualisations attempt to explain gameplay in an interactional way through which players *experience the rule system* (Lindley, n.d.; Salen and Zimmerman 2004; Juel Larsen and Kampmann Walther 2020). The viewpoints support the concept of ludic form–gameplay encapsulating property of rules of the game and player actions. It is a way to study fun *in relation to* the rule system. Hence to study fun as an experience, we propose gameplay can be considered as a ludic form.

Gameplay as the particular ultimate means to fun

At times, the gameplay also has been conflated with fun. However, in our viewpoint, the gameplay is a ludic form that is a means to experience fun and not fun in itself. Players act and interact with the rule system to create different gameplays and learn and experience the system that generates them. In the process, they have fun. This viewpoint echoes Koster's and Kuklich's concepts of fun (Koster 2013; Lindley, n.d.). In an effort to experience and learn the system, players create gameplays, and hence, they can be considered as the ultimate particular means to design the aesthetic of fun.

Studying gameplay as an emergent phenomenon of player interaction with the rule system is a challenge even when the term is formally defined (Juel Larsen and Kampmann Walther 2020). This dynamic and emergent aspect of games, which is important in creating fun (Hunicke, Leblanc, and Zubek 2004), is often given little importance. Game designers can only design the rule system of the games, not the gameplay. However, our study showed that the players design gameplay by following rules to experience fun.

The proposed method supports the gameplay as a ludic form and makes the researcher/designer think of the gameplay as "the ultimate particular" of a fun experience. Moreover, the method does not study fun or the game in isolation, but it facilitates establishing design guidelines of fun in relation to the game structure. It approaches player experience from Goddard's viewpoint of design research on player experience–the ultimate particular aesthetic in games through particular means. The approach facilitates in identifying 1) constituents of gameplay, 2) identifying designable attributes of each constituent, and 3) conditions offered by the rule system in creating fun attributes of gameplay.

CONCLUSIONS

In this paper, we propose the method to study fun in relation to the player and the game structures. By employing a novel stimulus of removing fun from two table-top games, we show that the data collected contains empirical information about the ludic structure, the players' way of creating fun, and the form through which players

experience fun while playing *Ludo* and *Jenga*. Analysis of the data can elicit events of fun in the gameplay, the specific aspects of rules that are generating those instances and the conditions that afford those events of fun.

Fun is hard to articulate. Even if it was precisely articulated by players, it would be difficult to capture a general sense of fun in board games, given the variety of games and infinitude of gameplays created by various players. The goal of the authors is not to capture all the senses of fun; neither the list of designable and experiential elements is exhaustive. The goal is to develop a method that aids our understanding of ludological game structures (or the rule systems) that create fun for players. Considering fun as a whole experience, the imaginative variations, grounded in rule systems to increase or decrease fun, helped achieve the goal. It made players think about what was fun, how the game helped it create for them, and how to modulate it.

Our method can help game designers to identify design elements of games and their attributes that players consider fun. It can be used for play-testing board games with players as it allows enough freedom for them to make the game fun as well as provides grounded design prescriptions of the game structure. It can also help designers of serious games to troubleshoot the design of their game structure. The method can prove useful to applied ludologists who aim to study game structures and design drivers of player experiences for a specific genre of games. It provides a systematic approach to establishing relations between the design elements of games with the experiential elements of fun, identify conditions, and their attributes essential to the fun.

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