Core or Chore? How Hybridity Impacts Player Experience

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Abstract

Tabletop gaming spaces are becoming increasingly hybrid, necessitating further study into the effects of hybridity on player experiences. Hybrid digital boardgames provide an opportunity to examine the relationship between technology and player experience in an atomic way. We present an exploratory mixed-methods A/B study (N = 16) comparing the player experience of Spy Guy: Fantasy, a published, non-hybrid boardgame, and a custom hybrid version which replaces the original game's deck of cards and sand timer with an app. The study contributes insights into player experience of hybrid games as well as into study of hybrid player experience. We found no statistical difference in player experience between the non-hybrid and hybrid versions. However, comparing responses based on play-order shows preference for the hybrid version, which is further supported by rich interview data. This reveals players' expectations about the "core" and "chore" elements of a game, and the role of technology in facilitating the "core" by handling the "chores". Future work examining the effects of hybridity on player experience should consider study design, the selection or development of appropriate measures of player experience, and participants' prior exposure to and literacy in boardgames.

CCS Concepts

• **Human-centered computing** → *Empirical studies in HCI*; **HCI design and evaluation methods**; *HCI theory, concepts and models*; • **Software and its engineering** → **Interactive games**.

Keywords

Hybrid, Boardgames, Player Experience

1 Introduction

The contemporary tabletop gaming landscape is increasingly hybrid. Digital tools augment tabletop gaming experiences during play (like

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companion apps that provide player support for gameplay tasks [16, 17] or music [3]), and out of play (like generative tools to support [9] or replace [7] game masters in role-playing games). An important, and growing, part of this landscape are **hybrid digital boardgames** (HDBs) which combine physical and digital components [17].

Despite increasing adoption of hybridity, previous work has found that player opinions on technology-integrated boardgames are mixed [4, 10]. People working in the boardgame industry hold nuanced perspectives that embrace assistive technology, but are cautious about how that technology is integrated into the game's **player experience** (PX) [16] . Examination of how technology affects boardgame PX has explored novel interaction methods (e.g. 19), or augmentation of existing experiences (e.g. 3). None of this work, however, captures how these hybrid versions experientially differ from their non-hybrid counterparts in a way that gives us a deeper understanding of the effects of hybridity on PX.

To improve the design of HDBs, and hybrid games more generally, we need to know how hybridity affects PX. By extension, we need to know *how* to study the experiential differences between hybrid and non-hybrid games. To this end, we designed a pilot study focusing on the effect of hybridity on PX for Spy Guy: Fantasy (SG:F) [13], a co-operative, family-weight board game. We selected SG:F because of its simple rules, fast gameplay, opportunity for rudimentary yet meaningful hybridisation, and very limited local availability, which made it unlikely that participants would have played it previously. We compared the hybrid and non-hybrid versions via a within-subjects A/B study. The hybrid version intentionally does not introduce any new gameplay. Thus, we expect any changes in PX to be solely due to the hybridized nature of the components. This paper presents the results of this pilot study, and implications on how to design studies for HDBs. This adds to the body of literature on PX and hybridity in tabletop play, and specifically for HDBs.

2 Related Literature

An extensive body of research exists exploring PX as a multi-dimensional, context-dependent phenomena [2], and measuring it using survey tools like *PENS* [18] and *PXI* [1]. However, the bulk of PX work is focused on video games, leaving it unclear whether the theories and measures apply to boardgames. Farkas et al.'s work on immersion suggests that while some game concepts may carry over (e.g. engrossment), there are notable differences between the mediums (e.g. sensory input and perceived narrative depth) [5]. This is supported by Liapis and Denisova [12] in their attempt to study PX for tabletop role-playing games. However, video game-specific theories and measures do not capture important boardgame-specific nuances like materiality of pieces [15] or sociality through chores

[21]. When considering hybridity, these nuances require even more attention as they may be implicitly lost in the hybridisation process through removing components or speeding up play.

Our work builds on literature comparing PX of physical and digitally-augmented or digitised commercial games. Studies in this space recurrently find that technology increases usability by automating some game functions, but decreases other experiential aspects like enjoyment [8, 20] or social connectedness [8, 11]. These works suggest that some forms of automation actually subsume functions that the player perceives as important to the experience [8], like negotiating rules at the table [20] or managing their game components [11]. The Hybrid Digital Boardgame Model (HDB-M) [17] collects forty-one commonly digitised functions in HDBs into eight domains (timing, randomising, housekeeping, informing, storytelling, remembering, calculating, and teaching). This structured view of digital functions creates a road-map from which we can systematically explore the specific effects of hybridity on PX.

3 Method

With ethics approval from The University of Melbourne (Project ID: 29470), we ran a small, within-groups, A/B study to test how PX differs between the non-hybrid and hybrid version of SG:F.

3.1 Spy Guy: Fantasy

3.1.1 Gameplay. SG:F [13] is a 2024 cooperative family-weight boardgame. Players must move their playing piece (the Spy Guy) around the vividly decorated board to rescue a treasure without being caught by the dragon, Balasar. Each turn, they earn movement points by revealing the top card of the deck and finding the indicated object on the board as many times as they can within the time allowed by a sand timer. Each card shows a single item and how many times it appears on the board (the number at the end of the card label), as well as how far Balasar will move in that round (the number of wings at the foot of the card). For example (see Fig. 1), if the players find 5 of the 7 lanterns on the board, they move 5 spaces before Balasar moves 4. They lose the game if Balasar catches or overtakes them before they reach the end of the movement track.
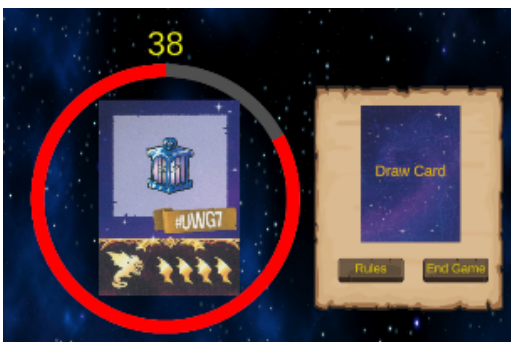

Figure 1: Example of Spy Guy: Fantasy app screen showing a drawn card (Lantern, 7 items, move 4) and in-progress timer.

3.1.2 Hybridising Spy Guy: Fantasy. We created an SG:F Android app in Unity, which we tested and revised through several pilot rounds. The app replaces the game's cards and timer (Fig. 1) but

not its physical board or indicator tokens. When players start the game, the app shuffles the deck of cards and presents a "Draw card" button to the players. Selecting this button automatically starts an audio-visual timer for forty seconds. When ten seconds are left on the timer, the audio feedback gets louder and speeds up.

Our app digitises the game's *randomising* (cards) and *timing* (sand timer) functions [17] while retaining its physical board and markers. We refrain from adding additional functionality so that we can reliably attribute any PX differences to hybridity.

3.2 Study Design

16 participants (9 women, 7 men; mean age: 34.50 ± 8.5 years) completed our study; eight played the non-hybrid first (Pub-1), and eight played the hybrid first (Hyb-1). While participants represented both hobbyist (n=6) and casual (n=10) boardgame players , none had played a Spy Guy game before.

Individual sessions ran with four participants at a time. Participants were paired off and taken to private observation rooms to play the games. The pairs played the versions in the same order. After each version of the game, participants filled out a short survey on their experience which included eleven questions from the miniPXI [6] about experiential constructs, eight Likert-items on the sociality and materiality of boardgames, nine Likert-items on hybridity, and some open-ended questions about their likes and dislikes. When they had completed both versions, the four participants reunited for a semi-structured group interview about their experiences.

4 PXI Findings

Following the PXI [6], we analysed the Likert data using IBM SPSS v29. The mean item scores suggest the experience of both game versions was positive and incredibly similar.

We compared the experiences for each game version by participant group using Mann Whitney U Tests. For the **non-hybrid** experience, we found that Pub-1 players had significantly higher scores in two sociality items (SOC3: "I felt connected to the other players", $U = 53.0$, $p = 0.028$; SOC4: "I would like to play this game with my friends or family", $U = 53.5$, $p = 0.021$), and understanding the game state (STE2: "It was easy to understand the state of the game", $U = 57.0$, $p = 0.007$) than Hyb-1 players. For the **hybrid experience**, we found that Pub-1 players had significantly higher scores in the challenge item (CH1: "The game was not too easy and not too hard to play", $U = 54.0$, $p = 0.021$), one materiality item (MAT3: "Moving the physical pieces helped me to understand how to play the game", $U = 52.0$, $p = 0.038$), and one hybridity item (APP4: "The app adds interesting variety to my options to play this game", $U = 51.5$, $p = 0.038$) than Hyb-1 players. Table 1 summarizes the mean responses and results of the Mann Whitney U Tests for each significant Likert item by version.

5 Group Interview Findings

Our discussion with players focused on their experience of the game: whether it felt like others they had played, whether either version felt more engaging, and whether they felt that the technology had changed their experience in playing SG:F. Their responses reveal key details about how players conceptualize the "core" of the game and demonstrate their expectations of in-game hybrid technologies.

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Table 1: Comparing Significant Experiences Between Versions, Generally and by Play Order.
Legend: Pub-1 = Published-First, Hyb-1 = Hybrid-First, * = item is not part of miniPXI, bold = significance.

Label	Comparing Experiences Means		Comparing Non-Hybrid Experience				Comparing Hybrid Experience			
	Non-Hybrid	Hybrid	Mean Rank Pub-1	Hyb-1	Mann Whitney U	p	Mean Rank Pub-1	Hyb-1	Mann Whitney U	p
CH1	1.50	1.38	9.88	7.13	43.00	.279	11.25	5.75	54.0	**.021**
*MAT3	2.19	1.88	10.5	6.50	48.0	.105	11.0	6.00	52.0	**.038**
*SOC3	2.06	2.50	11.13	5.88	53.0	**.028**	9.75	7.25	42.0	.328
*SOC4	2.13	2.13	11.19	5.81	53.5	**.021**	10.75	6.25	50.0	.065
*STE2	2.00	2.44	11.63	5.38	57.0	**.007**	9.31	7.69	38.5	.505
*APP4	–	0.06	–	–	–	–	10.94	6.06	51.5	**.038**

5.1 What do players think is "the game"?

In interviews, participants focused on how the versions differed because of the timer. Although no significant differences were observed between non-hybrid and hybrid responses via Wilcoxon Signed Rank Test, on an experiential level participants noted that the timer "really added a huge amount of [enjoyable] tension" (P13). Despite this pressure, there was an overall preference for the hybrid version of the game. Participants felt that the app reduced their attentional load due to not having to check the timer, and improved the visibility of the cards.

Nevertheless, participants felt they "wouldn't classify [the two versions of SG:F] as different games" (P01). The dissonance between perceiving these differences yet not finding the experiences overall different seems to relate to what players consider the "core" game — a fuzzy concept of which elements of gameplay are crucial to the game's experience. For SG:F, participants repeatedly identified the "core" game as "finding the objects" (P08). This is reflected in how participants discuss difficulty in terms of both the design of the objects (i.e. colour, size, placement, number) and the objects' relationship to the dragon's movement (i.e. difficulty of object to number of spaces the dragon can move). In comparison, while the timer is described as adding stress, it was perceived as "keeping track of a part of the game that I didn't really think was super important to the game" (P03). This fosters a sense that "with the app I was able to actually focus on just playing the game" (P01).

5.2 What is the role of technology?

When prompted about functions they would like to see in the app, participants' suggestions addressed accessibility (e.g. larger, easier to see card images) and changes to gameplay functionality (e.g. ending the timer early, revealing the object locations). Both of these were out of scope for this project, given our focus on closely replicating the published gameplay, however these comments offer insights into what players may value in a HDB. While participants enjoyed the hybrid version for taking on some of the gameplay "chores", they also expressed desire for the app to "do more" than its physical counterparts. Some participants found it "kind of frustrating [that] just like with the physical timer, once in a while we would finish [finding all the objects] and then we'd just have to sit there and watch the timer go down" (P01). Other participants suggested "the image [on the card could be] a little bit bigger so you can just have a quick look and then go back to searching" (P07).

6 Discussion

Our analysis identifies two key implications around players' experience of in-game hybridity, highlighting the need to accommodate players' expectations of both games and technology. Moreover, it identifies implications for future study of PX in this hybrid context.

6.1 Players' Expectations of a Game.

These findings suggest players may embrace hybridity when it offers them more time with the "core" game and removes the elements perceived as "chores" (i.e. "the work necessary to make play happen" [21]). This aligns with previous findings about players disliking games' automation of core functions [8]. P16 reflects this when they say "I'd be tempted to play the regular [i.e. non-hybrid] version...but use an iPhone timer or something". The distinction between the "core" and the "chore" may be why there is no perceived or statistical difference between the non-hybrid and hybrid experiences within-groups, but notable differences between-groups. For Pub-1 participants, the "chore" was removed in their second game and so they scored the hybrid version higher, whereas the Hyb-1 group saw the same "core" game and were not bothered enough by the "chore" to find them significantly different experiences.

6.2 Players' Expectations of Technology

Designing for hybridity requires understanding players' expectations of technology, what it can do, and how it can assist them. For example, they expect technology to provide shortcuts (such as prematurely ending the timer) even when the comparable sand timer does not offer the same options. Furthermore, our own reflections and feedback from the pilot sessions highlighted the importance of presenting a "polished" technology component that looked like it could have been a commercial product: to avoid skewing player opinions of the hybrid version, players needed to believe that the app was designed as part of the published game. To this end, we added elements which players would expect from commercial apps, like audio feedback and the ability to check the rules from the app.

6.3 Methodological insights for future studies.

6.3.1 Between-group design. While the within-group design allowed us to directly compare an individual's experience with both versions, participants' second survey responses indicate they were implicitly interpreting the questions as being in comparison to the first game, not as an independent experience. Simultaneously, we recognise that participants were only able to complete this involved

study because the gameplay itself was short and simple. In future work, which will examine more complex games that can take an hour or more to play, a between-groups method is more feasible.

6.3.2 Boardgame specific PX measures.

While the PXI is a validated framework, it was designed to study video games and so does not capture some of the specifics of boardgaming experiences. In our case, we needed to add questions that recognise features of boardgames that do not inherently exist in video games. Also, we must consider whether the language of these standard measures is understandable for a boardgaming audience, or appropriate for games of this scope.

6.3.3 Participant History and Game Literacy.

As a pilot study using a simple, children's game, we did not target a specific participant demographic. As such, our participants were predominantly non-hobbyists who self-describe as playing video games more than boardgames. We noticed a marked difference between how self-identified hobbyist boardgame players and non-hobbyists thought about the game and perceived the app. Non-hobbyist players were more focused on their game's outcomes (i.e. win vs. loss), and how functionality in the app would affect their game performance. Comparatively, hobbyists focused on the game's replayability, modifications to make it easier to teach or improve quality-of-life, and how the experience compared to other games with similar mechanisms. We attribute this difference to the hobbyists' increased game literacy, which allows for faster and smoother interactions with new games. To better interpret results and gain a deeper understanding of hybridity, future studies should consider developing a more in-depth player profile on their participants. Such a profile should account for participants' personal gaming motivations (c.f. Martinho and Sousa [14]) and histories.

7 Conclusion

This short paper presented a pilot A/B study for understanding the effects of hybridity on player experience for the game Spy Guy: Fantasy. It highlights player perceptions of technology and of games. From this we offer considerations for how to study hybridity in board games. This paper furthers work in understanding hybrid board games, their player experience, and how to study them.

Acknowledgments

References

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

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

[3] Timea Farkas, Alena Denisova, Sarah Wiseman, and Rebecca Fiebrink. 2022. The Effects of a Soundtrack on Board Game Player Experience. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems* (New Orleans, LA, USA) *(CHI '22)*. Association for Computing Machinery, New York, NY, USA, Article 192, 13 pages. doi:10.1145/3491102.3502110

[4] Timea Farkas, Nathan Gerard Jayy Hughes, and Rebecca Fiebrink. 2024. How Boardgame Players Imagine Interacting With Technology. *Proceedings of the ACM on Human-Computer Interaction* 8, CHI PLAY (2024), 1–24.

[5] Timea Farkas, Sarah Wiseman, Paul Cairns, and Rebecca Fiebrink. 2020. A Grounded Analysis of Player-Described Board Game Immersion. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 427–437. doi:10.1145/3410404.3414224

[6] Aqeel Haider, Casper Harteveld, Daniel Johnson, Max V Birk, Regan L Mandryk, Magy Seif El-Nasr, Lennart E Nacke, Kathrin Gerling, and Vero Vanden Abeele. 2022. miniPXI: Development and validation of an eleven-item measure of the player experience inventory. *Proceedings of the ACM on Human-Computer Interaction* 6, CHI PLAY (2022), 1–26.

[7] Minh Hua and Rita Raley. 2020. Playing With Unicorns: AI Dungeon and Citizen NLP. *DHQ: Digital Humanities Quarterly* 14, 4 (2020).

[8] Ville Kankainen. 2016. The Interplay of Two Worlds in Blood Bowl: Implications for Hybrid Board Game Design. In *Proceedings of the 13th International Conference on Advances in Computer Entertainment Technology* (Osaka, Japan) *(ACE '16)*. Association for Computing Machinery, New York, NY, USA, Article 8, 7 pages. doi:10.1145/3001773.3001796

[9] Jack Kelly, Michael Mateas, and Noah Wardrip-Fruin. 2023. Towards computational support with language models for TTRPG game masters. In *Proceedings of the 18th International Conference on the Foundations of Digital Games* (Lisbon, Portugal) *(FDG '23)*. 1–4. doi:10.1145/3582437.3587202

[10] Mehmet Kosa and Pieter Spronck. 2018. What tabletop players think about augmented tabletop games: a content analysis. In *Proceedings of the 13th International Conference on the Foundations of Digital Games* (Malmö, Sweden) *(FDG '18)*. Association for Computing Machinery, New York, NY, USA, Article 6, 8 pages. doi:10.1145/3235765.3235782

[11] Andreas Larsson, Jonas Ekblad, Alberto Alvarez, and Jose Font. 2020. A Comparative UX Analysis between Tabletop Games and their Digital Counterparts. In *Extended Abstracts of the 2020 Annual Symposium on Computer-Human Interaction in Play* (Virtual Event, Canada) *(CHI PLAY '20)*. Association for Computing Machinery, New York, NY, USA, 301–305. doi:10.1145/3383668.3419899

[12] Antonios Liapis and Alena Denisova. 2023. The Challenge of Evaluating Player Experience in Tabletop Role-Playing Games. In *Proceedings of the 18th International Conference on the Foundations of Digital Games* (Lisbon, Portugal) *(FDG '23)*. Association for Computing Machinery, New York, NY, USA, Article 8, 10 pages. doi:10.1145/3582437.3582457

[13] Mariusz Majchrowski. 2024. *Spy Guy: Fantasy*. Boardgame. Trefl, Sopot, Poland.

[14] Carlos Martinho and Micael Sousa. 2023. CSSII: A Player Motivation Model for Tabletop Games. In *Proceedings of the 18th International Conference on the Foundations of Digital Games* (Lisbon, Portugal) *(FDG '23)*. Association for Computing Machinery, New York, NY, USA, Article 13, 10 pages. doi:10.1145/3582437.3582477

[15] Melissa J. Rogerson, Martin Gibbs, and Wally Smith. 2016. "I Love All the Bits": The Materiality of Boardgames. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (San Jose, California, USA) *(CHI '16)*. Association for Computing Machinery, New York, NY, USA, 3956–3969. doi:10.1145/2858036.2858433

[16] Melissa J. Rogerson, Lucy A. Sparrow, and Martin R. Gibbs. 2021. More Than a Gimmick - Digital Tools for Boardgame Play. *Proc. ACM Hum.-Comput. Interact.* 5, CHI PLAY, Article 261 (Oct. 2021), 23 pages. doi:10.1145/3474688

[17] Melissa J. Rogerson, Lucy A. Sparrow, and Martin R. Gibbs. 2021. Unpacking "Boardgames with Apps": The Hybrid Digital Boardgame Model. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (Yokohama, Japan) *(CHI '21)*. Association for Computing Machinery, New York, NY, USA, Article 111, 17 pages. doi:10.1145/3411764.3445077

[18] Richard M Ryan, C Scott Rigby, and Andrew Przybylski. 2006. The motivational pull of video games: A self-determination theory approach. *Motivation and emotion* 30 (2006), 344–360.

[19] Evgeny Stemasov, Tobias Wagner, Ali Askari, Jessica Janek, Omid Rajabi, Anja Schikorr, Julian Frommel, Jan Gugenheimer, and Enrico Rukzio. 2024. Dungeon-Maker: Embedding Tangible Creation and Destruction in Hybrid Board Games through Personal Fabrication Technology. In *Proceedings of the CHI Conference on Human Factors in Computing Systems*. 1–20.

[20] James R Wallace, Joseph Pape, Yu-Ling Betty Chang, Phillip J McClelland, TC Nicholas Graham, Stacey D Scott, and Mark Hancock. 2012. Exploring automation in digital tabletop board game. In *Proceedings of the ACM 2012 conference on computer supported cooperative work companion*. 231–234.

[21] Yan Xu, Evan Barba, Iulian Radu, Maribeth Gandy, and Blair MacIntyre. 2011. Chores are fun: Understanding social play in board games for digital tabletop game design. *Proceedings of DiGRA 2011 conference: think design play*.