Bringing a Micro-Sociological Theory to Co-located Social Games

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Abstract

Social play is complicated to study because of its emergent, diverse, and inter-subjective nature. Since social psychology and sociology have studied human interactions in great detail and depth in real life, we propose that they can deepen our understandings of social game experience. Specifically, the interaction ritual theory (IR theory) from Micro-sociology that focuses on moment-to-moment interactions in a small group seems to be a good fit to understand co-located multiplayer games. In this paper, we discuss the importance of theories in game research, how they inform the evaluation metrics, and how they reveal potential design problems. As an example of using IR theory, we analyze two tabletop augmented reality games through the lens of IR theory.

Author Keywords

Micro-sociology; Interaction Ritual Theory; Player Experience; Co-located games; augmented reality.

ACM Classification Keywords

K.8. [Personal Computing]: Games.

Introduction

Theories from psychology and sociology have been adopted to game research and proven to be fruitful. The most widely adopted theory in game research is

"flow" from positive psychology [2]. It guides game designers to balance skill and challenge, and forms the foundation for evaluating enjoyment [6]. Another example is from Isbister's work that brings in social psychology theories into game character design, such as social surface, empathy and emotional feedback, and body postures [5]. These psychological and sociology provides in-depth understanding of human behavior and thinking, providing game designers and researchers conceptual tools to understand and describe game experience, and open up new design space. In my work, I propose that the interaction ritual theory from micro-sociology can help us deepen the understandings of co-located social play.

Interaction ritual theory was created to understand the elementary processes that underpin all social interactions; this theory analyzes the ingredients and outcomes of successful social interactions of small groups in mundane everyday life. This theory is built on the sociologist Goffman's work [3] and symbolic interaction. Specially, in the book "Interaction Ritual Chains", Collins pointed out four key ingredients for successful social interactions in his Interaction Ritual model—**bodily co-presence** (physically assembling in the same space), **barrier to outsiders** (a sense of who is taking part and who is excluded), **mutual focus of attention** (awareness of each other's attention focusing on a common object), and **synchronization of emotions** (common mood or emotional experience that gets elevated during the interactions) (P48, [1]). Applying IR to game design and evaluation is a natural fit. Collins used games are cited as an example of rituals in which game mechanics, rules and setup have "*been tinkered with over the years in order to make it 'a better game'–which is to say, to provide moments of*

collective emotion." (P58) Collins work can also explain the long-term effect of interaction rituals on group solidarity and symbols of social relationship. But our focus in this work is the experience **during** the gameplay instead of longitudinal effect.

We choose interaction ritual theory because:

- The user scenarios of co-located games matches with those scenarios from which Interaction Ritual theory was generated;
- IR theory focuses on emotions as an ingredient and outcome of social interactions, instead of productivity of tasks;
- IR theory breaks down the complicated social phenomena into composing elements and explain why some social interactions are enjoyable or not.

Comparison with Other Methods

We compare theory-based method with other methods (ethnographic methods, design heuristics and design patterns), not to compete one method with another, but to tell pros and cons of each method and the unique advantages that theory-based method has. Ethnographic methods are based on inductive inquiries that have high-level open-ended research questions, and let the data tell their stories. In contrast, theories-based research start with exiting models that include critical factors identified in prior work. While ethnographic methods are good for areas that we have little knowledge of, the theory-based approach focus the research attention on factors that may have a higher relevance. This focus is especially important for social play as a complicated phenomenon with infinite amount of details, many of which are irrelevant.

Other methods, such as heuristics and design patterns, which analyze design artifacts and provide design guidelines, are also equally important. But the goal of this work is understand player experience. We target to understand not only what works and what does not, but also the reasons behind them.

Case study: Co-located Multiplayer Tabletop Augmented Reality Games

Previously we have applied IR theory to study people playing board games [7]. Board games did not include digital media, but it has physical game pieces and tabletop setup similar to digital tabletop games. In this work, we analyze one kind of such games, tabletop augmented reality games, to understand the role of artifacts and shared hybrid space in the social play. Tabletop augmented reality games are the games that register and render digital contents on real world, so that players view a shared hybrid space either through projected display or their own mobile device. We focus on the tabletop handheld AR games. We designed and studied two tabletop AR games, Bragfish [8] (a competitive fishing game running on the Gizmondo handheld game console) and Art of Defense (AoD) [4] (a collaborative tower-defense game on the Nokia N95). Details of the two studies can be found in previous work. We reanalyze the recorded video of gameplay and after-game interviews by looking for the ingredients mentioned in the IR theory. The "boundary to outsiders" does not apply to these studies because they were situated in lab settings and no spectators were included.

Telling Game State through Physical Presence
In IR bodily co-presence is important because 1) they leverage human ability of keeping track of another person in the same space; 2) they allow players to quickly respond to each other's action and build on each other's reactions, which is fundamental to the synchronization of emotions. We found that players tend to leverage their peripheral awareness to keep track of each others' action, sometimes even anticipating the other player's next movement based on their body posture change. For example, in the BragFish, it was common that players inferred what the other person was doing based on their physical actions, including change of positions, postures, and gestures. As shown in this quote, "*It's hard to catch a fish without zooming in. So if I saw him getting closer (to the board), I knew he was catching a fish. I can ram him immediately after he caught a fish (laughter)*".

Based on these findings, we add one more reason why bodily co-presence is important for tabletop AR games—players can directly associate what happens in the physical world with events in the digital world.

Directing Attentions through the Gestures
In IR theory, the mutual focus of attention means more than participants paying attention to the same object, also they are aware of the other person's attention being on the same object. In the example of AoD, players had repeated process (see figure 1): one player called for other player's attention through pointing and verbal utterance. Sequentially, the other person responded by moving their mobile device towards the position referred to earlier, and took actions on that spot. This shows that games that have space-related challenges can leverage players' gestures to direct other players' attentions and form joint attention. Moreover, the game was designed so that players need
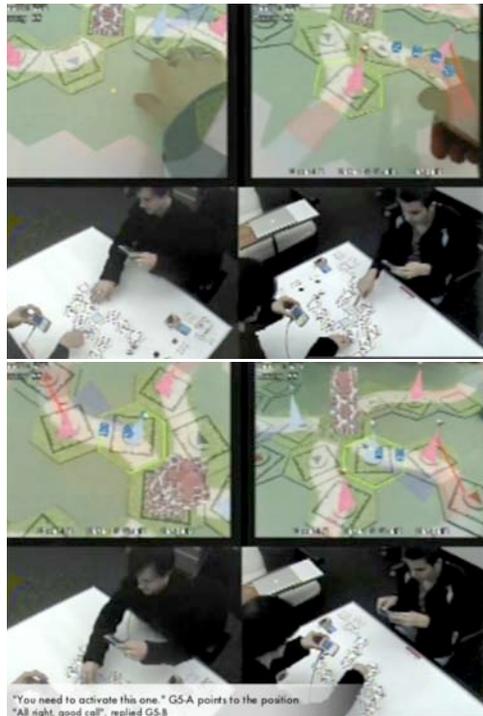

Figure 1. Two frames with 2 seconds apart. In the second picture, the markers in the green outline were the one pointed to and talked about 2 seconds ago. It became the shared focus of attention between both players.

to rely on each other's complementary skills and pay attention to their status.

Synchronized Emotions
In a successful interaction ritual, the emotions between players get synchronized, and build on top of each other to a higher level. One of the indicators is shared laughter. In BragFish, although players had conflicting interests in the competitive game, all the pairs laughed together when someone won the game. It showed that the competition in the game was a pretended conflict. Sometimes players acted as if they were really mad at the other person, but still they laughed together while he or she did so. The winning moments were when the emotion was elevated to the highest point and got released. Especially when the game was a close one, the tensions between players were built up high and players had more dramatic reactions in the end, showing an a strong sense of synchronized emotion.

Summary

From the theory-based data analysis, we turn the IR theory into a few questions that can be used during design process, and for making evaluation instruments such as coding system and interview questions.

- Bodily co-presence: How much is the players' physical presence represented in the game? How well can a player perceive the other players' physical movements and gestures? How do players adjust their position, orientation, and distance in relation to each other?

- Boundary to the outsiders: how visible are the actions and feedbacks? How do we design for different circles of participation in the game?

- Mutual focus of attention: How do objects and space support players to direct other's attention? How much do the gameplay rely on players paying attention to each other?

- Synchronization of emotions: Do players have the following behaviors: shared laughter, turn-taking conversations, and mimicking movements?

IR theory works across game genres. We have used it to analyze both board game and tabletop digital game experiences. In the future, we will adopt IR theory to build easy-to-use game design heuristics and coding schemes for gameplay analysis.

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