Game Stages Govern Interactions in Arcade Settings

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The Story

Groups of adults in arcade settings interact with game machines and each other through cyclical game stages. The roles that group members adopt and the activities in which they participate are governed largely by their location in the game-playing cycle. In the first stage, **Immediately Pre-Game**, group members have selected a game and player and observer roles are decided. Group type (size, gender, and number of relationships) may influence these roles. In the second stage, **During**, game credit has been inserted and the game has begun. At this point, observers may be bored or engaged while the players are typically either relaxed or intense. The third stage is **Immediately Post-Game**. At this point, players and observers react to the game play. If there is a winner, the group may congratulate the victor and console the loser. In the fourth and final stage, **After**, the player and observer roles dissolve and the group either takes a break, leaves the arcade, or starts a new cycle by finding a new game to play.
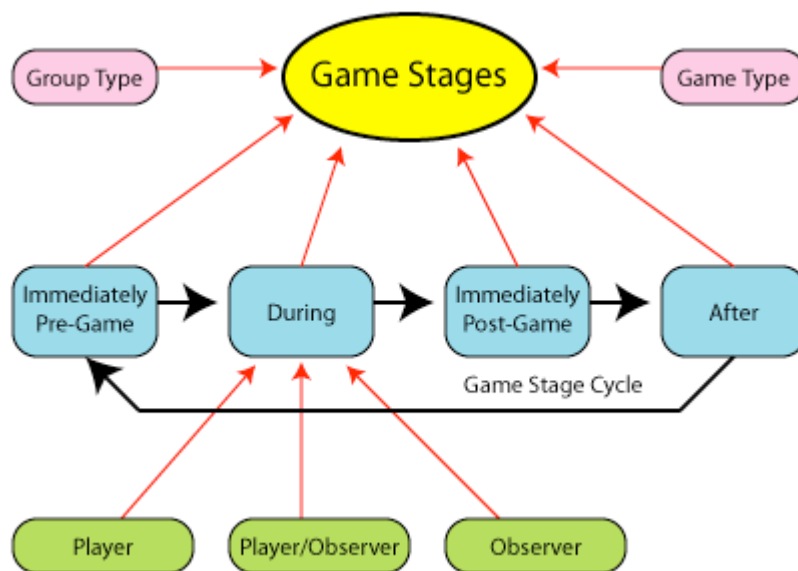
Related Themes

Overall, we observed slightly more males than females. Females were more likely to be in the observer role and males were more likely to be players. In addition, whenever there was room for more players but group members did not participate, the observers were usually female.

Post-hoc, we also measured group cohesion by the number of times the group split up over the number of minutes they were observed. Overall, smaller groups tended to be more cohesive than large ones. Smaller groups tended to have romantic couples in them as well, so it is difficult to say whether couples or size has more influence. We also did not keep track of time apart versus time in which the group was all together, which may have been a better tool.

Some people were more comfortable in their roles than others. Some observers would split from a group to play another game alone, rejoining the group later. Other observers had room to play a game with other group members but chose not to. These situations indicate individual's role-preferences and illustrate independent game cycles.

Three of our couples cheated the game machines. In all cases it was light-hearted rather than a serious attempt to perform better in the game. It was accompanied by laughter, smiles, and even mock-applause. In two cases the couple used a single-player machine cooperatively. Similarly, observers sometimes interfered with players as a form of affectionate teasing. With both cheating and interference, the games were the vehicles for friendly social interaction in the **During** game stage.

Methods

We observed groups of 2 to 6 adults in two arcades for a total of over four hours, taking time-stamped notes that were as detailed as possible. At Race Central, one observer was positioned overlooking the arcade for a global view of interactions, and the other was at a table near the games being played. At Food & Games, this was not feasible. Instead, we followed groups around the arcade. One observer stuck with a group until they left and the other observer switched between groups to avoid suspicion. Our focus on groups rather than machines let us observe over multiple activities and many different games, naturally leading to our story. Unfortunately, to avoid suspicion we were unable to get close enough to hear conversations or consistently see game performance, relying instead on gestures, expressions, and movement through the environment.

Grounded Theory

       We used Grounded Theory to analyze our field notes, stepping through open, axial, and selective coding to generate our story. We began by labeling our merged full-descriptive field notes, agreeing on the significance of an event or relationship before labeling and creating a concept. For example, any time someone helped a player to set up their game, we labeled it *helping*. This concept later became a dimension of the *setup* property in the **Immediately Pre-Game** category.

Concepts were put on white slips, categories on yellow. We went through an initial semantic clustering that quickly led to organizing concepts temporally based on a cycle of events that began to emerge. This cycle later became the game stages. A major revision made a hierarchy, with **During** enveloping three different categories, and **Game Stages** enveloping all but two categories, **Game Type** and **Group Type**. These two categories became effective dimensions and context for our game stages. Properties and dimensions were put on the yellow category slips.

Example open-coded category: **Immediately Post-Game**

Properties	Dimensions →		
Emotional reaction	Victory cheer	Sore loser	
Other members' reactions	Congratulate	Console	Loser happy for winner
Reward	Tickets	Prize	None
Talking about the game	Yes	no	
Winner?	No	Woman	Man

Axial coding was largely done in MS Excel. Contextual information was tallied by the combination of dimensions in which it occurred, helping us to define causal/intervening conditions, action strategies, and consequences. Below is an example of both for a relatively small category.

Immediately Post-Game

Causal Conditions	Intervening Conditions	Action Strategies	Consequences
After During phase. Game has just finished. Players and observers react to game. Observer/player roles are dropped.	Whether there's a winner, given the game type and performance.	If just won, give a victory cheer by calling out and/or raising your arms above your head. An observer acknowledges the win/loss by congratulating the winner or consoling the loser. (because of observation method, we could only note physical signs (kissing, pat on the shoulder) rather than verbal.)	Victory cheers draw attention to the winner, since they are usually accompanied by a shout, nearby patrons hear it as well. (cheer from climbing wall heard from other side of the room). Observer reactions acknowledge the victory. Competition is a theme of many games, so having an in game win acknowledged in the real world is significant.

Location	Group Type	Game Type	Emotional Reaction	Other Member's Reaction	Reward	Talking about Game	Winner
FG	U2 1/:28 0	Racing	Victory cheer	No	No	No	man
FG	B2 0/1:39 1	Shooting	No	Consolation	No	No	No
FG	B2 0/1:39 1	Basketball	No	No	Tickets	Yes	man
FG	B2 0/1:39 1	Shooting (parallel)	No	No	Tickets	No	None
FG	B2 0/1:39 1	Racing	Victory cheer	No	No	No	female
FG	U3 1/:39 1	Dancing	Sore loser (female)	no	no	no	no
RC	U36/1:18 1	race			no	no	f
RC	U36/1:18 1	race		congratulate	no	no	m
RC	B41/:38 2	race	Victory cheer	congratulate, console	no	no	m
RC	B41/:38 2	race		congratulate	no	no	f
RC	B41/:38 2	race	victory cheer	sore loser (male)	no	no	f
RC	U22/1:15 0	race			no	yes	m
FG	B20/:13 1	claw		congratulate	pillow	no	m

Our categories were mostly linked to one another with their sequential relationships, and we had already formed a meta-category called **During** that encompassed player interactions, player-observer interactions, and observer interactions that happened while a game was in progress. At Dr. Grinter's suggestion, outlier concepts were broken down to be more granular, at which point they were unique and fit into the sequence where they had been observed. All of the interactions between within groups and between people and machines now depended on the stage in which it occurred. Our two non-stage categories effectively served as properties and dimensions of cyclical activity. Thus, the core category became **Game Stages**.

Game Stages

Properties	Dimensions→				
Life Cycle	Immediately Pre-Game	During	Immediately Post-Game	After	
Group Type	Mixed	Single Sex (F)	Single Sex (F)		
Interaction	Within group	With stranger			
Game Type	1-player	2-player	Multi-player		
	Competitive	Cooperative	parallel		

By merging the supporting categories upward into **Game Stages** and checking our field notes for individual groups' paths through the cycle, our story line was validated.

What we would do differently

While we are fairly satisfied with the way our project went, as always there were frustrations and issues we would handle differently if we had it to do again.

A main point would be to allot more time for analysis after the data was collected. We found grounded theory to be very difficult to use. There was a constant temptation of working top down – creating a hypothesis and seeing if the data supported it – rather than bottom up. Also, as first time practitioners of grounded theory, we were often uncertain whether we were applying it correctly. The instructions were fairly general, and while the examples were helpful, it was hard to generalize them to a larger dataset.

We also had certain holes in our data which would have helped in our analysis. Most of our analysis focused on the "during" game stage. This phase was one of the easiest to observe, since the participants were not moving and were distracted by the game such that we could observe them without getting caught. The other stages got less attention. Looking for "immediately pre-game" or "immediately post-game" behaviors didn't occur to us until the analysis, when we came up with the idea of game stages. We also coded many activities as "wandering," which in retrospect is a very loaded activity. Participants wandered to find a new game, out of boredom, to look for friends, or just to see what was happening in other parts of the arcade. Trying to look for signs of the purpose for the wandering could have lead to interesting insights to the game stages model.

We also found the sheer onslaught of information to be overwhelming. During our observations, we chose to observe different people in order to get more coverage and so we wouldn't have to coordinate pseudonyms. As such, there was too much to fully record. Watching the same set of people, each assigned to record different things, would have gotten more thorough notes about a particular even. When working separately, we tended to code the clear and obvious things, such as what the participants were doing, rather than nuances of expression and body language which may have provided clues as to *why* they were behaving in certain ways. For example, we had several notes of people standing and watching a game being played. In analysis, we wanted to see if there was a story to be told about whether these people were watching out of genuine interest or boredom. Boredom was a very difficult feeling to derive from our notes, as it is very similar to fatigue, daydreaming, and polite interest. We are uncertain whether the more subtle cases of boredom is possible with an observational technique. Interviews may be required.

Finally, we feel our notes were a bit light on researching the games themselves. The assignment was to observe people using a particular technology, and our story is more about people's behavior among a particular technology. We could have drawn a stronger link between the two if we had recorded more information about the games, and had some way to know what was happening in the game while it was being played. As it was, we observed from a distance, and observing the game screen as well as the patrons was not practical. Coordinating two observers or observing from closer proximity could have helped.