

The Individual and the Group in Console Gaming

Amy Volda, Sheelagh Carpendale & Saul Greenberg

Department of Computer Science, University of Calgary
2500 University Dr. NW, Calgary, Alberta T2N 1N4, Canada
{avolda, sheelagh, saul.greenberg}@ucalgary.ca

ABSTRACT

In this paper, we present results from a study of collocated group console gaming. We focus, in particular, on observed gaming practices that emphasized the individual gamer within a gaming group as well as practices that emphasized the gaming group as a whole. We relate each of these practices, where possible, to specific elements of the game design including game mechanics, interaction design, and special effects design. We argue that the classic distinction between competitive and cooperative modes of gameplay does not fully transfer to account for the interpersonal dynamics within collocated gaming groups.

ACM Classification Keywords

H.5.3. [Information Interfaces and Presentation (e.g., HCI)]: Group and Organization Interfaces—Collaborative Computing

General Terms

Human Factors, Design

Author Keywords

Wii, Xbox360, Playstation, PS2, PS3, Gamecube, Video Games, Console Games

INTRODUCTION

It is a common reality in Computer-Supported Cooperative Work (CSCW) that not all “cooperative” systems are used in cooperative contexts [13]. Some CSCW systems are used in contentious contexts or even competitive contexts. This reality may never be more poignantly borne out than in the context of gaming. Most games have been, after all, fundamentally competitive in nature. Relatively recently, however, there has been an increase in the prevalence of both board- and video-games featuring cooperative or collaborative modes of gameplay [28].

While the mechanics of a particular game or mode of gameplay have classically lent themselves to a sort of binary categorization—competitive or cooperative—the tenor of interactions surrounding gameplay may not always

be so clear cut. The producer of one cooperative game, *Legend of Zelda: Four Swords Adventures*, acknowledged that “although it’s a game that four players have to cooperate to solve puzzles, when you play it... you actually end up competing a lot more in that game than you do cooperating” [16]. Research has also found that competitive games sometimes have a more cooperative tenor when played in groups with diverse expertise levels [25].

Most studies of computer-supported cooperative gaming have explored the sociality of the gaming experience and the game mechanics designed to support or foster it—from massively multiplayer online games [7, 8, 17] to console games [25] to handheld games [22]. Much less is known about the dynamics and practices within groups that result from this sociality. The sociality of gaming experiences could be a great asset for groups, helping to foster a sense of cohesiveness and interdependence among group members. But social interactions could also contribute to the deterioration of groups if individuals were only to look out for their own self-interests.

In this paper, we examine the gaming practices of twelve groups of gamers. We describe our study, its method and participants, and we present the results of our analysis, distilling from the data the various practices that served to emphasize the group and those practices that emphasized the individual. Where possible, we relate each of these practices to specific elements of console game design, including game mechanics, interaction design, and special effects design.

COMPETITION, COOPERATION AND COLLABORATION IN GAMING

Traditionally, games have been classified into one of two categories: competitive or cooperative. *Competitive* games “require players to form strategies that directly oppose the other players in the game” [28]. Individual gamers must look out for their own self-interests in order to be successful in the game. In a *cooperative* game, players’ goals are not necessarily in direct opposition, but neither are their goals completely aligned [28]. In cooperative games, some value may be obtained from gamers working with one another; but because their goals may be different, not all players are guaranteed to benefit equally. More recently, a third category of gameplay has also been recognized: collaborative gameplay [28]. In *collaborative* games, players share common goals and outcomes. All gamers either win or lose together. In this case, looking out for

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

CSCW 2010, February 6–10, 2010, Savannah, Georgia, USA.
Copyright 2010 ACM 978-1-60558-795-0/10/02...\$10.00.

group interests instead of individual interests provides the greatest benefit to players.

Instead of considering the landscape of games as being crafted out of some number of distinct modes of gameplay, as traditionally may have been the case, we adopt the view of Zagal et al., who consider a spectrum of modes of gameplay. This spectrum ranges from competitive games, which reward individual-oriented strategies, to collaborative games, which reward group-oriented strategies [28]. Cooperative games exist on the spectrum between competitive and collaborative games, where gamers are rewarded for group-oriented strategies only when it is in their own self-interest.

Within the CSCW community, the words competitive, cooperative, and collaborative are frequently used in a broader sense in order to convey larger patterns of co-engagement in sociotechnical systems. Nardi and Harris, for example, describe a more synergistic relationship between competition and collaboration in gaming:

Even when players are competing, the object of having fun by playing the game is a form of collaboration; players could not compete if there were no one to play with. As in any game or sport, the larger field of collaboration is constituted by engaging in the game [17].

We share the view that a larger field of co-engagement is, indeed, constituted within the gaming activity. In this paper, however, we reserve our use of the words competitive, cooperative, and collaborative for describing game mechanics and modes of gameplay. We characterize gaming practices on a spectrum, as being more individual-oriented or more group-oriented, in an effort to try to disentangle the mechanics of game design from the practices of gaming groups.

Studies of various genres of gaming and gaming platforms have provided glimpses across these continua of competitive-to-collaborative modes of gameplay as well as individual-to-group oriented gaming practices.

In their study of handheld gaming platforms, Szentgyorgyi et al. found that competitive modes of gameplay were a “strong motivator” for gamers [22]. In collocated contexts, their participants also valued the opportunity to engage in individual-oriented practices, such as trash talking other gamers.

A number of researchers have studied various practices surrounding children’s use of computer and console games. Ito observed group gaming in a computer clubhouse and identified individual-oriented practices constituted around a game’s special effects [14]. She found that children who maintained control of a game’s input device developed a self-centered infatuation with special effects, frequently at the expense of others in the group. Stevens et al. conducted a study of the ways that children constructed their own learning environments around console games [21]. They observed a number of instances in which children adopted group-oriented behaviors such as when two gamers helped

each other perfect the sequence of actions required to get their characters up a cliff.

Ducheneaut et al.’s study of the massively multiplayer online game *Star Wars Galaxy* highlighted a number of its cooperative game mechanics, including interdependencies among character professions and combat designed to be too difficult to undertake alone [7].

A number of researchers have studied the massively multiplayer online game *World of Warcraft*, which has some of the same cooperative game mechanics as *Star Wars Galaxy*. But in *World of Warcraft*, researchers have also identified a number of group- and individual-oriented gaming practices. Nardi and Harris found that small acts of kindness or assistance were routinely offered by virtual strangers and that other emergent group-oriented practices such as slumber parties and conga lines added an additional air of fun to the game [17]. These researchers also identified a number of individual-oriented practices such as ganking—“tak[ing] advantage of [a player’s] weakened state for an easy kill”—and corpse camping—“remaining by [a] corpse and killing the player after he resurrects and is in a weakened condition” [17]. Ducheneaut et al. have added additional nuance to our understanding of the continua of game mechanics in *World of Warcraft* through their analysis of grouping patterns [8]. They found that the prevalence of cooperative game mechanics, notably combat designed to be too difficult to undertake alone, increased toward the end of the game and suggested that this may help to foster more individual-oriented practices at the outset of the game and more group-oriented practices as a player approaches the endgame.

More research has been conducted to understand massively multiplayer online games than many other current game genres or platforms and, as a result, our understanding of the complex relationships between game mechanics and gaming practices is somewhat more nuanced.

In this research, we contribute an analysis of these same phenomena within the domain of console gaming. In particular, we derive a richer understanding of the breadth of individual- and group-oriented practices present in console gaming and tease out the types of game mechanics and design decisions with which these practices correlate.

METHOD

We conducted a study of collocated group console gaming, recruiting 12 groups of participants who gathered regularly to play console video games. Participants engaged in four research activities:

1. **Questionnaire.** Participants completed a questionnaire that asked about their previous experiences with various game genres and platforms. Participants also reported basic demographic information such as sex and age.
2. **Group gameplay.** Participants gathered in groups of friends or family who regularly get together to play games. These existing groups played the game or games that they typically play for anywhere between thirty

minutes and two hours (an hour and fifteen minutes, on average). We observed groups play a variety of games on a variety of gaming platforms. Descriptions of the gaming groups and the games that were observed are reported in Table 1.

3. **Gaming environment sketch.** Participants sketched their ideal group gaming environment, after the sketching task suggested by Sall and Grinter [20].
4. **Focus group.** Individuals participated in a semi-structured focus group with other members of their gaming group. The focus group protocol included questions about the gaming environment sketches, motivations for getting together to play games, and gameplay preferences when gaming in various contexts.

We carried out our study in whatever setting the groups typically gathered to play games; all groups gathered in residential settings—family rooms, recreational basements, or the shared common areas of retirement communities.

We have previously presented results of an analysis of the focus group data, characterizing the social motivations for gaming in groups [25]. This earlier work unpacked participants’ preferences for gaming that, to a large degree, were influenced by the significant diversity within gaming groups.

In this paper, we have focused our analysis on data captured

during the group gameplay—both fieldnotes and video—and have drawn from the focus group data where it serves to clarify our analysis of the gameplay data. We transcribed each video recording and merged these transcripts with our fieldnotes. Merging these two sources of data helped us create a more complete end-to-end record of gameplay. In some cases, our fieldnotes provided the sole record of conversation during short periods of gameplay in which the audio from the games drowned out the verbal interactions among participants in the video recording.

We conducted a grounded theory analysis of our data, inductively generating concepts from the data such as “self-sacrifice” and “trash talk” [4]. We iteratively refined these concepts while characterizing relationships among them and identifying a number of higher-level themes in the data. Through our analysis, we identified clusters of gaming practices that emphasized the gaming group as a whole as well as clusters that emphasized the individual gamer.

Participants

For this study, we recruited 12 groups, including 36 individuals, who gathered regularly to play console video games. We recruited participants in the context of both inter- and intra-generational gaming groups: three groups of all youth participants, three groups of all adult participants, two groups of all elder participants, and four groups whose

Gaming Group	Participant Demographics								Platform Observed	Games Observed
	Youth		Adults		Mature Adults		Elders			
	Female	Male	Female	Male	Female	Male	Female	Male		
Group A Siblings & their Cousin		P1–P3							Wii	Super Smash Bros Brawl Mario Kart Wii
Group B Friends		P4–P6							Wii	Wii Sports—Tennis Wii Sports—Golf
Group C Siblings	P7, P8								Gamecube	Paper Mario
Group D Couple			P9	P10					Wii	Lego Star Wars
Group E Friends				P11, P12					Xbox360	Grand Theft Auto IV Burnout Paradise Halo 3
Group F Couple			P13	P14					Xbox360	Guitar Hero III Rock Band
Group G Residents of a Retirement Community								P15–P17	Wii	Wii Sports—Bowling
Group H Residents of a Retirement Community								P18–P20	Wii	Wii Sports—Bowling
Group I Child & his Parents		P21	P22	P23					Wii PS2	Boom Blox American Idol (Karaoke)
Group J Child & his Parents		P24	P25	P26					Wii	Wii Sports—Tennis Wii Sports—Bowling Dance Dance Revolution Hottest Party Rock Band
Group K Couple & her Mother			P27	P28	P29				PS3	Rock Band
Group L Siblings, their Parents, Uncle & Grandparents		P30, P31	P32	P33, P34	P35	P36			Wii	Wii Sports—Tennis Wii Sports—Baseball Wii Sports—Golf

Table 1. Overview of participant population.

participants spanned multiple generations (Table 1). Youth participants ranged in age from 3 to 15; adult participants, from age 26 to 41; mature adult participants, from age 52 to 59; and elder participants, from age 68 to 84.

Although we specifically contacted retirement communities to recruit groups of elder participants, all other groups were recruited via snowball sampling. We did not turn away any groups; the diversity of participants in our study was a naturally occurring result of the snowball sampling.

In all but three cases, every member of the gaming group present on the day of the observation participated in the full research design. Participants in Group F were joined briefly in their gameplay by a housemate who was just passing through. Participants in Groups G and H were a subset of larger gaming groups that fluctuated in membership from 7 to 28 individuals. While a researcher observed the gameplay of the entire group, the activity coordinator at the retirement community recommended individuals to participate in the remainder of the study based on their health and the schedule of other activities.

In this paper, we refer to our study participants and individuals with whom they play games as “gamers.” We have explicitly chosen not to perpetuate other cultural definitions of “gamer” that legitimize only certain kinds of gameplay (see also [6]).

In the following sections, we present the results of our analysis, unpacking the various practices that emphasized the group as well as those that emphasized the individual. We also discuss two “pivot points” at which group- and individual-oriented practices most commonly intersected.

EMPHASIZING THE GROUP

We observed a number of practices that emphasized the gaming group as a whole. As one might expect, we did observe group-oriented practices during cooperative and collaborative modes of gameplay. But we also observed group-oriented practices during competitive modes of gameplay, as well.

Constructing Shared Awareness

Participants used conversation during gameplay to construct a shared awareness of game state, others’ activities within the game, and others’ engagement with the game more broadly.

Gamers helped each other keep tabs on various game states that would influence gameplay. During collaborative gameplay in *Lego Star Wars*, for example, group members used conversation to help each other keep track of how much time was left in challenges: “We’ve got five minutes...” (P10). During competitive gameplay in *Wii Sports: Golf*, group members helped each other keep track of the direction of the wind and used that information to make suggestions about the force and direction with which other players should drive the golf ball (Group B).

Gamers also constructed shared awareness by alerting each other to their activities within the game. Some of this

conversation focused on conveying the spatial location of players and was particularly prevalent in collaborative first-person shooters: “Still behind you... on the right hand side of the rocks.” (P11). Similar conversations helped to convey an awareness of who was doing what, particularly who was fighting or covering which opponent (Group A).

A final form of shared awareness was focused around others’ engagement with the game. Gamers checked in with other gamers; they kept a finger on the pulse of others’ engagement with the game:

P27: How’d you do over there?

P29: Eh...h...

This form of shared awareness was most commonly solicited of more novice gamers by more expert gamers in gaming groups. In some instances, this awareness information was used to help players gauge whether the difficulty of the game was appropriate to the skill level of the gamers in the group, and it sometimes led into discussions about whether it was time to switch games or to switch roles in the games. In addition, this form of shared awareness was usually sought repeatedly over the course of a gaming session, keeping track of how players’ engagement with the game was changing over time:

P27: How’d it go, lady?

P29: I’m finally getting it.

There were a number of game design elements associated with conversations in which groups constructed shared awareness. Many of these conversations centered around interfaces requiring that multiple factors in the game be managed simultaneously. In *Wii Sports: Golf*, for example, the active golfer had to account for the direction of the hole, the slope of the green, the direction and force of the wind, as well as the power of the golf stroke. Here, each element of the game state was depicted by a different interface design component (e.g., a color-coded arrow indicating the direction and strength of the wind or an overview map displaying the layout of the hole, the current lie and the direction of aim). The physical interaction required of the active golfer specified only the power of the golf stroke. The active golfers we observed were so engaged with the physical interaction task, other gamers jumped in to help provide shared awareness of the other factors.

Other conversations in which group members constructed shared awareness, particularly shared awareness with respect to others’ activities and spatial locations, arose in contexts in which group members had different views of the gaming environment (e.g., split-screen modes). These conversations were carried out not just in collaborative games but also in competitive games such as *Mario Kart*, in which shared awareness would benefit players unevenly, giving a strategic advantage to a player who is ahead in a race but who cannot see how far his competitor is behind him.

Finally, conversations focused around constructing an awareness of others’ engagement with the game occurred

primarily during breaks in gameplay, after completing a level or a song, for example.

Reinforcing Shared History

In several groups, gamers reminisced about previous times that they had played the game together. It was common for more than one player to contribute to these stories, reinforcing the shared history of the gaming group:

- P5: Remember that time that you, like, just got mad and gave up trying...
P4: (Laughing)
Shot it back and forth for like half an hour?
P6: Yeah, that sucked!

Sometimes, the groups' shared history was reconstructed for the pragmatic purpose of remembering what challenges, both collaborative and competitive, had been surmounted before and collectively strategizing about how to take on these challenges at present:

- P10: Have we done this one before?
P9: Yeah... this is Darth Vader chasing us around...

P5: Ah, it's the [hole] where you go to that thing.
P4: So we have to get to the secret spot.
P6: Yes. You have to hit three to get to there.

In one instance, a gamer reminisced about a time when he was at the exact same virtual location in *Grand Theft Auto IV* with another gaming partner. The reminiscing occurred in a similar context to that in previous examples and the story followed in content and tone to the stories shared within other groups:

- P11: I was driving with my brother... and we stopped on the bridge right here where it slants down because our car was just about to explode. And he got out because I got out. And he said, "blah blah blah," saying all this stuff and all of a sudden the car just flew over and nailed him right in front of me... and we had to restart the mission because he was dead. It was really awesome!

In this instance, however, the story being shared was not about the shared history among members of a gaming group present in the room. The history extended to other gaming partners. It may be, then, that gaming groups exist in a larger sense, transcending the specific individuals present at a particular point in time or, perhaps, that individuals also share stories to invite others into a larger shared history.

Most interactions in which groups reinforced a shared history corresponded to moments of arrival at a particular location within the game: the next hole in *Wii Sports Golf*, the next level in *Lego Star Wars*, or a particular bridge in *Grand Theft Auto*. The longer shared histories were often recounted during cut scenes in the games. Each hole in *Wii Sports: Golf* was introduced by an aerial survey of the hole. Each new level in *Lego Star Wars* was preceded with a brief glimpse of the location and a narrative trailer. Because these game elements did not require input from gamers, there seemed to be time for the group to reflect on and tell

stories about previous experiences. Because these game elements provided an overview of a new location, they also seemed to provide context that triggered memories among gamers.

Sharing in Success and Failure

Gaming groups shared in both their successes and failures, offering each other encouragement, reassurance, compliments, and high fives:

- P32: Oh, you are tied. You've both won two games.
P31: High five!
(Holding his hand up in the air with the Wiimote dangling around his wrist, he reaches to give his brother a high five.)

Gaming groups celebrated together even when they were competing against each other. In both retirement communities, competitive games were played against a continual backdrop of encouragement from competitors and audience members, alike. This encouraging pattern was so rich with detail about the gameplay that one could follow the game without watching the television screen at all. In one gaming group, the continuous pattern enabled a visually-impaired gamer to participate in the game (Group H).

We observed a number of instances in which groups playing collaborative games shared in failure, as well, accepting responsibility as a group instead of pointing a proverbial finger at any one gamer.

- P24: We're going down!
P25: Who is?
P24: We are...
P25: Going where?
P24: ...as a band.

We also observed a number of instances in which gaming groups worked to create an environment in which it was more socially acceptable to fail, for example, by constructing shared excuses for poor scores across the board in a competitive game: "Oh boy, we're rusty, aren't we? We haven't played in a while" (P17).

Although we did not observe a correlation between any particular elements of game design and practices related to shared success and failure, we did note that these practices were more prevalent in groups of elder gamers and in intergenerational gaming groups. These kinds of practices may require more social maturity than some youth or even some adults may possess. In addition, these kinds of practices may also be fostered by intergenerational contexts in which adults may be trying to be more intentional about being a positive role model for youth gamers.

There was some correlation between the audio commentary of games such as *Wii Sports* and the commentary of gamers who often mimicked words or phrases from the game's commentary. The commentary of the games, however, typically focused on individual performance (e.g., "Nice Spare") and not on whole-group performance.

Engaging in Interdependence and Self-Sacrifice

Some of the most striking group-oriented practices we observed involved situations in which individual gamers sacrificed their own interests for the sake of the group. Part of what made these practices so striking was the lack of conversation surrounding them during the gameplay. If an act of self-sacrifice was requested during a game, that action was carried out without comment:

P10: I'm not going to be able to get over there.

P9: Then drop out.

And a gamer would sacrifice her character or her opportunity to play so that a teammate could continue on in the game. In other cases, the act of self-sacrifice was never explicitly requested; instead, the game (e.g., *Rock Band*) notified the group when a player had "failed" and others stepped up when they could, sacrificing their own "star power" to bring a teammate back to life.

Because there was so little discussion about these practices during gameplay, we asked participants to explain what was going on during the focus groups. Gamers playing *Lego Star Wars*, a collaborative game, viewed these interdependent practices as emblematic of how coordinated their play had become, the result of extensive experience playing with each other:

P10: There are certain points where you do something and if the other person is way far behind...

P9: And, like, the things that we're doing were timed too.

P10: Yes. So you have to go quickly.

P9: ...but if you can't find the guy that can't jump high enough or can't fly—

P10: Drop out!

P9: Drop out. And the other guy will continue on a bit.

P10: ...it's amazing how coordinated we've become actually in that. "Okay drop out now!" There's not even a question. "Okay, do it." Out the person goes and then, bink, you're back in when it's safe again.

While self-sacrifice sometimes meant only temporarily dropping out of the game, in other cases, self-sacrifice had greater long-term impact on a player's individual character.

P13: If you get enough star power, you can bring [a failed team member] back.

P14: You have to kind of plan ahead. If you know it's going to be a hard song... and you know that maybe one of your friends is not going to make it, you're actually probably not going to use it.

P13: Store it.

P14: You're going to store it for, to save them, rather than to try to... boost your own life gauge.

The game mechanics of the collaborative mode of *Rock Band* made interdependence a central facet of gameplay. When one individual "failed," the group's collective health continuously decreased as long as that gamer had not been "saved." Although a team could complete a song without all individual players finishing, it was much more difficult to do so after someone had failed, providing an explicit

incentive for others to bring a teammate back into the game and to look out for the interests of the group instead of themselves.

As in *Rock Band*, a level in *Lego Star Wars* could be successfully completed as long as one team member completed it. Not all players had to be present in order to win the game. This design decision gave gamers a certain amount of latitude to sacrifice their character or to drop out of the game if it were in the best interest of the group as a whole. Interestingly, the game mechanisms fostering interdependence in *Lego Star Wars* were not as explicit as those in *Rock Band*, so although our participants were proud of the interdependence and trust that were bound up in their gaming practices, they also believed that what they were doing was, to a certain extent, "cheating" and "taking advantage of the behavior of the game's AI" (P10).

EMPHASIZING THE INDIVIDUAL

We observed a number of practices that emphasized the individual gamer. As one might expect, we did observe individual-oriented practices during competitive and cooperative modes of gameplay. But we also observed individual-oriented practices during collaborative modes of gameplay, as well.

Talking Trash

In several gaming groups, we observed individual-oriented conversational interactions involving trash talk. Trash talk often involves general insults and put downs [11], and we observed a number of these general insults in our data (e.g., "Oh, you suck!" or "Pressure too much for you?").

One core characteristic of trash talk is that it emphasizes and fosters hierarchical distinctions between individuals [11]. In gaming groups, we observed interactions in which individuals were vying to establish their place in the hierarchy of a competitive game:

P2: I'm in first!

P3: Not for long!

Finally, trash talk is often employed so that individuals can stake claim to their turf [11]. We observed a number of instances in which gamers attempted to stake claim over a particular input device, planting themselves firmly on top of the *Dance, Dance Revolution* floor mat, for example, so as not to relinquish their turn amidst a series of competitive games. We also observed trash talking turf wars as gamers tried to stake claim to more or less desirable input devices prior to a collaborative game of *Guitar Hero*:

P26: How about I do drums?

P24: Fine, then I'll do guitar.

P25: No, I'm doing guitar.

P24: I'm gonna do guitar.

P25: No way, I'm doing guitar.

P24: First one to touch it...

While it was difficult to identify correlations between general insult talk and specific features of the games, we did observe a correlation between trash talk reflecting turf

wars and the presence of physical input devices in the gaming environment. This correlation was particularly prominent in situations in which the group perceived different degrees of desirability for different input devices.

Falling Prey to the Computer's Holding Power

Turkle talks of the computer's "holding power," a "seduction" between the human and the machine [24]. Ito, in her study of gaming practices in a computer clubhouse observed instances in which interactive special effects (e.g., the "squishing sound" and "bloody smudge" that result when a fly is crushed in the pages of a restaurant menu in *DinoPark Tycoon*) enabled a kind of computer holding power [14]. Ito found that "the interactive special effect is somewhat antisocial, relying on a tight interactional coupling with human and machine, often at the expense of other interlocutors" [14].

In our study, we observed a number of similar instances in which a gamer seemed to fall prey to the computer's holding power. Each of these instances correlated with some form of special effects or "Easter eggs" within the game. One youth gamer, for example, rolled or hit the various balls of *Wii Sports* games backwards after discovering that the spectators in *Wii Sports: Bowling* could be startled by releasing a ball backwards into the crowd (P30). This behavior seemed to disrupt the flow of group gameplay and was commented on by the adults in the group. Similarly, two adult gamers took turns crashing cars in *Burnout Paradise*, exclaiming "Awesome!" when the game showed a slow-motion crash sequence (Group E). While both adults seemed to enjoy the spectacle of the car crashes, the primary form of engagement during those special effects seemed to be between each individual gamer and the game and not between the two members of the gaming group.

PIVOT POINTS: SHIFTING BETWEEN THE GROUP AND THE INDIVIDUAL

Some phases in console gaming seemed to bring the distinction between group- and individual-oriented practices into sharper relief. In particular, we observed a number of "pivot points"—points in the game at which we observed a marked shift in orientation, between an emphasis on the group and an emphasis on the individual or vice versa.

Negotiating Individual Contributions to the Group

There were a number of points during gameplay at which group members discussed the contributions of individuals to the larger group. Here, the emphasis on the group and the emphasis on the individual seemed to intersect. Sometimes these interactions occurred explicitly in the middle of a game:

P3: You're supposed to be helping; it's a team sport.

Negotiations about individual contributions to the group were much more prominent, however, during the configuration and setup of each new game, when gamers

assigned or reassigned group roles to individual players. In the following excerpt, one individual's role in the group was reassessed following the group's failure to get a star:

P27: Bogus, we didn't get our first star...

P29: You should play the guitar.

P27: You know, a bass part is what you need.

P29: Should I switch it?

P27: Nah, you're good.

P29: No I'm not!

P27: Well you could play the bass on it. Yeah...

P29: Cuz' I'm used to the bass part. Yeah, I think I will.

Individual team members' strengths and, more prominently, their weaknesses were taken into consideration in an attempt to create a more successful team for the next game. Groups continually assessed and reassessed individuals' contributions to groups and adjusted individual roles as gameplay unfolded. In many of these interactions, gamers often seemed to single out a particular individual in the adjustment and assignment of roles. But because groups surfaced these decisions, discussed them, and, to a greater or lesser degree, agreed upon them, there also seemed to be some acknowledgement that the group, as a whole, was accountable for the decisions that had been made. In the following example, P13 and P14 agreed upon a particular set of roles in the game. When one individual "failed" out and the game ended prematurely, the other individual voiced an acknowledgement (albeit somewhat resigned) that it is sometimes the case that the decisions everyone agrees on do not always pan out:

P14: I think you're going to have a tough time with the drums...

P13: Yeah? It's...a somewhat easier song...

P14: No, I think it's going to be quick and hard.

P13: Well, you'll just have to save me...

[...]

P13: Oh no! I'm sorry! I'm sorry!

P14: Oh, we were right at the end! Oh well. That happens.

Finally, we observed a number of instances in which individuals wanted to play a more significant role in the gameplay than they had been accorded. These individuals spoke up repeatedly in an attempt to assert their value to the other members of the gaming group. In one group gaming context, for example, two sisters played together but only the elder sister (P8) held the game controller. The younger sister (P7) recognized that part of her value as a peripheral participant was bound up in her ability to remember details about the game, for example, what characters had which special abilities:

P7: You want to jump to the other side. You could be Yoshi.

P8: Whoops! Yeowch! The shark caught me...

P7: If you want to jump there... then you need to use Yoshi. He can fly for two seconds, can't he?

Sometimes the individual's contributions were acknowledged and sometimes they were ignored; the age

and maturity of gamers seemed to influence how these advances were received. Nevertheless, patterns of individuals trying repeatedly to assert their value to the larger group continued over the course of gameplay.

Reviewing Scores

We observed a marked shift in conversation at the point in games when scores were displayed. In many cases, there was a very explicit shift between singular and plural tenses in the language used by participants. Most commonly, participants appropriated a plural tense immediately following gameplay and focused their discussion on the groups' performance. Once the scores for the game were posted, however, participants frequently shifted to a singular tense, refocusing the discussion on an individual:

P24: Yeah! Woohoo!

P25: We did it!

[Individual accuracy percentages appear on the screen]

P26: I sucked.

P25: Maybe you shouldn't quit your job, dear.

P26: I only got fifty-two.

In some cases, as in the example above, the tense shifted to first person singular with a gamer commenting on personal performance. In other instances, the tense shifted further to second person singular with a gamer commenting on another gamer's performance:

P27: Uh oh! We've got to get these last notes or otherwise we're not going to get it... We're gonna get it... Oh, what happened? We both missed it! Darn it...

P28: I did horrible on that song.

P27: It's your fault, then.

(Laughs)

P28: I know it was.... I can't hit the notes.

P27: Yeah, you only got a ninety-eight, come on y'all.

In only one instance, we observed a conversation in which the display of scores correlated with a shift from a focus on the individual to a focus on the group. In this instance, one gamer felt she had done quite poorly and the score helped her see that, relative to the performance of others, she had not done so poorly, after all:

P27: Ahh! That was terrible! Ug! I did so bad.

P29: No, you didn't...

P27: No, I did; it was really hard...

[Individual accuracy percentages appear on the screen]

P29: Ooh, ninety-four!

P27: Mom and me, we tied!

We found the explicit shift in conversational focus surrounding the display of scores to be quite striking. It is worth noting that in most of the games we observed, even in collaborative games in which an entire gaming group would win or lose together, the screen displaying scores still presented scores for individual gamers; sometimes these individual scores were given more visual prominence than was the shared group score.

DISCUSSION

By teasing apart two related continua, competitive-to-collaborative modes of gameplay and individual-to-group oriented gaming practices, our analysis creates space to think about group dynamics and the influence of the games that are being played on that group dynamic. This distinction between modes of gameplay and group gaming practices allows us to see resonances between our view of the sociotechnical gaming context and other research in group cohesion.

The construct of cohesion in studies of groups emerged as a way to help explain differences in group performance:

The theoretical and intuitive hypothesis has been that [social and motivational forces between group members] create a bond, or cohesion, among the members of the group, and that the stronger the bond, the greater the productivity of the group [1].

Researchers have not reached consensus about what kinds of forces create cohesion among groups. However, a number of different forces have been suggested, including (among others) the following:

- An attraction to the other members of the group and/or a perception that one has a reciprocal influence on the group [12, 18]
- The similar personality characteristics or perceived "fit" of other members of the group [10, 18]
- The prestige of the group [12]
- A "basic allegiance to the group" [18]
- An "attack from outside or a common 'cause'" [10]
- The shared or interdependent activities of the group [10, 12]

Traditionally, researchers have examined group cohesion in the context of work groups, therapeutic groups, living units, and sports teams [3, 10]. More recently, research has examined group cohesion in virtual teams [19]. Although most researchers agree that the construct of cohesion is fundamentally important in studies of groups, there is considerable disagreement about how it should be defined and how it should be measured [1, 10, 18].

We did not measure cohesion within the gaming groups in our study. Nevertheless, we suspect that the groups who participated in our study were more than likely already relatively cohesive, evidenced by the fact that they chose to gather together regularly to play console games. One of the forces that has been suggested as an influence on cohesion is shared activity, and all gamers in our study participated with their group in the shared activity of gaming. This perspective on cohesion also seems to resonate with Nardi and Harris' claim that "a larger field of collaboration is constituted by engaging in the game" [17].

However, we would also speculate that some groups were more cohesive than others and that cohesiveness within some groups waxed and waned over the course of gameplay. For example, groups who engaged in interdependent practices such as those observed during

Rock Band or *Lego Star Wars* may have experienced increased cohesiveness. A group in which one gamer enjoyed sending the ball backward in *Wii Sports* was most likely not engaged in the same game as other group members at that moment—playing a game of eliciting responses from the virtual and co-present audiences as opposed to playing *Wii Sports*—and the group may have experienced decreased cohesiveness.

When studying gaming, then, it may be increasingly valuable to distinguish between the games, themselves, and the games that people choose to play. In some cases, the goals of the game and the goals of the gamer may align. In other cases, gamers may choose to play other “games,” opting, instead, to crash cars in order to watch the slow-motion graphics or to lose intentionally in order to model prosocial behaviors to youth gamers. In collaborative gaming groups, then, there may be as many games being played as there are gamers. The relationship between the game and the games people choose to play likely influences group cohesion; a more focused study on this phenomenon would be an interesting direction for future work.

Within computer-supported cooperative work and human-computer interaction, the construct of group cohesion has also been employed as a motivation and goal for system design. Researchers developing, for example, games across media spaces [15], games within virtual worlds [9], mobile computing and photoware [5], ambient intelligent environments [26], tangible computing and ambient displays [2], and semi-public displays [27], have all set out to design technologies to foster cohesion within groups.

As with many other researchers in computer-supported cooperative work, we believe that social relationships are an important component of one’s well-being and identity (see e.g., [23]). As such, we also believe that helping to maintain and nurture existing social relationships is an important goal for design.

More than likely, game designers also wish to foster cohesion within gaming groups, as doing so would help ensure a continued audience for their work. However, as we have shown, gameplay involves both group-oriented and individual-oriented practices within gaming groups. Understanding more precisely what elements of game design influence cohesion among groups—whether games are competitive, cooperative, or collaborative—would be a compelling direction for future work.

CONCLUSION

In this paper, we have presented results from a study of collocated group console gaming. We endeavored to disentangle the discussion of gameplay practices from the traditional classifications of game mechanics in order to better understand the range of individual- and group-oriented gaming practices. In our analysis, we identified four classes of practices that emphasized the gaming group as a whole: constructing shared awareness, reinforcing shared history, sharing in success and failure, and engaging

in interdependence and self-sacrifice. We also identified two practices that emphasized the individual gamer: talking trash and falling prey to the computer’s holding power. In our data, we observed more group-oriented gaming practices than individual-oriented gaming practices and believe this may be due, at least partially, to our explicit choice to study gaming groups, the self-selection bias of groups that volunteered to participate in the study, or our presence in the gaming environment during gameplay.

Nevertheless, we found that both group- and individual-oriented gaming practices were present across the spectrum of competitive-to-collaborative games, transcending the classic modes of gameplay with which they would most likely be associated. In fact, some of the most group-oriented practices we observed occurred in a group that was playing a competitive game. And some of the most individual-oriented practices we observed occurred in a group that was playing a collaborative game.

We also identified two critical “pivot points” at which a group orientation intersected with an individual orientation: negotiating individual contributions to the group and reviewing scores. These two pivot points suggest two key foci at which game designers might carefully consider the ways in which their decisions influence group dynamics during gameplay. We found it quite interesting that these two pivot points served as the bookends around what one might generally consider the gameplay experience. Negotiations about individual contributions to the group typically occurred during game setup and configuration while displays of scores typically occurred after the game had ended.

For each of the gaming practices that we identified, we related the class of practices, where possible, to specific elements of the game design, including game mechanics, interaction design, and special effects design. These observations pave the way for other researchers and game designers to explore, more specifically, the causal relationships between specific game design elements (or, perhaps, combinations thereof) and the dynamics within gaming groups.

Overall, this research points to the rich dynamics within gaming groups and contributes initial insights about relationships between console game design and group interactions—that competitive games do not always equate to individual-oriented practices, that collaborative games do not always equate to group-oriented practices, and that the dynamics within groups are not merely influenced by the mechanics of the gameplay but by the design of the setup and scoring, as well.

ACKNOWLEDGEMENTS

We would like to thank our participants for sharing their time and gaming experiences with us. This research was supported in part by the NSERC/iCORE/Smart Technologies Chair in Interactive Technologies and by NSERC’s NECTAR Strategic Networks Grants Program.

REFERENCES

1. Beal, D., Cohen, R., Burke, M. & McLendon, C. (2003). Cohesion and performance in groups: A meta-analytic clarification of construct relations. *Journal of Applied Psychology*, 88(6), 989–1004.
2. Brewer, J., Williams, A. & Dourish, P. (2007). A handle on what's going on: Combining tangible interfaces and ambient displays for collaborative groups. In *Proceedings of the Conference on Tangible and Embedded Interaction*. New York, NY: ACM Press, pp. 3–10.
3. Carron, A.V., Bray, S.R. & Eys, M.A. (2002). Team cohesion and team success in sport. *Journal of Sports Sciences*, 20 (2), 119–126.
4. Corbin, J. & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Los Angeles, CA: Sage Publications.
5. Counts, S. & Fellheimer, E. (2004). Supporting social presence through lightweight photo sharing on and off the desktop. In *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems*. New York, NY: ACM Press, pp. 599–606.
6. Dovey, J. & Kennedy, H.W. (2006). *Game cultures: Computer games as new media*. New York, NY: Open University Press.
7. Ducheneaut, N., Moore, R.J. & Nickell, E. (2007). Virtual “third places”: A case study of sociability in massively multiplayer games. *Computer Supported Cooperative Work*, 16(1–2), 129–166.
8. Ducheneaut, N., Yee, N., Nickell, E. & Moore, R.J. (2006). “Alone together?” Exploring the social dynamics of massively multiplayer online games. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. New York, NY: ACM Press, pp. 407–416.
9. Ellis, J. B., Luther, K., Bessiere, K. & Kellogg, W.A. (2008). Games for virtual team building. In *Proceedings of the ACM Conference on Designing Interactive Systems*. New York, NY: ACM Press, pp. 295–304.
10. Evans, N.J. & Jarvis, P.A. (1980). Group cohesion: A review and reevaluation. *Small Group Research*, 11(4), 359–370.
11. Eveslage, S. & Delaney, K. (1998). Talkin’ trash at Hardwick High: A case study of insult talk on a boys’ basketball team. *International Review for the Sociology of Sport*, 33(3), 239–253.
12. Festinger, L. (1950). Informal social communication. *Psychological Review*, 57(5), 271–282.
13. Grudin, J. (1994). Computer-supported cooperative work: History and focus. *IEEE Computer*, 27(5), 19–26.
14. Ito, M. (2005). Mobilizing fun in the production and consumption of children’s software. *The ANNALS of the American Academy of Political and Social Science*, 597(1), 82–102.
15. Ljungstrand, P. & Björk, S. (2008). Supporting group relationships in mediated domestic environments. In *Proceedings of the Conference on Entertainment and Media in the Ubiquitous Era*. New York, NY: ACM Press, pp. 59–63.
16. Moledina, J. (2004, June/July). Doing mushrooms, Miyamoto-style. *Game Developer Magazine*. Retrieved online 14 May 2008: http://www.gamasutra.com/view/feature/2117/doing_mushrooms_miyamotostyle_.php
17. Nardi, B. & Harris, J. (2006). Strangers and friends: Collaborative play in World of Warcraft. In *Proceedings of the ACM Conference on Computer Supported Cooperative Work*. New York, NY: ACM Press, pp. 149–158.
18. Piper, W.E., Marrache, M., Lacroix, R., Richardsen, A.M. & Jones, B.D. (1983). Cohesion as a basic bond in groups. *Human Relations*, 36(2), 93–108.
19. Salisbury, W.D., Carte, T.A. & Chidambaram, L. (2006). Cohesion in virtual teams: Validating the perceived cohesion scale in a distributed setting. *SIGMIS Database*, 37(2-3), 147–155.
20. Sall, A. & Grinter, R.E. (2007). Let’s get physical! In, out, and around the gaming circle of physical gaming at home. *Computer Supported Cooperative Work*, 16(1–2), 199–229.
21. Stevens, R., Satwicz, T. & McCarthy, L. (2008). In-game, in-room, in-world: Reconnecting video gameplay to the rest of kids’ lives. In K. Salen (Ed.), *The ecology of games: Connecting youth, games, and learning*. Cambridge, MA: MIT Press, pp. 41–66.
22. Szentgyorgyi, C., Terry, M. & Lank, E. (2008). Renegade gaming: Practices surrounding social use of the Nintendo DS handheld gaming system. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. New York, NY: ACM Press, pp. 1463–1472.
23. Tajfel, H. (1974). Social identity and intergroup behaviour. *Social Science Information*, 13(2), 65–93.
24. Turkle, S. (1995). *Life on the screen: Identity in the age of the internet*. New York, NY: Simon & Schuster.
25. Volda, A. & Greenberg, S. (2009). Wii all play: The console game as a computational meeting place. In *Proceedings of the ACM SIGCHI Conference on Human Factors in Computing Systems*. New York, NY: ACM Press, pp. 1559–1568.
26. Wakkary, R., Hatala, M., Jiang, Y., Droumeva, M. & Hosseini, M. (2008). Making sense of group interaction in an ambient intelligent environment for physical play. In *Proceedings of the Conference on Tangible and Embedded Interaction*. New York, NY: ACM Press, pp. 179–186.
27. Yamada, T., Shingu, J., Churchill, E., Nelson, L., Helfman, J. & Murphy, P. (2004). Who cares? Reflecting who is reading what on distributed community bulletin boards. In *Proceedings of the ACM Symposium on User Interface Software and Technology*. New York, NY: ACM Press, pp. 109–118.
28. Zagal, J.P., Rick, J. & Hsi, I. (2006). Collaborative games: Lessons learned from board games. *Simulation & Gaming*, 37(1), 24–40.