

The Channel Surfers: Playful Collaborative Activities to Dissolve Interpersonal Boundaries

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ABSTRACT

This research explores how we can encourage and support different groups of people to collaborate in teams. Games could develop strong teamwork skills. Our Channel Surfers' prototypes help to enable shared understanding and build interpersonal relations among people. Players are physically dependent on each other in collaborative play with dynamic swapping first-person perspectives. We conducted playtestings through designed physical activities with people in situ and analyzed social interactions among different groups of people. We presented the results of how connected people communicated and were able to successfully achieve a shared goal.

Author Keywords

Embodied interaction, social play, collaboration, engagement, sharing first-person perspectives

INTRODUCTION

Games have long been used as an efficient way of supporting social interaction. Family board game nights or weekly bridge meet-ups among friends, help players satisfy their psychological need for relatedness and create shared experiences that draw them closer than before [5]. Collaborative games offer players a way how to have fun and help each other in (required) difficult situations, but these games also train players' social skills, especially their ability to work in a team [2]. Players perform collaborative learning which is more effective than learning alone [7]. McNally and colleagues' study [11] found that cooperative social interaction such as cooperation and teamwork among people can provide greater intelligence and larger brain size.

Our research started as an apprenticeship course called Collective Body Play at winter semester 2016. The goal of the semester project was to explore and design novel digital-physical playful experiences for two and more persons in a bodily collaborative manner. Our final concept consists of three players wearing head mounted displays and same overalls, due to hide their identities, which have to accomplish a shared goal with dynamic changing of visual perspectives. Because the player's point of view is continuously swapping with the others points of view, where the players never have their own perspective, the collaboration and shared understanding is very important in this playful experimental setup.

The research could provide beneficial information to researchers that are interested in social interaction among

different group of people and their ways of communication. It could also encourage and inspire game designers, who focus on exertion games or virtual reality games, to create a more playful experience. In places such as kindergarten, school or workplace where relations and collaborative work need to be supported, professional audience might be interested in order to ensure communication skills and teamwork.

RESEARCH AIM

The paper explores new ways of ensuring empathy between different people by sharing each other's perspectives. Our project is focused on the communication between different groups of people, especially strangers, and their roles in collaborative activities when they experience each other's point of view. What happens and how different groups of people behave in a collaborative game with dynamic changing of visual perspectives? Is there any difference between playing with strangers or friends? We would like to investigate by using our research how can we encourage social interaction between strangers in collaboration and thus help them build connection in interpersonal relationship.

RELATED WORK

A visual perception is connected to a human body. Several experiments where individuals experienced the illusion of owning dummy limbs [8] or the body of Barbie doll [15] have demonstrated that they disown their body and no longer perceive it as part of themselves in situations when they visually experience that they were located in a different place from their real own body [3]. The feeling of out-of-body experience is best achieved when the brain has to perform multisensory integration of stimuli which was very well performed by project Machine to be Another [14] where swapped visual perception created illusionary embodiment. This study was achieved by Hachiya [4] in early years by creating the Inter Dis-communication machine that allowed the swapping of visual perspectives among two people for the purpose of unbinding body and perspective. But the out of body experience could be reach even for more than two persons. The Parallel Eyes [9] study explored how people in mutual visual shared parallel experience can easily lose their physical embodiment with other players, how they develop strategies to understand their own embodiment and communication model of visual sharing.

These studies were inspiring for our research that discuss connected human communication by first person video perspectives. In order to explore and support our research we

created a provotype [12] for distributing shared vision that is focused on investigation of how group of people would behave in collaborative play with limited sensory perception. Our players experienced normal collective activity in a new alternative way where the technology provoke current practice.

PROJECT DESCRIPTION

Our provotype represents a wearable cardboard helmet that is equipped with a wireless First Person View set which works on radio frequency video transmitters and receivers where a small screen shows video transmissions from different cameras. The Arduino controllers enable every 12 seconds continuous and dynamic changing of three frequency channels that allow sending video from camera to different screens. For our research we created three provotypes designed for three players. In this case player A could see the world through the camera of player B, player B see the visual perspective of player A, so they can experience each other's perspective, but then perspectives are changed so player A can suddenly see through the camera of player C and so on (Fig. 1).



Figure 1. Diagram of swapping first-person perspectives between players A-C.

In collaborative social play are players encouraged to be equal and work together towards a shared goal engaged in the same activity [17]. We supported this achievement by putting the players into similar overalls and giving them gloves and shoe covers. This setup could evoke players' sensation of distributing shared vision among each body with the feeling of confusion where players create together a representative big image of the world which should open shared understanding. We named this experiment as "Channel Surfers" because players experience surfing between different channels of the cameras.

METHOD

We took our research into natural context within field approach where social interaction between different groups of people could occur. The research activities were conducted as part of the Pixelache festival 2016 of Interfaces for Empathy at the Kiasma art museum in Helsinki and also at the Finnish library in Jyvaskyla. Participants of the research were local and international visitors of the museum/library and also festival visitors. We as facilitators ran 46 playtestings [1] with 138 random visitors that consist of groups of strangers and people which knew each other.

Setting

We prepared simple activities composed of several tasks with cardboard boxes for a single group of three players such as finding three boxes in the middle of the room, build a tower from them, find other three boxes around the room, build another tower from new boxes next to the built tower with a distance, go through these two towers and even go outside of the room and come back. The activities had one shared purpose and goal without any limiting rules for the players. Players were allowed to act freely. We just suggested that they could communicate and help each other. Firstly we presented and introduced our concept to the players. Then we deployed the players around at the same distance into the field of view of the players. Then we placed three boxes in the middle of the room, in front of them. One design student at the time facilitated the session of playtesting where players were provoked by our provotypes. We observed players in native perspective. After each playtesting the participants were interviewed with prepared semi-structured questions in order to understand their experience and reflect on the event.

DATA DOCUMENTATION

The playtestings of provoked collaborative activities among different people were video recorded on video camera and mobile phones. The players' video perspectives were also recorded to get the insight of what players in various situations could see. The semi-structured interviews of individuals and groups of people were video recorded and also handwritten notes were kept.

ANALYSIS

Our analysis includes analyzing transcriptions [6] of selected playtesting, their interviews and also analyzing players' behaviors in these sessions.

We would like to demonstrate what happened on the real example of session with a couple and a stranger. While the young couple, player A (PA) and player B (PB), had helmets already on in the prepared setting, the third player C (PC), a stranger, arrived later. When the first task of finding boxes started, the players without speaking slowly began to move and search for a box. Their first experience of the task became more individual. Although players were depend on each other perspectives, they were in this setting able to see themselves in participants' cameras and with smaller issues found and grab their box. They did not need physical help, they were able to solve it without any strategy just by help of their human senses. When player A finished his individual task, he started to help the others by communicating and providing his view. The first dialogue in this session was between friends.

- 24 PA: *I am trying to help out here.*
- 25 (2.3)
- 26 PB: *OK. I can see myself right now.*
- 27 PA: *OK.*

28 PB: *OK. I have a box.*

29 PA: *Got it.*

When player C, the stranger, started to feel desperate and realized that she was the only one without a box, the situation forced her to communicate and ask for help from the strangers. Player C led dialogue with Player B. She came up with a strategy using player C's perspective in order to navigate her and get a best angle of her situation.

31 PC: *No. I don't have box yet.*

32 PA: *I think now, I am looking [at*

33 PC: *[So it is W. (PA) and the other person is?*

34 (1.2)

35 PA: *S. (PB)*

36 (0.3)

37 PC: *PB*

38 PB: *PB*

39 PC: *So, Look down PB.*

40 PA: *So I am on your left.*

41 PA: *Can we back up and see more?*

42 (0.9)

43 PC: *PB, can you please look down?*

44 (0.5)

45 PB: *Look down, yes.*

46 PC: *Ehm, little bit to the right.*

47 PB: *Okay.*

48 (0.3)

49 PC: *More.*

During the collaborative play the two strangers have been working together, while player A was passive standing in the background to provide them a view. But suddenly when the two strangers were done, they were missing the last piece from player C to get the tower done, so player B looked for him.

80 PB: *Where is PA?*

81 (0.4)

82 PA: *I am like over here.*

83 PC: *This is go strange.*

84 (0.2)

85 PB: *PA, can you see the tower?*

If the player was lost, the others helped him by telling what everyone could see or even navigated him by noises, so the

player could then follow his hearing sense without any visual perception.

123 PA: *Great. Does anybody see me? Because I got nothing.*

124 PB: *One is behind me.*

125 PC: *PA, here is the box.*

126 PB: *PA, come over to us.*

127 (0.2)

128 PB: *Follow our voices.*

129 PA: *Ok. I am slowly moving to get the box.*

130 PC: *Here it is.*

When the passive player was empowered with the best point of view of the other player which was acting desperate, she was engaged into social interaction and started to navigate him.

158 PB: *PA, I can see you. Look down.*

159 (0.4)

160 PB: *Look down and to the left.*

161 (0.4)

162 PC: *And there is the box.*

163 (1.0)

164 PA: *Alright. To my left here?*

165 PB: *Yes.*

166 PC: *To the left.*

167 (1.0)

168 PA: *Yeah.*

169 (3.0)

170 PC: *Now we can all slowly move.*

Player B and C saw clearly the situation that allowed them to navigate the player A, which was moving without no visual clue. One player saw through the acting player's camera and the second player saw through well provided point of view. Even if one of them did not provide a good perspective, the collaboration among players appeared and was successful.

Mostly the stranger took the initiative to navigate the team in order to achieve the goal, but in one moment the active player A interrupted her and took charge of the situation by telling which direction they should look or go.

193 PC: *PB go straight.*

194 (1.5)

195 PB: *Can anyone see where I am?*

196 PC: *To the right a little.*

197 (1.1)
 198 PA: *Ehm, sorry for second.*
 199 (3.0)
 200 PC: *And go slowly. To the [right and then to the left.*
 201 PA: *[Forward to the left.*
 202 (1.0)
 203 PA: *Perfect. You right over. You feel it.*

From that time player A was navigating both players. In the moment when player C noticed that player A could manage it by himself, she gave up the leadership role. In interviews both players knew about their leading skills.

"I am weirdly comfortable ordering people around. I just like right now. My personality is trained". (PA)

"I was so relieved, that you were also leader. Because I work with artists, I have to manage a lot of people". (PC)

When player A got players' views he used them managed to ensure best views for the whole team. He fixed one point of view of player C into a stable position and then helped player B to the get right direction of her point of view, so she could go alone and grab missing box.

213 PA: *PC to the left a little bit.*
 214 (3.9)
 215 PA: *Oh, maybe to the right. Actually, sorry PC. I am trying to figure it out where I am looking.*
 216 PA: *Ok. Perfect.*
 217 PC: *Yeah.*
 218 PA: *Just to the left a bit more PC.*
 219 PA: *And down a little bit.*
 220 (0.6)
 221 PA: *Perfect. Now stay around this way.*
 222 (1.2)
 223 PA: *And, (0.4) PB could you look to the left?*
 224 (1.0)
 225 PB: *Yes.*
 226 PA: *And down a little bit.*
 227 PA: *Ok. You looking directly to the box.*
 228 (0.9)
 229 PB: *Ok.*
 230 PA: *so if you just go down.*

Even when passive player C was providing the view, she was still part of the activity. She felt important, because they would not be able to collaborate without her. She was

encouraged by our provotype into supportive collaborative role.

After this successfully finished session, player A and B met face to face player C for the first time. In the interview they mentioned how great and simple it was to interact with the stranger. They did not have any problem to address the players by names. The collaborative flow was very smooth. Players created their own mental image of the individuals they have interacted with based on their voices and reactions.

"I didn't know they know each other. No I don't know. Just two. Someone. I didn't even know the gender. There was the name what was the gender". (PC)

"Yeah it was very interesting for me with PC. I had no idea what you look like. That was probably the strangest part of whole experience to meeting someone in a box. Next time I would like to do it with all strangers. Because since I already knew PA, it was more interesting to interact with PC. I already interact with PA. It was fun for a moment, but I think it was really interesting to interact with stranger. Especially with stranger who I have never met in any other context besides in the box. And I had only name and voice. That was super interesting". (PB)

FINDINGS

We found out that players act individually at the beginning of social play. Each player had their own goal that seemed simple. In first moments a player experiences the normal world in a new provocative way. S/he tries to get used to it and figure it out alone. They used each other's perspective to achieve the first part of the activity. If a player is lost and without any clue what to do, s/he realizes how his/her co-players are important and starts to communicate with strangers by asking for help or s/he navigate some of players to get a better view. After that they had to build a tower from these single boxes. This achievement became collaborative since it is changing players' thinking into collective teamwork. The task can't be done without the participant's box. One of the players comes up with a communication strategy in order to play successfully and applies it [13].

"Can we all stop? Hey, let's try to coordinate. So ehm, I look down, ok?" (PF)

"PN, can you show me the box?" (PM)

Then it depends on how the others will accept it. A player could communicates with both players, the switching camera allows communication across whole team. They start to navigate each other, so they communicate on very specific level of distribution of action. A leading role depends on positions of players in the room. This model of dynamic leadership roles enables a smooth collaboration flow where each player is involved into collaboration and fulfill different role. Some players were sure that they did not take a leading role even if they did in some situations.

When two players have a good perspectives the team can begin to collaborate even if a third player provides a bad

perspective, which is usually the active leading player who have good views from both co-players. In some playtestings was already possible when just one player was in the right direction, for example pointing to the box. His/her camera already provided the best view for a co-player who noticed that so a co-player quickly took advantage of the situation and directly navigated him. These behaviors of players depend on interpersonal trust - *“the willingness to be vulnerable based on positive expectations about the actions of others”* [10]. High trust has positive effects on team communication, team identification and team performance [16]. Low trust in group of people could enabled collaboration problems.

Our provotype with hiding personalities and characters of players helped to see everyone as same person – just a body. The interpersonal boundaries of stranger disappeared so physical contact such as touching or talking did not feel bad because the player’s mind was embodiment somewhere else [11,15].

“You sort of forget where you are if you concentrating on task of looking, making, asking somebody to look somewhere. Then you were kind of there. R. (PS) was there, S. (PT) was there, so I thought I was there. I was kind of physically there but I was looking from there very intensively. Then it was moment when I was losing location and action”. (PR)

We also found that concentrated players in some short moments forgot that what they saw on small display wasn’t their own visual perspective and they instinctively moved in a same way with body on the other side [11].

Based on the conducted interviews, players didn’t think that collaboration with friends really matters. The communication might have started earlier but the strategy is more important. They didn’t see any differences between communication with friends or strangers. Our provotype has showed them how others react on different situations, their real personalities and how they were able to work and clearly communicate in a team. Some players preferred to play with strangers [18], some were more curious to play with their colleagues at a workplace.

On the other hand, playtestings where collaboration problems occurred and the stranger was not involved, happened because of the lack of trust, lack of responsibility for teamwork or simply because of the language barrier among international players. In these scenarios the stranger felt separated from the activity. The stranger had to take an active role, because the friends were dependent on his/her action. When a stranger discussed with others his/her needs without using their names s/he did not get an answer. The only case how s/he succeed was when two faceless players were in physical contact or they felt the proximity aware, then the social interaction was engaged. When the single action was done, the conversation ended and moved again to friend’s conversation without the stranger’s involvement.

CONCLUSION

In this paper we introduced and analyzed our social collaborative play that connects players by distributing their visual perceptions across the whole team. The provotype enabled the player to embody with co-players and thus each player got the power to be active, shared awareness and together the players created a part of the representation of the real image of the event. Helmets and same overalls dissolved interpersonal boundaries, so players could focus on the shared goal where the player is distributed across the whole team.

Our investigation of encouraging strangers in collaboration and supporting interpersonal relationship, showed that it depends on several factors. If a player came up with a communication strategy and the rest of team realized that it could work, they accepted it and the collaboration flow is enabled. Players have interpersonal trust for the active player who takes the responsibility for the team work so they are more engaged. Because the perspective swapping was dynamic, players were dynamically taking leading roles to support each other. There is not a big difference between strangers’ and friends’ players. It could take more time in comparison to players who know themselves, since they know their personalities, reactions and movements. Players learn how the others react to different situations, their real personalities and how they communicate and work in a team.

Future work

Future work would include further research on including more than three players and find out if players wouldn’t create couple of communication groups where some players wouldn’t be taken as part of the team. We would like to test our research in a real workplace environment with just hired workers and use it as icebreaker for team buildings. We would like to ideate on the provotype improvements that may ensure a more natural camera view and better wearing experience.

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