# Interaction Manifestations at the Roots of Experiencing Multiplayer Computer Games

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**ABSTRACT**
Today's computer games offer players stunning audiovisual environments, intense action, adventures, puzzles and crowded worlds with vast amounts of other players to play with. Consequently, play experience is a combination of numerable variables. This study focuses on understanding how interaction manifestations of games participate in the process of experiencing multiplayer game environments. Rich Interaction Model [9] is used as a theoretical framework for analysing experiencing of interaction. Two experimental games are used in the analysis as examples. The results of this study are preliminary guidelines of how interaction manifestations affect experiencing games.

**Author Keywords**
Play experience, interaction forms, multiplayer games

**INTRODUCTION**
Success of multiplayer games has raised many questions of how the players, situated around the world, play together. The players may not share age, time zone, continent or even native language but they do find ways to interact with each other and experience the adventures together. Interaction manifestations in computer games have been studied from the perspective of communication. Those forms of interaction offer researchers' interesting ways to understand how the players experience the virtual world and each other in it.

Picture three characters on a deck of a small airship equipped with mighty cannon. The player standing in the front of the deck starts jumping and writes a short message "ENEMY BALLOON ON THE LEFT!!". The rest of the crew starts acting at once. The pilot steers the airship towards the enemy balloon. The aimer notices the change in speed and direction and loads the cannon while taking the position to turn the cannon towards the enemy balloon. The fireman watches the enemy closing in, takes a torch and approaches the cannon. The movement of the balloon stabilises and it starts to ascend slowly. The aimer and the fireman see the enemy ship exactly where it is supposed to be and the fireman fires the cannon as the aimer keeps it targeted towards the enemy ship. The cannon fires and all three see the cannonball fly across the sky and hit the enemy balloon. The crew continues this seamless act of loading the cannon, firing it, and coordinating the flight path of the balloon and the direction of the cannon. When everything goes right, the enemy balloon takes a few hits and falls off the sky. The feelings of success, cheerfulness, power and joy is shared by the victorious crew.

A crew of three players worked efficiently and in co-operation to reach a common goal. How did they know what to do and when to do it to succeed? One explanation can be found by analysing the communicative power of interaction forms, or, manifestations of interaction [9, 10] within a game world. To succeed, these players knew how to interpret the clues of action provided in forms of *environmental detail, kinesics, spatial behaviour* etc. [10, 11]. All the necessary information is there to perceive for the ones who know how to interpret it. This study looks deeper into what the manifestations of interaction mean in terms of experiencing the game environment. Two experimental games are analysed and used as examples. Furthermore, the actual experiencing process is evaluated through preliminary analysis of player testimonials. Since successful interaction with the environment seems to cause positive experiences in the game environment, the goal of this study is to create understanding of how interaction forms participate in the process of experiencing the game environment and others in it.

**EXPERIENCE AS MANIFESTATION OF INTERACTION**
Dewey saw experience as the manifestation of interactions between organism and environment. He thought experience is *of* as well as *in* nature. It is not experience which is experienced, but nature. Things interacting in certain ways *are* the experience."[6] This forms an interesting basis for analyzing an experience of a player interacting with virtual environment. The player experiences the game environment in multiple levels. The physical being of the player can not enter the virtual world although phenomenology sees an experience as a result of a process of being-in-a-world [3]. Virtual environments form a problematic combination of experiencing a world without physical presence in it. The player, however, has a representation, or avatar, acting as

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the manifestation of player's presence in the virtual world. What, then, are the forms of interaction the player can use to experience a virtual world?

In addition to experiencing presence in the world, the player needs to be able to interpret the content of the virtual world. The player's experience gains meaning through focused interaction with the environment. She can experience feelings of successful action and happiness of reaching goals in the game. An experience of interacting with the world can even reach a point where the player feels completely in control of her actions. This can be described as flow experience presented by Csikszentmihalyi [2]. A feeling of successful interaction with the environment can lead to feeling of flow and to optimal experience. But how does the player reach a state of successful interaction in a game environment?

Another very important part of experiencing multiplayer games is the presence of other players. Csikszentmihalyi argued that almost every activity is more enjoyable with other person around and less so when one does it alone [2]. Interaction between players, thus, affects the experience of all participants. Successful communication requires forms of interaction that enable and support it. The communication and interaction between players lead to an enhanced shared experience [1]. How do the players interact within the game world to reach adequate level of communicating with each other? How do the players interact with each other through the means of the virtual environment in order to share an experience?

In his studies of interaction forms occurring in game environments, Manninen defines them as mutually perceivable manifestations of interaction [10, 11]. These manifestations, presented in the Rich Interaction Model [9], reveal an extensive arsenal of concepts that are used in computer games for the purpose of enriching interaction. They offer a diverse variety of elements that can be used in understanding the process of experiencing in game environments. Through that framework it is possible to analyse how the players interpret those manifestations within a game to reach the game's objectives and how the manifestations enable communication between the players.

## RIM AS FRAME OF REFERENCE FOR EXPERIENCING GAMES

Rich Interaction Model (Figure 1) is a theoretical framework constructed to uncover various ways to implement interaction cues into game environments [10]. It offers a tool for understanding what the elements of interaction in a game environment can be. This framework is used here to study how play experience can be a manifestation of interaction between player and virtual environment.

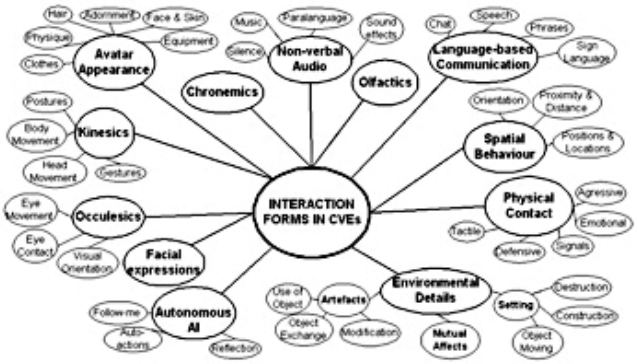


**Figure 1:** Rich Interaction Model [9]

***Environmental details*** define the appearance of surroundings providing contextual cues. These include *artefacts* that can be used and manipulated within the environment. Moving objects and furniture, leaving markers, and architectural design can be used to communicate through space and place [9]. The audiovisual content on a screen creates the first experience of feel and mood of the virtual world. Looking at a world can create a sense of experiencing it; however, the possibility to interact with the environment can not be belittled in the experience of actually being in a place. According to Dewey [6] things interacting in certain ways *are* the experience. An interactive experience of virtual world mimics the responsive nature of real-world experience [14]. A player experiences the virtual world as a participator to its events. Her interaction with the environment is meaningful and the experience of being present in it can be strong.

***Spatial behaviour*** consists of proximity, orientation, territorial behaviour and movement in a physical setting [9]. Orientation and movement are essential to the experience of enacting in a world. The perception of the virtual world, understanding the virtual proportions and being able to find locations in it create an illusion of being present. Understanding the space also enables most of the other interaction forms. In addition, *spatial behaviour* of virtual characters reveals characteristics of players' actions and relationships. The experience of sharing the space with others is very much dependent on this form of behaviour. For example, if some one runs towards you with a sword, you are likely to take some form of action. Instead, if that character is walking slowly towards you with empty hands, you are likely to react differently. Interpreting the *spatial behaviour* of others affects the player's experience of the situation.

***Non-verbal audio*** includes amongst other things silence, music, paralanguage and sound effects [9]. This form of audio serves several purposes in the process of experiencing the world as well as experiencing the other players. Firstly, the experience of a living world can be strengthened with a proper soundscape [15]. The habitants and events of the virtual world are partly brought to life with diegetic sounds

[7]. In addition, the virtual environment responds to players' actions with sounds and this intensifies the experience of interacting with a world.

Furthermore, *non-verbal audio* is an essential part of communication as it can significantly change the meaning of the verbal message [9]. Emotional responses to events are quite essential in the process of experiencing [13]. Since virtual characters often lack the power of expressing emotions through visual means, ability to use paralanguage and non-verbal vocalisations in recognising emotional states becomes very important. The screams, laughter, tone of voice, loudness, pitch etc. communicate very effectively the players' emotions. This, in turn, makes it possible to share emotions within the action and strengthens the shared experience [4].

***Chronemics*** involves the use and perception of time [9]. The audiovisual presentation of virtual environments often mimics the passage of time in real world (daylight, darkness in the night etc.). More importantly, experiencing time in game happens usually through actions that need to be finished within certain time-limit. The element of time, however, is manipulated to fit the purposes of the game and the player needs to learn the *chronemics* of the environment. In terms of interaction, time can be used as a critical element in coordinating actions. The experience of perfect timing or being able to perform the task within the given time can lead to experiencing flow [2].

***Autonomous AI*** category includes a set of pre-programmable actions and reactive behaviour that resemble subconscious and intuitive actions in the physical world [9]. These are the tools of the computer world that make it possible to automate various mundane (and boring) actions. The player's experience is enhanced through deleting mundane acts from game. They can also act as automatic triggers for various game events. The player is, thus, saved from some frustrating or meaningless activities in the game.

***Olfactics*** refer to the non-verbal communicative effect of one's scents and odours. Perhaps the most common example of this category is the use of perfumes. [9] The role of *olfactics* in process of experiencing is important. Especially the power of scents and smells in evoking memories can be strong. The virtual environments, however, do not support olfactic experiencing. The potential strength as interaction manifestation in virtual environments can, therefore, be approached only theoretically.

***Avatar appearance*** defines the attributes of image and presentation of self. Appearance contains the visual aspects of one's presentation [9]. An avatar constitutes the presence of the player in the virtual world [12]. Especially in role-playing computer games the avatar serves as an important foundation for immersing into the role and enacting the role in the game [5].

On the other hand, *avatar appearance* works as a visual cue for recognition of players. The physique, hair, clothes and face all communicate what the avatar represents in the virtual world. The identification of these representations can be crucial for the experience. For example, visualisations of avatars can reveal who is a friend and who an enemy. In addition, if the game is played as a team, players need to be able to look at the characters and know if they are part of the team. Recognition of other players strengthens the experience of togetherness and sharing the adventure.

***Kinesics*** includes all bodily movement commonly referred to as body language [9]. In real-life communication *kinesics* forms another way of expressing and interpreting emotions. Positions and movements of body are very important elements in communication between people who share a space [13]. In virtual space the expressive potential of avatars depends on the amount of expressive movements available. Usually the amount is quite limited. The experience of being able to enact emotional states and communicate through movement is, thus, also limited. The experience of immersing in a character can also suffer from the limitations of movements. Despite the limitations, interaction through movement does have great communicative value. Knowing the limitations of the bodily movements of the characters, the players do find innovative ways to express themselves through the avatars.

***Physical Contact*** reflects the use of touch in communication situations. This category consists of actions such as handshakes and patting. Furthermore, bodily contact stimulates several receptors that are responsive to touch, pressure, warmth or cold, and pain. [9] This category can be considered quite problematic in virtual existence. In real world *physical contact* is very strong in evoking emotional responses [13]. In virtual world the player does not have direct tactile contact with anything. The act of touching something in the game environment can, however, be experienced intensely. For example, if the character launches an unexpected and sudden reaction in the world by touching an object, the player is likely to react emotionally.

On the other hand, tactile elements can be considered according to interaction between players. The feeling of touching other person can not be conveyed through virtual means. However, the mental level of experiencing tactile elements seems to exist. Even though the physical stimuli of touching something do not exist, the players in general tend to act within the norms of real world. For example, players seem to feel very uncomfortable if they accidentally walk through another person. In general people tend to maintain an appropriate distance (proximity) from other users and try to avoid violating their personal space. [8] This suggests that *physical contact* between the virtual characters can be recognised and does affect the experience. Another example of entering the personal space of the character is violence. It can evoke very strong emotional responses from players. The experience of being in danger and under attack can be strong even though the player knows that the virtual self will re-spawn if killed.

***Occulesics*** are movements of the eyes, e.g., gaze. *Eye movement and eye contact* depict the focus, direction and duration of the gaze in relation to other participants. The term *visual orientation* can be used to differentiate *occulesics* from *spatial behaviour*. Two groups of variables associated with the gaze are: amount of gaze (e.g., how long people have eye contact) and quality of gaze (e.g., pupil dilation, blink rate, opening of eyes, etc.). [9] In real-life communication the informative value of eye contact can be considerable. The look in the eyes can reveal the person's innermost feelings. Virtual avatars can not express similar information, mostly due to the lack of all *facial expressions*. The strength of experiencing others' emotions can not be portrayed by a virtual character. Instead of evaluating the meaning and mental state of the others, the players can perhaps recognise if they are looked at and experience being noticed.

***Facial expressions*** may be broken down into the sub codes of eyebrow position, eye and mouth shape and nostril size. These, in various combinations, determine the expression of the face. Furthermore, blushing and perspiration can be classified as *facial expressions*. Although face is the most significant channel of nonverbal communication in physical world, the virtual environments tend to diminish the role of face due to graphics resolution limitations. However, in close encounters and discussion-oriented situations the *facial expressions* are fully perceivable even in games [9]. In addition, *facial expressions* are very important in sharing and experiencing emotional states [13]. Possessing this form of interaction can be considered very important in social play. Unfortunately the contemporary game environments do not support *facial expressions* well. The emotional state of players is conveyed through other means, if at all. Mostly players are left to guess what others feel. This affects the shared experience and experiencing others in general. However, sharing emotional states in virtual environments can be complicated. The player may feel one way but wish to express a completely different emotion through the character. In general, the self-expressive power and experiencing *facial expressions* as a means of interaction between players is very limited in virtual environments.

***Language-based Communication*** is the major channel for interpersonal information sharing in most of the current games. The use of language, or symbols, can be modelled and conveyed textually, aurally, and in the form of images. [9] In multiplayer environments the ideas and emotions of other players are very effectively shared through *language-based communication*. Especially due to the lack of other means from real world (*facial expressions*, *kinesics*, *occulesics*) this form of interacting becomes important. Verbal communication offers means to interact towards success of playing as a team. A common language will enable planning of strategies, sharing needed information and forming relationships. Writing messages can, however, distract the players from intense action and pull the players further from the immersion to the virtual environment. The informative and expressive power of written messages can even surpass its seeming potential. The players create innovative ways of verbal expression that can lead to mutual understanding and sharing an emotional state through very short messages.

## EXPERIENCES OF THE INTERACTION FORMS

Not all games are designed to entail all the forms of interaction mentioned in the RIM model. Usually the type of game sets some priorities for implementing elements for interaction. In this study two quite different games are evaluated in the area of interaction manifestations and the affects the designers' choices have made to experience of the environments.

AirBuccaneers is a team oriented action game. The most important interaction manifestations are *environmental details, spatial behaviour, kinesics, chronemics, non-verbal audio* and *language-based communication*. Some of these are designed to be used in gameplay, others are important in player communication. Castle of Oulu is a social game where the emphasis of action is on the interaction between players. The most important interaction manifestations are *environmental details, avatar appearance, non-verbal audio, physical contact* and *language-based communication*. *Facial expressions* and *occulesics* are interaction manifestations that are very important in the experience of interpersonal communication [13]. These can not, however, be extensively evaluated in the light of player testimonials because they were not implemented in the prototype environments. In addition, *autonomous AI* and *olfactis* are not evaluated here since their role as interaction manifestation was not significant in either of the games.

**Figure 2:** Spawns of Kirmukarmu in AirBuccaneers.

***Environmental details*** have many roles in both evaluated games. The virtual environment of AirBuccaneers was designed to have a few special environmental features that

notably affected the experience of the space. The basic idea of the game was to engage on an air battle over wide lands of, for example, forest or swamp (Figure 2). The players of early versions of the game found out that if they would run across the land to the enemy base and blow-up all the balloons from outside the gates, they would win easily and spoil the experience for the players who wanted to engage on an air battle. Only the team members had access to the bases but the spatial limits could not prevent this. As a solution to this problem of disruptive play, the designers created two monstrous beings, Ikuturso to inhabit the waters and Kirmukarmu to inhabit the lands, to prevent free movement on the grounds. This guided the players to use the balloons in the intended way. Limiting the possibilities of players to experience the virtual environment with monsters, however, created another way to experience the landscapes. If a player happened to fall off a balloon to water or land, there was a slight chance for the player to be able to escape the monsters by returning the base really quickly. Some players would even try their luck for fun and run as fast as possible to see how far they could get on the ground before Kirmukarmu caught them. The experience of the lands was changed from access all areas that offered a way to disrupt the game of others to airborne view with mysterious and dangerous landscape beneath.

The *environmental details* also included wind that had great effect on the flying experience of the balloon, the higher the balloon would rise, the stronger the wind would be. Trying to steer the balloon in heavy and unexpected gusts of wind made the experience of flying challenging and strengthened the feeling of interacting with an existing world. In addition, the category of *environmental details* includes the objects the players had at their disposal. Visualisations of the central objects were designed to be quite obvious and players did not experience great difficulties interacting with them.

**Figure 3:** Courtyard of Castle of Oulu.

In Castle of Oulu the environment was very limited to begin with. A large amount of players were forced on a relatively small area of courtyard (Figure 3), two harbours and a slim strip of land and water around the castle. Many players experienced the environment to be too small. The limitation of the environment was a design choice to make sure that the players did not wonder off to explore the world but would engage in social interaction with each other. On the other hand, the players did in general appreciate the historical setting. The experience of travelling back to 17$^{th}$ century Oulu was strengthened with historical props and objects unfamiliar to the players. The meaningful use of them was designed to rise through social interaction. In general, the players experienced trading to be fun and did not care about the meaningful goals.


**Figure 4:** Air fight in AirBuccaneers.

***Spatial behaviour*** presented a very interesting two-layer manifestation in AirBuccaneers. The player's movements in the virtual space were limited according to basic tasks needed in the game, amongst others, running, jumping, standing in a steering position or holding objects. Most of these actions were taken on the small deck of a balloon. The balloon, however, was also steered through the virtual space. The combination of understanding how to move within the space of the balloon's deck and how the balloon moved in the virtual space was crucial. The small deck of the balloon seemed to be challenging especially for the inexperienced players. Since falling off the deck was possible, it was quite a common sight on the sky. This was very strong in evoking emotional states. Players were excited to fly but at the same time the fear of falling to the poisonous spores of Kirmukarmu or to the ever-hungry mouth of Ikuturso was present.

Generally, the outcome of a battle depended heavily on the movement of the balloon. It was very important to understand how the balloon glided in the air and how the environmental effects, such as the wind affected the steering. In addition interpreting the *spatial behaviour* of the other balloons was elemental. Players had to be able to recognise and interpret the intentions of approaching

balloons (either friend or foe) through their *spatial behaviour*. For example, the proximity of the balloons revealed strategies of enemies and weapons planned to use in the attack (Figure 4). Cannon balls had a long range when fired but the cannon could also be loaded with gunpowder. Effective use of gunpowder required close proximity to the enemy balloon. Also boarding an enemy balloon required very close proximity. The experiences that followed the understanding of the *spatial behaviour* were very strong. For example, in desperate situations where one damaged balloon was surrounded by enemies, the players expressed feelings of panic, despair and defeat. In a similar way, if an enemy balloon was surprised completely by gaining a spatial position of power, the feelings of success, joy and victory were expressed.

***Non-verbal audio*** forms an important part of the presentation of the virtual environment in AirBuccaneers. The whole ambient soundscape is created to support and continue the feel of the world. These sounds, with wind on the trees, echoes of battles far away, birds etc. create a feeling of mysterious, misty forest lands with peculiar animals and birds. The functionality of the sounds is also recognised with extensive design of functional sound effects. These sounds were important for the players to follow what was happening in battles. Sound of cannon being fired signalled an upcoming attack, the whistling sound of air mines warned about dangers in the air, the crackling sound of gunpowder was a clear sign of danger on board the balloon, huge explosions told that a balloon was lost etc. The effect recognition of these sounds had on experiences was notable. Since the action of the game took the players to a "life threatening" situations, the sounds of closing danger evoked strong emotions of excitement, anticipation, fear for survival, but also enthusiasm, success and triumph when the sound of finally exploding balloon came from enemy balloon. In addition, sound effects were important in revealing direction and amount of threatening actions.

In Castle of Oulu *non-verbal audio* played an important part in interpretation of social communication. The game was designed around spoken language and the importance of hearing what the other players had to say was essential. All the players wore headsets with microphones. Recognising the emotional states of other players was in many ways essential to reaching the goals of the game. For example, the players needed to recognise if other players were being sincere, angry, hostile or friendly. This helped them decide if talking, trading or co-operating with them was a good idea. Since about thirty children were speaking out loud at the same time in very small virtual space, the noise level of the game was remarkable. The marketplace was full of laughter of joy, vivid conversation, yelling out of frustration of not being heard etc. However, not many interpretations of non-verbal qualities of speech were reported. The interpretation of them can be so intuitive that the use of them is not recognised without guidance.

***Chronemics*** presented another interesting interaction manifestation in AirBuccaneers. It was designed to be an action game, but all actions happened on nice slow pace. There were elements that could not be rushed and this caused calm passages into the gameplay. For example, the balloon was large and crude. It was impossible to manoeuvre it really fast. Reaching the battle area took a certain time because of the slow speed of the balloon. The cannon needed to be loaded, aimed and fired to attack another balloon. The hectic action, where time always runs out created a nice contrast with the slow moments before and after the battles, when "nothing happened". The "slowness" of action received lots of critic from players, who are generally used to very fast action in games. However, the time consuming activities were very strong in evoking emotional responses. For example, in a critical situation the time it took to turn the cannon seemed to feel absolutely like forever. Or if quick escape was needed, the speed of the balloon was experienced to be vastly inadequate. The emotions of not being able to perform in time could be overwhelming.

Another important aspect of *chronemics* in AirBuccaneers was the role it had in the experience of working together on the balloon deck. The captain, the aimer and the fireman needed to keep track of each others doings. In order to succeed in crafting a successful attack, players needed to time their actions seamlessly. When everyone knew what they were doing and felt that others knew their business as well, the shared experience was very positive and even an experience of flow was reported.

**Figure 5:** Avatars in the courtyard of Castle of Oulu.

***Avatar appearance*** was not supported well in either of the evaluated games. Avatars did, however, have a significant function in Castle of Oulu. The players were expected to play a role and the character was their own visual representation in the game environment. Four different geometrics of models were used in the game. These models

were further individualised with different hair, hats and clothes (Figure 5). This, however, did not create significant differences between the appearances of the avatars and again, the name tags offered the best way to tell the players apart. Despite that, the characters played an important role in the experiences of players. Because the game was a role-playing game, the players were supposed to immerse in the characters and act out a role. The avatars with specific roles were randomly distributed to the test players. The players did not like this, and it became evident that it was important for the players to be able to choose characters they liked. In addition, all the avatars were designed not to have a conventional visual appearance of computer game characters. They were not heroic, beautiful or cute. Instead they were old, fat, ugly, dirty, wrinkled or bald (Figure 6). Most of the players did not find the visual appearance of the characters pleasing. This affected the experience of immersing in the characters. On the other hand, had they been allowed to choose the characters they might have been happier, even though the selection was unchanged.

**Figure 6:** Avatars.

***Kinesics*** as a manifestation of interaction was somewhat limited in both studied environments. The amount of characters' movements and positions was not impressive. The expressive power of the possible movements, however, was strong. In AirBuccaneers it was very easy to interpret the players' actions from the position of the avatar (Figure 7). The steering of the balloon or the cannon, using the telescope, air mines or musket could easily be recognised when flying by. This gave the players an experience of being on top of the situations. For example, it there was no one at the cannon of the enemy balloon, they would not be able to fire. Or if a balloon did not have a pilot, it would inevitably start to descend. Furthermore, the balloon *kinesics* were enhanced with additional special effects, such as, vapour bursts when using the evasive manoeuvres. With all these combined, the players seemed to be able to "read" the surrounding skies amazingly well.

**Figure 7:** Aimer in AirBuccaneers.

***Physical Contact,*** as discussed earlier, forms an interesting dilemma in the experiencing the virtual environments. In AirBuccaneers the *physical contact* between players happened mostly through violent behaviour. The experiences of *physical contact*, thus, were generally not positive. In Castle of Oulu the players could not hurt or kill each other. The only possible physical attack was guards' possibility to stun players. When stunned, the players could not move or do anything. This lead to some frustrating experiences, when some guards decided to play interruptively and stun everyone they could all the time. The physicality of the characters was also manifested through collision with objects. This presented another example of *physical contact* between characters. Since the space was very limited, a doorway or gate could easily be blocked by someone. The experience was again mainly negative due to the frustration of not being able to access the blocked area.

***Occulesics and facial expressions*** did not play important roles in the evaluated games due to the lack of proper implementation. The experiences of players of AirBuccaneers did not directly suffer from the lack of those forms of interaction. The intended action of the game placed the avatars too far from each other for those to matter. In Castle of Oulu both of these forms of interaction would have offered interesting areas of study. The players did experience the appearances of others from very close proximity (Figure 8). However, the character in front of the player just stared into the emptiness with a painted expression on her face. The players, however, did not report any complaints against these forms of interaction missing. The lack of them is not noticed because no one expects to have them.

**Figure 8:** Event in Castle of Oulu.

**Figure 9:** Players of Castle of Oulu.

***Language-based Communication*** was supported in both studied environments in form of speech and writing. The test players of AirBuccaneers were located all around the world, had different native languages and did not know each other in person. They used mainly the written form of *language-based communication*. The communicative value of the short messages the players generally wrote was not very high. The texts mainly contained cheers for winning and slander towards loosing team (Figure 10). Teams, however, did also share some strategical information through team chats. This form of communication is a distractive, slow and clumsy way of transferring ideas and especially emotions between the players. Having said that, it is amazing how the players developed efficient methods of using such short texts and letter-based emoticons to transfer and interpret each other's emotional states. Another possibility to communicate was through speech using headsets with microphones. This form of communication enabled very efficient way to plan strategies and co-operate on a balloon. The use of spoken language enabled the team to share the experience very efficiently.

In Castle of Oulu all the players used speech as means of communication at all times (Figure 9). The game was built around storytelling and, thus, verbal communication was very essential to the success of advancing the storylines. The players did find this way of communication generally pleasing, intuitive and one of the most fun aspects of the game. A few players, however, did experience it to be unpleasant and would have preferred a written form of communicating. Due to the lack of many other interpersonal forms of communicating (body language, *facial expressions*, etc.) the use of speech was very important in enhancing the possibilities of experiencing the other's intentions, states of mind and attitudes.


**Figure 10:** Text chat of AirBuccaneers.

## DISCUSSION

In general the interaction manifestations are very useful in approaching the aspects of play experience. When an experience is considered to be a manifestation of interaction between a person and an environment [6] it is only suitable to use interaction manifestations of virtual world in the study of player experience. The RIM model offers a very fruitful starting point for understanding how interaction can be experienced by the means of computer environments. The categorization of interaction manifestations presented in the RIM model offers a method that can be used in analyzing the building blocks of the formed experience. Through this type of analysis a deeper understanding of the affecting factors in experiencing process can be formed.

The analyses of player experiences show that players can enjoy the rich forms of interaction. All the individual interaction manifestations and their combinations have an identifiable part in creating the player experience. Furthermore, the implementation of uncommon ways of interacting, such as speech, bring new levels to the

experiencing other players. On the other hand, the limitations of the environment do not necessarily hold the players back. They find ways to surpass these limitations and receive enriched shared experiences in any case.

The results of the player experiences in this study can only offer preliminary guidelines of how the interaction manifestations affect the experiencing. The two test environments offered some insight to understanding the roles of *environmental details*, *spatial behaviour*, *chronemics*, *kinesics*, *physical contact*, *non-verbal audio*, *avatar appearance* and *language-based communication* in the process of experiencing interaction in games. The lack of *olfactics*, *autonomous AI*, and more importantly, *facial expressions* and *occulesics* are areas that need to be implemented for studying. In addition, all forms of interaction presented here need to be studied further to gain more extensive understanding of the experiencing process.

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