Practices to Display Social Presence:
A Study in a Shared Mediated Environment

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ABSTRACT

The current study belongs to a series of studies promoted by the EU funded project "PASION", which focuses on augmenting social presence. The underlying assumptions to this series is that participants' interventions in the shared environment represent a way to exhibit their being socially present in that environment. Therefore, the practices organizing these interventions define "when", "why" and "how" social presence become relevant in the group. In the study presented here, participants navigate in a shared, non immersive virtual world, and can contact each other dyadically via instant messaging. Their task as a team consists of finding as many treasures as possible in the virtual world.   Chat logs and video recordings of the activity on the screen are collected, and subsequently analyzed with the approach of Conversation Analysis. The results show the way in which social presence is addressed in the chat openings, the occasions in which the intervention of the interlocutor on the chat is made relevant and the format of this intervention. These results are connected to the nature of the activity and of the mediated environment.

1. Introduction

Social presence can be defined as "the phenomenal sense of being there with another, or quite essentially, the sense of another through a medium" (Biocca, Harms, & Burgoon, 2003, p.456). This concept has socio-psychological roots, and it was originally meant to describe inner feelings due to the others spatially present or to the

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thought of another person being in the position of the observer (Short, Williams, & Christie, 1976). The notion of "being socially present" or "socially absent" has gained particular attention with the advent of telecommunications. How much do we feel the weather man of the television broadcasts present? Do we feel our mother present with us when she sends an SMS to our mobile phone? In an attempt to provide a definition of social presence, scholars have first of all tried to respond to the basic question: what does it mean to be socially present? According to the existing approaches to social presence, there are mainly three ways to be present with the others: physically, psychologically and behaviorally.

Regarding the possibility to be physically present with the other in the environment, a dycothomic approach to social presence has linked it to the other being physically present or absent in the same environment (Huguet, Galvaig, Monteil, & Dumas, 1999): in this case social presence is seen as a dichotomy, the other is or is not present. This definition has been expanded by Goffman, with the introduction of co-presence (1959). Differently from the previous approach, it considers social presence as having different degrees, according to the possibilities of the medium to convey both sensory awareness and mutual awareness. Co-presence, which "renders persons uniquely accessible, available, and subject to one another" (Goffman, 1959, p.22), has been linked to both the sensory awareness of the embodied other, for instance the possibility to see or hear the others, and mutual awareness, the awareness of the existence of the other accompanied by the other's reactions to the self. Using questionnaires to detect this dimension, some examples of items investigating co-presence have been: "To what extent did you have a sense of being in the same room as your partner?" (Schroeder, Steed, Axelsson, Heldal, Abelin, & Wideström, 2001) or "I was often aware of others in the environment" (Biocca, Harms, & Gregg, 2001).

If being physically present is traditionally considered a fundamental dimension conveying social presence, different definitions have focused more on the role played by the psychological engagement with the other (Rice, 1993; Nowak & Biocca, 1999 in Biocca, Harms, & Burgoon, 2003; Biocca, 1997). In fact, being present with others also means that we feel a certain psychological involvement with them. According to the existing definitions of psychological involvement, the sense of access to intelligence, salience of interpersonal relationships, intimacy and immediacy and mutual understanding all relate to this dimension. Being psychologically present to the other means to relate actions performed by others to states of the intelligence animating the body, feeling involved in the relationship, feeling intimate and similar to the others in

terms of emotions or attitudes ("homophily"). "When I was happy, the other was happy" "The opinion of the other was clear to me" (Biocca, Harms, & Gregg, 2001), "My partner did not understand my needs" (Kumar & Benbasat, 2002) are just some expressions used in questionnaires to address psychological involvement in the social presence experience.

Finally, some other definitions have been formulated considering that we are socially present when we display behavioural engagement. "My behaviour was in direct response to the other's behaviour" (Biocca, Harms, & Gregg, 2001) is one of the assertion which can summarize what we mean by this dimension. The feeling that there is a synchronized and coordinated interaction among the parts, regulated by gaze, nonverbal mirroring, turn-taking and so forth has been seen as fostering social presence (Garau, 2006).

This brief review of social presence definitions, based on the Biocca, Harms, and Burgoon paper "Toward a more robust theory of social presence: review and suggested criteria" (2003), clarifies in which positions the "agents" involved in social presence stand. The individual being is the main focus of attention, because social presence is considered as an intimate state, the mediated environment and the mediated other act as factors affecting the individual feelings of being socially present. In particular, social presence would depend on the capability of the medium to filter to a greater or lesser extent cues coming from the others (such as gaze, body position, speech, etc.).

Social presence, however, also opens new issues more related to how this phenomenon is displayed (more than "felt") and made evident in the environment. The question would not be "what social presence is" but "how social presence is" or, to put it differently, "how I act to be socially present with and to the other". In order to provide a response to these questions, we need to shift the focus of attention to the relationship between the individual and the environment (including the social environment) as it is in this respect that actions performed by individuals are developed (Spagnolli, Varotto, & Mantovani, 2003; Reno', 2005). Such an action-based approach to social presence considers the environment as "a set of resources organized and transformed by the involvement in human action at any certain moment" (Spagnolli & Gamberini, 2005, p.8). The term "resources" in this approach refers to the material (physical) and symbolic (cognitive-cultural) resources hosted by the environment. In the first case, they refer to the physical resources present in the environment. In the second case they refer to the symbolic world which comes with the individual and the affordances of

the medium, such as expectations and possibilities to interact with the environment (Spagnolli & Gamberini, 2005). According to this definition, resources and actions are interdependent, because resources are exploited by the individual to perform actions and actions are performed thanks to the available resources. The way resources are exploited and actions performed, however, is not a random process, but it depends on the practices defined as socially legitimate and appropriate as well as relevant to the on-going activity.

The action-based approach to interactions builds on a tradition of multidisciplinary research, coming from anthropology (Goodwin, 2003), sociology (Schegloff, 2007), and cultural psychology (Mantovani, 1999). Theories such as Situated Actions (Suchman, 2007) and Distributed Cognition (Holland, Hutchins, & Kirsh, 2000) have been based on this approach, being their units of analysis participants' actions within their natural environment, more than investigation of mental processes which could lead to perform them. These two theories depict interactions as negotiated moment by moment, according to the possibilities of actions perceived by the participants in the environment at their final aims, dictated by the kind of activity at hand. With the advent of technology, its wide use in workplace settings has enabled people to verify the practices regulating interactions between workers and their surrounding settings, generally to design more efficient technologies or reconstructing the environment to increase performance (Hindmarsh & Heath, 2002; Gamberini, Spagnolli, Bua, Cottone, & Martinelli, 2004).

Such an approach can be fruitfully adopted in the study of social presence, whenever the focus of attention is on actions performed by participants to make their presence in the environment relevant to the others. In fact, it allows the researcher to investigate the unfolding interactions between the individual and the environment, linking them to the possibilities of actions offered by the latter as well as to the task to be accomplished. Adopting this framework, the question to be addressed will be "how do participants make their presence relevant to the others and why?"

This study is aimed at exploring the development and re-configuration of social presence by observing practices through which people manifest their presence in a specific environment, namely an online game, and to relate them with the specific resources of the medium. As practices constitute the focus of interest of this research, an action-based approach to the study of social presence will be adopted, conducting a systematic analysis of verbal actions performed in chats by participants to signal their "being present with the others in the mediated environment". As a last step, an

interpretation about how these practices can be related to the specific resources of the medium used to interact and the task to be accomplished will be provided.

This paper is organized as follows. In section 2 will be illustrated how participants, according to the existing literature, can make their presence verbally relevant in a mediated environment. The first situation will be openings, while the second one will comprise verbal actions further developing the on-going interactions. In section 3 method and analytic approach will be introduced and will lead to the results section. Results will be divided according to the two categories mentioned before, stressing on openings, on one side, and relevant actions used to foster interactions on the other side. Finally, conclusions will offer a summary and some comments on future research.

2. Social Presence in Verbal Communication

To study the verbal practices adopted in the construction of social presence, Conversation Analysis has been applied (Schegloff, 2007). Derived from a sociological approach to communication, this method defines conversations as an interactional achievement continuously negotiated through verbal actions pragmatically linked one to the other. Based on Austin's "How to do Things with Words" (1962), this approach does not focus on the pure meaning of words, but relates them to the interactive function they perform when uttered. Consequently, Conversation Analysis allows to see verbal exchanges as a series of actions sequentialy positioned.

Considering conversation as an ordered sequence of actions has provided the possibility to point out practices ruling when, how and why social presence was displayed verbally during the game. In what follows, two phenomena, which will be the focus of attention of the whole study, will be presented. First of all, a brief review of literature on openings will be provided, at the aim of explaining why they can be considered a valid practice to display social presence and how they differ according to the media used to interact. Secondly, the environmental resources to be exploited to manifest social presence will be introduced to provide a theoretical framework into which social presence can be positioned and studied.

2.1 Openings
Openings are the very first verbal actions performed at the beginning of encounters. According to Schegloff (1968), who has for a quite long time investigated the practices

of openings, these are seen as serving mainly three functions. Considering that conversations are developed by two or more persons, the use of openings would first of all establish mutual attention. In face-to-face encounters as well as mediated ones, openings direct the attention of the participants to the activity which will take place after the beginning of the encounter. As asserted by Schegloff, they can be seen as a pre-sequence of actions which introduces the reasons for the encounter and its successive possible development. For instance, when meeting our friend at the supermarket, we use openings with the aim of making his/her attention shift from the freezer to ourselves. By so doing we are not only taking priority over what is in the surrounding area, but we are also verifying our partner's availability to interact with us. To explain the concept of availability, let's think for instance of telephone conversations. According to Schegloff (1972), the first action a speaker performs to initiate a conversation at the telephone, is to summon the called. The summon is constituted of the ring of the phone and the answer of the other person detects by itself the presence of the other on that specific medium. The action of answering creates a boundary between the relationships with the world the answerer was involved in (e.g. cooking, sleeping, washing the car) and a new one, which involves attention to the caller. The called person is completing a pre-sequence, as prefatory of another activity which will follow, for instance a friendly chat. Thereby, completing the summon-answer sequence, the called person signals her/his availability to talk. Was it not the case, no one would answer. However, it is not sufficient to obtain the other's availability in the openings, because after the response the partner could decide to stop the conversation, impeding its development. For this reason, availability needs to be constantly negotiated during the whole interaction, in order to develop it further on.

Finally, openings signal that the speaker wants to interact with the partner (even if only for a brief exchange, or more demanding conversations).

Openings, therefore, can be seen as the first practice in terms of the time we engage in to make ourselves relevant to the other, displaying our social presence as well as trying to detect the others' availability to be "present with us" in the interaction.

Greetings and summons are the most used forms of openings in face-to-face encounters (Schegloff, 2002). However, studies on different media used to interact have emphasized that their use is deeply affected by the medium and the activity the speakers are engaged in (Arminen, 2005; Weilenmann, 2003).

For instance, with the introduction of mobile phones, the structure of openings has changed compared to that of landline phones. The possibility of detecting the ID caller

and the certain knowledge about the identity of answerer-addressee, are different from landline phones and seem to have limited the presence of acknowledgments after greetings (Hutchby & Burnett, 2005). In this case, the first exhibition of social presence by the ring of the phone does not need any further recognition process, as the caller identity is already known. For this reason the first action performed by the answerer is greetings, signaling that he/she already knows who the caller is. At the same time, mobile phones have modified the availability issue. The phone is constantly at hand and is personal, so that the caller is not intruding in a public space such as a house where more inhabitants live, but an individual space. The possibility to see who is calling, the phone ringing wherever the addressee is and the private owning of the cell phone, all offer a "sense of perpetual contact" between the potential users (Katz & Aakhus, 2002).

Openings have evolved differently in SMSs (Spagnolli & Gamberini, 2006). In their study practices developed by participants to display their "being present with the other" have been addressed. Considering that these kinds of messages have a cost, information is usually managed to fit a unique message (differently from messages exchanged in chats); furthermore, it is possible to detect the sender's identity from the cell number displayed at the message arrival. Consequently, practices developed by participants to perform openings and then to continue the interaction take into consideration all these aspects (e.g. multiple action turns or going directly to the reason of the interaction). As regards openings, it is interesting to notice that greetings are usually not responded to, as if it was evident that mutual presence was already established. For the same reason stated above, thence, availability on the mobile phone does not need to be established, as it is already made evident by the characteristics of the medium itself.

These studies support the idea that individuals manage the beginning of their encounters differently according to the established availability to the interaction allowed by the media used. Furthermore, a criterion for the development of a practice on another is the relevance of certain actions or, more precisely, what is made relevant by the situation in order to achieve a fruitful interaction. The decreased presence of identification in mobile phone openings, for instance, can be a practice developed by participants who rely on the knowledge about who is calling provided by the mobile phone itself and, therefore, consider identification less relevant. Again, the practice to open up SMS with actions going directly to the core business of the interaction is

motivated by the relevancy of these actions because the cell already provides us information about other important personal cues, for instance the caller.

Considering that openings, as stated before, are the first verbal display of social presence, it should consequently be affected by the availability on the medium already or still to be established and the relevance social presence acquires in the specific situation.

2.2 Environmental Resources for Social Presence

A second insight on social presence could be provided by verbal actions performed exploiting the environmental resources.

Being socially present means first of all being present in the environment. Such an environment is constituted by material, symbolic and behavioural resources (Spagnolli & Gamberini, 2005). Goodwin (2000), studying interactions developed between girls playing hopscotch, emphasized that social actions were developed exploiting physical resources (body positions), material resources (the hopscotch grid), other's actions resources (talk or gaze), cultural resources (knowledge about the norms ruling the game). All these resources present in the environment, served for the girls to interactively carry out courses of action in concert with each other. The development of interactions considering what is present in the place where they unfold, exploiting what is considered as relevant to foster them can offer an insight on social presence. In fact, responding to the question "how is your way to interact with the other affected by the environment?" means to focus on practices developed by participants to carry on relationships in accordance with the characteristics of the material and social environment they are placed in.

Part of the resources which can be exploited to manifest social presence are verbal actions performed by the other inhabitants of the environment. Considering that a verbal interaction has already been opened, how do participants exhibit their being tuned and present to collaborate in the conversation process? How do individuals exploit others' actions to exhibit that they are present and collaborative in the environment?

Conversation analysis, considering conversations as a micro context where verbal actions unfold to construct and sustain interactions, provides some important cues to investigate these aspects. Conversation is seen as an ordered process, where actions are pragmatically linked one to the other. This link is determined by the relevance acquired by a certain action to a previous one. For instance, a question is likely to be

followed by an answer. When fruitfully interacting, though, contributions need to be a) relevant, for instance providing the appropriate answer after a question; b) provided at a relevant time, when the contribution is needed and c) in an appropriate format, for instance verbally or non verbally.

These principles seem to discriminate between a series of randomly performed actions and, on the contrary, actions aimed at constructively feeding social interactions. Called by Schegloff (1991) "intersubjectivity", these actions build "in some coherent fashion with respect to what went on before" (p.157). They should manifest our being in the same environment with the others, working to make the interaction develop. To achieve this goal, participants need to share understanding of what has happened before and foresee adequate actions to develop the next moves.

One aspect fostering intersubjectivity, coherently linking actions among them, is the sequentiality of contributions building interactions. As already said, sequentiality can be seen as a way to manifest social presence, to say "I am here, coherently collaborating with you and further developing our relationship".

Herring (1999), analysing data collected in chat conversations, asserts that participants develop new practices based on the characteristics of the medium, to keep sequentially coherent their contributions.

The existing literature supports the idea that sequentiality is supported in mediated communication by topicality and the turn-taking system. McCarthy, Wright and Monk (1992) have emphasised the importance of continuity in the topic addressed to maintain contributions as sequentially related. Analysing chat communication they found that the use of co-references, terms of address and acknowledgments were used as valuable strategies to keep interactions sequentially linked. Considering that in chat communication many messages can intervene between a first message addressing a topic and a second one addressing the same topic, multiple threads of messages can be developed at the same time. Even if these threads can be seen as disruptive to coordination, because participants could get confused about which contribution the new one is referred to, ambiguity seems to be solved using addressing or quoting the related message (Reed, 2001). On the other hand, to preserve topicality a strategy developed in chats is that of breaking messages in chunks; sending an evidently incomplete message to the partner would signal that the intervention is not yet finished and, consequently, would prevent the addressee from introducing new topics (Baron, 2004).

Another resource considered in the literature to support the development of action sequences in mediated communication is the turn-taking system. Garcia and Jacobs (1999) analysed how participants in chat communication could detect the appropriate moment to intervene, avoiding interrupting the partner. The grammatical completion of the received message allowed the receivers to place their intervention in the conversation. Having the possibility to manipulate the environment, Reed (2001) demonstrated that an updated knowledge about the others' actions in the chat environment highly helped coordination among the partners.

In the light of these results, it seems that participants adopt locally situated strategies to manifest their being socially present and engaged in and with the environment. The accusation moved to mediated communication to hurdle social presence, because of its incapability to convey rich social cues, therefore, rapidly decays (Herring, 1999).

In the present research, interactions under analysis to investigate the exhibition of social presence will be those developed in written dyadic chats. At first, the focus of investigation will be the analysis of the very first verbal encounter between the participants. The analysis of the openings will permit to analyse the moment, the way and the reason fostering the exhibition of social presence in the chat, trying to understand how these aspects can be affected by the characteristics of the media and the task assigned.

Secondly, "intersubjectivity" will be investigated. If social presence is manifested during the on-going interactions performing actions relevant to the their development, the focus of attention will be on the existence of messages pragmatically linked. Then, the research will investigate if some actions performed by the conversational partner are considered as relevant resources to be exploited to manifest social presence and, finally, if action formats chosen to display social presence were in some way related to what could result to be particularly relevant to the prosecution of the task.

3. Method

3.1 Experimental Setting

The Study

This study belongs to a wider series of studies promoted by the European Funded Project "PASION". The data presented here have been collected within the "Crossfire1" study of this project, whose results have been published in Gamberini, Martino,

Scarpetta, Spoto and Spagnolli (2006). The current paper will consider the same data from another perspective.

Participants and Setting

In the present study 24 students (aged 24.88 on average, standard deviation 2.96) of the University of Padua played a collaborative online game called Crossfire. Sometimes they knew each other because they belonged to the same class, sometimes they were strangers. However, their identity was hidden by their nicknames which had been assigned by the researchers. Participants were asked to sign a consent informing them that everything happening on the computer screen was going to be recorded and then analyzed. The pc stations were located in a room at the at the Psychology main building in Padua and each participant sat at an individual station. Due to the size of the room, none of them could see the others' screen and, furthermore, they were prevented from talking during the task (see Figure 1).

**Figure 1**. The experimental setting.

The Virtual Environment and the Task

The virtual environment in which participants were asked to play was constituted by a game, called Crossfire supported by a chat system (Skype®). From the pc screen participants had access to the game environment, representing a virtual world; the interface displayed the portion of the world immediately surrounding the participants' avatar, including the avatars of other participants navigating in that region (see Figure 2).
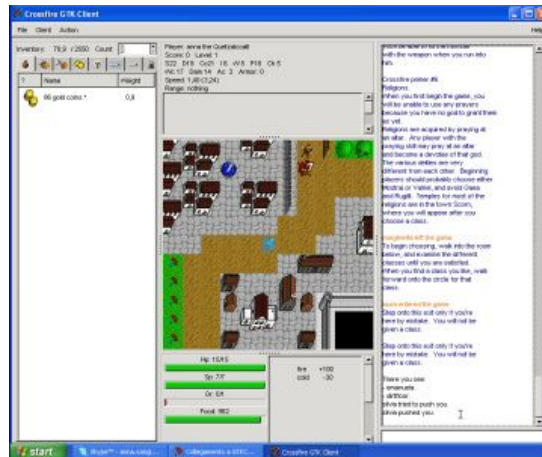
Figure 2. A screenshot of the game environment. The blue dragon
is the participant's avatar while the brown dragon and the man on
the right upper part of the street are other participants' avatars.

The instant messages (IM) window was also displayed and could be adjusted in the screen as desired (see Figure 3).
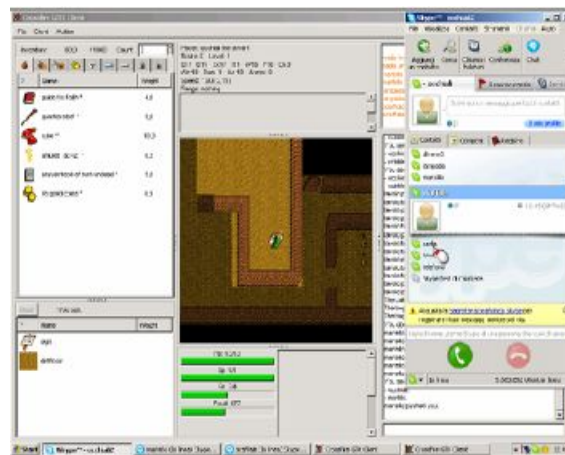
Figure 3. A screenshot of the participants' desktop during
the game. In the central part, an image of the virtual
environment, on the right the chat.

This game was chosen because of its free availability on the Internet and then modified to adapt the navigable environment to time constraints (participants were required to play for forty minutes). Considering that the study's aim was to observe which actions individuals performed to make their social presence verbally evident to the others, some issues led to the choice of this specific game. First of all, participants needed to construct interactions. Crossfire satisfied this requirement, because it allowed a free number of people to collaborate in the game. Furthermore, the Crossfire game was full of clues indicating the positions of the treasures (goblets) or other, more

specific clues, thereby fostering verbal interactions. Finally, the collaborative nature of the task itself (to find as many treasures as possible in the environment) further enhanced motivations to communicate. In order to verbally communicate, participants could use a dyadic Skype chat opened on the pc screen from the beginning of the game. Notice that using both the Crossfire game and the Skype chat provided the player with the possibility to be present at the same time through different modalities. In fact, the teammates' reachability was signalled by the entrance of the avatar in the user's region of navigation and by the colour of the symbol near the contact nickname in the chat (see Figure 4). However, only in the verbal modality supported by the chat were teammates always reachable during the game. The possibility to rely on both nonverbal and verbal modalities of communication (through the avatar and through the chat), allowed the researcher to investigate practices adopted to manifest social presence considering the possibility to be already socially present in other modalities.

Figure 4. The Skype® chat. All names are listed and a green sign displayed on their left.

Participants operated in groups of eight, with the common assignment of finding as many treasures (which were goblets) as possible in the virtual game. They played two forty-minute sessions of the game. In the environment they could also find clues about the location of the treasures. Verbal communication was useful to notify when some treasures were found, and when new hints on the treasures' whereabouts were discovered. Considering that communication did not take place in a common chat with

all 8 participants, but in dyads, each participant could start up to 7 conversations with as many teammates.

Data

The study aimed at understanding which actions individuals performed to display their social presence during the collaboration task in the Crossfire environment. Considering that in the Crossfire game participants could also rely on modalities different from the verbal one and social presence was established from the beginning of the task, the focus of investigation were contextual situations or needs pushing participants to exhibit their social presence verbally. Consequently, the analysed data were all the chat logs and videos of the duration of the entire game session. Chat logs were collected in .txt format and the videos captured with specific software called Zdsoft®, generating .exe files. The chat logs reported in textual format the time in which the message had appeared in the chat window, the nickname of the speaker and the message. The video files showed everything that took place on the screen during the game. Navigation of the avatar in the game environment and composition of messages in the chat were both visible in the videos.

3.2 Analytic Approach

The aim of the research was to investigate verbal practices adopted by participants to exhibit social presence in the specific mediated environment. As practices are constituted by actions, adopting a Conversational Analysis approach to the study of actions we considered as units of analysis the turn, the action format and the action position.

·   Turn: the start and end of a single contribution from one participant to the communication process; in this kind of mediated communication, each turn is constituted by a message entered in the chat.

·   Actions: what actions do people perform by speaking (e.g. offering, questioning, answering, aligning).

·   Action Positions: actions are sequentially connected to each other. This connection is evident in the topic, grammar and format of the message. The sequential position an action holds with respect to other actions is not the one it has in the chat log, but the one it has with respect to other messages pragmatically connected to it. The time gap between the actual moment of production of the message and its delivery could be filled in by other partner's contributions. Consequently, the produced message could refer to messages other than the last one appeared in the chat window. A basic

sequence, called Adjacency pair (Ap), is composed by two subsequent actions produced by different speakers, in such a way that the former makes relevant another action immediately after it. The first action is called 'First Pair Part' (FPP), the second 'Second Pair Part' (SPP); as already mentioned, in mediated conversation the first occasion to produce the second pair part is often not immediately adjacent to the First Pair Part as it is in face-to-face. Finally, in some cases a third turn is produced after a SPP, which does not make another action relevant next. It is called SCT (Sequence Closing Third).

In Extract 1 these units of analysis will be summarised, applying them to a brief exchange between participants.

Arancia and Mandarino were the nicknames of two participants to the Crossfire games. No one had visually access to the portion of virtual environment where the other's avatar was navigating and, thereby, they did not know what the other was doing and if the other had collected some important information about the treasures. Indeed, participants were not obliged to communicate and they could also decide to keep hidden the retrieval of a treasure and never contact anyone. They had never been verbally in contact until the moment reported in Extract 1.

Extract 1

[10.33.15] Arancia says: ciao, hai visto qualche cartello?

hi have you seen any sign?

[10.33.49] Mandarino says: si il calice si trova nelle case verso ovest… mi sembra

yes the goblet is in the houses toward West… I think

[10.34.26] Arancia says: ok grazie

ok thanks

Extract 1 is opened by Arancia greeting and questioning Mandarino about the possible retrieval of a clue (FPP), followed by a second turn performed by Mandarino, who announced that he had indeed found a clue, thereby providing an answer to the question (SPP). The sequence is ended up by Arancia, who thanked for the information (SCT). To sum up, this example counts 3 turns (3 messages), a complete action sequence of the type question-answer-closing performed through the adjacency pair followed by a sequence closing third.

In some cases the basic adjacency pair is expanded by further adjacency pairs, pragmatically linked to the basic one, which can introduce the main pair (pre-

expansion), or can follow it (post-expansion). The conclusion of the main adjacency pair can also be postponed by an inserted sequence (which starts after the basic FPP and finishes before the basic SPP, see Extract 6).

In Extract 2, which will be reported as an example of expanded sequence, Tavolo and Sedia were exchanging some information about food position. Food was a particularly important topic in Crossfire, because participants who ran out of it were automatically repositioned at the very beginning of the game. To avoid the consequent loss of time, all participants needed to pick up food found in the environment. Thereby, many verbal exchanges were based on food position.

Extract 2

[16.40.08] tavolo says: se sei a città del sud, ad ovest trovi isolotto con castello
stracolmo di pappe buone
if you are in the Southern city, at West you find an oxbow
overstuffed with good food

[16.50.17] sedia says: no, sembra non ci sia nulla qui!
no, It seems there is nothing here!

[16.50.37] tavolo says: neanche una merendinaaa?
not even a snack?

[16.51.22] sedia says: nou!!!!!!ci sono un sacco di prosciutti nell' edificio prima!!!!!!
no!!!!! There are a lot of hams in the building before!!!!!!!

[16.51.45] tavolo says: grasssie!
thanks!

Tavolo (FPP) opened the chat by the announcement that, in case Sedia needed it, there was a lot of food in an oxbow in the Southern city. Tavolo was, therefore, providing useful information to Sedia who decided to go feeding its avatar in the suggested place. Ten minutes after the provision of Tavolo's information, Sedia (SPP) complained that the place indicated by Tavolo was empty. By so doing, Sedia did not open any new sequence, but provided a disalignment (introduced by "no") to the "fake" information. Tavolo (FPP) did not let the topic decay and continued asking if the place was really empty or if there was little to eat. Even if the basic sequence had been closed by Sedia disalignment to Tavolo's announcement, the latter, who had been indirectly accused of the fake provision of important information, reacted post-expanding the basic sequence, though producing a new FPP under the format of a

question. Sedia (SPP) responded repeating what he had already said and adding new information about food position. Acting as SPP he provided a conclusion to this second adjacency pair which then definitively ended by the SCT performed by Tavolo.

The whole expanded sequence, composed by more adjacency pairs pragmatically linked, will be referred to as "thread".

All the chat logs and the videos were completely analyzed, for a total of 116 chats, 966 messages and 32 hours of video-recording. To analyze the sequential structure of communication, attention was paid to the videos, where it was possible to see the time at which the participant started to write a message in the composition window of the chat. As underlined by Garcia and Jacobs (1999), in chat communication actions that seem to constitute adjacency pairs, because of their format and sequentiality can also be "phantom adjacency pair", as meant to refer to other previous actions and, thence, born to belong to other adjacency pairs. To solve this problem, videos were the most reliable source of information as they allowed us to understand the real sequential organization of the messages. In the following paragraphs some recurrent practices emerging in the communication mode will be described, connecting them with their implications for social presence.

In the first part of the results the focus of attention will be the very first verbal actions performed by participants to manifest their social presence in the chat environment. The analysis of these openings will allow us to understand when, why, and how social presence was displayed, linking this phenomena to the characteristics of the media and the task.

Then, the author will illustrate how social presence is displayed during ongoing verbal interactions. Considering that one possibility to make ourselves present to the other when verbally interacting is to keep feeding talk, attention will be paid to the development of thread of messages signalling the development of verbal interactions. Then the analysis will investigate if action formats performed by the conversational partners affected in any way the likeability to receive manifestation of social presence by the other participants, investigating if a discrimination between actions with a high or low-relevance for social presence was retraceable in the participants' behaviours and, finally, if the practice through which social presence was manifested depended on the relevancy of actions formats to be performed, always considering the task and the environment.

4. Results

4.1 Openings: The First Verbal Exhibition of Social Presence

In the verbal exchange the first display of social presence was performed in the openings of the chat. However, previously to the first verbal exchange, in the Crossfire environment the interlocutor's social presence was established in different ways from the beginning of the game. Her/his identity was displayed by the nickname, always visible in the chat windows. A green oval displayed on the left of the nickname in the contact list signalled the interlocutor's availability on the medium (see Figure 4). Finally, all participants were present in the environment from the beginning of the game through their avatar, who had all entered the shared virtual environment at the same time. All these characteristics can explain why the most used practice to start encounters in face-to-face communication, namely greetings, was present only in 7.70% of chat initiations, as reported in Table 1.

Chat Starting Actions	Occurrence	Percentage
announcement	50	43.10%
question	50	43.10%
greeting	9	7.70%
order	6	5.17%
request	1	0.86%
Total	116	100%

Table 1. Occurrence of chat starting actions and percentage.

If greetings were rarely produced to open verbal exchanges, in our data participants showed an equal preference to start speech exchanges with announcements and questions (43.10%). Extract 3 presents an example of chat opening performed using a question.

In this specific situation, as already mentioned, Ananas knew that Fragola was available in the chat by the green oval sign near the latter's name. Furthermore, the latter's avatar had entered the environment at the beginning of the game making legitimate to think that Fragola was participating in the game. When the chat was opened, Ananas had been navigating without finding anything relevant for the game development (treasures, clues, food), while Fragola had entered a building, together with another player (Melone), from which she had not yet managed to exit. It is to be

remembered that participants were never forced to communicate verbally in case they found a treasure or a clue and, therefore, they often solicited this kind of information.

Extract 3

[12.47.30] Ananas says: trovato niente?

found anything?

[12.47.54] Fragola says: no.. sia io che Melone siamo bloccati in una casa da cui non possiamo uscire

no.. Melone and I are both stuck in a house from which we cannot exit

[12.48.09] Ananas says: ahah

Ahah

Extract 3 is the starting sequence of the chat between Ananas and Fragola. At time 12.47.30, about 10 minutes after the beginning of the game, Ananas (FPP) performed the first verbal attempt to contact Fragola, asking about her progress in the game. The first action through which Ananas decided to exhibit her social presence to the teammate, avoiding any greeting, acknowledgment or introduction, hence, was a question whose response could have updated Ananas' information about the retrieval of a treasure or some other clues, consequently helping her in the advancement of the task.

In the following extract, the chat is opened by an announcement performed by Mandarancio. Similarly to questions, announcements played the role of making information flow among players, alerting the participants about the retrieval of some goblet, the finding of food or clues. In Extract 4 Mandarancio had just found a treasure and, with the chat, communicated it to Nocciola.

Extract 4

[16.38.11] mandarancio says: trovato calice

goblet found

[16.38.24] nocciola says: well done!!

well done!!

In Extract 4 Mandarancio (FPP) contacted Nocciola to provide her with a relevant information about the retrieval of a goblet. As in the previous example Mandarancio did

not choose to summon or greet the partner, opening the chat directly with the reason for the verbal contact, namely to inform the partner about the fact that a treasure had been found.

Both extracts represent the most common ways found in our data to open the first verbal encounter with teammates.

The wide use of questions and announcements to start up conversations to the detriment of greetings suggests that participants strongly relied on what they had previously acquired from different non-verbal interaction modalities. In particular, their nickname on the contact list, their red sign near their nicknames and their avatar navigating in the environment constantly fed their awareness that they were socially present, available and engaged in the game from the very beginning of the session.

Consequently, the social presence on the medium did not seem to be something discontinuous with respect to the social scenario before the start of the message exchange, something that needed to be addressed again. It seemed something already established, on whose bases the conversation could enter directly into its core.

4.2 Exploiting Environmental Resources to Support Social Presence

As already anticipated in the introduction, social presence can be displayed during the ongoing conversations by means of contributions which are relevant and coherent to the actions performed by the partner. In other words, being socially present means not only sharing the same space, but also performing actions which acknowledge what was previously done, with the aim of enhancing interactions. For this reason, attention was paid to how conversations were supported and developed in the Crossfire game, in terms of sequentiality on which action sequences were unfolded, responses provided to the partner's verbal actions and action formats.

Sequentiality

To verify how participants displayed their social presence coherently with the actions previously performed by their partners, thence demonstrating that they were engaged in the task and in the environment, the existence and development of action sequences turned to be the main focus of attention.

Following Spagnolli and Gamberini (2006), the number of messages in the chat left isolated was considered. These cases did not receive any response or acknowledgments by the addressee.

In the chat conversations developed during the Crossfire game, only 10.43% of messages (101 out of 968 messages) did not receive any acknowledgement by the partner, as in Extract 5.

Extract 5 reports an encounter that took place after a long lasting navigation in the environment (about 20 minutes), when Lontra contacted Scoiattolo to ask for the retrieval of clues. In the game, clues were disseminated all over the virtual environment and, being numerically superior to the number of hidden treasures, it was easier to reach a treasure following a clue than by chance. Thereby, clues resulted to be the topic of many conversations, as they could help players to localize treasures and go directly to fetch them.

Extract 5

[16.43.02]   lontra says: indizi?

clues?

Lontra (FPP) asked to Scoiattolo (potential SPP) in a very synthetic way about the retrieval of some clues on the location of the goblet. In this case, however, no response was provided by Scoiattolo and the basic Adjacency Pair remained uncompleted.

As cases such as the previous one constituted a minority, in terms of social presence this means that whenever required, the addressee tended to manifest her/his social presence by responding to the request demonstrating that he/she was paying attention to the other and was there actively reacting.

Thread Length	Number of threads	Percentage
1	101	26.90%
2	127	33.90%
3	48	12.80%
4	42	11.20%
5	25	6.60%
6	12	3.20%
7	9	2.40%
8	5	1.30%
9	6	1.60%
Total	375	100%

Table 2. Occurrence of Threads of messages of different lengths.

To further support and expand this result Table 2 reports the variety of thread length found in the chats. The total number of threads found in the analysed data was 375. The threads found varied from 1 to 9 messages. Some examples are reported below.

The following thread has been developed near to the end of the game. Scaffale and Occhiali had previously verbally interacted to coordinate their moves. Interestingly, towards the end of the game sessions, participants tended to plan their moves communicating about their position in the environment and verifying, considering that they started to run out of time, how many treasures were still hidden in the environment. In this specific situation, Occhiali had previously signalled that he was in the Northern city and Scaffale had responded warning him not to attempt entering the Southern city. In what follows Scaffale, who knew that Occhiali was exploring the North, contacted him.

Extract 6

[16.37.51] scaffale says: trovato qlc?

anything found?

[16.38.20] occhiali says: no ero arrivato dove si trovava un calice ma qualcuno era arrivato prima di me

no I arrived where the goblet was but someone else had arrived there before me

[16.38.34] scaffale says: oh cacchio

oh gosh

[16.38.49] occhiali says: io l'ho trovato al porto non andare

I found it at the harbour, don't go there

[16.39.32] scaffale says: hai trovato un calice?

did you find a goblet?

[16.39.41] occhiali says: -si

-yes

[16.40.24] scaffale says: nella citta del nord?

in the Northern city?

This thread is opened by Scaffale (FPP) questioning about a possible retrieval. Occhiali (SPP) provided a negative response, underlying that he had arrived too late where there had been a goblet. The main basic sequence is concluded by Scaffale commenting on this unlucky event (SCT). Then Occhiali (FPP) reopened the sequence

by providing information which was anyway related to the question already responded to. Even though the first response had implicitly assumed that Scaffale was referring to the specific city where Occhiali was as the potential place for a clue or a treasure, they had never before communicated the retrieval of anything to each other. Consequently, Occhiali reopened the sequence announcing that he had indeed found something (action pragmatically related to Scaffale's question) in the harbour and suggested her to avoid loosing time going there. This announcement is expanding the basic sequence. Scaffale, at this point, posed a question (what CA calls a repair) to make sure that she had exactly understood what Occhiali said. This action was not a response to Occhiali announcement, as it postponed a possible response which could be provided only after Occhiali's clarification. Scaffale was, in this case, performing the role of the FPP of an inserted sequence which was completed by Occhiali's answer. Again, the response to Occhiali's FPP did not arrive because Scaffale asked for a second clarification about the place where he had found the goblet. By so doing, she was offering an extension of the inserted sequence which did not receive a closure. This thread is an example of complexity which can be reached when the participants exploit as resources the others' verbal actions, enhancing interactions.

Thread complexity varies according to the sequences composing them. The existence of sequences of messages related one to the other demonstrated that participants tended to carry on the verbal activity started by someone else, manifesting that they too were actively engaged in the task. These threads support the possibility of maintaining sequentiality in mediated communication (Herring, 1999). When an exchange was opened it was very likely that the addressee responded by providing a coherent conclusion to it, avoiding leaving the first pair part unconsidered and troubling the development of the task itself.

In terms of social presence, it meant that, when verbally addressed participants did not drop the possibility to reply. Once received a message, they did not ignore it remaining inactive in the verbal modality.

Returning Relevant Actions

In order to better understand which kinds of actions were considered particularly relevant and, consequently, particular useful resources present in the environment to be exploited to manifest social presence, attention has been paid to which kinds of actions were more likely to be responded by the addressee. In fact, the typology of actions performed by the FPP stimulating a high level of response, which means to

which the participants were more likely to manifest their social presence, could offer some insights about the relevancy of these actions performed in the Crossfire game.

In the analysed chats we found six different kinds of actions performed in the First position (FPP), as reported in Table 3.

Action	Occurrence	Percentage
announcement	244	46.47%
question	205	39.04%
repair init	35	6.6%
greeting	18	3.42%
Order	15	2.85%
complaint	8	1.52%
TOTAL	525	100%

Table 3. Occurrence of actions and percentage.

The preference for questions and announcements is easily due to the nature of the task and the possibilities of actions to be exploited in the environment. The game required to find the position of the treasures in the virtual world, but the access to each other's achievements in the graphic world was very limited. Therefore each player had to keep the teammates updated on the treasures or on the clues discovered using announcements, or to obtain this updates with questions.

The next step was to verify, among all these actions, which were those more likely to receive a response, stimulating the partner's exhibition of social presence.

Generally, only the 28.5% of actions did not receive a response, while the 71.5% did (Table 4).

Action	Unreplied	Occurrence
complaint	5 (62.5%)	8 (100%)
greeting	11(61%)	18 (100%)
announcement	86 (35.2%)	244 (100%)
order	5 (33.3%)	15 (100%)
repair	8(22.8%)	35 (100%)
question	35 (17%)	205 (100%)
TOTAL	150 (28.5%)	525 (100%)

Table 4. Amount of unreplied actions by type, and total occurrence of that type of actions.

According to Table 4, announcements and questions, the most frequently performed actions, had been highly reciprocated. Although players constantly received them, they did not give up contributing to the exchange. Their being often responded seemed to underline that these actions were consider so relevant that the partner could not afford to make their reception pass unobserved.

Considering actions less frequently performed, complaints and greetings seemed to be those less likely to be produced, as shown in Extract 7 and Extract 8.

In the sequences preceding Extract 7, Viola had communicated to Blu that a treasure could be found in a house with a red-brick roof. Blu found the house and entered it, but she could not find any sign of the treasure. After having searched the whole house few times, she complained to Viola.

Extract 7
[13.17.04] blu says: questo calice è troppo imboscato
this goblet is too deeply hidden

By complaining Blu (FPP) was making evident that she was criticizing the fact that the treasure was, in her opinion, too well-hidden and probably quite impossible to find. The complaint, however was a comment with little relevance for the task itself, as a possible response could not have in any way helped the development of the game, but only provide a support, by co-complaining for instance, to Blu.

Similarly, in Extract 8 Giallo greetings used to open up the chat were ignored by the addressee.

Extract 8

[16.48.49] giallo says: ciao anne

hi anne

[16.48.54] nero says: poco più avanti c'è un indizio

a little bit further on there is a clue

Giallo (FPP) opened the verbal encounter by greeting the teammate. Nero responded using an announcement about the location of a clue, without greeting back (SPP). This response provided some information which could have been very useful for the retrieval of a treasure and, thereby, highly relevant for the task.

Greetings, as already introduced in the first part of the result section, were rarely performed by the participants. The high rate of ignored greetings (61%) offered a support to those findings, suggesting that social presence also relied on different modalities of interactions and, thence, the relevance of greetings seemed to be diminished here.

To conclude, outcomes on actions more likely to receive an acknowledgment by the addressee pointed out that social presence was more likely to be manifested in the chat by returning actions which were crucial to development of the task.

Returning Relevant Actions in a Relevant Format

The last outcome of this study involves action formats of responses provided to relevant actions. In particular, considering that social presence was displayed providing a response to what could be considered the most relevant actions, namely questions and announcements, it was interesting to see if this response could be affected by the "relevancy" issue. In other words the question was "do participants exhibit their social presence in responding to relevant actions using actions which are by themselves relevant?" If that was the case, it could have meant that players decided to support the interaction not only by providing a formal response to relevant actions, but providing a response which could advance further the task. In particular, the data emphasized the existence of new formats of SPP provided to announcements. While the traditional pair is composed by announcement in the first place (FPP) and alignment/disalignment in the second place (SPP), the considered chats showed that these actions were frequently reciprocated by other announcements.

In the following extract Ananas and Arancia had been wondering around for about thirty minutes. While Ananas had already found a treasure, Arancia had continued

looking around communicating very often to gather clues and information, but she had not found any goblet yet.

Extract 9

[16.34.22] ananas says: ho trovato un calice!!! Edificio bianco città del nord

I have found a goblet!!! White building in the Northern city

[16.34.49] arancia says: anch io tempio a cupola zona templi nord

Me too domed temple temple area North

[16.34.55] ananas says: bene

Good

Extract 9 is opened by Ananas (FPP) who informed Arancia (SPP) about the location and the retrieval of a goblet. Very often, indeed, participants communicated not only that they had found a treasure, but also where they had found it preventing others from looking in the same places. Arancia (SPP) responded performing the same kind of action, another announcement. Even if standard actions coupling announcements are alignment or disalignment, in the analysed data 20.8% (33 out of 158) of responses to announcements were constituted by actions in the same format.

To identify which announcements were meant to be responses (viceversa they could be FPPs, opening new sequences) a series of "strategies" used to connect two subsequent announcements emerged. In Extract 3 this was recognizable in the starting terms 'me too', together with geographical coordinates mirroring the one provided by the first announcement. Some other examples were: "I found the same sign", or "I have already been there, but I did not find anything". It has to be noticed that these reciprocating announcements were never treated by the first speaker as disregarding their original announcement for the absence of an explicit align/disalignment. Consequently, it seemed that the speaker accepted as legitimate closure of the pair a response in the format of an announcement.

Considering all the adjacency pairs composed by two announcements, one in the first position and one in the second, results showed that they usually addressed the same topic, namely goblets, clues and participants' positions.

In Extract 10, Tavolo and Telefono had just found a clue in the environment and communicated it to the partner. Sometimes clues were about the location of a treasure, while some other times participants could find clues about the location of other clues.

Extract 10

[13.22.13] tavolo says: c' è un indizio su un calice in un tempio a nord-ovest

there is a clue on a goblet in a temple North-east

[13:24:36] telefono says: nella taverna al centro della città c' è un altro indizio

in the tavern in the centre of the city there is another clue

The announcements performed by Tavolo (FPP) and Telefono (SPP) are about two locations of clues.

This practice underlines that, by providing an announcement in response to another announcement, participants did not open new sequences, ignoring what the conversational partner had previously done, but they were performing a cooperative action considering the current activity. By using an announcement in the second position, the speaker increased the amount of information exchanged and, therefore, actively enhanced the game.

In terms of social presence this further supports the idea that the strategies adopted by the players to make their social presence visible to the others are deeply affected by what is relevant to the activity at hand.

5. Conclusions

The present study investigated when, how and why social presence was manifested during an online game. The first interest was to verify how the possibility to rely on different communication modalities could affect the very first exhibition of social presence. The possibility to be already present in the environment in modalities different from the verbal one, the participants' availability was signalled by a green sign in the chat list, their avatar being present in the shared environment (even if not constantly displayed), could be hints to understand why social presence was verbally display without using greetings or summons. On the contrary, players opened verbal exchanges going directly to the motives of the interaction, which were mainly asking for information or providing it. Verbal interaction was seen as a continuum with the previously established framework in which social presence had been displayed.

The second aim was to see how social presence could be exhibited during the interactions, underlying which were the legitimate practices to do it. In the Crossfire game, information flow was fundamental to speed up the retrieval of treasures in the

environment. Considering that participants did not have access to the teammates' actions, because the visual space display on the computer screen only covered their avatars' surroundings, verbal interactions were the only way to spread information in the team. Thereby, in the game a legitimate practice to display social presence was by performing actions which were relevant to the task itself, in particular announcements and questions. These actions were so important for the development of the task that they were usually followed by a response from the addressee and not let ignored. On the contrary, greetings and complaints, which did not particularly enhance information flow, were rarely considered by the partner. To sum up, social presence was more likely to be manifested in the chat by returning actions which were crucial to development of the task.

Finally, practices adopted by the players to manifest their social presence in the Crossfire game seemed to be also affected by what was considered relevant in the task. In particular, the traditional format of alignment or disalignment following an announcement had been sometimes replaced by other announcements which could enhance the development of the game.

To conclude, Crossfire results highlight that the emerging practices used to display social presence in this specific environment are connected to both the nature of the activity and of the mediated environment where they take place.

The results of this study suggest new ideas in the study of social presence in mediated environments. Adopting an action based approach to the phenomenon, it would be really interesting, for instance, to consider what is the most legitimate modality to display social presence whenever different options are available to the participants. Furthermore, how different tasks establish different relevance of actions performed to exhibit that we are actively collaborating to its development? Once determined which practices are considered legitimate, what are the reactions to transgressions to the legitimate practices of social presence display? It will be worth investigating these issues in the future.

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