

Player Talk—The Functions of Communication in Multiplayer Role-Playing Games

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Communication is a vital component of multiplayer gameplay, constituting a large part of the total player interaction. This article presents a comprehensive study of the role of interplayer communication during the gaming process in digital and tabletop role-playing game formats. A series of empirical game experiments are presented and the player-based communication analyzed, with the aim of clarifying how format (media of expression) impacts on verbal communication in multiplayer games; as well as examining player communication in general. The results show distinct differences in the communication patterns between the two game formats, directly related to the limitations and requirements of the tabletop and digital media utilized, for example in the amount of “in-character” communication. Interplayer communication in both formats is highly focused on functional content, that is, oriented towards supporting practical gameplay; however, functional content has different meanings on the two platforms. These and other results are discussed in the context of format differences and in the larger context of the functions of verbal communication during the playing of multiplayer games.

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1. INTRODUCTION

Players of multiplayer games communicate. For some game types, nothing could be less surprising; Pen-and-paper, or tabletop, role-playing games (PnPs), for instance, are mostly played through the medium of speech. Here the game state is processed in the minds of the players and the game master, and maintained, updated, and synchronized verbally. In comparison, in multiplayer digital games the game state is processed by the computer and the role played by verbal language in such game sessions is less obvious. Verbal communication in multiplayer contexts is a subject that has received limited empirical attention, and it is therefore not clear whether inter-player communication in such games is used mainly for *functional* purposes such as coordination, information sharing or negotiation of collective choices; or, alternatively, *strategic* purposes such as ensuring that the players' individual objective game goals are met [Smith 2006]. It could also be hypothesized that players talk about issues external to the game itself, supporting the notion that games serve as backdrops for social interaction. These subjects, and indeed the entire topic of inter-player communication during play, are under-explored, with studies limited to a handful, and typically focused on the more general functions of language in gaming [Wright et al. 2002; Lazzaro 2004; Manninen 2004; Holmes and Pellegrini 2005], rather than direct analysis of player communication content; but see Tychsen et al. [2006]. Group-based communication is however a topic explored in other contexts, for example, in collaborative design or in organisational or managerial contexts [Chen et al., 2006]), and in relation to virtual working environments within areas such as architecture, design, and software engineering [Gabriel and Maher 2002; Sudweeks and Simoff 2005].

Understanding player communication (and player interaction more generally) aids the understanding of the social function and social rules of gaming, that is, how people play games and how the game-playing activity relates to other social activities in terms of norms governing the social interaction.

In this study, a contribution is made to the larger study of player behavior by addressing the specific issue of how players of multiplayer role-playing games (RPGs) communicate. Results from two interconnected studies are presented: The first study examined the communication of PnP players, while the second focused on players of a computer RPG (CRPG) on the *PlayStation 2* console [Smith 2006].

The focus on different game formats permits the examination of the different roles that verbal language plays in the two game contexts. This provides an opportunity to study the effects on communication of transferring a game form between different media, both between the participants, and the participants and the fictional game world. It also assists in determining which functions of language are general across formats and those which are format-specific.

In summary, this study aims follow:

- (1) To map and catalogue the communication that occurs in multiplayer RPGs, initially focusing on the effect of the media change from tabletop to virtual world.

- (2) To develop a cross-platform framework for analyzing the communication and storytelling that takes place in these games. This framework must be platform-agnostic at its core, but still capture relevant communicative aspects. The construction of such a framework is challenged by the differences in format and the relative diversity of RPGs in general.
- (3) To apply the framework to a series of empirical experiments, refining it through an iterative development process, and evaluate its merits for comparative game studies in general.
- (4) To utilize the framework to obtain data on the communication actions and statements utilized in PnPs and CRPGs in order to evaluate the effect of the different media through which the games are expressed and played.

This article begins by discussing perspectives on communication in video games and then examines the RPG genre to clarify its internal variations as well as its relationship to other game genres. Previous research and models of RPG communication are surveyed and discussed. The study methodology is presented, results outlined, and perspectives offered for how these results can serve as a basis for further research. In this article, emphasis is placed on multiplayer PnPs and CRPGs, and on how players of these games utilize verbal communication to interact and play these games. Future publications will broaden the study to include communication in massively multiplayer online role-playing games (MMORPGs).

2. GAMES AND COMMUNICATION

A game, in the careful definition of Katie Salen and Eric Zimmerman [Salen and Zimmerman 2004] is “a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome”. Other definitions have been proposed, but few address what to expect on the level of *player interaction* (except to say that players will compete).

Assuming that players are concerned with achieving the game goals, we would expect them to communicate to the extent that it helps them achieve these goals. Largely, this means that they should freely give advice in strictly cooperative games, that they should negotiate appropriate behavior in semi-cooperative games, and that they should remain mostly silent in strictly competitive games (for a discussion of these categories, see Smith [2006]). However, this simplified theory is clearly inadequate in itself, as it cannot explain why communication between players of competitive games is commonplace [Holmes and Pellegrini 2005; Smith 2006]. Because multiplayer games are potentially both games’ frameworks as well as social situations, at least three general hypotheses can be formulated to explain the need for communication between the players:

- (1) *The functionalist perspective*: Communication between players serves as a tool for coordination, information-sharing, and negotiation of appropriate behavior. For instance, players of *Counter-Strike* will often need to agree on where to make their stand, may share information on enemy sightings, and may discuss appropriate in-game behavior (with both allies and

opponents). In this perspective, communication is thought to be relatively tightly focused on the game itself (as opposed to game-external topics).

- (2) *The strategic perspective*: Communication between players serves as a tool for furthering the narrow, goal-oriented interests of the specific player. From this perspective it would be expected that players not share information, without getting something in return. In competitive games, players would not be expected to communicate beyond taunts and possible short-term alliances. As with the above perspective, communication would presumably be relatively tightly focused on the game itself.
- (3) *The socializing perspective*: Communication between players is only indirectly related to the game. From this perspective, the game itself may be seen as an activity around which players are social. In this context, it would be expected that player communication be unfocused and resemble conversation in nongaming contexts.

These overall perspectives need not be mutually exclusive. They could be used to understand variation between statements in one and the same game session; that is, one statement may be categorized as mainly functional while the next may be strategic, and so on.

2.1 Related Work

Empirical data on the communicative activity of players interacting via multi-player games in any medium is, with a few exceptions [Trappl 1997; Hutchison 2003; Mateas 2003; Eladhari and Eindley 2004; Castronova 2005; Aylett et al. 2006], mostly absent in the academic literature, although massively multi-player games have been the subject of considerable academic analysis and development writing [Bartle 2003; Taylor 2006]. From a theoretical perspective, some basic descriptions of the communication structure in PnPs is presented in many works [Henry 2003; Kim 2003; Mäkelä et al. 2005; Young 2005a; Young 2005b; Tychsen 2006]. Empirically-based games studies are rare; however, Smith [2006] adapted communication coding schemes to the study of multi-player gaming, studying collaboration and conflict patterns between players of different types of multiplayer games, including CRPGs. Furthermore, Tychsen [2006] presented initial models for the structuring of information and communications flow in PnPs and CRPGs.

Within architecture and design and software engineering, communication in virtual online environments has been studied for quite some time [Maher and Simoff 2000; Gabriel and Maher 2002; Sudweeks and Simoff 2005]. Architecture, in particular, has taken good advantage of virtual reality in creating online, collaborative virtual design environments; the communication between groups in these environments is a well-examined subject when compared to communication in RPGs. This is also the case for collaborative software engineering and other activities where communications technologies and virtual environments can be put to use to overcome the barriers of geographical distance.

In order to study communication in RPGs, a certain level of insight into the underlying structure of these games is desirable. For the digital variants, there

are numerous useful sources [Hallford and Hallford 2001; Bartle 2003], as well as a steadily increasing number of scholarly publications [Murray 1997; 2001; Fine 2002; Tosca 2003; Lindley 2004; Peinado and Gervás 2004]. For live action role-playing games (LARPs)—RPGs played using physical embodiment of the game characters—and PnPs, the amount of material is substantially smaller. However, outside of academia and industry spheres, the player community has a long tradition for creating theoretical models of LARPs and PnPs, as well as sharing design and practical knowledge of how these games operate. Internet-based forums such as *The Forge*, *Skotos*, and *RPG.net* [Padol 1996; Edwards 2001; Henry 2003; Kim 2003] combined with the Scandinavian Knutepunkt conferences [Bøckman and Hutchison 2005] have in the past decade managed to produce and collect a variety of useful material. Today, the publications of the player communities form the bulk of the material available for the study of LARPs and PnPs. Recently, academia has also begun studying LARPs and PnPs in more detail, not only for the reasons outlined above but also for the purpose of developing innovative hybrid game forms such as physical presence games, mobile games, and so on [Björk et al. 2001].

3. RPGs ACROSS MEDIA

Role-playing games (RPGs) form one of the currently most popular game genres, and a rare example of a game genre that has spread across a variety of formats and media of expression [Lindley and Eladhari 2005; Tychsen et al. 2007]. This provides an opportunity to directly study what happens with a game as it is modified to suit different media forms.

RPGs originated as group-based, collaborative storytelling games operating under a framework of rules, and featuring the use of player-controlled fictional characters interacting in a shared, imagined game world (PnPs). The game form was almost immediately adopted by historic recreation societies as a platform for live action RPGs (LARPs) [Bøckman and Hutchison 2005; Tychsen et al. 2006]. Additionally, in the very early years of computer game development, the PnP format was transported into the digital environment, first in single-player form (*Akalabeth*, *Ultima*), and later as a multi-player game type (*Neverwinter Nights*, *DungeonSiege*). Throughout the development of computer games, PnPs have exerted a significant influence, and today CRPGs featuring expansive 3D environments are commonplace [King and Borland 2003]. With the arrival of *Meridian 59*, *Ultima Online*, *World of Warcraft*, and other massively multiplayer online RPGs (MMORPGs), which parallels the physically-embodied LARPs, RPGs have taken on a new aspect: that of living, virtual worlds [Bartle 2003].

The various forms of RPGs share a number of key features (e.g., rules systems, themes), and are pairwise structurally quite similar (PnP-CRPG, LARP-MMORPG). However, the different incarnations of RPGs provide very different gaming experiences [Salen and Zimmerman 2004; Tychsen et al. 2006; Tychsen and Tosca 2006]. This difference is linked to the variations in the number of players involved, and more importantly the use of virtual worlds in digital RPGs to represent the fictional game world these games take place in, rather

Table I. Key Differences of RPG Forms that Impact on Player Communication

	PnP	CRPG	LARP	MMORPG
Platform	Imagined	Virtual	Physical	Virtual
GM/player ratio	High	High	High-Low	Low
Communication lines open	All	Texted chat, live speech, limited emotions/body language	All, limited by sight range or communications equipment	Texted chat, live speak, limited emotions/body language
Character Action Descriptions (CAD)	Verbal	Verbal and/or visual	Visual	Verbal and/or visual

Note: multiplayer CRPGs can either be played with the participants geographically separated or positioned in the same space, using separate monitors or sharing one. The GM/player ratio is a measure for the proportion of players per game master or game manager, which is an important driver in RPG design [Tychsen 2006].

than the imagined or physical world of PnPs and LARPs. MMORPGs feature visually represented virtual worlds, but differ from PnPs and CRPGs by allowing thousands of players to interact in real-time instead of one or more groups of participants. In this respect, MMORPGs bear comparison with LARPs, and certain enhanced reality games, which in some cases feature as many participants as MMORPG servers (that is, several thousand) [Tychsen et al. 2006].

Disregarding single-player CRPGs, role-playing games are (to various extents) based on collaborative storytelling; that is, they are *communication-based games*: The players communicate the actions of their characters within the fictional game world, but the way this communication takes place varies and various media impose various limits on the collaborative storytelling. This presumably impacts on the inter-player communication patterns as well.

In this study, a systematic approach was chosen that is based on initial models of multi-player games communication from previous studies and published literature, notably the information systems approach of Tychsen [2006] and the communications analysis of Smith [2006]. These were iteratively tested and a communications framework developed based on methods utilized within communications studies and collaborative design [Maher and Simoff 2000] based on coding and categorization of communication.

Understanding how these games operate as communications frameworks is, however, necessary when studying communication in these games. For example, PnPs show markedly higher amounts of in-character communication than CRPGs (see below). Without some knowledge of the communication structures of the two game forms, such a result becomes difficult to explain.

3.1 RPGs: Structure, Process, and Communication

One of the most important differences between RPG forms is the way in which the fictional game world is represented. PnPs rely on an imagined world, CRPGs and MMORPGs on a virtual world, and LARPs on utilizing the physical, real world as a backdrop to the game activity. These medial differences affect the lines of communication open to the players, and therefore the communication structure.

PnPs constitute a highly particular communicative phenomenon. Here, speech is used to make the player-controlled character perform actions within a shared, imagined game world [Edwards 2001; Kim 2003; Young 2005a; Young 2005b], as compared to a shared, virtual world in a CRPG context. Consider for instance the statement: “I open the door and peek inside”. Technically, the player hereby expresses the desire to have the game character open the door and look inside. Only “*the desire*”, since the game master (GM)—a specific form of game participant, who generally, but not always, has the in-game power to provide feedback on the reaction of the game world to the actions of the player characters [Tychsen et al. 2005; Young 2005a, 2005b]—might nullify the action (perhaps the door is locked, the character is shot dead before reaching the door handle, or the player has failed to realize that another player has already opened the door). In this case the resulting verbal exchange could take place:

Player: “*I open the door and peek inside*”

GM: “*You reach towards the door handle, but before you touch it, you feel a sharp pain to your neck and everything becomes black*”.

In terms of speech act theory [Searle 1969; Austin 1975], PnP players are performing a series of illocutionary acts (acts performed through speech) subject to the approval of the GM. Technically speaking, they are illocutionary acts by proxy, since the player *character* performs them, but this distinction is irrelevant in this context. It is more important to note that language (at least on the face of things) must serve different functions in PnPs and CRPGs: In a CRPG, the game engine provides a visual representation of the game world and provides feedback on the actions of the player. To understand the implications of this difference, we will now examine the RPG genre more generally.

Because PnPs rely on a shared understanding of an imagined reality, the games have the potential to produce experiences that are customized to the individual player and/or group, forming a deeply personal and immersive form of interactive entertainment. This feature of PnPs may be one of the major reasons for the popularity of the game form, but maintaining a shared understanding of a purely imagined fictional world can be somewhat challenging, and involves the risk of communication problems. If the joint understanding of the imagined reality is not aligned closely enough to allow the players to interact in and with it, conflicts of understanding can arise. For example, two players may have understood the action of a third player’s character differently, based on the verbal character action description (CAD) of the third player.

In theory, these issues should lead to a substantial part of the communication between the game participants being related to maintaining the shared understanding of the imagined fictional reality. For example, players constantly inform each other of the actions of their characters, and the GM updates the state of the game world based on these actions and the unfolding storyline of the game scenario in question. This part of the communication in PnPs contains a large element of information requests and exchange, for example, asking about the positioning of characters and structures or opponents in the fictional world, which, because it is imagined and by necessity has to be shared between

multiple players, has to be kept constantly updated. The time spent reaffirming the shared understanding through verbal and somatic communication in theory imposes a limit on the time that is available to progress the game story; for example, in situations that require a high density of CADs, such as combat encounters, which can take hours to resolve in PnPs.

The use of a virtual, computer-driven fictional world in CRPGs and MMORPGs means that the computer has taken over a substantial part of the communicative tasks of the PnPs related to maintaining and updating a shared understanding of the fictional reality. Again in theory, this should at least partially free players to focus on the storytelling and role-playing aspects of RPGs. However, technical limitations have meant that CRPGs while able to provide stunning 3D visualizations also impose strict limits on communication channels and the freedom to improvise and adapt the gameplay and game narrative to the player(s). Even with the more flexible multiplayer-capable CRPG scenario-building toolsets, such as the AURORA toolset from the game *Neverwinter Nights*, or the toolset from the game *Oblivion* (which allows players to build game scenarios in advance, and even in the case of the AURORA toolset, partially control them in real-time via a GM application), these games remain less flexible and user-adaptable than PnPs. MMORPGs, while allowing even greater numbers of players to interact, do not usually allow players to modify story or quest lines, nor add a permanent change to the game world, as in, for example, *World of Warcraft* and *Dark Age of Camelot*; although MMOGs such as *A Tale in the Desert* allow players to build structures and impose laws with a lasting effect in the fictional game world. However, even *A Tale in the Desert* imposed limitations on player adaptability and creativity, especially when compared to the complete freedom to adapt and modify the fictional game world possible in PnPs.

With the introduction of a virtual world, a substantial amount of game control is surrendered, as large parts of the game rules are being handled by the game engine. This basically means that there will never be doubt about the validity of a given rules-based action. Furthermore, players need not be aware of the rules to the same extent as with PnPs. Due to their inflexibility, the game rules cannot be modified to accommodate the story. This does not affect the ability of the participants to communicate about the rules nor the format the rules are communicated in; however, it will presumably limit the communication necessary to handle rule issues.

LARPs form a hybrid between PnPs and MMORPGs. While players enjoy the character-based freedom of PnPs, the use of the real world as a backdrop and the potentially high number of players (numbering in the thousands) imposes limitations on the effect that individual characters can have on the overall game world and storyline.

3.2 Character Actions and Communication

In RPGs, the players change the game state by making their characters perform actions (e.g., attacking an opponent, moving across the floor of a house, engaging an NPC in conversation, etc.). These actions are directly related to

communication, although the way the players communicate the actions of their characters to other players is different in the RPG formats.

In CRPGs, the player character is represented physically in the virtual world by an avatar. The avatar is controlled by the player, and usually the avatar and its equipment are the only in-game objects controlled by the player. The avatar forms the visual representation of the character and is the link between the player and virtual reality. Players can move their avatars, attack opponents or interact with NPCs without needing the level of directorial approval generally necessary in a PnP [Young 2005a, 2005b]. The presence of the virtual world—in theory—alleviates the need for communicating basic avatar behavior such as walking between points A and B in the virtual game world. However, note that in CRPGs, MMORPGs, and LARPs, groups of players still retain the need to communicate their intentions, character status, and in many cases basic spatial behavior, and to describe the actions of their characters. For example, in many CRPGs and MMORPGs, players can move outside each other's visible range, necessitating a degree of geographic orientation and communication.

In some CRPGs (e.g., *Neverwinter Nights*), the players can move their avatar outside the visual area of the other player's computer monitors. This is not possible when multiple players are interacting via the same monitor, as is the case with console games, such as *Champions of Norrath* for example. In the first situation, the players remain in contact, either directly or, for example, via texting; but they may lose visual sight of each other's avatars, possibly necessitating communication about avatar actions. This is different from the PnP situation, where the players are aware of the actions of the other players, unless the other players specifically don't want them to be (e.g., by communicating with the GM directly about character action).

In order to be valid in the shared, imagined game world of a PnP, all character actions have to be described verbally (called character action descriptions (CADs) here) and accepted or approved by the other game participants (except those imagined by an individual player and not shared with the rest of the group of players or the GM). Character actions that are relatively unimportant to the game narrative and the shared understanding of the state of the imagined fictional world are not normally communicated in a PnP. Players need not specify the exact location of their characters at all points in time, a certain fluidity is necessary—for example, if the characters are talking in a room, they are assumed to be within a distance of each other that allows doing so. That being said, specific character action description statements require verbal communication. This does not need to be the case in a CRPG—the player can simply make the avatar perform the chosen action and the game engine and in-built rules governing the virtual world and objects/agents in it will handle the rest.

In a digital game, however, some actions can be taken without the need for verbal or textual communication. For example, the process of moving around the game environment is controlled directly, and the other players can, directly, see the effect. This means that there will commonly be no need to communicate these actions, unless, for example, the players walk the characters outside the shared visible space. Because many character activations can be handled

without verbal communication, the pattern of communication in CRPGs as compared to PnPs would be expected to be different.

In LARPs, communication range is determined by sight range, possibly expanded by communications technology [Söderberg et al. 2004]. The direct, physical interaction space of LARPs usually eliminates the need for basic character action descriptions. Finally, in digital RPGs and LARPs, while the movement of an avatar from point A to point B need not be communicated verbally, it is still communicated visually by the avatar or player (in a LARP), by being seen to move.

In summary, in a virtual environment, the game and the participants are bound in the physical frame of the pre-planned virtual world. Time is a constant unless the scenario is planned to include time-jumps or similar narrative effects [Tychsen and Hitchens 2006].

3.3 Other Differences Between Digital and Nondigital RPGs

Shared, personal and visual play spaces: When people play RPGs, they form their own perceived stories of the events taking place in the game; they have their own personal play space. What players perceive in the events of the game and how they perceive them will affect their communication, the sum of which in turn forms the shared play space, which is equal to the parts of an RPG that can be recorded (e.g., screen capture, audio, video recordings, etc.). The visual play space, the section of the game world visible to each player on his or her monitor, and any additional information displayed, forms part of the shared play space.

The contributions of one set of players to the shared play space will affect the way that the other players perceive the unfolding game narrative. In a PnP, the GM is typically the participant who directs the story, and relates the actions of the players to them. The GM, or in the case of digital RPGs, the game and its storyline components, can be viewed as the source for the story. The GM/game engine continually update the state of the fictional world and the game narrative according to player actions (and to a pre-defined storyline), to a greater or lesser degree. In PnP and LARP, the preconceived story may be planned in part by the GM(s) (many LARPs use multiple GMs) at the game start, but the level of planning detail can vary [Aylett et al. 2008; Tychsen 2008].

Storytelling in RPGs: RPGs are (usually) games where the players take on the roles of the protagonists of a specific story, and the rules of the games are designed to support the formation of the stories. It might be argued that (some) digital RPGs are games first and interactive storytelling second (if at all); but this depends on the definitions of story and game. This is however a debate that is out of scope of the current study. Here, it will be sufficient to say that in RPGs the players take control of fictional characters that are protagonists in a fictional storyline set in a likewise fictional game world.

As noted above, interactive storytelling is a subject outside the scope of this study. The design of RPGs, notably in various kinds of interactive storytelling systems, is formed around AI-based believable/intelligent systems and on agent-based or directorial systems [Trappl 1997; Mateas 2003; Combs

2004; Aylett et al. 2006]; they make up one of the main thrusts in the development of next-generation interactive entertainment, training, and education applications.

Role-Playing: Role-playing is a concept of general importance to RPGs. There is currently no consensus as to a definition of what constitutes actual role-playing in RPGs. The issue is complicated because the basic structural variations between PnPs and MMORPGs, for example, are substantial, and because the specific games can be played very differently. For example, it is possible to play the MMORPG *World of Warcraft* without ever having to perform any action that could be remotely linked with character enactment in the theatrical sense. On the other hand, there are player-run guilds in *World of Warcraft* that construct detailed personas for their virtual characters, and try to act and behave like those characters. Similar differences can be observed in PnPs, LARPs and CRPGs. Due to the variety of RPG formats and ways of playing these games, it is difficult to define role-playing in a sense that satisfies all the interest groups. For the purpose of this study, role-playing is defined as *the process of speaking or otherwise expressing oneself in-character*; that is, the player talks and acts as if he or she was the fictional character. The concepts of in-character and out-of-character communication are discussed below.

4. METHOD

This article develops and uses a hierarchical coding scheme designed to RPGs, by which the verbal components of the communicative actions are categorized in a system of hierarchically structured *codes*, prior to statistical evaluation and analysis [Gabriel and Maher 2002].

This approach is commonly referred to as protocol analysis [Ericsson and Simon 1993], and is utilized within communications as well as architecture, design, and so on, for studying individual subjects, groups, and teams [Cross et al. 1996; Vera et al. 1998]. A protocol is basically the recorded behavior of the study subjects, and can be represented by video and audio recordings, computer logs, sketches, notes, and so on [Akin 1986]. These kinds of studies generally produce high sample sizes and good statistical significance. The datasets can be analyzed in terms of raw numbers of different types of categories, direct comparisons, and more advanced statistical analysis utilizing, for instance, multivariate methods such as factor analysis.

The basic approach towards developing a usable coding hierarchy for this article was iterative (Figure 1). An iterative process has the advantage that it allows for testing a theoretically-based scheme before the actual coding is initiated. With each iteration, the system (comparable to a prototype in an information systems design process) is refined until a saturation level is reached where no new codes appear from the testing, and no further redefinition of existing codes is necessary.

Codes were first developed deductively from theory and models (Figure 1), and then in an inductive manner from categories that arose from an initial test coding of the transcribed game sessions. The coding scheme was then tested in a pilot study, where approximately 20% of the total amount of transcription to

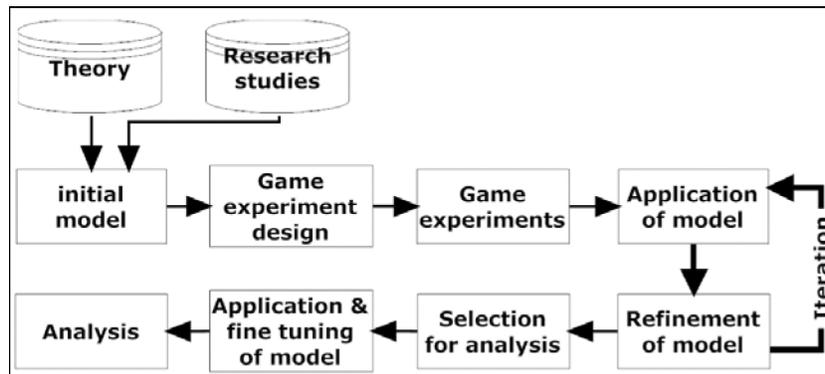


Fig. 1. The communication coding framework development process.

be analyzed was coded, resulting in a further refinement of the system. As the system was saturated, the iterative process was stopped, and empirical data collected from monitored game sessions in the form of communication transcriptions and video recordings (see below). The finished coding hierarchy was then applied to the data using the coding application package *nVivo*, and minor adjustments applied (Figure 1). Finally, the resulting coded communications data was analyzed.

4.1 Definitions

We employ standard communications terminology, but a few specific terms are defined here, as their meanings tend to vary.

(1) *Statements and utterances*: The basic unit of coding is an *utterance*, defined as consisting of (1) a subject who performs the communication; (2) the content of the communication; and (3) an object or objects to which the communication is addressed [Gabriel and Maher 2002]. This definition allows application to both asynchronous and synchronous communication; but in the current situation all communication is synchronous. A *statement* is the entire verbally expressed communication by a participant (e.g., up to several utterances, until the point when another game player starts talking).

(2) *In-game and out-of-game*: An utterance can be given “in-game” (IG) or “out-of-game” (OOG). An utterance that is IG relates to the game or game content—for example, a rules question, a CAD, or similar. An OOG utterance has content that is unrelated to the gaming activity—for example, asking a question about a real-world political issue.

(3) *In-character and out-of-character*: An utterance can be “in character” (IC) or “out of character” (OOC). IC utterances happen when players describe actions from the perspective of their characters (from either a first- or third-person perspective), or speak as their characters would (i.e., enact, embody their characters). Examples include “I run over to the door” (first-person CAD); “my character runs over to the door” (third-person CAD); or directly: “Let us see what is beyond that door over there” (enactment). An OOC statement could, for

example, be related to a question about the rules of the game or an interface questions such as “How much damage does a sword do?” “Which button do I click to open doors?”

While subtly different, in this article, these three types of utterances are coded IC, since they involve a player directly describing a character action or communication. OOC utterance could for example be rules questions, or comments about the interface with the virtual world in a CRPG. An OOC utterance can be both IG and OOG (IC utterances cannot be OOG).

4.2 Coding Hierarchy

The coding hierarchy (Table) is designed to specifically code utterances and to be applicable to communication by participants in all forms of RPGs, but with the main focus on PnPs and CRPGs. The hierarchy was developed based on material from PnPs and CRPGs (it was also informally applied to MMORPG chat logs, and appears equally applicable to this game format). The current hierarchy performs well as a baseline for RPG communication studies, but additional categories may need to be assigned if it is to be used as a basis for goals beyond those presented here, (e.g., trading in MMORPGs, tactical communication in multiplayer online first-person shooters).

The various codes that emerged during testing were combined in a hierarchy and separated into sub-hierarchies. Each utterance in the transcribed material was given a different code, depending on where it belonged in the various sub-hierarchies (Table). As noted above, statements can include several utterances, and thus require multiple codes. Similarly, utterances can have several components requiring several codes (e.g., a player describing both a character action and providing an environmental description at the same time).

Within protocol analysis hierarchy codes are usually given as abbreviations. In this case it proved more manageable in practice to utilize short descriptions of the content code categories than three- or four-letter abbreviations. Most commercial coding packages support this approach by auto-assigning higher level codes at the same time that lower-level codes are added. This also means hierarchies can be complex without prolonging the coding procedure.

4.2.1 Content Hierarchy. Content codes form the bulk of the hierarchy, and they comprise 28 unique codes. This sub-hierarchy is used to define and categorize the actual content of what is being communicated, such as: Is it a character action? Is the player asking for help? Are the players arguing? Content codes (Table II) are divided into five overall groups, depending on their overall purpose: Assistance, critique, ask for info, actions, and other (Figure 4). As a general rule, communication that can be content-coded relates to the game process, either in relation to the storyline or to the actual gameplay.

Further refinement of the hierarchy is possible: For example, “ask for advice” could be further subcategorized to ask for advice pertaining to one’s own character, other characters, rules, and so on, for current purposes; to keep the system manageable, the hierarchy is kept at the level of resolution presented.

Table II. The Coding Hierarchy: Content Code Categories.

Sub-hierarchy	Code	Description/example	
Assistance	Ask for advice	Asking for advice of any kind	
	Ask for help	Asking for help of any kind	
	Give info non-/spontaneously	Giving information spontaneously or non-spontaneously (upon request)	
	Give advice non-/spontaneously	Giving advice spontaneously or nonspontaneously (upon request)	
	Give help non-/spontaneously	Giving help spontaneously or nonspontaneously (upon request)	
	Confirm info/advice/help	Confirming the receipt of information/advice/help	
Critique	Critique of self	Critique of oneself, either player or character. Typically critique of an action.	
	Critique of one other person	Critique of another player or character. Typically critique of an action	
	Critique of group	Critique of a group, clan or faction of people, either players or characters. Typically critique of an action	
	Critique of NPC/NPC group	Critique of an NPC or group of NPCs.	
Game critique	Game critique	Critique of a feature or aspect of the game in question.	
	Actions	Character Action Description (CAD)	Describing the action of one or more player characters
		Order action (followed)	Ordering one or more other player characters to perform specific actions
		Suggest/request action	Suggestion or requesting other player characters to perform specific actions
		Confirm suggest/request action	Acknowledging and/or performing the requested/suggested/ordered actions
Oppose suggest/request action		Opposing the requested/suggested/ordered actions	
Ask for info	Ignored request	Ignoring a request/suggest/order actions	
	Other character actions	Information request about what one or more other player characters are currently doing in the game world	
	Player character state	Information request about the state of one or more other player characters (e.g., their current hit points)	
	Game world state	Information request about a feature or object of the game world state (e.g. whether it is night or day)	
	Rules/interface	Information request concerning a rules, interface or technical issue	
Other	Rule/interface/technical comment	A comment concerning any rules, interface or technical issue	
	Die roll result	Reporting a die roll result, or use of a different randomization tool	
	Acknowledgement	An acknowledgement or approval of another player or character, e.g., of a specific action (depending on whether IC or OOC)	

(Continued on next page).

Table II. *Continued*

Sub-hierarchy	Code	Description/example
	Apology	An apology to another player or character (depending on whether IC or OOC)
	Environment/world description	A description of the game world similar description of the fictional environment
	Other	Any communication that cannot be classified in any other sub-hierarchy category

A content code is defined within one of the four general categories formed by combining the IG/OOG and IC/OOC groupings (Figure 4) (IG+IC, IG+OOC, OOG+IC, which is not possible in practice, and OOG+OOC). For example the utterance: “I run towards the door, readying my weapon” is spoken IC, and thereby also IG. Further more it is a “character action description” belonging to the “actions” group.

4.2.2 Receiver Hierarchy. Receiver codes define the entities to which the utterance is directed; the information can be used to draw social network diagrams, for example. Utterances can either be directed at one other player (including the GM in PnPs), more than one player or the entire group (Figure 2). An example could be: “Peter (character or player name), where is the key to the weapons locker?” which is an utterance directed at the player or character with that name. Finally, keeping track of the communication of the individual player is important in ensuring that variations and patterns are consistent across the groups of players, and not the result of one or a few participants acting in an unusual manner.

4.2.3 Drama Language Hierarchy. Drama codes (Figure 2) are, arguably, mostly applicable to PnPs. In PnPs especially, the players embody, talk, and behave like their characters in the dramatic situation. Hence players can communicate in a way that is purely expressive, with no real in-game effect—for example, narrating an anecdote that has no relation to the narrative content. They can also mix expressive and functional statements—for example, a player may describe the way that the sun was caught in his sword as he was charging the orcish horde. The first half is expressive because it has no impact or use in the game, while the second is an important piece of gameplay information. Finally, players can employ a purely non-expressive form (e.g., reporting the result of a dice roll in a PnP or reporting the damage done by a particular weapon in a CRPG).

4.2.4 Social Hierarchy. While testing the communication hierarchy, it became apparent that there was a minor but consistent component of utterances that did not appear to have any directly game-relevant content, but was commonly voiced in-character, notably in the PnP context: for example, two players in a MMORPG discussing the appearance of a new piece of clothing, a cooking recipe, or a past experience. This type of communication is also observed in OOG, with much the same type of content, only real-world related.

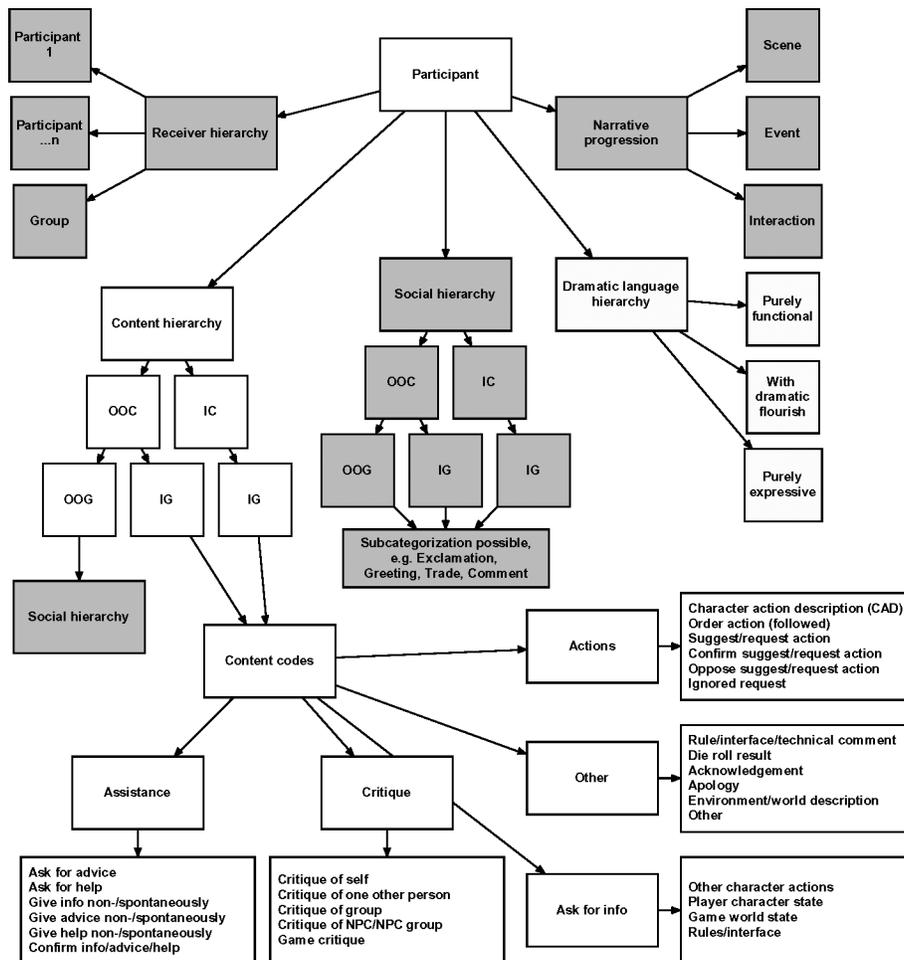


Fig. 2. The communication coding hierarchy developed for the study of RPG communications.

Communication that is purely social and does not have any direct impact on or relation to the game is interesting in its own right, and presumably acts as a pathway for establishing player relations. Note that utterances such as: “What a beautiful day” is actually a description of the environment. In the current study, the content of social communication is not studied in detail, but is a subject for future investigations of the experimental data.

4.2.5 Narrative Progression. As mentioned above, the actual narrative progression of the players was not measured or analyzed—but it is worth noting that a game story deconstruction model such as that employed by Tyhsen [2006] can be incorporated into an utterance-based hierarchy. For example, the storyline of an RPG can be divided into components such as scenes, events, interactions, and utterances coded after the specific scene, even an interaction in

which they occur. This allows, for example, tracking of narrative progression, the contribution of specific players to the game narrative over the duration of the RPG in question.

4.3 Pros and Cons of the Utterance Model

The use of utterances as the basic unit of communication means that the hierarchy has a high degree of precision and resolution. However, due to the fine resolution scale that utterances represent, the context of communication can be lost. For example, a player repeating a question to another player who did not hear it the first time is counted as the same type of utterance twice. During the pilot testing of the communication hierarchy, it became apparent however that the statistical imprecision imposed by context loss was minimal. Furthermore, the utterance-based analysis was combined with a context analysis, which is useful to assess general communication patterns and locate problems with an utterance-based coding hierarchy.

5. CRITERIA AND PROCEDURE

RPGs and their players vary. This means that one of the primary problems facing the study of these games is maintaining control of the variables that can affect communication: for example, the specific rule set used, the theme of the game story, distribution of authorial control, and so on.

5.1 Game Criteria

The ideal basis for a comparative analysis of the communicative patterns in CRPGs and PnPs would be to sample transcripts of the communication taking place in either a wide span of games or a standardized version of the two game forms. The first approach is time-consuming; but the second approach is difficult as well, due to the sheer variety of RPGs. This makes it nigh impossible to define a “typical” or “general” format for these games. In reality, PnPs vary across a spectrum with improvisational theatre at one end and simulation play at the other. While it is correct that at the dawn of RPGs in the early 1970s GMs commonly had full authorial control of the game narratives, this is not consistently true today. Currently, control is commonly shared between all the participants, and with a heavy emphasis on narrative development and character interaction, not rules and action sequences. The publications of the PnP *Vampire the Masquerade*, which gained popularity among PnP players in the early 1990s, were major causes in bringing on this change that affected the PnP environment broadly [Schick 1991; Darlington 1998; Mackay 2001; Fine 2002]. In essence, there is no one way of playing PnPs, as there is no one way of developing a CRPG. Therefore, in this study we chose to aim for a PnP and a CRPG that were as alike as possible in terms of story, rules system, ease of play, and linearity/theme of storyline.

The similarity of the storylines and the linearity thereof further ensured a modus of context control. Presumably, a group of players engaged in an investigation storyline will communicate about subjects, and in a different way, than

players engaged in an action-based storyline. In order to avoid interference by differentiating story genres, two action-based games were selected.

5.1.1 *What A Lovely War!* The PnP scenario selected was *What a Lovely War!* Produced by Sven Münthers in 2003, and modified to the specific requirements of this study. Apart from fulfilling the above requirements, the scenario was produced by a group of 15 highly experienced GMs and scenario writers, who have worked together for 10 years and won several prizes at Danish game conventions. The scenarios utilize simple rules (the *Traveller Light* D20 system), centralized on the interaction between the player characters and the environment (e.g., rules for combat and use of skills are comparable to CRPGs, while interactions with NPCs overall were controlled almost exclusively by the GM).

What a Lovely War! Is a political science fiction action satire, which places the player characters in a situation where they have to combat dangerous alien invaders while being confronted with the broader perspectives of warfare and modern media. The scenario has five pre-designed characters, which are provided to the players at the beginning of the game. The characters have been shipped to the frontline of the war against the presumably evil Fulzans. They have different objectives (e.g., a politician who is trying to get some media coverage, an under-cover activist sent to try to unravel what the war is actually about, a scrupulous cameraman and an attention-craving journalist). The band is chaperoned by a lieutenant from the mobile infantry. In the scenario, the group is introduced to life on the frontline and sent on several missions that the military command hopes are low risk but that will ensure good television coverage. Gradually, the group learns that the war is a fake, and that the horrible aliens they are fighting in the acidic atmosphere of Fulzan are merely virtual representations, fed directly onto their combat helmets, of the peaceful and desperate inhabitants of a resource-rich and quite pleasant planet.

5.1.2 *Champions of Norrath*. The CRPG chosen for this study was the opening chapters of the PS2-version of *Champions of Norrath* (Sony Online Entertainment, 2004). *Champions of Norrath* is a sword and sorcery type fantasy online-capable CRPG. It is set in the same universe as the MMORPG *EverQuest*, and utilizes the development company's *Snowblind*'s engine from *Baldur's Gate:Dark Alliance*.

The game features elements common to the CRPG form (e.g., action-driven gameplay, a linear storyline, and a generally collaborative environment). *Champions of Norrath* can be played on a single monitor with multiple players, which ensures that all players have the same visual image of the virtual world. It would also have been relevant to include a hybrid of these two forms: for example, a CRPG using the *Neverwinter Nights* engine with each player having his or hers own monitor; however, this was not done due to time constraints.

As the players fight monsters, they gain experience and levels in the traditional RPG style. The interface is relatively simple, fighting with a melee weapon or a bow is a matter of simply tapping the "X" button repeatedly. Additionally, all characters have a series of spells and skills, which can be enhanced

via an ability tree that unlocks as levels are gained. The ability tree allows for a modus of customization of the characters, which however does not feature any of the personality, background, or motivational features of the characters in the PnP game.

The player characters are inhabitants of the world of *Norrath*, and must heroically save the world through a series of quests and battles. Initially the players are called to assist the elves in their war against goblins and orcs. The players are soon involved in large-scale adventure via their encounters with the orcs.

In the opening sequence the players select race and skills, and from there the game continues to follow classic fantasy CRPG standards. Initially there is a cut-scene in which the elf lord asks the players to help defend the village from the orcs, after which the players may shop for equipment or immediately take on the orcish invaders. This is followed by an exploration of the landscape, with sporadic fights, and ends up with a boss fight against the orc overlord and his minions. Winning this fight grants access to the underworld, but very few of the player groups made it much beyond the first boss fight in the time allocated to the game sessions (45 minutes per group).

5.2 Recruitment

The players for both game sessions were recruited at the IT University of Copenhagen in 2004-2005, the Macquarie University (Sydney) in 2005, as well as among the Danish and Australian gaming communities. There does not appear to be any cultural bias between the Danish and Australian datasets. The age of the players varied between 18 to 54 years (only one was under 20). Most of the CRPG players were students at the university, with a substantial amount of game experience. The experience of the PnP players varied. Both sexes were represented: about two-thirds were male and one-third female. There were 25 PnP players, 5 game masters, and 22 CRPG player participants.

5.3 Experiment Procedure

5.3.1 PnP Sessions. Seven PnP sessions were run with the chosen scenario, five in Denmark and two in Australia. The participants were divided into groups of five players, depending on their experience level. Two groups consisted of experienced players, four of a mixture of experienced and inexperienced players, and one group of relatively inexperienced players. All had previously played PnPs. For this study, the verbal communication (and to some degree body language) of three mixed group sessions (based on the relative similarity of the players in terms of playing skills), and one of each of the other types, was transcribed and coded.

The game sessions were managed by highly experienced GMs, in two cases the primary authors of the scenario. Each GM utilized the scenario as a blueprint to run the game and form a relatively linear game narrative. The scenario contains from five to ten general plot points, each describing the general properties of a particular scene. The conditions necessary to progress to the next scene were loosely defined, and a substantial variation was observed between



Fig. 3. Photos of the PnP and CRPG sessions.

the sessions as to how the players progressed through the narrative (e.g., in jumping or altering scenes). The GMs had the freedom to alter the game narrative on-the-fly; however, they were asked to try and maintain the general storyline of the scenario. This was in order to provide a similar storyline to the strictly linear one of the *Champions of Norrath*. The GMs performed in an exemplary manner in keeping the players in the pattern of the overall frame for the storyline, without at any time forcefully limiting the players' freedom. A researcher was present during the sessions, but did not interfere with the gaming activity, since he/she was constrained to answering questions, and these were rare.

Each game session was videotaped, and the participants interviewed before and after each session in order to get feedback on the playing experience, on the interests of the players in RPGs, and so on. Sound was recorded using a tabletop microphone. The tapes were copied to digital format and transcribed.

5.3.2 CRPG Sessions. Six CRPG sessions were held, with either two, three, or four players in each group. Five of them were selected for analysis based on the relative similarity of the players in terms of playing skills and their progress through the game narrative. The groups were introduced to the game and controls in general terms, and played *Champions of Norrath* for 45 minutes each, from the beginning of the game. A researcher was present during the sessions, but did not interfere with the gaming activity and was constrained to only answering questions. Such questions were rare, and almost all players preferred to work out game controls themselves. The sessions were videotaped, the shared visuals of the 50" screen captured, and the communication transcribed as for the PnP sessions.

5.3.3 Coding. For each of the two game types, all verbal communication, and to some extent body language, was transcribed. Three specific sections of each game session were coded, recognized by their narrative content. Scenes from the beginning, midway, and end of each game session was coded, with varying narrative content that was matched across the two formats (Table). The completion time of each scene varied between player groups and between the two formats, from a few minutes to over an hour. Generally, the CRPG groups took less time to complete scenes than PnP groups, due to the pacing

Table III. Sections of the PnP and CRPG Sessions Coded Using the Hierarchy

	Scene type	What a Lovely War!	Champions of Norrath
Section 1	Non-stressful planning and prioritizing	Selecting and donning equipment (shopping)	First extended shopping scene
Section 2	Nonthreatening combat scene	Initial fight against aliens	Initial confrontation against goblin invaders
Section 3	Possibly dangerous (lethal) combat scene	Raid on an alien military base, fight against tougher aliens	First boss fight against goblin overlord and his pets

in *Champions of Norrath*, where, by comparison, the PnP groups had more freedom in determining how long they would play a specific scene.

In both games there was a substantial variation in the temporal length of the scenes. Coding sections in the beginning, midway, and end of the sessions meant that any changes in the communicative patterns of the two game forms as a feature of playing time could be located. For example, it might be expected that the participants would initially have more rules or interface questions than later in the games. As noted above, each of the three sections was coded for five instances of the same game or game scenario in order to ensure cross-session comparability.

The coded sections were chosen based on their narrative content, which varied between the three sections, but had a similar content and style between the PnP and CRPG (Table). This allows evaluation of communication changes not only at different temporal intervals in the game sessions, but also between different types of story content. Additionally, the sections contain parts that are comparable, to further be able to evaluate any changes in the communication taking place in situations with similar narrative content, however at different temporal intervals of the game sessions.

Approximately 40 minutes of verbal conversation was coded for the PnP sessions, each segment from the beginning of the specific scene. For each of the CRPG sessions, the full length of the specific scenes was coded, averaging approximately 13 minutes per gaming session. The full 45 minutes of game-playing time from the CRPG sessions and 60 minutes of game-playing time from the PnP sessions, distributed in 20 minute intervals from the start of each of the selected scenes and onwards, was transcribed and subjected to analyses as described below.

Counts and summaries from the full volume of the transcribed material were extracted using a custom *Active Perl*-script written for the study. This extracted character- and word-length frequencies for each session and each player, as well as listed words used and frequency. The raw output files were further treated in *MS Excel*.

6. ANALYSIS AND RESULTS

Due to the range of results presented, they are arranged in the following order: *Communication content*, *role-playing*, *communication direction* (who says how much to whom?) and *communication intensity* (e.g., how much is said per time unit?)

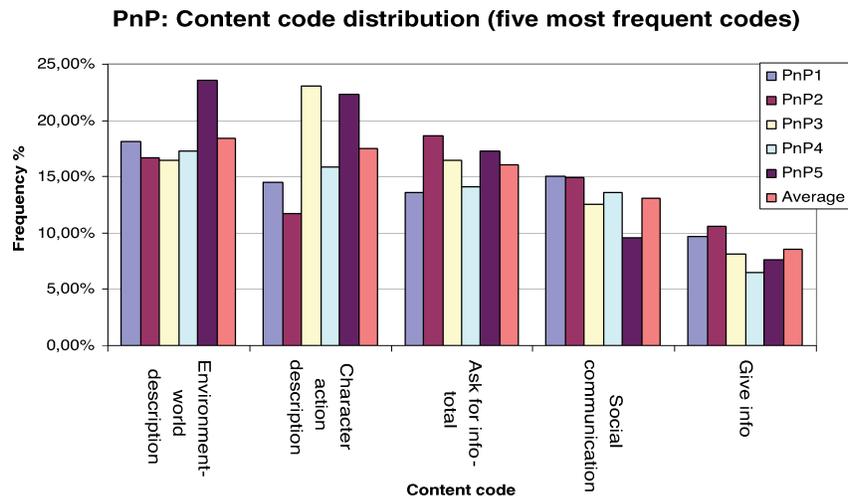


Fig. 4. PnP content code distribution (five most frequent codes).

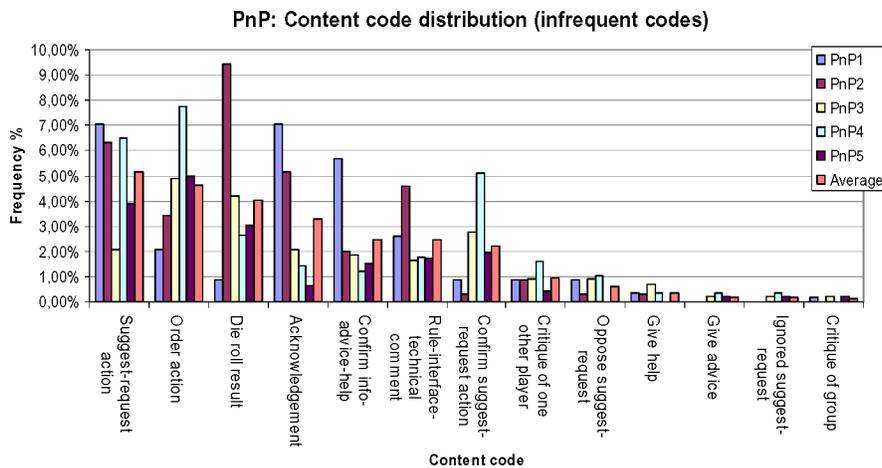


Fig. 5. PnP content code distribution (infrequent codes).

Furthermore, emphasis is applied to determining how *narrative content* (what the players are doing in the game) and *game format* (whether they play PnP or CRPG) shapes the verbal communication.

6.1 Communication Content

The distribution of the content codes for the PnP game sessions (Figures 4 and 5) indicate that the most prevalent content types were *Environment-World description*, *Character Action Description*, *Ask for info*, *Social communication*, and *Give info*. Considering that PnPs are based on a shared imagined game-world reality, it is not surprising that descriptions of the state of the game world, as well as the actions that characters perform therein, are the most commonly encountered codes. The game master often utilized environment descriptions

to describe in-world events and add tension to the game, which corresponds with their role as “story managers”:

“There’s explosions, Fulzans run everywhere, they scream and yell. There are a bunch of Fulzans that take defensive cover, they’ve got themselves laser rifles, they’re shooting back, there’s gun fire going over everyone’s head”

Character action descriptions (CADs) were commonly utilized by the players to describe the behavior of their characters, for example:

“I will heroically swipe the car away, and with my other hand . . . ”

Furthermore, the need for information and provision of information about the different elements of the game and game world would furthermore be expected to be commonly occurring utterance types (information requests are discussed in more detail in Section 6.1.1):

Player: What sorts of weapons do they have?

Game Master: Most of them have little pistols in their giant hands [demonstrates little pistols], or they have rifles [demonstrates holding a rifle]. And so you know, a long rifle, sort of like [demonstrates holding a large rifle].

While there is some variation between the five PnP sessions, the frequency of occurrence of the five most common content codes are perhaps more homogenous than would be expected.

The relatively homogenous pattern of the most common content codes is not, however, reflected in the more infrequent codes (Figure 5). While minor variations in the number of occurrences in these codes result in the appearance of relatively larger variations, there are striking differences in the patterns (e.g., the high degree of the category *Die roll result* for PnP2, and the variation in *Acknowledgment*). As observed during the gaming sessions, the player groups managed the game rules differently, with some groups using rules to support the game story and social interaction, while others used the game rules more frequently. This variation is likely linked with the variation in *Die roll result*. The five most common infrequent codes all deal with actions of some kind, either character-based or player-based (rolling dice), and the acknowledgement and confirmation of these actions by the other game participants. The degree of variation indicates that the playing styles of the five groups varied substantially (e.g., in terms of acknowledging the help or advice received by others, the organization of character actions, etc.). The generally high frequency of the *Suggest-request action* is directly linked with the GM and players, both regularly offering suggestions as to the actions of the characters of other players, for example:

“But you could get, for example, someone else to move the car out of the way with their power suit and then you could blast them.”

In comparison, the communication of the CRPG players is dominated by *Give info*, *Ask for info*, *Suggest/request action*, *Give advice*, and *Game Critique* (Figures 6 and 7).

Notably, a total of 23% to 55% of all utterances focus on supplying information about the game (*Give info*). While the frequency of this content code varied

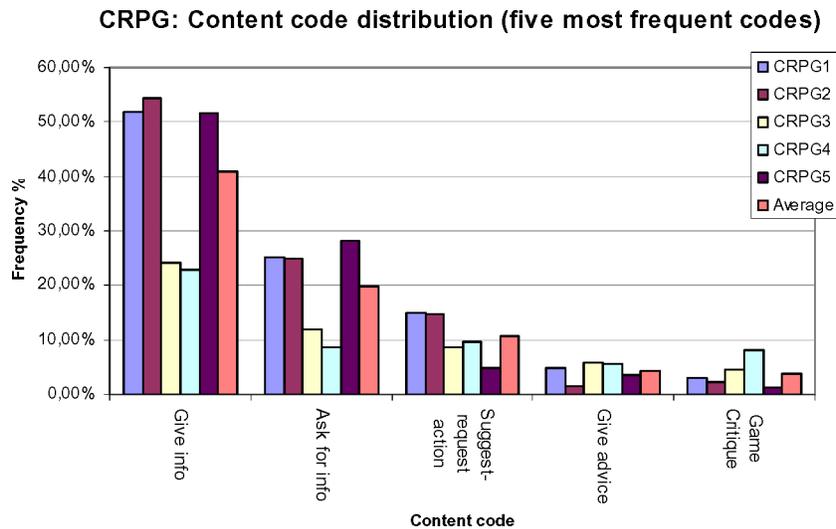


Fig. 6. CRPG content code distribution (five most frequent codes).

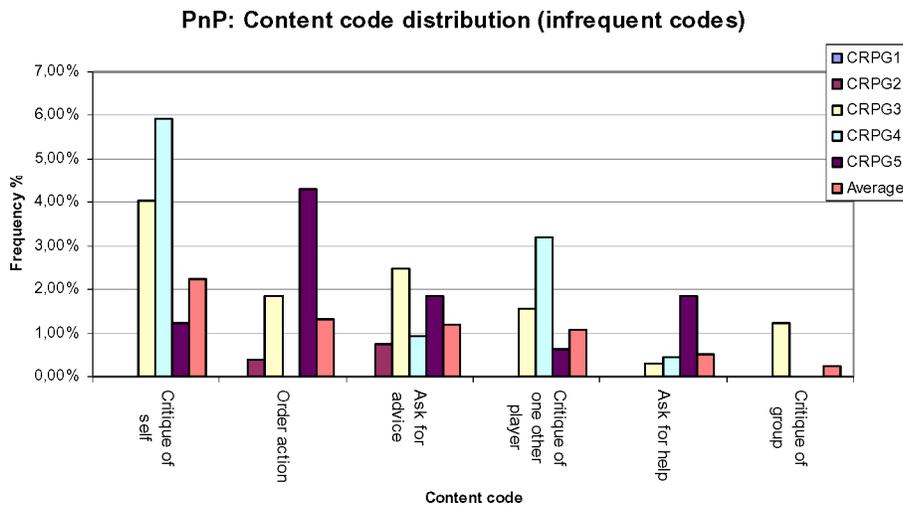


Fig. 7. CRPG content code distribution (infrequent codes).

substantially between the five CRPG groups, it was the most frequent in all of them. The frequency of the code illustrates the CRPG version of the functional communication of the PnP sessions: Orientation within the game world, relaying of information about objects found and lost, descriptions of the status of the player characters, and so on, for example:

“I bought some sort of knife - that may have been stupid.”

“I found a mace.”

“No I caught fire again; I’m real good at that.”

The give info-utterances emphasize and illustrate the cooperative atmosphere of the game sessions, although it is important to note that some instances of *Give info* in fact may be interpreted as requests for help, such as

“Uh, I almost burned up”

Here, the player is of course providing factual information; however, the player may also be trying to get others to provide help, for example, in the form of healing, or better cover in the future. Apart from the underlying necessity of providing tactical information to each other, the prevalence of the *Give info* code is also explained by the many possible uses of providing information. A similar explanation can be attached to the high frequency of the *Ask for info* code, which covers both very general tactical questions, such as

“What do we do now?”

The code also encompasses more specific enquiries about game mechanics, such as

“Can’t you cast healing magic?”

As would be expected, the *Ask for info* code forms the second significant part of the functional in-game communication of the CRPG session, and reflects the general level of cooperation evident in the gaming groups. In general, the players were mutually helpful and willing to answer questions. Since *Champions of Norrath* poses considerable challenges of coordination (for instance, the players must continuously move in the same direction), players often proposed that others (or the whole group) act in a certain way, for instance,

“So we actually have to run back?”

“I have no potions and I have no mana. Can’t we wait two seconds perhaps?”

The *Give advice* code covers expressed beliefs and advice rather than factual information, and represent a different means of cooperating, for example,

“Remember, by the way, to keep an eye on your health”

Finally, the code *Game critique* was much more common in the CRPG context than in the PnP. The code category cover statements such as

“I think, I just think compared to when I play *Final Fantasy* then I think it’s a bit primitive to look at”

Turning to the less frequently utilized codes (Figure 7), the pattern of variability between the CRPG groups becomes more evident, in a manner similar to the PnP groups (Figure 5). Critique-based utterances take up a few percent of the total verbal conversation, whereas none of the critique-based utterances reach above 1% frequency in the PnP situation. This is probably related to the increased demands for real-time tactical coordination required between the players in *Champions of Norrath*, as compared to the PnP situation where the GM and player can effectively “freeze” the events in the game world and discuss their tactics and approaches.

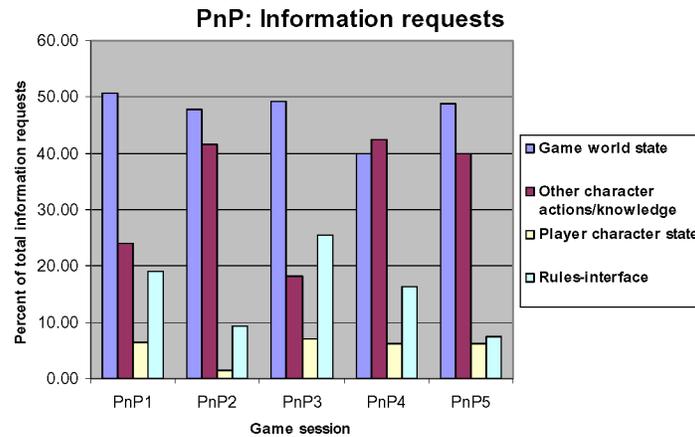


Fig. 8. Details of information requests in the PnP sessions.

Comparing the two formats, the most striking difference that does not appear directly related to the game format, is the substantial difference in the utterances coded as *Social communication* (Section 4.2.4). This category covers utterances that do not carry direct in-game functionality, and were much more common in the PnP context as compared to the rare examples in the CRPG. The explanation for this variation is probably related to the game format. PnPs are based on direct player interaction in-character, while the CRPG investigated for this study largely eliminated character-to-character communication. PnP players will therefore not only converse to a higher degree in-character, but this also carries the inherent encouragement to have informal chats as well. Possibly, this is a method for players to immerse themselves in their characters and gather information about the other characters.

6.1.1 Information Requests in PnPs. As noted above, requests for information comprise about 15% of the communication in the PnP sessions. Furthermore, one of the most common codes was *Environment-World description* (Figure 5), which was especially utilized by the GMs. When breaking down the game participants' information requests, it becomes even clearer why the environment descriptions are so common, as around 50% of the total amount of information requests focus on the game-world state (Figure 8). Similarly, the relatively high frequency of the Other character actions/knowledge would appear to fit with the high frequency of the Character Action Description content code (Figure 5).

6.2 Role-Playing

The “role-playing game” label is used liberally in the game industry. In the context of this study, it was desired to examine the degree of role-playing in the two formats, to determine whether CRPG players freed of the need to talk about rules and mechanics would dedicate themselves to role-playing. As shown in the following, this turned out not to be the case (Figures 9 and 10). Two separate measures were used: The in-character/out-of-character ratio

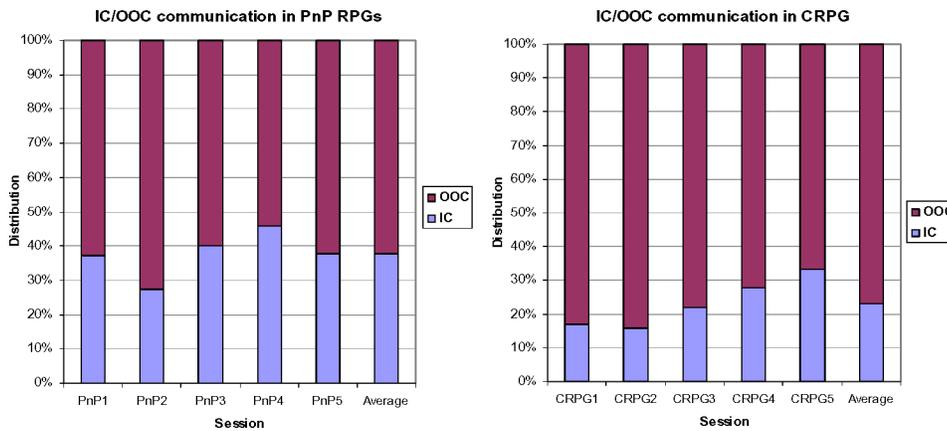


Fig. 9. Ratio of in-character to out-of-character communication in the two formats.

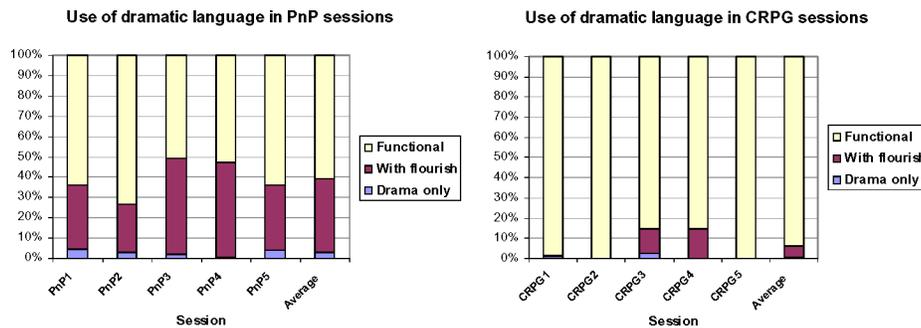


Fig. 10. The use of dramatic additions to the verbal language in the two game formats.

(whether players enact their characters) and the use of dramatic language.

6.2.1 *In-Character versus Out-of-Character Communication.* The ratio of character-based communication varied substantially between the two game formats (Figure 9). While there is a degree of variability in the results, the players in the PnP sessions communicated more in-character than the CRPG players.

Communication in-character also indicates a larger inclination to enact these characters. This could be interpreted as greater identification in the dramatic sense; but it could also be caused by more time spent with the character or with greater character depth—the PnP characters featured developer personalities, background histories, and similar information that could possibly facilitate role-playing more than the relatively clichéd CRPG characters do.

As many utterances can be interpreted as both in-character and out-of-character, a coding choice was made to place ambiguous cases in the in-character category. This was mostly a problem in the CRPG sessions, while the variation in IC and OOC communication is clearer in the PnP context. This has likely over-emphasized the frequency of IC communication in the CRPG

sessions (Figure 9). For example, the following two utterances from the CRPG sessions could be coded as IC or OOC, and which was not always clear from the transcript context:

“Let’s get out and kill something”
 “How about we try to run in the other direction?”

In-character communications in the PnP sessions were utilized to communicate strategies and debate information and clues, as well as provide information to the other players about the state of one’s character, as in this example in which a character has been shot:

“No. Oh, it really hurts. Believe me boys, it really hurts. Perhaps we can . . . ”

Or similarly (an unfortunate character was asked to look agonized in front of a cameraman):

“Oh, the agony, the agony. The things we go through for our war. Owwww . . . ”

Irrespective of the explanation for the variance in IC and OOC communication, the PnP players in the current study displayed a higher tendency to role-play or enact their characters than their CRPG counterparts did.

6.2.1 *The Use of Dramatic Language.* A second indicator of role-playing is the degree to which players seek to enhance the dramatic atmosphere. This is done by making utterances that are either purely dramatically motivated and have no game-functional function apart from adding drama and visualization (e.g., “I stuff my pipe with tobacco and stare ponderously towards the ocean”), are dramatically embellished (e.g., “As I draw my sword, it glitters blindingly in the sunlight”), as opposed to utterances that are purely functional (e.g., “I draw my sword and charge the orc. I hit him for five points of damage”).

Similar to the variation in IC vs. OOC communication, PnP players appear to be more inclined to utilize dramatic additions to their verbal language than their CRPG counterparts (Figure 10). Two CRPG groups (CRPG₂ and CRPG₅, Figure 10), did not use communication that was not purely functional.

In summary, the PnP players were more inclined to speak in-character and to use dramatic language than the CRPG players.

6.3 Communication Direction

Figure illustrates communicative balance, that is, whether players have a similar number of utterances directed at them. First of all, most utterances (around 50% in the PnP sessions and around 60% in the CRPG sessions) are directed at the group as a whole.

The numbers indicate that the distribution of communication in the two game setups is generally flat. It is the exception rather than the rule (PnP₄, CRPG₄, Figure 11) that a player is the recipient of a substantially higher number of utterances than any other. The exception is the game master in the PnP situation, who in four out of five cases receives approximately twice as many utterances as the average for the players. A higher amount of communication

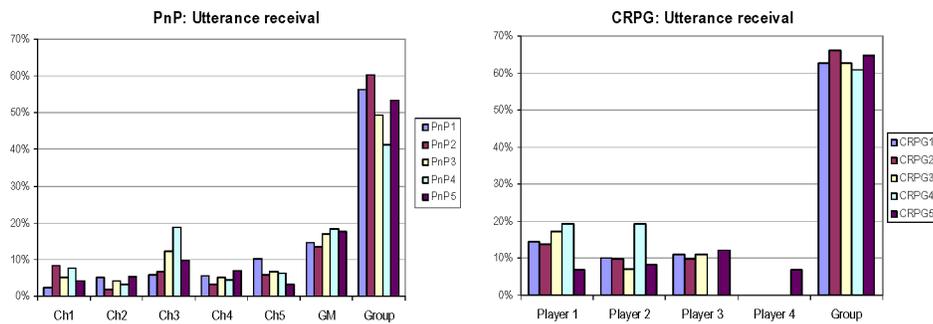


Fig. 11. Direction of verbal utterances in the two game formats. Note that CRPG₅ had four players as the only one of the CRPG sessions, hence the zero-values for sessions 1 to 4.

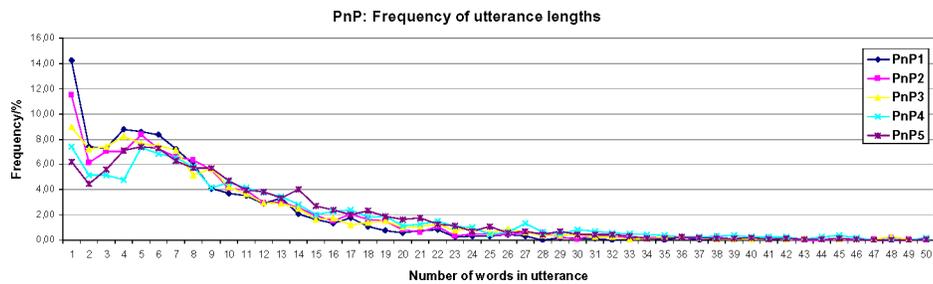


Fig. 12. Frequency of utterance lengths in the PnP game sessions.

directed at the game master would be expected, given the game management nature of this participant.

6.4 Communication Intensity

Additional differences between communications in the two game formats can be pinpointed by analyzing the frequency of distribution and general communication intensity.

On the whole, the two formats show many similarities in this regard (Figures 12 and 13), although there is a tendency for the PnP players to use more long sentences (the curve descends less rapidly). Also, the most popular utterance length for PnP players is the one- word type, whereas CRPG players prefer two words. Finally, both curves initially fall, but increase again around five words per sentence (PnP) and seven words per sentence (CRPG). The greater variation apparent in the CRPG data may be related to the total size of the CRPG dataset being smaller than the PnP one.

Breaking this data down by the three scenes (Figure 14), shows a noteworthy difference between the two formats: Narrative content does not matter for the length of utterance of the PnP players, but does influence the CRPG players.

In particular, Scene 3 (a potentially lethal fight against a boss monster) inspires many long utterances. This pattern could be related to the need for players to coordinate their actions, in the first seriously threatening situation

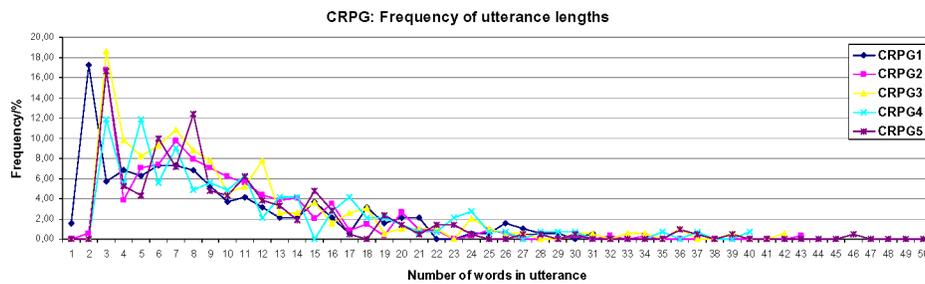


Fig. 13. Frequency of utterance lengths in the CRPG game sessions.

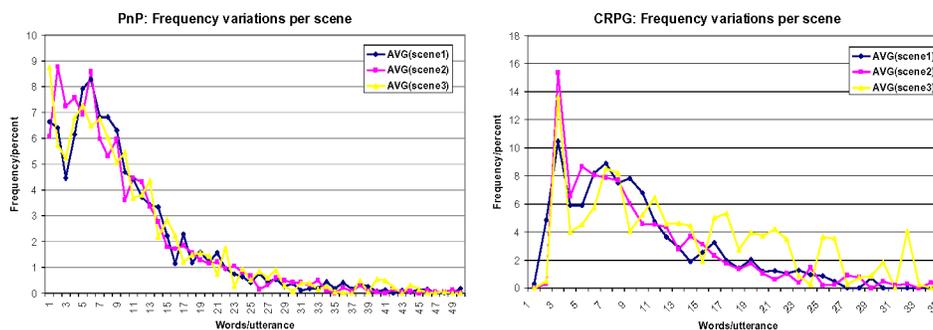


Fig. 14. Utterance length frequency variations by scene.

that they encounter during the game sessions. An example of such an utterance (26 words in the original) follows:

“I think we just have to, if we keep running back and err . . . shoot. How did you heal yourself?”

In contrast, the communication frequency pattern for the three scenes in the PnP games is generally homogenous (Figure 14).

The difference between the apparent effect of the active game content or situation and player communication in the PnP and CRPG contexts respectively is further emphasized when considering the communication intensity. The sum of spoken words per minute (wpm) varies between 107.23 to 219.33 in the CRPG context, but only between 151.13 and 198.63 in the PnP games. There is almost twice as much variation in the overall communication intensity in the digital RPG. Considering wpm as a function of the specific scene, a similar pattern is observed: PnP varies between 151.13-225.05 wpm, while CRPG varies between 81.19 to 339.0 wpm.

While the pattern for the PnP sessions is one of minor variations between the different player groups, and a constant flow of communication with no apparent relationship to the narrative content of the active scene, the average wpm for the CRPG sessions varies substantially across the three scenes: 220.39 for scene 1; 158.67 for scene 2; and 115.31 for scene 3 (Figure 15).

While the pattern of variance in the wpm counts as a function of the active scene is not identical across all five player groups, there is a clear tendency for

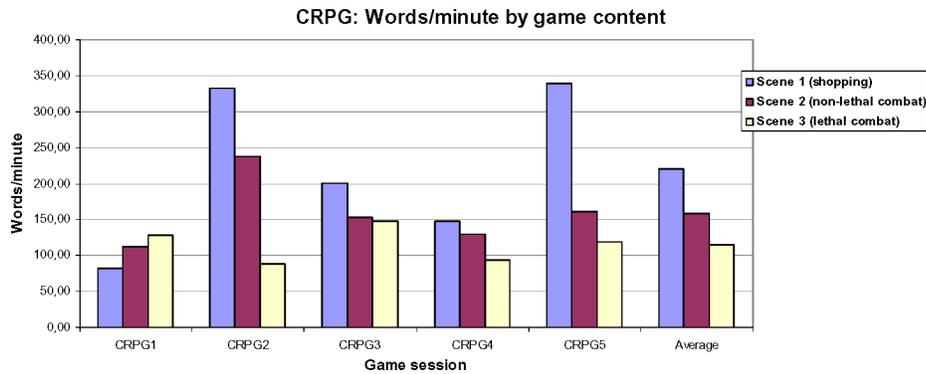


Fig. 15. Words per minute in CRPG by game content (scene).

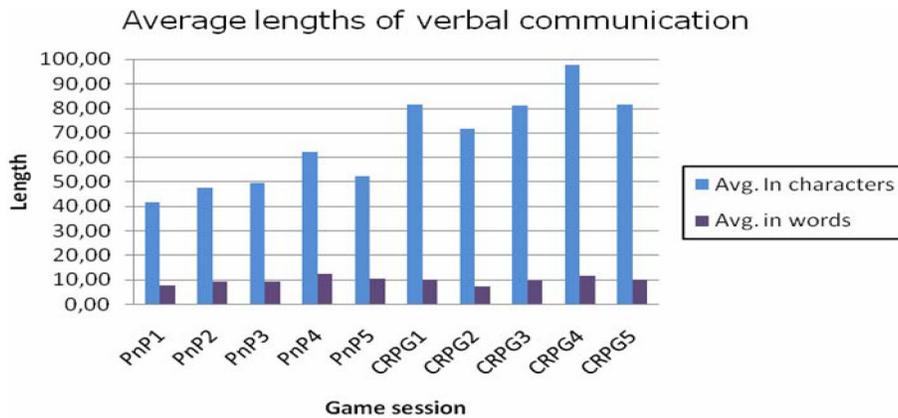


Fig. 16. Average length of verbal communication in the PnP and CRPG sessions; averages provided in number of characters and number of words per utterance.

the players to speak most during the shopping scene (scene 1) and least during the lethal combat scene while battling the orc overlord and his pets (scene 3). That no such pattern emerges in the PnP data is, perhaps, not surprising: since all events there take place through speech, there is no immediately obvious reason to expect that one type of narrative content should stand out in this regard. Meanwhile, in the CRPG, players are especially unburdened cognitively and under no time pressure during the shopping sequence, whereas the lethal combat scene requires intense concentration to merely stay alive (for most groups).

6.4.1 Descriptive Statistics. To add further substance to the results outlined above, a series of descriptive statistical indicators were calculated for the ten game sessions (Tables IV, V, and Figure 16). The data indicate—perhaps surprisingly—that the CRPG players on average utilized longer words than the PnP players: 82.75 characters per utterance on average for the CRPG sessions, as compared to 50.47 for the PnPs, with comparable average utterance lengths in number of words. As indicated by the frequency diagrams, the maximum

Table IV. Descriptive Statistics for Utterances for PnP and CRPG Sessions

Experiment	PnP ₁	PnP ₂	PnP ₃	PnP ₄	PnP ₅	CRPG ₁	CRPG ₂	CRPG ₃	CRPG ₄	CRPG ₅
In characters										
Average utterance length	41.59	47.77	49.54	62.09	52.52	81.61	71.69	81.16	97.75	81.54
Word length/characters	5.31	5.15	5.01	4.93	4.98	8.11	11.7	8.17	8.4	8.12
Min length	3	1	2	1	2	9	9	11	9	9
Max length	343	940	243	684	319	345	387	431	373	499
In words										
Average utterance length	7.83	9.27	9.54	12.60	10.55	10.07	7.4	9.94	11.56	10.05
Min length	1	1	1	1	1	2	2	3	3	3
Max length	63	174	52	133	61	32	43	42	40	54

STDEV = standard deviation; CRPG = computer role-playing game; RPG = role-playing game

Table V. General Utterance Statistics for the PnP and CRPG Sessions

	In characters				In words			
	Avg. length/chars.	Avg. chars./minute	Min	Max	Avg. length/words	Avg. words/minute	Min	Max
PnP	50.47	894.44	1	940	10.16	175.99	1	174
CRPG	82.75	1314.35	9	499	9.80	164.79	2	54

CRPG = computer role-playing game; RPG = role-playing game

sentence lengths were substantially higher for the PnP games, both in terms of numbers of characters and words. Standard deviations in the length of utterances are also highest for this format, with the difference being readily apparent in word length (Table V).

7. CONCLUSIONS AND DISCUSSION

This study has examined the varied and complex functions of language in multiplayer gaming. Key results are summarized here, and their possible implications for game research and design are discussed.

Closely studying communication form and content in games by means of empirical research enables the definition of general and specific tendencies and patterns in the communication between players. Furthermore, studying two different formats—a pen-and-paper role-playing game and a computer role-playing game—permits the investigation and understanding of how the game medium (or format) affects the communication and behavior of the participating players.

As outlined above, the speech rate of the participating CRPG players (from 107 to 219 WPM) and PnP players (151 to 199 WPM) is somewhat lower than normal conversation, which takes from 190 to 230 words per minute [Tauroza and Allison 1990]. However, considering the cognitive challenge of playing multiplayer games in any game format, notably PnPs that mainly takes place in the imagination of the players, these numbers are not surprising, and serve to emphasize the importance that language plays in these games.

For both game formats, the players were generally engaged in a conversation with all group members. Overwhelmingly, utterances were directed at the entire group, reflecting that the multiplayer games in question produced collaborate interaction in which players were able to, within short time spans, work together to achieve their goals.

Turning to a comparison between the two formats, the differences between the PnP and CRPG are unsurprising in that they appear to relate to the consequences of PnP games using language as the primary medium of interaction while CRPGs do not *need* language in the same way: PnP players uttered a large number of descriptions while the CRPG players were collectively working out how the game operated by requesting and providing information.

More thought-provoking is the large difference between the formats as regards verbal aspects of role-playing: the CRPG players seemed to care far less than their PnP counterparts about contributing to the drama by enacting their player characters. In the CRPG sessions, in-character utterances were less frequent and, strikingly, very few utterances were dramatically embellished in any way. In other words, the CRPG players delegated language to a much more directly functionalistic and tactical role than was observed during PnP play.

Finally, speech intensity only varied as a function of the content or events of the specific game scene for the CRPG players, who communicated most intensely during a peaceful shopping scene and least during a potentially lethal combat scene. This finding shows how, for CRPG players, low speech intensity is not necessarily linked to dull game moments (although boredom might well also lead to moments of relative silence). Quite the contrary: players spoke least when struggling to stay alive. This shows that communicative patterns *are* related to game content (and thus, in future studies, may be studied as symptoms of excitement and boredom); however, it also shows that we must refrain from simplistic notions about how communication and player experience are connected.

All these results provide empirical insights into the under-explored functions of language during video gameplay. But what, from a larger perspective, are their implications?

In terms of game *studies*, the present study illustrates how cross-game or cross-platform communication analyses can be carried out and how empirical research at minute levels of player interaction can highlight differences in player experience. Traditional genre labels such as “role-playing games” based on content or particular mechanics may well obscure major differences of actual *play*. This is an argument in favor of increased attention to players and the relationship between their behavior and aspects of game design. As to implications for video game *design*, it is readily observed that CRPGs—at least of the form investigated here—may not inspire much role-playing from their players, and thus possibly not much immersion in their fictional characters. This means that developers alone carry the entire burden of providing a dramatically compelling experience (whereas PnP scenario writers can concentrate on much more high-level narrative issues without worrying about minute details). Assuming that narrative-based games thrive on dramatic atmosphere, multiplayer offline CRPGs may be failing to engage players beyond the excitement of

a completing series of goals. The present study has not documented any single remedy; however, taking lessons from PnP, more complex character development (or perhaps even premade characters) may well be the key to pleasurable identification (for further discussion see, e.g., Sheldon [2004]; Tyachsen et al. [2006]; and Smith [2007]). Also, the clear reliance on language to coordinate and to share information may be a cue to designers of online CRPGs to prioritize communication features (possibly the aspect of this genre's design that has seen the least development over the years). The events on the screen should not be mistaken for the game itself, or at least not for the game that players prefer; communication *around* and *about* the game may be as important to the player experience.

In summary, the present study has provided a methodological and empirical foundation for further work while generating design suggestions that are at least plausible hypotheses. Future work on player communication in multi-player games could aim at linking communicative patterns to the player experience more directly by gauging (whether by objective or subjective measures) at which points the players are most immersed or entertained and how this relates to their behavior. It would thus be possible to arrive at approximate measures for that vague concept which, after all, any entertainment-oriented game designer strives for: Fun. Furthermore, it is suggested that such studies build on—or at least consider—the coding system provided in this article in order for game studies to mature by building on previous results and approaches. Thus, it is hoped that future work inspired by this study may further bridge the gap between the study of games themselves and the study of player behavior, as well as the gap between game studies and game development.

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