

Intercultural Communication in a Virtual Environment

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Abstract

In this paper we explore and describe aspects of intercultural communication in an Internet based virtual environment. In spite of a massive Anglo-American dominance, the Internet share of non-English language use and of participants from non-English speaking countries is steadily increasing (cf Flydal). Our study is based on observing spontaneous text-based communication in a potentially multilingual and multicultural setting, the Active Worlds multi-user VR system. The paper examines a number of features of this communication, such as length of contributions, languages used, origins of participants, types of introductions, topics, vocabulary and communication management.

keywords: intercultural communication, virtual intercultural communication, virtual reality, intercultural avatars, Intercultural ECA.

1. Purpose

In this paper we explore and describe aspects of intercultural communication in an Internet based virtual environment. In spite of a massive Anglo-American dominance, the Internet share of non-English language use and of participants from non-English speaking countries is steadily increasing, cf Flydal (in this volume). Our study is based on observing spontaneous text-based communication in a potentially multilingual and multicultural setting, the Active Worlds multi-user VR system. The paper examines a number of features of this communication, such as length of contributions, languages used, origins of participants, types of introductions, topics, vocabulary and communication management.

2. Background

Active Worlds is one of a number of systems which allows interaction between users in a 3-D computer-generated virtual environment that can be accessed via the internet (for a sample of these systems, see <http://www.ccon.org>). Active Worlds consists of more than 500 interlinked separate virtual worlds that are typically used by between 100 and 300 users at any time of day.

There are also some multi-user systems of this type which allow voice-communication, but at present these are still only used by very few users due to the technical problems of carrying both voice and 3-D images via the internet. There are also systems which are purely text-based - "MUDs" - in which users describe their appearance and the spaces they "move" in, in words. There has been some research on communication on these text-based systems (for a comparison of text-based versus the graphical system described here, see Becker and Mark, 1998) but, language might play a different role in text-based as opposed to (graphical) VR systems because the mode of interaction between participants is different.

Having made the statement that multi-user VR systems and purely text-based MUD's are different in terms of interaction between participants, it should be added immediately that the participants in Active Worlds do not make much use of the gestures of their avatar embodiments (they have the capability to smile, frown, wave, jump and the like). They also tend to stand fairly immobile while they are having conversations. In other words, communication is mainly by means of text. This means that among the interesting things to investigate are:

1. How, or in what instances, are text exchanges typically complemented by the expressive capabilities of avatar embodiments in Active Worlds?
2. What difference do the spatial movement of avatars and the spatial setting make to the text-exchanges in Active Worlds, particularly in comparison with text-based MUD's on one side, and with face-to-face conversations in the real world on the other?

In this paper, we shall only comment briefly on these questions (though again, see Becker and Mark, 1998). Instead, we shall focus on a different and equally interesting feature of the Active Worlds system, namely, that it brings together users from many different cultural and linguistic backgrounds. There are some worlds that reflect these differences in cultural background ('Russia', 'France', etc.). Here we will examine the main world within the system, Alpha World, since this is the most popular world within the system and also because this world (and 'AWGate', where newcomers enter) are common spaces which are frequented by all users.

Active Worlds is a place to socialise. There are virtual worlds within this system, for example, for educational purposes, for product display and advertising, for gambling, and for holding religious services. The main purpose, however, is socialising for its own sake - in other words, entertainment.

3. Method

3.1 Data

The study consisted in recording and analyzing a 6 hour and 29 minute long VR chat session from "Alpha World". The session was selected arbitrarily and continually logged during this period, which was from approximately noon until 18.00 Greenwich Mean Time. The details of the size of the material can be seen in Table 1.

Table 1. Size of Analyzed Material

Duration	6 hours, 29 min.
No. of contributions	3 092
No. of word tokens	15 453
No. of word types	3 970
No. of participants	185

As we can see, 185 persons participated in the session, yielding a total of 3 092 contributions (utterances) or 15 453 word tokens and 3 970 word types. The material was analyzed both manually and automatically. Below we will first mention the types of analysis which have been done and then describe the results of these analyses.

3.2 Types of Analysis

The following types of analysis have been undertaken:

1. Participant's share of interaction
2. Participant's origins and languages used
3. Share of non-English contributions
4. Topics
5. Types of introductions
6. Types of expression and vocabulary
7. Communication management

- summons
- feedback
- turntaking
- sequences
- own communication management

4. Results of the Analyses

4.1 Participants' share of the session

In Table 2 we summarize some data on the participants' share of the session.

Table 2. Participants' shares of interaction

Contribution/participant	16.7
Words/participant	83.5
Word types/participant	21.5
Words/contribution	4.9

Table 2 shows that participants made on average 16.7 contributions each. The set of contributions from one person on average contained totally 83,5 word tokens and 21.5 word types and were of a length of 4.9 words per utterance. In other words, the contributions are fairly short. However, just presenting average figures is misleading since the distribution of utterances and words is skewed. In Table 3, we present some data which shows this.

Table 3. Contributions per participant

No. of participants = 185, No. of contributions: 3 092

No. of contributions	No. of participants	%
1	38	21
2	23	12
3	11	6
4	12	6
5	9	5
	3	2

We see that as many as 21% of the participants made only one contribution and then got out of the interaction, 12% made only two contributions, etc. In fact, 50% of the participants made less than 5 contributions. So even if the average is 16.7 contributions, the median is 5 contributions. Only 3 participants made over 100 contributions in the session. Thus, we have a situation where a majority of participants participate in the session only for a short time and then leave, while a very small minority participate for an extended period of time.

4.2 Participant origins

Participants in the session do not have to identify themselves in any way. However, they all choose a name which is mostly not their own but a pseudonym. Sometimes they state their geographical or linguistic origin, but mostly they do not. In Table 4, we show the geographical and linguistic background of the participants as far as it was possible to determine these. Since the participants using Spanish came from several countries (some not identifiable), for Spanish, language rather than country is given.

Table 4 Participant origins

(No. of participants = 185)

	Origin	No. of participants
1.	Unknown	128 (69%)
2.	English speaking country	27 (15%)
	USA	17
	Australia	5
	New Zealand	2
	Canada	1

	England	1
	Ireland	1
3.	Non-English speaking country	30 (16%)
	Spanish 8	Germany 1
	Sweden 4	Finland 1
	Brazil 3	France 1
	Holland 3	Israel 1
	Norway 2	Hong Kong 1
	Italy 2	Belgium 1
	Kirgistan 1	

All the unknown participants were using English in their contributions and since their English was mostly native like, it is fair to hypothesize that a majority of them had English as a first language, but it is impossible to be certain about this since we do not know the origins of the participants. Together with the participants who were identifiably from an English-speaking country, this gives a very clear majority of English speakers (probably over 80%).

4.3 Share of non-English contributions

If we pursue the analysis of what language is used in the contributions of the participants from non-English speaking countries, we find the following picture (Table 5).

Table 5. Language used by participants from non-English speaking countries. The use in the table of adjectival or nominal form depends on whether only a geographic or a linguistic and/or geographical identification was made of the participants

1	Only English (10)	Germany (2) Spanish (1) Dutch (2) Kirgistan (1)	France (1) Belgium (1) Israel (1) Hong Kong (1)
2.	Mixed English and another language (16)	Spanish (5) Dutch (1) Brazil (3) Portuguese)	Swedish (3) Finnish (1) Norwegian (1) Italian (2)
3.	Only non-English (4)	Spanish (2) Swedish (1) Norwegian (1)	

The table shows that a third (33%) of the participants from non-English speaking countries use only English in their contributions. 16 participants (53%) use a mixture of English and another language while 4 participants (13%) use only another language. If we combine these results with the results presented in Table 4, we find that 165 (or 89%) of the 185 participants use only English. 181 participants (or 98%) are using only English or English and another language. Only 4 participants (2%) are not using English at all. This means that although the setting is potentially open to all languages and cultures, the de facto dominance of English is very strong.

We have also done a more detailed analysis of the contributions of those participants who used several languages. The results of this analysis can be seen in Table 6.

Table 6. How much is English in mixed contributions?

16 participants making 221 contributions.

Language		Contri- bution	Non- English	Dom. Language
1.	Spanish	1	4	
2.	Spanish	4	32	
3.	Spanish	7	27	
4.	Spanish	11	11	
5.	Spanish	<u>2</u> 25	<u>2</u> 74	Spanish
6.	Brazil	2	2	
7.	Brazil	2	7	
8.	Brazil	<u>2</u> 6	<u>7</u> 16	Portuguese
9.	Holland	10	1	English
10.	Finland	1	1	
11.	Swedish	2	13	
12.	Swedish	6	12	
13.	Swedish	<u>127</u> 135	<u>11</u> 36	English + 2 lang. less
14.	Norwegian	9	1	English +German
15.	Italy	15	1	
16.	Italy	<u>20</u> 35	<u>6</u> 7	English
	TOTAL	221	135	

The results show that only Spanish and Portuguese speakers let their own language dominate when using several languages. In the case of the Dutch, Finnish, Swedish, Norwegian and Italian speakers, English is

allowed to dominate. In one case, a Swedish participant attempts to give the others a Swedish language lesson. A Norwegian participant makes an attempt to use German. The fact that this is the only attempt of this type draws our attention not only to the dominance of English but also to the dominance of English as a second language. The persons who are not using English seem mostly to be using those languages as first languages. When they are using other languages than their first language, the language they use, except in one case, is English.

If we investigate the properties of the contributions coming from participants from non-English speaking countries, we find that the contributions are mostly very short and not very many. Both of these facts are compatible with having difficulties in using English as a second language. Insufficient linguistic competence, therefore, might be one of the factors behind short participation in interaction. We also find that the contributions very often have a contact function consisting of a greeting or, a query about whether others speak one's language. A more general overview of the topics covered in the exchanges is found in the next section.

4.4 Topics

In Table 7, we present the results of carrying out an analysis of the topics referred to in the contributions. For 1962 contributions the results were the following:

Table 7. Topics in a VR chat session

(1962 contributions)

Topic		No. of contributions	%
1.	Greetings	349	8
2.	Farewells	159	3
3.	Announce being back	12	
4.	Asking for contact or help in Active Worlds	17	1
5.	Being witty – seeking attention	63	3
6.	Seeking a specific person	72	4
7.	Age & sex (Q & A)	74	4
8.	Domicile & language	119	6
9.	State of health in Real world	23	1
10.	Events, objects, persons, Active Worlds	508	26
11.	Events, objects in Real World	378	19
12.	Sex (jokes, invitations, rejections)	25	1
13.	Religion	26	1
14.	Contact in Real World	104	5
15.	Immigr. officer & unidentif. Addressee	33	2

Greetings and farewells account for 26% of all contributions. This goes well with the fact that many persons only come for short visits. Greetings are more common than farewells. Perhaps this is so, since establishing contact is an unavoidable precondition of participation in a session, whereas preparing for maintenance of contact through leave taking is only important if contact really has been established.

Contact making in other ways than through greetings, e.g. announcement of being back, asking for contact or help in Active Worlds, being witty or seeking attention, seeking a specific person, asking about the sex and age of other persons and announcing your own domicile and language account for another

22% of all contributions. Totally, thus, 48% of all contributions are devoted to the establishing of contact (40%) or maintenance of contact through farewells (8%).

When it comes to the contributions which do not have a primary contact function, 26% concern events, objects, persons in the virtual environment itself (Active Worlds), while 19% concern events, objects and persons in the real world. Two special topics are noticeably present in some exchanges - sex (1%) and religion (1%). But as we see both are a comparatively minor concern.

5% of the contributions are devoted to discussing contact in the real world, either because the parties have already met in real life or because they are exploring the possibility of doing so in the future. Finally, 2% of the contributions come from a non-human programmed immigration officer.

4.5 Types of Introductions

Since over 50% of the participants only participate in the session very briefly, introductions are a major feature of interactions in AlphaWorld. We therefore examined participants' introductions. Looking at the 180 first contributions the results were as follows:

Table 8. Introductions in AlphaWorld.

180 contributions

Type of introduction		Frequency
1.	Unspecified	
	Hi to everyone	81
	Exclamation to gain attention	19
	"Is anyone out there?"	<u>5</u>
		105 = 58%
2.	Specified	
	Hi to specific person	31
	"Hi X – where are you from"	23
	"Is X there"	4
	Implicit direct response to ongoing conversation	7
	+ "who are you"	<u>1</u>
		66 = 35%
3.	Interest in language or country	
	Does anyone speak X/	
	Is anyone from X	8
	I am from country X	3
	"Hi X – where are you from"	<u>23</u>
		34 = 11%

The table shows that 58% of the introductions were either an unspecified *hi* to anyone that might observe it, an exclamation to gain attention, or the phrase "is anyone out there". All of these types of introductions can be used when you are a newcomer or unsure about whether you know anyone. Many of the

participants in Alpha World presumably fit into these categories of description. 35% of the introductions are slightly different in being more specific. Of these more specified introductions, some are compatible with having previous knowledge of Alpha World, such as saying *hi* to a specific person, asking for a specific person or giving a direct response to an ongoing conversation. Others are more open ended, such as asking a person where he/she is from or who he/she is.

A third category of the introductions (11%) directly topicalize language or geographical origin. Some examples are *Does anyone speak X*, *Is anyone from Y*, *I am from country X*, *Hi W - where are you from?*

4.6 Types of expression and vocabulary

Two very noticeable traits of the contributions in the sample are the very frequent occurrence of smileys or emoticons, and also the very frequent occurrence of unconventional abbreviations. In Table 9 we present the most highly frequent smileys and abbreviations.

Table 9 Highly frequent smileys and abbreviations. (Total corpus 15 453 words).

The rank number gives the rank in the total corpus

Rank	Expression	Frequency
14	U (you)	114
19	lol =LoL (laughing out loud)	89
22	:-)	81
42	:)	61
56	ya (you)	42
71	r (are)	34
89	ur (you are)	27
137	(ya (see you)	17

Over and above the smileys and abbreviations presented in the table, there are very many others with a lower frequency. The presence of these means of expression, which are a typical feature of written language in more interactive use, also point to the fact that the capabilities for movement and gesture of the avatars are not really being made use of.

A second quantitative feature of the corpus is that 87 of the 100 most frequent expressions are syncategorematic or function words. This is not really remarkable but a feature which is shared with most other corpora of spoken or written language. The function words here, like in other types of language use, are simply indispensable for constructing complex contributions.

A third more interesting quantitative observation is that the words *you* (*you* (310) + *U* (114) + *ya* (42) = 466) and *I* (403) are the most frequent words in the corpus. This is a very marked feature and means that these interactions are more than normally focussed on the speaker (writer) and especially the listener (reader).

A fourth quantitative observation is that in line with the prevalence for greetings found in the analysis of topics above, we find that words of greeting are much more than normally frequent. The ranks and frequencies of the four most common words of greeting are presented in Table 10.

Table 10 Greetings

(15 453 words)

Rank	Word	Frequency
6	hi	244
40	hello	63
43	hey	60
64	bye	40

4.7 Communication Management

A fundamental feature of human communication and interaction is that it needs to be managed by the persons who participate in the interaction. To enable them to do this, all languages have evolved a set of mechanisms to take care of basic management functions. Below we list some of these functions and present observations on how they are realized in the Active Worlds setting.

- Summons

In order to start a communicative interaction we need to be able to catch the attention of a potential interlocutor. This can be done through various types of summons like greetings, use of names or vocative forms. As we have seen, this is a very striking feature of the Active Worlds setting. Greetings are more than normally frequent. Also the use of names is more common than in ordinary spoken language. This is probably due to the difficulty in Active Worlds of knowing who is being addressed. Physical contiguity and eye contact do not make this clear sufficiently the way it would have been in ordinary face-to-face conversation.

- Feedback

Communicators have to let each other know whether what has been communicated has been perceived and understood. They also have to let each other know if they wish to continue the interaction and how they are reacting to what their interlocutors are trying to achieve (cf Allwood, 1987 and Allwood, Nivre & Ahlsén 1992).

In spite of the fact that there is need for feedback, the rate for feedback words is lower than in ordinary spoken interaction. We are unsure of a plausible explanation for this. Either there is actually a lesser need for feedback in this setting which seems unlikely, or else feedback signals are given in some other way. A third possibility is that the medium does not allow a convenient use of feedback signals and that they are left out for this reason.

- Turn management

Communicators also have to find a way of sharing floor space. This is done by some form of a turntaking system (cf Sacks, Schegloff and Jefferson, 1975). In such a system we expect to find signals for

- assigning a turn to another speaker
- keeping the turn if one has not finished
- interrupting and taking the turn from another speaker
- accepting the turn

First, we note that the turn management in Active Worlds is not controlled by a chairman or the like. The participants themselves regulate their turns and the contributions appear in the order in which they have been submitted (it may be possible that a faster Internet connection may confer an advantage on the participant using this connection, but this is difficult to gauge).

Looking at these functions, we have found that turn assignment and summoning is a very prevalent feature of the interaction we have studied. However, keeping a turn when it is not finished is difficult

since it depends on the ability of keeping up a high speed of writing. Interruption is not really possible given that simultaneous contributions are not allowed by the medium. Accepting the turn can usually be done even if there might be a problem when other contributions appear before your own.

- Sequencing

In many types of communication, it is useful or important to break the interaction up into parts. We need to do one thing before we do another (cf Sacks and Schegloff, 1993).

One type of communicative action needs to precede another. For example, giving an answer usually presupposes that a question has been asked. The parts or phases of a sequence of interaction may be of different lengths, going from a single communicative act to several communicative acts constituting what might be called a subactivity.

A problem concerning sequencing in Active Worlds is that other participants may insert their contributions in between contributions which functionally belong together. This means that sequencing in Active Worlds often leads to a need for redundancy in the form of repetition or paraphrase in order to ensure comprehension of what sequence is being continued.

- Own Communication Management

"Own Communication Management" refers to mechanisms whereby a speaker can manage his/her own speech. Two important functional needs of own communication management are "choice" and "change". "Choice" is connected to the need to choose the right expressions and to planning your contribution. In spoken interaction this can be accomplished for example by hesitation sounds or pausing. "Change" is connected to the need to change your contribution for various reasons, such as mistakes or changes of mind, etc.

In the VR session, own communication management is difficult to observe. Pauses can be observed only if other speakers do not intervene. Other turnkeeping devices do not really occur. Changes are not observable, since contributions arrive in lumps rather than on-line word by word which means that they are pre-edited before they are contributed,

5 Discussion

5.1 Participants' share of the session

The finding that most participants' contributions to the session are few and short needs to be put in the context that AlphaWorld, together with 'AWGate' where the new users enter the system, is one of the most central places within the Active Worlds system. It is the world that almost always has the largest number of users, and 'Ground Zero', the place where our logging took place, is the area where new users to this world first arrive, and which therefore acts as kind of central square. 'Ground Zero' is at the major crossroads within the most built-up area of Active Worlds and it is ringed by billboards with advertising and announcements.

Even so, observation suggests that the behaviour of participants at 'Ground Zero' within AlphaWorld is not untypical of behaviour throughout the whole Active Worlds system. Users of the system tend to move around, leaving a few participants to dominate the 'conversation' in a particular place. It is clear that the number of contributions per participant and the distribution of contributions among participants also has to do with the nature of the contributions; namely that a large proportion of contributions are greetings and brief communication management utterances (see below).

The average number of words per contribution (4.9) is also related to the fact that greetings are the most common type of contribution. In addition, it is possible to speculate that the number of words per contribution may be a result of the size of the text window combined with the nature of turntaking in Active Worlds. The text window allows approximately 50 keystrokes per line which, in turn, is approximately 10-15 words. Although it is possible to change the size of the text window on the screen, it is unlikely that this affects the number of keystrokes or words per line. If we combine this with the fact that almost all contributions are 'one-liners', then the shortness of participants' contributions is not

surprising. It remains to be investigated whether or to what extent 'one-liner' or short contributions are characteristic of text-based forms of (synchronous) computer-mediated-communication, or if there are settings in which contributions are more lengthy, as in 'real' world conversations.

5.2 Participant Origins

The dominance of English speakers in Active Worlds is not surprising. The use of the internet is most widespread in advanced industrial societies, with the United States foremost among them. And again, like the internet, Active Worlds is not bound to location but rather a single network that operates throughout the day. There therefore an ebb and flow of participants from different countries in Active Worlds, depending on the time of day. Despite the dominance of participants from English-speaking countries, it is clear that Active Worlds is a cosmopolitan place, with participants from a wide range of countries. (We should mention again that we do not know the origins of participants or their backgrounds, but they are likely to be more diverse than is often supposed. In an interview between Schroeder and the developers of the Active Worlds system in Newburyport, Mass., on October 18, 1999, they mentioned that according to a marketing survey, 51% of users were from the US., 39% were female and 83% were more than 25 years old.)

5.3 Share of non-English contributions

Again, the near-absence of participants contributing only in non-English language needs to be in the context that 'Ground Zero' is a kind of central thoroughfare. The Active Worlds system has also come to contain worlds that are oriented towards nonEnglish speakers, such as Russia, Germany, Japan and the like. There are currently more than a dozen such worlds, and in some of them, one will often find that the language toward which the world is oriented tends to predominate. In Russia, for example, the characters of the Russian alphabet can most often be found in the text window, which prohibits participation by non-Russian speakers. In central or cosmopolitan spaces like 'Ground Zero' and 'Gate', however, English dominates. The 'real' world analogy here is with the predominance of English at international conferences and the like.

The dominance of English in central places in Active Worlds means that, again, as in the 'real' world, the inability to 'speak' English puts people at a disadvantage (here it is important to note that there may be differences among participants' abilities in spoken and written English). This form of stratification of the population of Active Worlds can be placed in the context that there are other forms of stratification in this system, for example between 'tourists' and 'citizens', between 'insiders' and 'outsiders' and between those with greater and lesser skills or familiarity in using the system's features (see Schroeder 1997).

5.4 Topics

The reasons for the large share of conversations devoted to greetings, farewell and contact has already been mentioned above. It can be noted that this finding fits with observations made by Becker and Mark (1998) in their study of Active Worlds, Onlive Traveller (a system which uses voice communication) and LambdaMO (a text-only MUD or multi-user dungeon). Becker and Mark found that the social conventions for greeting and leaving (among others) in these systems follow the conventions in the 'real' world. Where our findings may depart from Becker and Mark is that they observed that 'in all three environments, avatars rarely leave without saying goodbye' (1998: 51). It seems odd that our results should show that farewells are infrequent (8%) compared with establishing contact (40%) - if farewells and greetings follow the conventions of the 'real' world, and if, for Becker and Mark, there is no difference between the commonness of greetings and farewells, then there should be a greater balance between farewells and greetings. This area deserves further investigation. Becker and Mark also found an average of four conversation turns for Active Worlds participants (1998: 51), which is strikingly different from our average of 16.7 contributions and can perhaps be compared with our median of 5 contributions per participant.

Apart from this, the minor role of sex as a topic (1 %) is notable in view of popular conceptions of internet uses. As regards religion (1 %), it should be noted again that 'Ground Zero' is a particular kind of meeting place. There are worlds and places that are oriented towards special topics or interests within the Active Worlds system. One world, for example, is oriented to religion and holds regular church

services, and here most of the conversation is devoted to religious topics (for an analysis of religion in this type of virtual world, see Schroeder, Heather and Lee, 1998).

5.5 Types of Introductions

The introductions Active Worlds reflect the rapidly shifting population of this system. Participants enter the world and try to establish who is there and where they are from. This is in keeping with the 'cocktail party' atmosphere and style of the conversation, especially, again, at the thoroughfare of 'Ground Zero'.

5.6 Types of expression and vocabulary

The use of smileys and emoticons is common in email and text-based MUD's and should therefore come as no surprise here. What is noteworthy, however, is that participants do not make use of the gestures and expressions that their avatars are capable of - the screen features commands for 'wave', 'dance', 'happy', and the like. Observation indicates that these commands are hardly ever used. When they are used, it tends to be in the context of 'fooling around' or exploring the capabilities of the system, rather than for communication purposes as such.

5.7 Communication Management

The most noteworthy feature of communication management in Active Worlds is that much effort is devoted to the contact aspect of communication. Several reasons can be given for this:

- the 'reduced social cues (Short, Williams and Christie, 1976) explanation, whereby communication via electronic media does not allow the same range of expressivity as face-to-face communication, ie. eye contact, facial expression, 'body language', touch, and the like
- the difficulty of establishing and keeping track of who is taking part in the conversation (it should be noted that although the participant's name and their contribution is displayed above the head of their avatar, it can often be difficult to keep track of all the participants in a 3-1) space on a flat screen)
- the rapid turnover between participants. Here it is necessary again to point to the fact that 'Ground Zero' is a central space. In more remote parts of the Active Worlds system with fewer avatars present, or in cases when only two participants are present, it is easier to manage a conversation. At 'Ground Zero', however, with participants constantly coming and going and typically 6-12 participants present at any time, communication management is much more difficult.

When we examine the content of the communication, we therefore often find that conversations seem disjointed, the flow of the conversation is often interrupted, and - as is common in text-based conversations that do not have special rules or designated roles for turn management - there are often two or more conversations going on simultaneously which interrupt each other (that is, there are different conversations between pairs or groups of participants that are interspersed with those of other pairs or groups) with little possibility of imposing any order on this 'chaos' or 'babel' or free-for-all.

6. Summary and Conclusions

We have analysed some of the main features of a session in Active Worlds and found a number of noteworthy characteristics:

- the dominance of the English language in a setting of participants with diverse linguistic backgrounds
- most participants make only a few contributions. Only a few exhibit extended participation with many contributions.
- the contributions are relatively short with much emphasis on greeting and identifying yourself and other participants
- considerable effort expended on communication management, with conversations nevertheless lacking the 'orderliness' of comparable conversations in the real' world

In multi-user virtual spaces that are accessed from all over the world, English is the lingua franca, with the exception that separate virtual worlds are being created that cater to speakers of other languages. It will be interesting to keep track of the balance between Anglophone cosmopolitanism or imperialism (depending on one's point of view) as against 'cyber-provincialism' or resistance to this linguistic dominance in this novel setting. Those who do not speak English or who have difficulties using English will be at a disadvantage in the areas of Active Worlds (currently most areas)

where English is dominant.

These findings suggest a number of areas for further study:

- compare 'Ground Zero' with communication in other settings in Active Worlds, and perhaps especially conversations between two participants
- compare conversations that consist of 'socialising for its own sake' with conversations that are oriented to different tasks
- compare conversations in Active Worlds with other forms of computer-mediated communication, including other text-and-image systems, text-only MUD's, and VR systems with voice capability (such as OnliveTraveller)
- compare Active Worlds systematically with 'real' world conversations

The main purpose of communication in Active Worlds is socialising, and in the setting of ('Ground Zero', this requires a vast amount of introducing participants to each other and establishing their place in the conservation. In text-only MUD's, participants expend a lot of effort not only introducing themselves and getting a 'sense of the place', but also describing their appearance and character. In Active Worlds, the emphasis is not on describing your appearance and locating other participants in the virtual space, but rather on contact aspects of communication management in a situation where several simultaneous conversations are going on.

7. References

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