

# **Role Playing Games and Language Learning**

## **Role Playing Experiments in Spring 2007**

**J. Michael Moshell, Li Wei, Alpesh P. Makwana and Rudy McDaniel**

**Technical Report UCF-SFDM-2007.2**

**May 20, 2007**

This paper reports on a pilot "language lab computer game" experiment conducted at the University of Central Florida in the spring of 2007, as part of the course CHI 1121.

### **Outline:**

- 1. The Concept: A Virtual Field Trip**
- 2. The Setup: Beijing Library**
- 3. Observations**
- 4. Plans for Future Work**

## **1. The Concept: A Virtual Field Trip**

It is often remarked that the most effective way to gain fluency in a language is to live in a country where it is spoken. The constant flow of stimulation, immediate availability of things to point at and people to talk to, provides a rich experience. Can some aspects of this experience be provided via a computer based game-like system?

Role playing games such as Everquest and World of Warcraft have become very popular with today's students. They spend hundreds of hours engaged in complex stories and battles, learning arcane details of imaginary worlds. Would students willingly partake of such activities set in a foreign language? We plan to find out.

Building high-quality games is expensive and complicated. The virtual world itself is an artistic work of great magnitude. Designing a compelling story is challenging, and programming the automatic responses of the objects and non-player characters (NPCs) in the system is another big job.

We have been pursuing an idea that we call the Cast Member Hypothesis. Here it is, in a nutshell:

A game-like interactive environment can be constructed to achieve the purposes of a fully developed game, *with radically reduced cost and effort*, if pre-trained actors called *cast members* provide the interactivity of the game, to the guest or guests.

It is possible to imagine such activities in elaborate graphical worlds, but we do not believe that this is necessary. Most theatrical productions take place on minimalist sets. The story itself and the audience's imaginations provide most of the details.

**Language learning.** We believe that there are several modes of interaction that could benefit language learners. These include:

- native language speakers as cast members
- advanced students as cast members
- mixed teams of natives and multi-level students as cast members

In the preliminary experiment that we conducted at UCF in the spring of 2007, none of these options were conveniently available to us. All our students were taking their first year of Chinese. We could have arranged for native speakers, but we wanted to learn what we could with our language students, first.

The obvious purpose of the graphical world would be to provide something to talk about: destinations to go to, objects to name and use. A less obvious purpose would be to provide a geographical or spatial means of sequencing the activities of the intended interaction ... a kind of “memory palace” to help the cast members work their way through the story.

These objectives can be used to develop a list of capabilities that we must discover or construct in any game engine that we propose to use.

## **2. The Setup: Beijing Library**

UCF Digital Media students used the *Second Life* online role playing environment to construct a small scene consisting of a street scene and a library building. The library consisted of a ground floor, a staircase and a second floor where the library’s office for issuing library cards was located.

Chinese language students had, some weeks previously, completed Lesson 16 in the *New Practical Chinese Reader* textbook, volume 2. The introductory dialog in this chapter involved Mr. Ding (a foreigner), his friend Mr. Song (a Chinese student) and a library clerk. Mr. Ding wanted to get a library card, and Mr. Song assisted him in his interactions with the librarian.

Chinese 1121, as taught by Prof. Wei, is a rigorous first year course of instruction. The students learn to write and read modern simplified Chinese characters. The class of approximately 30 students seemed highly motivated, and their familiarity with the vocabulary and characters was very good. Their oral experience was largely limited to hearing the professor read the lessons and speak in class, and the recitation in class of lesson materials.

Seven students volunteered to be trained as cast members. They agreed to participate in three two-hour sessions of work, in exchange for which they would be excused from the oral examination normally given at the end of the class.

**Session 1: table-top exercise.** The cast members met with Profs Moshell and Wei in a conference room in the Modern Language Department. Working in pairs, they went through the following experiences in succession:

- 1) Read the dialog from the text, in Chinese. Readers take on roles of Ding, Song and the library clerk.
- 2) Using an English translation (but no Chinese writing), try to reproduce the dialog in its essence. Literal memorization was not required or expected.
- 3) Designating one of the two as ‘guest’, try to conduct the dialog with the guest having no written materials. The cast member was provided with a Story Guide, which consisted of a set of suggestions as to how to coach the guest through the story. (See Appendix A for a translation of the story, and Appendix B for the story guide.)

We had set up the timing so that the first group of two students had already been through this sequence of experiences when the next students arrived. So the experienced ones served as cast members (playing Song and the librarian) while the newly arrived served as guests (playing Ding’s role)

Some of the participants had prepared line-by-line ‘crib sheets’ in English and Chinese, and used these when playing as the guest. We encouraged them (but did not require) to try to carry out the dialog without the notes.

After each person played guest, they were invited to either watch or to take on the role of cast member for the next guest who entered the session. Finally when we had six experienced people in the room and the last guest arrived, we tried a novel arrangement: three of them played Song, and three played the librarian. Whenever anyone on the Song side of the table (or the librarian side) felt that they had a response ready, they jumped in and provided the line.

### **Session 2 and 3: The Computer Game**

While session 1 was going on, the Digital Media students prepared the environment for the trials. They built several ‘avatars’ or human figures for use by the players. They constructed an exterior model of the library, and (at the last minute) finished the interior of the library with bookshelves, a second floor, a desk and documents – application form, photograph, library card.

Three computers were set up with the necessary software and provided with avatars (human figures) to play the roles of Ding, Song and librarian. The two cast member computers were set on one table and the guest computer was set on another table facing the first. Over the shoulder of the guest, and visible to all the cast members and (approximately twelve) digital media students, was a projected image of the game as seen by the guest.

Cast members arrived at the session at 7 PM and rehearsed. First, they had to learn how to move their avatars through the world. No particular difficulty was observed, as most students are experienced game players. However it was noted that there was no easy way to pick up a document or other object, and hold it. It is possible to take an object into one's inventory and later to drop it elsewhere, but this is not a satisfactory method when you are trying to provide a visible cue to the guest: "here is a form ... please fill it out."

In addition, there was no way for the guest to fill out a form within the game. We provided paper forms for this purpose, but they were not actually used.

**Performance of the cast members.** The cast members had studied the dialog before coming to the class – both paper session and computer game session. However, they had not previously had much experience at conducting one-on-one dialog. Consequently they often had difficulty understanding what was being said to them.

Fluency varied widely, as would be expected. Some students had a good command of the vocabulary but their pronunciation – particularly tones – was unpracticed and thus difficult for the other students to understand.

After initial familiarization, some students were able to begin to improvise and make slight variations in the script.

**Performance of guests.** We brought in two guests at 8 PM during the first game session, and two more during the second session. The guests were somewhat apprehensive, as they had not been part of the 'warm up experience' that the cast members had. In order to reduce their anxiety, we had one or more cast members sit next to the guests and coach them as necessary.

In most cases, the guests' performance felt under-rehearsed, and almost marginal. By this we mean that they were searching for what to say. The fluency that the cast members had achieved by repetition, was not demonstrated by the guests.

### 3. Observations

**Usefulness of the game.** Dialog practice can, of course, be provided to students without the use of a computer and software. The students simply need to allocate time to practice speaking the lines, and then improvising around the given themes. What benefits might accrue from having a three dimensional simulated environment?

1) The game could provide items to refer to, so as to rehearse vocabulary. In this pilot experiment, we had an application form and a library card. However they were so small (in order to be in-scale with the game) that it was difficult to see them. Other props included furniture, bookshelves, cars on the street etc. It was suggested by some of the students that we should set up a system to reveal the names, in Chinese characters and also in Pinyin (phonetic spelling) of each of these objects.

- 2) The game provides geographic locations so that expressions like 'go inside', 'go upstairs', 'office' etc. can be practiced in a visual context.
- 3) For more elaborate stories, the game's geography can provide a 'memory palace' or spatial structure for the narrative. As the players move from one space to another, features of the locations can help to remind the cast members - and suggest to the guests - what to talk about. For instance, when we went into the library and up to the desk, it was obviously time to ask about a library card.
- 4) The game is one potential form of collaboration at a distance. Students who might wish to practice a dialog could meet in a shared game instead of having to come together in a public space (or come to one another's living space). Students from different universities could get together. Of course, using a system like this would require that the students have computers, software, Internet access, microphones and headsets.
- 5) If proper arrangements could be made, students could encounter native speakers of languages at particular times and places (in 'cyberspace') so as to work through dialogues. It might be necessary to either pay the native informants, or to exchange English practice for foreign language practice.

**Disadvantages of the game.** Simple dialog practice requires no overhead: no scenarios to be set up, no computers, Internet access, etc. And being in the same space as another person provides opportunities for interaction such as "look at this page of the book: what does this character mean?" that are difficult to implement in the computer game.

**Recommendation for UCF language students.** In the short run, since the game does not exist, the obvious recommendation is to set up a process for regularly practicing dialog with other students. For those who are seriously pursuing the idea of going to China, I strongly recommend finding a Chinese student to serve as an individual tutor for one hour a week. Memorize the dialogs and then have your Chinese friend play Song to your Ding (or whoever is in the dialogs). Use the improvisation exercises in the textbook.

I believe that in order to take advantage of a resource such as our game, students will need a certain level of fluency. The best way to get that fluency is through dialog practice.

**Cast member qualification.** It seems clear from our experiments that cast members will need to have certain minimum qualifications, in order to be useful to their guests. While we are assuming that cast members would most often be second-year students, these criteria apply without regard to what level of course the students are currently taking.

At a minimum the cast members must be able to

- conduct the entire dialog from memory, with an easy conversational flow
- correctly pronounce the Chinese, with proper tones
- improvise around the theme of the dialog, in simple ways

Within the group of seven experimental cast members and four guests, approximately two of them were within reach of this level of performance with another week or so of practice. Three more were within reach of achieving this level with perhaps a month of regular dialog drill. The remainder would probably need a semester of regular weekly dialog drill (with different dialogs each week), before they are ready to be tested as potential cast members.

An instructor or fluent show director should certify the cast members' capabilities before they are trained and placed in contact with guests.

**Cast member training.** Cast members with sufficient fluency should then be trained by first experiencing the scenario as delivered by native language (or reasonably fluent non-native) cast members. After they have had this experience, they would be given story guides and asked to practice with one another as guests, until they were reliably able to improvise a half-dozen deviations from the story, and to respond appropriately to such deviations by their 'guests'.

We are developing an automated system to deliver story guidance to cast members. It will co-evolve with our understanding of the methodology for training and supporting cast members.

**Guest preparation.** We observed that the guests often had a 'deer in the headlights' look, which is understandable given their lack of knowledge as to what was going to happen. Our cast spontaneously coached them by sitting beside them and helping them to play their roles. This kind of coaching is, indeed, what the whole cast member idea is about - but we hope to make the game easily enough used, that this coaching can take place from within the game.

Guests should be told that they need to memorize the dialog well enough to be able to recite it from start to finish, playing all parts, without referring to the text. This is a substantial homework / preparation requirement. The point is that the game experience is intended as a "baking" process - the transformation of thought into habit - and you must "prepare the dough" before you put it in the oven.

#### **4. Plans for Future Work**

In the next month, we plan to write a proposal and begin to seek funding for the Orlando Virtual Language Project. This section sets forth a few of the ideas that will serve as that project's basis.

##### **Technology: Dedicated versus Shared services.**

The Spring 2007 experiments were carried out using *Second Life* which is a publicly shared online virtual world. There are advantages and disadvantages to this approach, when compared to the idea of a private and separate environment for language practice.

**Advantages of shared services.** Using a system like Second Life has these advantages:

1. Maintenance. The world is supported by fulltime professionals. When problems are found with the underlying software, they are fixed and distributed.
2. Access. Game developers and users can log into the world from home, any time of day and from anywhere.
3. Ease of use. Construction of new venues, props, etc. is easy. The user interface has been simplified for use by the masses.
4. Cost. Basic membership is free, and the 'Premium' class of membership that is required to build assets is inexpensive.

However, such worlds have some disadvantages, which I will describe in terms of the advantages of dedicated servers, or private services.

**Advantages of private services.** If we ran our own server software, e. g. on a UCF computer, we would have the following advantages.

1. Infinite space. In Second Life or other shared worlds, our square meters of land cost a certain amount of money per month. If we wanted to use a shared world to construct a separate venue for each chapter in a text, for instance, we might pay several hundred dollars a month in maintenance fees on that space.
2. Replicability. If we use a shared system, there is only one "Beijing Library" set. Thus, if there are ten teams of students who want to use that set, they have to schedule their times of use so as not to conflict. In a private server we could open however many sessions we wanted, with replicated venues.
3. Privacy. It is possible in a shared environment to restrict unauthorized users from entering a particular space, but this raises the problem of continually maintaining and updating a list of authorized users. Of course we would need such a list in a private server as well ... but its maintenance is a single unified task. In the shared environment, users have to "join twice" - once to enroll in the shared service, and again to enroll in the language learning environment.

In order to achieve these advantages, we would have to provide the services and conveniences listed above under shared services.

**The ideal system** combines both attributes. We would use a software system that is commercially supported, but which supports replication of private sessions, and has infinite space available in each session. It would be easy to use, reliable and economical.

We will look for such a system.

### **Service Model: Who does what?**

Ultimately, any service must deliver value in order to survive, and must generate revenue to support itself. There are several steps in our plan.

1) Seek grant support to develop and evaluate a full semester's support for one language. This project would involve the selection of a server system, creation of mini-worlds for the dialogs in each chapter of a text, provision of appropriate cast members, development of an evaluation plan, conduct of the actual course and evaluation of it.

2) Conduct a survey to determine the potential market for a commercial version of the system developed in 1. The potential market would consist of high schools, universities and commercial schools who want to offer students a 'virtual field trip' - either on a one-trip basis, or as a regular activity throughout a semester.

3) Design a business entity that combines the results of 1 and 2, and decide whether this entity is to be for-profit or not-for-profit. Determine its relationship to UCF.

4) Seek funding for 3.

5) Build and operate the resulting organization.

We expect to pursue sponsorship for Step 1 with respect to Chinese and Arabic languages. The actual development and construction of the project will be driven by which funding first falls into place.

A separate and related issue is the development of the Cast Performance Management System (CPMS), which is Alpesh's Ph.D dissertation project. Funding for this work will be sought from organizations such as the National Science Foundation that support innovative work in user interfaces. It is possible that a sponsor in this area may be desirous of pursuing some area of work other than natural language learning. NSF, of course, sponsors science and mathematics projects.

### **Appendix 1: The Library Story**

Song: This is the Beijing library. Let's go in.

Ding: This library is really big.

Song: The office is on the third floor. Let's go upstairs, and first get a library card.

Ding: Today can we borrow books?

Song: Yes, as soon as we come down.

Here we are on the third floor. I'll see if this is the office.

Ding: Sir, I'm thinking about a library card.

Clerk: Did you bring a photograph?

Ding: Yes.

Clerk: First please fill out this form.

Song: Tim, Take this form. I'll tell you how to fill it in.

Tim; I write Chinese too slowly; you fill it out.

Song: Nope. Now you're living in China. You can begin to fill out forms for yourself.

Ding: Ok, I'll write it myself. "Family name?"

Song: "Ding Li Po."

Ding: "Gender" What do I write.

Song: Look for yourself.

Ding: Look ... for .... myself? Oh, "Gender" should write "Male". And, "profession?"

Song: Write "Student". Hand in this form and photo, and in a bit, that man will give you your library card.

## **Dialogue 2:**

Song: How long did it take us to get the library card?

Ding: Fifteen minutes, it was quite fast.

Song: Today there aren't many people getting cards. Tim, I hear you had an exam last week. How was your exam?

Ding: My pronunciation wasn't bad, but my translating wasn't very good. There were also quite a few questions about grammar. I'm thinking of borrowing a new Chinese language textbook to have a look.

Song: Now let's go borrow books, and then we can go out. First I have to give back the books I borrowed before.

Ding: How long may we borrow books from here?

Song: You can borrow for a month. Sir, I'm returning books.

Clerk: OK. Your book is overdue. You will have to pay a fine.

Song: Excuse me, this month is too busy, I forgot this thing. How much must I pay?

Clerk: One book late one day costs 20 cents. You borrowed four books for ten days. You should pay eight yuan.

Song: I give you eight yuan. Can you tell me where the Chinese lesson books are?

Clerk: There's a computer. You can look it up.

Ding: Do you have the new book for foreigners studying Chinese?

Clerk: Yes. Go find "New Practical Chinese Reader".

## Appendix 2: The Library Scenario

**Song:** This is the Beijing library. Let's go in.

### The Big Library

- # If Ding says "This library is really big",  
Song says "it's the biggest one in Beijing."  
## If the guest says nothing, Song asks a question like:  
"Does your university also have a big library?" or  
"Does this library look big to you?" etc.

*Try to get the guest to say something about the size of their own library, such as  
"This library is bigger than the one at my university"  
"Mine is bigger."*

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### Do you have a library card?

**Song:** Do you have a library card?

# If the guest says **yes**:

**Song:** Let's go borrow some Chinese textbooks. The office is on the third floor.  
*go to ----->How was your Exam?*

## If the guest says no:

**Song:** The office is on the third floor. Let's go up and get a library card (for you).

<go upstairs>

**Song:** Here is the clerk. Go and ask him for a library card.

# If the guest does not know how to ask, or does not ask the clerk, then Song says to the clerk:

"My friend needs a library card."

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### Do you have a photograph? Please fill out this form.

**Clerk to Ding:** Did you bring a photograph?

# If Ding says no,

**Clerk:** Please come over here. I will take your picture. (Takes picture.)

**Clerk:** Please fill out this form.

(Give guest a form: name, gender, profession, student ID number.)

(Question: in computer game, how would one fill in the blanks? Chinese character input perhaps.)

# If Ding tries to chicken out and ask Song to fill it out for him, e. g. "I write Chinese too slowly; you fill it out." Song gives him some Tough Love:

**Song:** No, you're living in China now. You should fill out forms for yourself.

*Song helps Ding figure out the boxes. Improvise dialog as needed.*

Family name? Ding

Gender? Male

Profession? Student

**Song:** Hand the form and the photo to the worker, and in a little while, he will give you your library card.

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### **How long did it take?**

**Song:** How long did it take us to get the library card?

*Ding can say anything; the point is to get him to give a time period answer.*

# If Ding says a long time (30 minutes or more) Song says "The library is very busy today." If Ding says a short time, Song says "Today, there aren't many people getting cards."

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### **How was your exam last week?**

*Song and Ding are walking upstairs.*

**Song:** I hear you had an exam last week. How was it?

(Song: check off as Ding mentions each of these things. If he forgets any of them, ask about them:)

Pronunciation:

Translation:

Grammar:

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**You have to pay a fine.**

**Song:** Ding - here is the book that I borrowed two months ago. Please give it to the clerk. Ask him how long you can borrow books.

*Ding gives the book to the clerk. The clerk examines the book and then says:*

**Clerk:** You can borrow for a month. This book is overdue. You will have to pay a fine.

*Ding should ask the clerk how much to pay.*

*# If he does not, Song will ask the question. "How much must I pay?"*

**Clerk:** One book late one day costs 20 cents. You are ten days late, so you should pay two yuan.

**Song:** I give you two yuan. Can you tell me where the Chinese lesson books are?

**Clerk:** There's a computer. You can look it up.

**Song:** Ding, what is the name of our textbook?

*# If Ding doesn't remember, Song hands him a piece of paper containing the characters for "New Practical Chinese Reader", and asks him to read it out loud.*

**END**