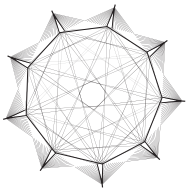
Bonds & Bridges

Facing the Challenges of the Globalizing World with the Use of Simulation and Gaming



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CONTENTS

CHOOSING BETWEEN TRADITIONAL AND VIRTUAL SIM-GAMING ENVIRONMENTS FOR LANGUAGE LEARNING

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ABSTRACT

The paper describes a simulation-game for beginning-level and low-intermediate learners of English as a Second Language that is designed to teach understanding and giving street directions. The original design for the activity borrowed heavily from traditional approaches, using a map and markers to be placed on the map. It was found that even with the adaptations made, there were still problems in preserving reality of function. Aspects of the simulation-game are analyzed in order to show what is important in the choice between modeling a simulated environment in traditional vs. virtual media. It is found that a key factor in the choice is the need to control the participant's point of view.

1. INTRODUCTION

Language learning (LL) simulation-games may be designed with traditional or virtual environments. "Traditional environments" are those using various props in physical settings, including documents or object representations. Settings may be simulated maps or the classroom itself. Participants effect changes in props or generate new documents to simulate events. "Virtual environments" use computer representations; participants effect changes in the representation through a keyboard, mouse, or other input device. An LL sim-game will be analyzed to identify a key factor in choosing between modeling a simulated environment in traditional vs. virtual media.

2. THE PROBLEM

2.1. The learning context

In an adult, non-credit English as a Second Language (ESL) class offered by an urban Midwestern university in the United States as a free community service to adults in its metropolitan area, participants in recent years have been speakers of various languages, including Arabic, Chinese, German, Korean, Portuguese, and Spanish. Their proficiency levels vary mostly from beginner to low intermediate. This precludes giving instructions in the learner's native languages. What we do instead is rely heavily on experiential learning, largely simulation-gaming or related activities.

Each lesson is on a basic topic, most being "English survival skill" related. Each has three primary segments – an input phase, an action phase, and a debriefing phase. The input phase and action phase are not exactly parallel to typical briefing and simulation-action phases. First, there is no explanation of process. Instead, events are modeled for learners via briefing without explanation (Coleman, 2011). Also, the input and action phases in this course overlap, involving a continuous process of providing new English input to the learners and performing comprehension checks along the way.[1]

The input phase, when the course was first created, was intended to provide what Krashen (1982, p. 20–30; 2003, p. 4–6) calls "comprehensible input". However, it has been found that his theory of language acquisition has inherent weaknesses. Materials for the course are now designed on the basis that input is not language (structure and meaning) plus something to make the language comprehensible, but is a mass of undifferentiated parallel sensory data, which learners themselves must organize into knowledge-as-effective-action (Klein, 1986, p. 44; Coleman, 2005, 2007; Maturana and Varela, 1987, p. 29). As will be shown below, this reconceptualization of the nature of input helps us understand better why the design problem under consideration exists. The input phase consists of demonstration combined with speech, such as pointing along a railroad

[1] "Continuous" does not mean that there is a strict alternation between input and comprehension checking. Sometimes, multiple inputs must be provided before specific parts of the input are understood as such. For example, suppose in a lesson of this type (for a hypothetical language) you see someone point along a railroad track and you hear "kowosk solepilur". You can guess the person is identifying a railroad track, but there is no way to know what refers specifically to the track. Now suppose you see the person point along a street and say "kowosk irowi", then point directly at a bridge and say "kowosk nesk". Now you know "kowosk" is what a person says to identify something, "solepilur" refers to a railroad track, "irowi" to a street, and "nesk" to a bridge. You still don't know if instead of "nesk" at times you must say "neska", "nesech", etc.

track and saying "This is a railroad track" or moving a marker representing a person along a street and saying, "Go two blocks on Main Street."[2]

The action phase of each lesson has two major parts, the first involves the learner demonstrating an understanding of spoken directions. The most basic aspect is being able to identify landmarks, e.g., "Show me a railroad track" or "Show me a traffic light." Only after it is clear learners understand references to landmarks are they introduced to actions such as "Go two blocks", "Cross the railroad tracks", and so on. The most demanding communicative behavior required of learners is, of course, to give directions to another person. This comes only after learners have demonstrated proficient understanding via non-speech behaviors (pointing, moving a marker, and so on).

2.2. The problem with typical designs

ESL textbooks typically use paper maps. Eckstut (1993, p. 91–92) provides one example[3]. She gives a map with labels for street names and key landmarks – post office, library, etc. (p. 91). On the next page, an activity for learners consists of each learner asking for directions to three particular places. The author has half the target locations printed upside-down and instructs each student to read only one set. However, this makes no difference, as both learners know the target as soon as one asks the other, e.g., "Could you tell me how to get to the post office?" Also, both see the map, which shows an "X" at their starting point. In no case is there reality of function (Jones, 1982, p. 4) in asking how to get to the target: both see it on the map, clearly labeled. In some cases, there is only one sensible route; then the directions themselves have no communicative value insofar as telling the hearer how to get from the starting point to the target. At best, in cases with equally likely alternate routes, the directions possess a "correct"/"incorrect" value in regard to whether the hearer goes the way the speaker expects. This functional breakdown most frequently occurs because maps provide what strategy-gamers

[2] The demonstration in the second case typically goes like this with beginners who speak no English at all. The demonstrator says, "Go two blocks on Main Street" (shows the marker move two blocks along Main Street, pauses, then returns the marker to the starting point), "Go two blocks... one block" (moves the marker one block), "two blocks" (moves the marker another block), "on Main Street" (gestures along the label on the street that says "Main Street"). The demonstrator then repeats the action from the starting point, saying, "Go two blocks on Main Street."

[3] Maps are probably the most popular way to provide a representation for giving/understanding street directions because of their feasibility in textbook production: teachers are not required to produce any additional materials, or if they are, they can simply photocopy the maps. Examples can be found in other texts used for instruction in various languages over recent decades, e.g., Ferreira (1984, p. 11–12) (English), Miodunka and Wróbel (1986) (Polish), Magnan et al. (1999, p. 263) (French), among many, many more.

colloquially call a "god's-eye view" of the scene (see, e.g.: Thompson et al., 2007, p. 27 for a definition of "god's-eye view" in gaming).

2.3. Why don't most textbook designers see the problem?

In the field of second language acquisition (SLA), most theories assume that the input for learning how to speak English, for example, consists of English: language forms carrying meaning. Saleemi (1992, p. 8) puts it this way: "The evidential data (comprising the input) consist of a finite set of particular examples relating to the object of learning, such as a natural language."

But speech (and the input to a language learner) *cannot* consist of language forms carrying meaning. First of all, as Yngve argues convincingly (1996, p. 1–13) sounds waves do *not*, as commonly supposed, contain structures that carry meaning from speakers to hearers. From a purely physical perspective, sound waves contain only energy at various frequencies varying in intensity over time. A simple thought experiment created by Klein (1985) shows that the input in fact consists of energy producing parallel sensory input. Note his careful and precise reference to "linguistic input *in the narrower sense*" as "sound waves" (p. 44):

Suppose you were locked in a room and were continually exposed to the sound of Chinese coming from a loudspeaker; however long the experiment continued, you would not end up speaking Chinese... What makes learning possible is the information received in parallel to the linguistic input in the narrower sense (the sound waves (generated by speech)).

Prevailing theories in SLA therefore are based on the assumption of the presence of something being in the speech that is not really present for the learner to experience (i.e., language forms). If speech had structure that carried meaning, then the meaning of street directions would be their meaning, whether or not the hearer already knew how to get to the target location. Thus a false assumption of the nature of speech creates a dysfunctional view of the situation in which one learner gives directions to the other when it makes no sense for the directions to be given, leading to a lack of reality of function.

3. SOLUTION(S)

3.1. A partial solution and why it's only partial

To overcome the "god's-eye view" problem, the author designed a 2' x 3' (approx. 60cm x 90cm) map with street name labels (Figure 1). Buildings and other locations which might serve as potential targets or landmarks

along a route are not printed on or attached to the map. Instead they are printed in color on separate laminated squares about 1"x1" (approx. 2.5 cm × 2.5 cm). Squares to be used for landmarks are placed on the map face up, scattered around its entire area. Some of these are not actually used as landmarks for any given set of directions. This is intentional; it prevents the hearer from simply following the landmarks like a trail of breadcrumbs. A number of squares are also placed face down: one is the actual target; the rest are decoys. The presence of decoys prevents the hearer from knowing how to get to the target without actually understanding the directions, as the target could be any of the face-down squares.

Even with this limitation, the hearer can still see overall street layout. It is still possible to limit actions based not on what he hears, nor on what he would see if in a real environment, but on information available only because his view of the simulated environment differs from what it would be in a real situation. Therefore, reality of function is still compromised in the action phase, even with the modifications made to the map.

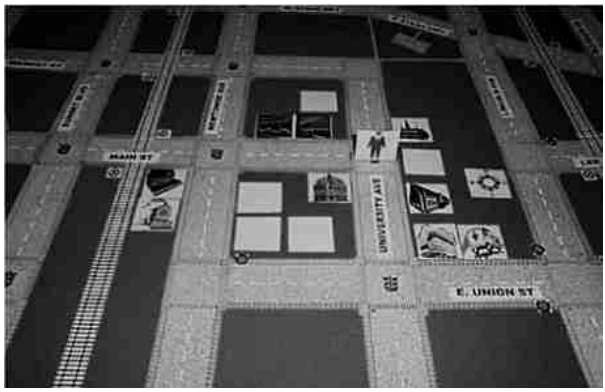

Figure 1. Close-up of an area of a map designed for the course

3.2. The problem virtually solved?

Sim Copter (1996) had previously been used with high-intermediate learners of English in a for-credit ESL writing class at the university sponsoring the non-credit class (Coleman, 2002). Although its graphics now appear blocky and rather low-quality, it was deemed adequate for use in preliminary tests using a 3D environment. The helicopter is not used. Instead, the pilot walks out of the airport and remains on foot (Fig. 2). A 3D environment like that in Sim Copter is a better representation of the reality a person experiences when using street directions because it lacks the "god's-eye view" that is also lacking when a person actually navigates a real-world space. Reality of function is preserved when hearing and following directions.

On the other hand, the figure in Sim Copter moves through the scene from landmark to landmark at a rapid walking pace, and some of the landmarks needed for teaching directions are quite distant from each other in virtual space. Getting from one to the next would take too long for initial demonstration purposes. Also, when demonstrating actions, for example, "go two blocks," the option to travel one block, then the second, while counting off the blocks would be lost. Therefore, in the 3D environment, the demonstrations would be impossibly tedious. A 3D environment cannot replace the map for the initial input phase.

Figure 2. Street Level View in Sim Copter

A further disadvantage of city simulation software and even driving simulations that are commercially available is that they do not have street signs. Yet directions in English very frequently refer to street names. Commercially available software also does not normally permit the importation of user-defined 3D assets such as models of specific kinds of landmarks people typically use to give directions, such as popular fast-food chain restaurants, chain department stores, and so on. Using open-source software similar to Second Life, the author began developing a virtual environment for street directions to overcome such problems, using original 3D assets in a virtual environment designed specifically for the purpose. The open-source virtual world server software OpenSim was selected for this purpose; the environment is being developed as an ongoing project, and will be ready for the classroom in fall 2012.

4. CONCLUSION

In teaching street directions in English, it has been found that a map is ideal for demonstration in the initial input phase. Effective use of the map continues through action-input cycles in which the directions are path-directed, rather than target-oriented. For example, if the learner is

told, "Go two blocks" or "Go until you cross the railroad tracks," this is path-directed. The "god's-eye view" of the map does not really give anything away. But if the learner asks, "Where is the library?" and is told "Go two blocks east on Main; turn left on Elm Street; turn right at the traffic light; it's straight ahead," the learner can already see where the library is. In the latter case, the use of the map destroys reality of function. The same reality of function, in contrast, is preserved in a 3D environment. Thus, we find advantages to both virtual and traditional environments in different parts of one particular lesson.

Certain factors can be identified in this case which are relevant to the design of the sim-game environment: the audience (basic-level ESL learners), the learning environment (a classroom, typically with fewer than 10 learners), the objects being represented, and so on. Such factors are well-known in the literature on sim-game design. In this case, it is not only *what* needs to be represented in the environment that matters. *How* it is represented makes all the difference. In the initial input phase, it is actually advantageous for the objects in the environment to be represented in a way that gives (via the "god's-eye view") more sensory data, and more rapidly, to the participant than he would have in a real-world situation. Yet in the action phase, sensory input must be limited to what it would be in the real situation, or reality of function (communicative function) is lost.

The spatial point of view of the street directions lesson is merely a concretization of a more general issue. In other types of sim-games, a traditional environment often makes it difficult or impossible for the designer to restrict how much participants see. In a virtual environment, on the other hand, it is often difficult for the designer to allow participants to see enough on a screen.[4] Subject matter by itself does not determine the most effective mode (traditional vs. virtual). Rather, a key factor is the need to control the participant's point of view.

REFERENCES

City Life (2006) Paris: Monte Cristo.

Coleman D.W. (2002) On foot in Sim City: Using SIM COPTER as the basis for an ESL writing assignment. *Simulation and Gaming*, Vol. 33, No. 2, pp. 217–230.

Coleman D.W. (2005) The Nature of Language Learning Input. *LACUS Forum*, Vol. 31, pp. 203–213.

[4] Think of the "pocket" represented as a list of icons on a screen overlay in a first-person adventure game or the heads-up display on a typical flight simulator. In many types of sim-games, information provided on adjunct documents for easy reference can seem to clutter a computer display or be inconvenient to access and use.

Coleman D.W. (2007) Required Variability in Input. *LACUS Forum*, Vol. 33, pp. 119–131.

Coleman D.W. (2011) Briefing without Explaining. In: M. Beran (ed.) *ISAGA 2010: Changing the World through Meaningful Play*. ISAGA Organizing Committee, pp. 52–56.

Eckstut S. (1993) *In the Real World: Activities for Oral and Written Communication*. Boston, MA: Heinle and Heinle/Wadsworth.

Ferreira L.A. (1984) *Express English: Transitions 1*. Cambridge, MA: Newbury House.

Greenblat K.S. (1988) *Designing Games and Simulation: An Illustrated Handbook*. Newbury Park, CA: Sage.

Jones K. (1982) *Simulations in Language Teaching*. New York: Cambridge University Press.

Klein W. (1986) *Second Language Acquisition*. New York: Cambridge University Press.

Krashen S.D. (1982) *Principles and Practice in Second Language Acquisition*. New York: Pergamon.

Krashen S.D. (2003) *Exploration of Language Acquisition and Use: The Taipei Lectures*. Portsmouth, NH: Heineman.

Magnan S.S., Rochette Ozzello Y., Laurey M.B., Berg W.J. (1999) *Paroles. Forth Worth*. TX: Holt, Rinehart, and Winston.

Maturana H.R., Varela F.J. (1992) *The Tree of Knowledge: The Biological Roots of Human Understanding* (Trans. Robert Paolucci). Boston: Shambala.

Miodunka W., Wróbel J. (1986) *Polska po Polsku*. Warsaw: Wydawnictwo Interpress.

RealXtend: Open Source Platform for the 3D Internet. Accessed May 30, 2011: http://realxtend.wordpress.com/.

Saleemi A.P. (1992) *Universal Grammar and Language Learnability*. New York: Cambridge University Press.

Second Life (2011) San Francisco, CA: Linden Labs.

Sim Copter (1996) San Mateo, CA: Maxis/Electronic Arts.

Thompson J., Berbank-Green B., Cusworth N. (2007) *Game Design: Principles, Practice, and Techniques – the ultimate guide for the aspiring game designer*. Hoboken, NJ: Quarto/John Wiley and Sons.

Yngve V.H. (1996) *From Grammar to Science: New Foundations for General Linguistics*. Philadelphia: John Benjamins.