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- Abstract:** Describes an interactive computer simulation where the student assumes the role of a reporter searching for a missing biologist in Columbia. The search involves simulated news broadcasts, documentary footage, and interviews with Colombians, all in Spanish. The student accesses help via electronic archives (translated words) and faxing the editor. (MJP)
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TRACKING THE MISSING BIOLOGIST**A multimedia adventure concocted by MIT takes Spanish-language learners into the heart of Bogota**

In real life, the odds for your success in this journalistic mission would not be favorable. The obstacles of language and an unfamiliar culture might be overwhelming. Fortunately, you are engaged in a computer-based multimedia adventure, the simulated immersion environment provided by No recuerdo, an NEH-sponsored project in development at the Massachusetts Institute of Technology. Far from being left on your own in this unfamiliar world, you have at your disposal an array of tools designed to enhance your cultural understanding and facilitate your task. The news reporter, who is indeed the same fellow on the air nightly in Colombia, speaks at his normal rapid speed, but with the

click of a computer mouse, you can stop his speech at any instant and repeat any segment. You can have access to a transcription of key words and vocabulary glosses and look up cultural information in an electronic archive. With a click on a fax icon, you compose your report and send it to your editor, and at the sound of the fax bell you will receive the editor's corrections and suggestions.

Nevertheless, there are abundant challenges in this simulated environment. Your decisions will have consequences on several levels. You will have to consult maps, decide which neighborhoods to explore, and what to "say" to people you meet in the video segments. Most dramatically, when you finally interview the missing microbiologist, your strategic choices will involve you in the story. No longer only a spectator, you will help determine the outcome of the interactive narrative.

Involvement and challenge are concepts fundamental to the design of *No recuerdo*. Multimedia, with its combination of text, graphics, audio, and video, offers the potential of a powerful immersion environment in which to learn and practice a foreign language. The challenge resides in adapting this new medium to provide the learner with meaningful interactions that wed culture and language. This elusive goal is central to all foreign language education. Short of sending students to the "target" culture, it is the educator's constant challenge to offer the variety and intensity of the authentic environment without overwhelming the student.

The traditional language lab can augment the classroom by offering exposure to many native speakers on tape or video. But we are just beginning to exploit the power of interactive multimedia, which offers the promise of an unprecedented density of native speech made comprehensible by computer-based comprehension aids. *No recuerdo*, while not at all intended to supplant teacher-student interaction, is intended to demonstrate the effectiveness of simulated immersion as a basis for designing materials to be used in the newly emerging electronic language labs.

With simulated immersion, language and culture are present in audio, textual, and visual images, and because these images can be manipulated by the learner, the level of difficulty ceases to be a major problem. Most foreign language learners are overwhelmed when confronted with authentic aural language. Unfamiliar vocabulary, difficult linguistic structures, rapid and seemingly unclear pronunciation all conspire to make listening comprehension a formidable task. Traditional materials attempt to resolve this problem by simplifying linguistic elements and reducing the pace of speech, but students who learn with these materials experience shock, bewilderment, or discouragement when they try to deal with the foreign language in real situations.

Instead of resorting to simplified language and culture, *No recuerdo* confronts the learner with spontaneous native speech and culturally appropriate behavior. Completely authentic language is used in documentary segments that include interviews with people on the street, and in the commercials recorded from Colombian television. Even the fictional portion of *No recuerdo* was not produced using a memorized teaching-oriented script. Instead native speakers portraying the fictional characters improvised their lines, using their own language to express the content of each scene. As a result, syntax, choice of lexicon, rate of speech, and conversational behavior are free of artificial limits. Learners are exposed to speech similar to what they would encounter on a visit to a Spanish-speaking

country.

The language learner uses multimedia and computer-based manipulative tools to acquire confidence in confronting the challenge of such demanding natural speech. In particular, the structured conversational exchanges that form the basis of the story are designed to encourage effective and culturally appropriate discourse, such as requesting clarification, moving between formal and familiar modes of address, and knowing when to use indirect means of exchanging information. This last strategy is especially important, because native English speakers from the U.S. may unintentionally offend or annoy Spanish speakers by being too blunt in asking questions and by going directly to the point in a conversation. In the *No recuerdo* interviews, learners are given the goal of finding out the truth about the scientist's adventures. However, they are discouraged from acting like interrogators and rewarded when they draw out their interlocutors by echoing phrases and following up on cues and hints in a polite manner.

No recuerdo is being developed at the Laboratory for Advanced Technology in the Humanities (LATH) at MIT, which specializes in taking electronic technologies at the edge of innovation and domesticating them for the uses of humanists. LATH language learning projects are based on learner-centered tasks, within an electronic environment that acts like a microworld or simulation. Simulations, electronic and live-action, are especially valuable in language learning, because learners are not only given goals, but they are empowered to make decisions on how to achieve their objectives. Their decisions affect the outcome of the simulation. In a classroom simulation, learners are participants who interact with one another in a cooperative or competitive spirit. In a multimedia simulation, interaction occurs with spaces (exploration of a street or a restaurant) and with representations of people. The most powerful representations exist in the form of full-motion video with audio, but audio, text, still frames or photos, graphics or some combination of these modes can also create the illusion of a human interlocutor.

No recuerdo is structured as a simulation with the main task of reporting on and perhaps changing the course of an ongoing adventure story, and with many subtasks that focus principally on the gathering of information. It is ambitious in several of its formal elements. *No recuerdo* combines narrative with documentary elements, in order to maximize motivation and authenticity; it gives the learner a well-defined part in the story, similar to role-playing games; and makes wide use of writing, as well as listening and reading comprehension. It is also innovative in its use of conversational structure to move the narrative forward. *No recuerdo* follows the tradition of Latin American "magical realism" by incorporating fantasy elements into the story, and makes use of the cinematic conventions of video and audio flashbacks to enrich the story-telling.

The story line begins with the announcement on television of the disappearance of Gonzalo Restrepo, a noted microbiologist who was to participate in a scientific conference in Bogota. Students deepen their knowledge of Colombia while awaiting further developments. Suddenly, after several weeks, news reports announce that Gonzalo has been found emerging from an automobile accident, apparently suffering from amnesia. The student reporter first observes Gonzalo interacting with Venezuelan colleagues who try unsuccessfully to jog his memory. The reporter then engages in a series of interviews with Gonzalo in an effort to help him reconstruct events leading up to his accident.

These interviews focus on general topics, such as weather, studies, travel, food, sports, and music, in order to put Gonzalo at ease and avoid the impression of direct interrogation, which would offend the sensibilities of most Spanish speakers. The polite efforts pay off as the small talk triggers memories or flash-backs. Eventually the reporter discovers that Gonzalo, through his years of study and experimentation with recombinant genetics in Europe, the U.S., and his current laboratory in Mexico, had developed a microorganism that could eliminate physical pain without dependence on drugs, but his experiment went awry: The highly contagious microbe he developed can cause amnesia.

Various branches of the story become available to students, depending on their decisions during the simulated conversation. A romance branch leads Gonzalo to remember his first love, then his life with his Mexican wife, and finally his connection with Elena, a Colombian woman who admires his work, follows him, and sets up what seems to be a chance meeting. An adventure path favoring Gonzalo's version of events shows video flash-backs of Elena as a spellbinding villain with designs on the experimental microbe he created. We see Elena participate in his kidnapping, threaten him, then repent and join him in a frantic automobile escape from her fellow abductors. When the reporter visits and interviews Elena on this path of the story, she is mendacious and distant.

A contrary path, favoring Elena's view of her relationship with Gonzalo, allows the reporter to establish rapport with her. She freely shares her music and her recollections of travels to the Amazon, indigenous ruins, and other regions of Colombia, and she offers revelations of her family life, interests, and political activism. In Elena's version of the story, no kidnapping occurred and Gonzalo simply tired of her and abandoned her. Secondary characters give testimony that reinforces one or the other of these competing versions of the story.

Student behavior is tracked throughout the interviews and determines access to diverse endings. In one ending we accompany Gonzalo to the location where he had earlier hidden the genetic material and observe his relief at recovering it untouched. In a completely contrary ending, the disorientation and strange behavior of people on the street suggest that contagious amnesia--a memory plague resulting from Gonzalo's experiment has already spread throughout the city.

The role of the journalist allows the learner to inhabit both a fictional and an authentic universe from the very beginning. Twelve simulated paseos (walking tours) permit contact with various kinds of neighborhoods and brief interviews with Colombians of diverse social classes, including school children, college students, and truck drivers. The reporter's editor also reinforces the fictional dimension. Students choose one of four editors, each of whom offers different journalistic experience and perspectives, and also reveals personality quirks that could help or hinder reporters as they cope with their mission. The reporters compose and send fax reports and then receive feedback from their editors, based on selected content elements; the tone of these messages of satisfaction, encouragement or disapproval corresponds to the personalities of each editor. Access to an archive of model reports and additional cultural material, written by native speakers of various Latin American countries, helps students with their journalistic tasks.

Like all LATH projects *No recuerdo* is the result of a multidisciplinary creative collaboration. Three

program designers bring expertise in such areas as teaching and learning Spanish, the use of classroom simulations, software design that makes the story interactive, and electronic narrative design. Creation of a key program element, such as the simulated conversations with Gonzalo, Elena, and people on the street, entails the collaboration of all three designers. Software tools allow the creative writer to create the complex multithreaded conversation without having to learn programming. Several native experts contributed to the cultural information. As a result of consultations with our NEH advisers, our cultural archives now include material from additional Spanish-speaking areas, as well as essays on Latin American journalism and on science by authentic professionals.

MIT students are also active partners in the design, helping us to identify and elaborate on the most successful arts of our design. Some of them particularly enjoy the documentary material. As one of them remarked, "It was almost as if we were seeing everything firsthand in the countries we were visiting." They also liked the variety of locations--from modern shopping malls to plazas dating from the colonial period. Others are more involved in the story line. They enjoy the fact that the program is "sort of like a jigsaw puzzle." All of them appreciate the immediacy of the presentation, the sense of being in Bogota, and the thrill of being able to understand the authentic Spanish of the characters. One student summed up our language learning goals for the program when she reported: "At first it was a little difficult to understand, but it was rewarding to be able to figure it out . . . I could see the words and get the gist, then the entire meaning." And another captured the overall intent of the program as a surrogate experience when she commented, "I enjoyed seeing all different aspects of the Colombian culture . . . going through restaurants and the plazas. You're actually walking through in the video . . . and combined with the story, it gave us a lot of practice in listening to Spanish and trying to understand what was going on. It's really interesting because you get to walk through--it's not as if people are telling you about it."

No recuerdo is being developed at MIT's Laboratory for Advanced Technology in the Humanities (LATH), directed by Janet H. Murray. As codesigner of the project, Murray specializes in electronic narrative. The pedagogical designer and video producer is Douglas Morgenstern, senior lecturer in Spanish, foreign languages and literatures at MIT. Aria Beatriz Chiquito of the University of Bergen, Norway, and the Center for Advanced Computing Initiatives at MIT and Maria Gonzalez-Aguilar, lecturer in Spanish at MIT, are design consultants and authors. Sue Felshin of LATH, is a co-designer and principal programmer. The project has received support from Annenberg/CPB Project and the Consortium for Language Teaching and Learning.

Massachusetts Institute of Technology received \$143,000 from the Foreign Language Education Program of the Division of Education Programs to create an interactive videodisk for learning Spanish and Hispanic culture.

PHOTO (COLOR): Title screen from No recuerdo ("I don't remember"), a multimedia narrative offering simulated immersion in a Spanish-speaking environment. The story is set in Columbia with Mexican elements, as indicated by the Aztec eagle and serpent.

PHOTO (COLOR): A real Columbian newscaster reports the fictional story of Gonzalo's

disappearance. Students can play the video with the subtitles in Spanish, retrieve underlined glossed items, and replay by phrase or scene as they desire. The icons on the left enable the students to gain access to a simulated Fax machine, an Archive of cultural information and model reports, a Diary of the events in the story as the students experience them, and a Map of the city for navigating from place to place.

PHOTO (COLOR): Students play the role of reporters and communicate with their editors through faxes like this one. The faxes are arranged in templates which direct the students' observations and structure their composition process.

PHOTO (COLOR): At the heart of the story is a series of conversations with the amnesiac Dr. Gonzalo Restrepo. The student chooses from a menu of possible responses, and the conversation is transcribed as it occurs.

MAP: You are a foreign correspondent in South America, and you find yourself walking through a small plaza in Santafes de Bogota, capital of Colombia. You must depend on whatever Spanish you know to obtain a story for your editor. You must find something compelling to write it in Spanish.

As you pass the rows of shoeshine stands, you head toward a shop window, where a small crowd is gathering to watch a sporting event on a television set that is on display. You look through the glass, and is on television screen fills your field of vision. A brief commercial (swimming pool, hotel, the daunting name "Fusagasuga") is followed by a news report. A bespectacled announcer speaks clearly but rapidly: A world-renowned Colombian microbiologist, who was to participate in a major scientific conference, has mysteriously disappeared. Obviously, you have stumbled upon material for your story . . . but what is your next step?

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