

“Multimedia Presentation - Southern Cone: Antarctica and Falklands/Malvinas”

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1. Introduction.

This paper presents information on a multimedia presentation (text, drawings, photographs, video, sound, inter-active computer programs) dealing with the extreme Southern Cone of Latin America: the so-called “South American Quadrant” of Antarctica, and the Falklands/Malvinas Islands and surrounding waters. The presentation was designed to be used with a Macintosh computer and is packaged on CD-RoM disks.

To deal with the geographic question first, for most people living in the northern hemisphere (and especially those in the United States and Europe) Antarctica and the sub-Antarctic Islands such as the Malvinas/Falklands are exotic and distant places with little connection to the Western Hemisphere. However, for those living in the Southern Cone of South America (and most especially in Argentina and Chile), Antarctica is close (only 600 miles across the Drake Passage), and the South Atlantic Islands are a vital link between the South American and Antarctic continents. Even if we do not accept this argument, it verges on the ethnocentric to dismiss this link as a South American idiosyncrasy since the geographic area involved is included in the Rio, and Argentines and Chileans (as well as Britons) claim that their national sovereignty extends to the South Pole. As for the islands of the South Atlantic, we should remember that Great Britain and Argentina fought over them a decade and a half ago, and that one of the causes of the war was that the islands are perceived to be a link to Antarctica.

The CD-RoM disks and the multimedia presentation they contain are the ongoing product of a three-year grant from the United States Institute of Peace (USIP), whose support is gratefully acknowledged. The grant is in the “negotiation and mediation” category of USIP solicited grants, and forms the core of a course on Antarctica and the Falklands/Malvinas which the author of this paper has offered in English and Spanish for several years.

This grant applies new information technologies to the teaching of a series of six negotiation and mediation role-playing simulations set in three time frames and two geographic settings. The time frames are “historical”, “recent” and “future”, as follows:

	<u>Antarctica</u>	<u>Falklands/Malvinas</u>
Historical:	The 1959 Treaty	Prior to 1982
Recent:	Madrid Protocol (1991)	The War (Apr-Jun 1982)
Future:	Discovery of oil (2045)	Mid 21st Century

The Falklands/Malvinas simulations are basically dyadic between the United Kingdom and Argentina although other actors, such as the Islands’ local inhabitants (the “Kelpers”), the United States and several Latin American nations are also involved. This simulation also includes a number of mediators, such as the Secretary-General of the United Nations, the president of a Latin American nation, and the Secretary of State of the United States. The Antarctic negotiation is multilateral, with up to 50 nations involved, as well as several conservation organizations and commercial firms.

The new technologies which were applied to these simulations were the personal computer and its CD-ROM (“Compact Disk - Read Only Memory”) capability linked to several appropriate pieces of software. The grant products are currently (early 1997) being developed and tested in several college-level courses taught by the principal investigator, as well as several colleagues.

2. The New Information Technologies.

The personal computer has now put at the disposal of most college faculty and students a multimedia device capable of handling large amounts of word-processing, documents, bibliographic data bases and visuals (both still and video). The CD-ROM disks currently being used have storage capabilities in the range of 650 megabytes of information. This means that a single 4 3/4 inch plastic disk can store the equivalent of 450 floppy disks (1.4 Megabytes each), or about 250,000 pages of text. Depending on the size and resolution, the same disk can store anywhere between 500 and 2,000 color images.

At the same time, the cost and complexity of the equipment required to prepare (“burn” in the current jargon) CD-ROM disks has diminished considerably, to the point that for about the cost of a computer an author can purchase a CD-ROM “burner” and the scanning hardware which permits digitizing documents and visuals and placing them on the CD-ROM.

One remaining technical obstacle is that (unlike floppy disks) CD-ROMs are “read-only” media, which, once recorded, cannot be changed or erased. This places a premium on careful preparation and testing before going final with the end product, but this obstacle may soon be removed as newer technologies permit, at reasonable cost, the ability to “write-over” existing materials on the CD, much as one can now do with the cheaper floppies.

The software items used in this particular grant were Macintosh packages, although equivalent software exists for MS-DOS IBM computers and their clones. The principal software packages used were:

“Filemaker”, a data base program employed mainly for the bibliography, since it permits easy sorting and rearranging of large quantities of files (the bibliographies involved almost 4,000 entries).

“Microsoft Word”, a conventional word-processing program used for items such as the monograph on negotiation, the chronology, and the instructions for the simulations.

“Scantastic” and “Microscan” scanning software which, when used in conjunction with the appropriate hardware, permitted the digitizing of documents, photographs and slides.

“Photoshop”, a visual manipulation software package.

“Macromedia Director” a sophisticated multimedia software package which integrates all of these items into a visual presentation. This presentation can be made inter-active by using “hot buttons” and hypertext. These additions permit the user to move around the program either in the linear direction set out by the author, or to whatever section is of interest.

With regard to the hardware, the multimedia presentation was designed on a Macintosh Power PC 8500/120 computer with 32 Megabytes of RAM and a 2 GB hard drive. This is one of a series of Macintosh computers which lend themselves readily to audio-visual productions because of their built-in CD-RoM player and seamless integration of text, visuals, sound and video. Other key hardware components were (see final page for additional details):

- A Pinnacle RCD 5040 Recordable CD-RoM system, which permits the easy preparation of master or “one-off” CD-RoM disks. Up to about five years ago the cost of CD-RoM burning equipment was so high (in the \$10,000 range) that only institutions and commercial firms could afford it. To make a CD-RoM a faculty member would have to build up the contents using a large removable hard drive and deliver the drive to a university media technology center or commercial firm for the preparation of a master from which individual CDs could be run off. The cost of such a commercial master was frequently in the \$1,000 range, with individual disks costing several dollars apiece if run off in quantity. In contrast, if a faculty member had access to a CD-RoM burner such as this Pinnacle model, s/he could prepare so-called “one-offs” one at a time directly from the computer at a cost of \$8-\$10 each (this is cost of the basic raw CD). For a limited production run such as the 18-student class involved in this project, this latter option is clearly the better one. For a larger production run, the “one-off” can be reproduced in quantity by specialized firms, bringing the cost of each disk down to \$1-3 each.

As an added bonus, this CD-RoM burner is now frequently used to prepare periodic backups of large files, a process which used to require many floppy disks, whose

limited capability of 1.4 megabytes each could not handle the larger visual and video files used in multimedia projects such as this one.

- An Epson ES-1200C flat-bed scanner used to digitize black and white and color drawings and photographs. This item functions much like a photocopier or fax by projecting a beam of light against the material on paper and reducing the visual component to pixels which can be handled by the computer. With the appropriate OCR (optical character recognition) software the flat-bed scanner can reduce printed or typed pages to editable text which can then be stored efficiently on the CD-RoM disk. As will be seen below, this was used to digitize some 3,000 pages of text and was a major feature of the CD-RoM disk presented to the students.

- A Scanmaker 35T slide and filmstrip scanner which, like the flatbed scanner, reduces 35mm slides or negative film to digital pixels for manipulation and recording on the CD-RoM. This was especially useful for incorporating the author's extensive library of 35mm slides taken during ten trips to Antarctica and the Malvinas/Falklands over the past decade.

As can be seen from the prices shown for these various items, they represent a substantial investment which begins to approximate the basic cost of the computer. The particular items selected for use in this project were generally in the mid-range of price options. Hardware with more limited capabilities can be obtained for considerably less, and the prices of these items have dropped substantially over the past five years. For those who might wish to experiment with these technologies without making this financial investment, one possible option is inquiring at one's university or college advanced media center. These centers generally have similar scanning and CD-RoM equipment available for faculty and graduate student use.

To summarize, the key advantage provided by these new technologies is that a very large amount of textual and visual material can be placed on a physically small disk and duplicated in as many copies as necessary so that each student can have the whole package at her/his fingertips. The contents of the disk can also be placed on the World Wide Web or distributed commercially.

3. Video.

The CD-RoMs also contain video taken in Antarctica and the Malvinas/Falklands islands by the author. However, even the most enthusiastic advocates of computer CD-RoMs are forced to recognize a major limitation: digitized video requires an enormous amount of memory. Even with slow frame rates and compression (which degrades quality somewhat) and small screen display (typically a quarter of the full computer screen) a minute of video can require between 20 and 200 megabytes of memory, with sound adding between one and ten magabytes.

As a result, this initial cut of the CD-RoMs includes only brief video clips for demonstration purposes. Experimentation with other frame rates and compression

systems will ultimately permit greater use of video, and the plan is to prepare the basic CD-RoM with text and still photos, then add video clips up to the maximum 650 megabyte capacity of the CD-RoM disk.

A video camera can serve an additional very useful function: acting as a still digital camera. The Macintosh video programs have the capability of “grabbing” or “freezing” a single frame of video and then treating it as if it were a still photograph or slide. Used in this way, the video camera can substitute for a single-frame digital camera costing substantially more, and has the advantage of providing literally thousands of frames per minute from which to select a single optimum one. Several of the still photographs used in these two CD-RoMs were obtained in this manner.

4. A comparison of delivery via traditional paper, the Web, and CD-RoMs.

A legitimate question to pose at this point is if the content of these multimedia presentation, and the class simulations they support, could not be delivered more cheaply and efficiently either by traditional paper/slide means, or by the World Wide Web. The comparative chart on the following page shows the features of each of the three delivery means.

The CD-RoM approach was selected for this project because of the CD-RoMs ability to present a large volume of textual and visual material which would be inordinately bulky and expensive if done by conventional paper means, and inordinately slow and low-quality if done on the Web.

5. The end products.

The negotiation/mediation simulations’ end products are two CD-ROM disks, one for the Antarctica geographic setting and one for the Falklands/Malvinas. The various elements of the text can be downloaded and printed as desired. The components of each disk include:

- a. Two extensive bibliographies. The one dealing generally with negotiation and mediation contains about 600 items, while the combined Antarctica and Falklands/Malvinas one runs to over 3,400 items. The majority are in English, although a significant number are in Spanish, and some in Portuguese. This emphasis on Spanish-language materials reflects the fact that the project’s materials are also available in that language for use in college courses taught in Spanish.
- b. A monograph on negotiation prepared by the principal investigator as an introduction to general and theoretical approaches to mediation and negotiation. The monograph concludes with a checklist, which the student uses to analyze (in writing) the negotiation being simulated. The number of possible questions, and the detail with which they are answered, can easily make this part of the negotiation equivalent to a short term paper.

- c. Several thousand pages of documents and other materials in the public domain. These are organized into general materials available to all players, and packets of materials for each specific actor in the simulation.
- d. Background readings. Some of these were written by the author, and some are government documents or other materials in the public domain.
- e. The inter-active multimedia presentation. This combines text, visuals, map-making exercises and questions to provide background information for the two simulations.
- f. Instructions for the role-playing simulation. These take the student (and the instructor) from the materials listed above to the actual simulation in the classroom. Each student is assigned a role, either as a country or organization representative, or as an historical figure.

6. Conduct of the simulations.

When used in a university course the six simulations provided more than enough materials for a 14-week semester. It was decided to use the first simulation in each geographic setting in a passive analytical mode which involved doing readings and answering questions that were drawn from the “Introduction to Negotiation” checklists. This approach provided a useful historical base from which to move on to the four active role-playing simulations. Of the four, the two which occurred in recent time frames (for Antarctica the 1991 Madrid Environmental Protocol, and for the Falklands/Malvinas the 1982 War) were the most constraining since the players were asked to take positions and make statements that were reasonably close to what actually happened. Feedback from students indicated that while they learned from this process, they felt they could not fully use their imagination or creativity.

This imagination and creativity was turned loose in the two simulations set in the future, when the student role-players were told they could use any approach they wished to the negotiation and mediation process. The class-room situation was “free play”, so that students could caucus in their group or negotiate and mediate with other players. For the Antarctic simulation the setting is the year 2045, and involves the discovery of a large oil field on the Antarctic Peninsula, which is especially sensitive since it contains overlapping claims by Argentina, Chile and Great Britain. For the Malvinas/Falklands simulation the historical setting is in the middle of the 21st Century, when joint development of fishing and oil resources between Argentina and Great Britain (initiated on the basis of a real 1995 agreement) begins to break down over a number of issues, not the least of which is the push for political independence by a very rich group of Islanders who had greatly profited from oil royalties and the sale of fishing licenses.

7. Utilization and testing carried out to date.

The full simulations mentioned in the last paragraph were carried out in a semester course (37.356/656 Antarctica and Falklands/Malvinas) at The American University in the Fall 1996 semester, in English. An abbreviated version was used in a two-week portion of a general education course at the same university, in English (37.210 Latin America: History, Art, Literature). The first Spanish version of the Antarctica multimedia portion was developed in late 1996 and is being used in the current (Spring 1997) semester in several Spanish language classes. The language teaching element (which supplements the negotiation/mediation component) involves parallel Spanish and English screens with the same visual elements. If the student is running the program in Spanish and has problems with the language, s/he can get an instant translation by clicking on a hot button and seeing the English translation, after which s/he returns to Spanish.

In the Fall 1997 semester the programs will be tested in a Spanish language version of the course on Antarctica and the Malvinas/Falklands. As many documents as possible will be translated into Spanish (or the Spanish originals obtained) to add realism to the course. Both multimedia presentations will be available in Spanish, and all classroom discussion and the negotiation/mediation simulation will be conducted in Spanish.

With this final test completed, the two CD-ROMs will be offered to a commercial firm for publication.

8. Evaluation and feedback.

At each stage students were asked to provide written feedback on the negotiation/mediation simulations and the value of the new technologies. The results have been almost uniformly positive, and generated numerous suggestions for changes and improvements, as well as identifying confusing areas and technical difficulties.

Simulations have a long history of effective employment in the study and teaching of international relations and peacemaking/peacekeeping. The positive evaluations have served to confirm that this is an effective method of teaching the concepts and practical approaches emphasized in the project.

The addition of the computer to the simulations has given students access to a very large amount of textual and visual information which they would not otherwise easily have available. While it is true that the textual material could have been provided in a binder or book, the sheer volume (about 3,000 pages) would make this unwieldy and prohibitively expensive. Putting it on library reserve would be an option, but not a very attractive one. Having it digitized and available on a floppy or CD-ROM is an ideal solution for this type of application.

The presentation of the visual material in an interactive program would be possible, in a limited form, in a classroom via slide lectures. But these would be linear in nature and interactive only in a very limited sense. Once presented, the instructor would probably not be able or willing to present them a second or third time for students who might have been absent or who wished to review the material. This possibility of seeing the presentation again and again is made feasible by putting it on the CD-ROM and making it available to each student.

One quantitative measure of the impact of the computer-based simulation and associated materials can be obtained from the student evaluation of teaching. At American University each course is evaluated anonymously by each student. These numerical evaluations then become public knowledge after the course is finished and all grades are turned in. The student questionnaire includes some 21 standard questions, and the most relevant question is extracted here for the Fall 1996 version of the Antarctica and Falklands/Malvinas course (which used the computer-based materials described here), and for the Spring 1995 version which did not have the computer materials.

	Spring 1995 (No computer)	Fall 1996 (With computer)
Question 14, "Course overall" rating for the course.	5.53/6.00	5.71/6.00

9. Conclusion.

The limited test of the computer-based negotiation/mediation simulation has yielded very positive results. For the instructor it has been an opportunity to be more creative and use a fresh and stimulating pedagogical approach. Student reaction in this TV and computer-oriented generation has also been gratifying and suggests that this type of instruction is a welcome change and provides the factual basis for the higher-order interactions experienced in class after the computer portions are completed.

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<http://www.icaire.org.nz> (New Zealand Center for Antarctic Info and Research)
<http://www.nsf.gov> (National Science Foundation)
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