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THE ROLE OF SOFTWARE IN EDUCATIONAL ROLE-PLAYING

An Interactive Qualifying Project Report

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of the

WORCESTER POLYTECHNIC INSTITUTE

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By



Brian L. Ellis

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Approved:



Professor John M. Wilkes, Major Advisor

1. computers
2. software
3. education
4. teaching
5. role-playing

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Preface

Despite plentiful evidence that interactive role-playing exercises are highly effective teaching methods both in classrooms and for consciousness-raising events, the process of creating a scenario from scratch is time-consuming enough to defer most educators from using them as full-scale class activities. This project centers on the creation by the author of an innovative cross-platform software solution to part of this problem. The solution discussed allows educators to leverage existing materials and dynamically generate the culture briefings necessary to hold a mock conference modeled after an assembly of the UN or other international body. The software is not limited to this application, and could in principle support technical or issue-based briefings. At the moment, however, only cultural diversity materials have been loaded into the database of categorized source material. The possibility of expanding this system to encompass other aspects of the creative process is also discussed.

Abstract

Despite plentiful evidence that interactive role-playing exercises are highly effective teaching methods both in classrooms and for consciousness-raising events, the process of creating a scenario from scratch is time-consuming enough to defer most educators from using them as full-scale class activities. A solution to this problem is presented in the form of a software program that allows educators and other game developers to create dynamic briefing materials with a specified length and content.

Acknowledgements

The author would like to thank, first and foremost, Professor John Wilkes without whose patience and insight this work would have been considerably shorter in content and much longer in coming. Appreciation is also due Peter Cooper, who provided the historical background appended to this work as Appendix A1, and Jesse Hurley, whose long hours sitting in a computer lab watching the glacial progress of scanning in thousands of pages shall not soon be forgotten.

A Note About Terminology and Typesetting

This report is typeset in full-justified 12 point Hoefler Text. Throughout the report, certain acronyms are rendered in small-caps style (OCR, MBTI, UNOOSA) while others are not (CD-ROM, USA, UN). The small-caps style is intended to provide a visual cue that an acronym has been included that the reader is not expected to have heard before, and to indicate that it is defined in the body of the text near its first occurrence. Most technical terms in the second half of the report are also rendered in small-caps.

I The Importance of Live Role-Playing Exercises

I.1 Introduction

Over the past twelve years, Worcester Polytechnic Institute (WPI) and other institutions have been working to develop a number of interactive simulations involving technology, society, and cultural awareness, for use either in a classroom setting or as consciousness-raising exercises. WPI's Social Sciences department has gained considerable experience with these games — so named due to their superficial resemblance to the live-action role-playing games popularly used for recreation. Many of the games have been studied before and subsequently revised, and a detailed history of the games at WPI, written by Peter Cooper, can be found in Appendix A1.

Aside from being a novel way to learn, role-playing exercises have been shown to be a more effective method of teaching for some students who might otherwise be unable to perform at the level of their peers. An in-depth study of this was undertaken in 2002 by George C. Spino in a report to the faculty of WPI entitled *Education Reform and Live Role Playing Games from a Learning Styles Perspective*. Some of the results described in this report are reproduced below (Figs. 1.1, 1.2, and 1.3).

The data were collected by observing a college sociology class, the first half of which was taught using traditional methods and the second half using a run of an interactive role-playing exercise called the AEGIS space policy game. Grades for various projects in both halves of the term were analyzed according to each student's classification in the Meyers-Briggs Type Indicator (MBTI), a codified representation of personality type. While a full range of analyses was conducted in the aforementioned report, the results of greatest interest were obtained by dividing students into two categories: sensing and intuitive.

The exact definitions of these terms are complex and beyond the scope of this discourse, but an intuitive personality is loosely defined by the presence of a

mental model of reality to which new ideas and experiences are compared. Intuitive students are better, in general, at “figuring out the system” and tend to have an easier time with traditional academics; faced with a question they do not know how to answer or a problem they do not know how to approach, they can more readily apply general techniques (educated guessing on multiple choice questions, for example) than sensing students.

The sensing personality type, however, is often more able to make detailed descriptive observations with functional implications. Intuitors are better at “reading between the lines” and working with problems that are not well structured, but given a well-defined problem a sensor will often be able to give a clearer and more vivid description of the solution. The fact that intuitives often have the advantage in an academic setting is a sign of bias in the system, not of an innate advantage in life.

In the class observed by the author of the report, the general trends toward the first half of the course were well summarized by the scores on the midterm exam, shown in Fig. 1.1. Over half of the sensing students in the class ended up in the lowest quartile of the grades, while intuitive students dominated the upper half of the range. This, unfortunately, is fairly typical of a traditional college class.

The second, role-playing half of the course was a new experience to the students in the class. None had ever taken part in such an exercise before, and as expected, this handicapped both intuitors and sensors. Fig. 1.2 shows the grading results of the first day’s character diaries — short first-person essays that are designed to determine the amount of knowledge and observation being absorbed by the student. This first day, no one managed an “excellent” diary, but the sensors were much better able to adapt to the change than the intuitors, who wrote largely mediocre diaries — technically correct for an essay, but lacking in real insight.

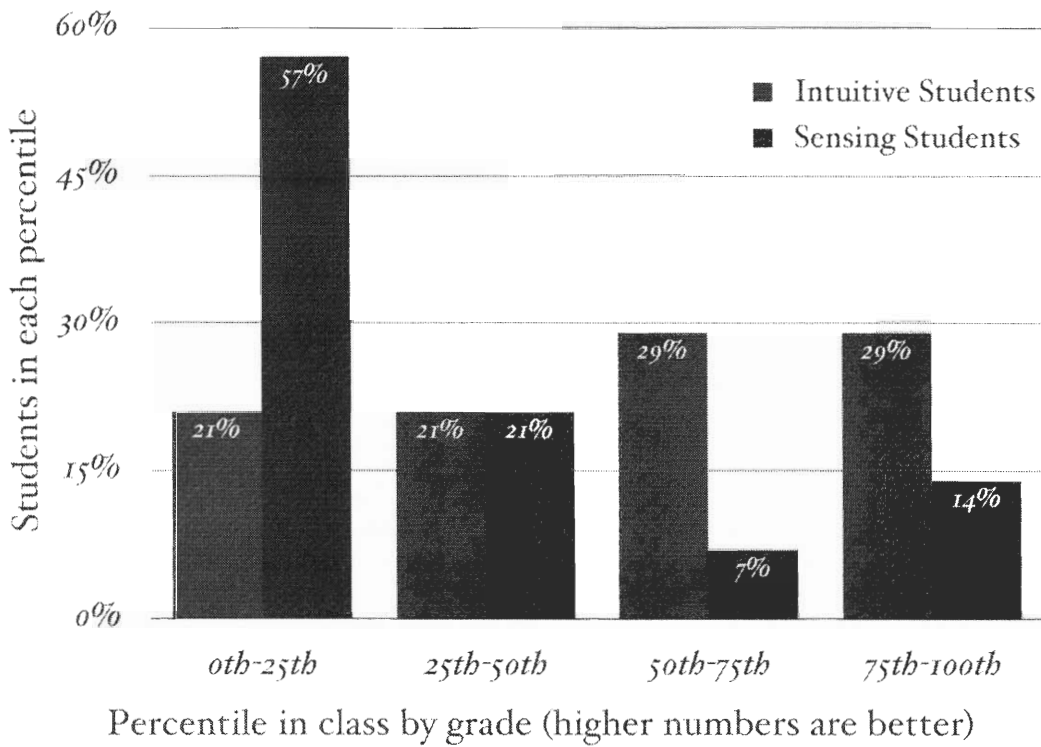


Figure 1.1:
Midterm exam results.

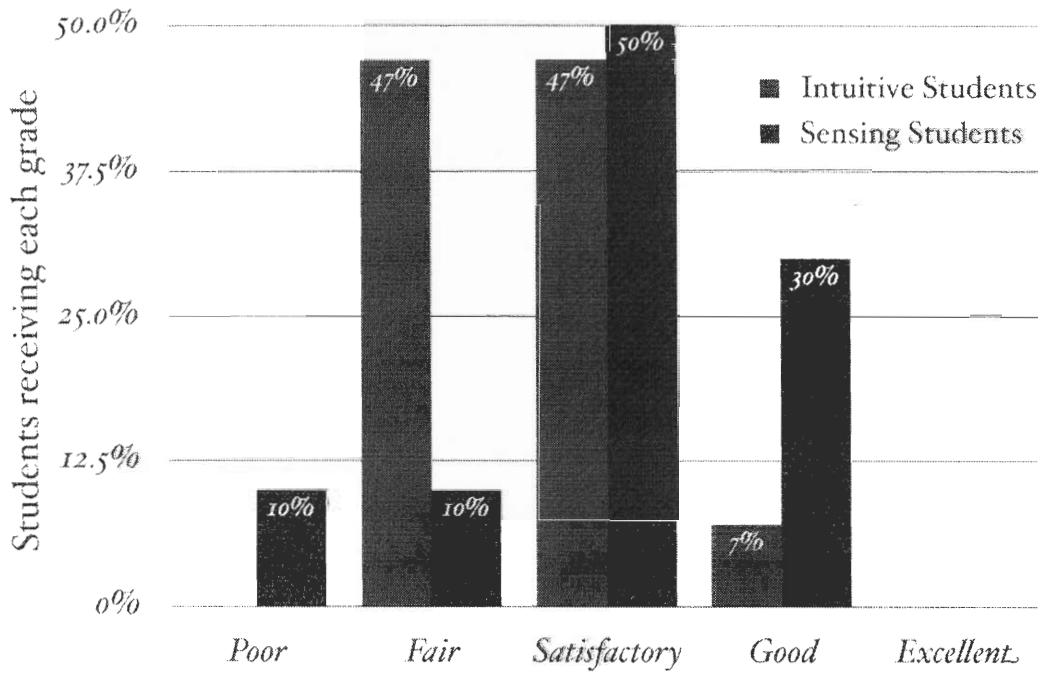


Figure 1.2:
The results of the first day's diary writing.

The second day of diary entries saw the intuitors catching up to, but not surpassing, the sensing students (Fig. 1.3). This normalization continued on the third day (not shown) and, after fully adapting to the expectations and workload of the new teaching style, a remarkable thing happened — the intuitive and sensing students did almost exactly as well, on average. Furthermore, the grade distribution for the intuitive students was just as high as it had been for them on the midterm — the sensing students were now working up to the level only the intuitives had managed before, and the intuitives were not suffering for it.

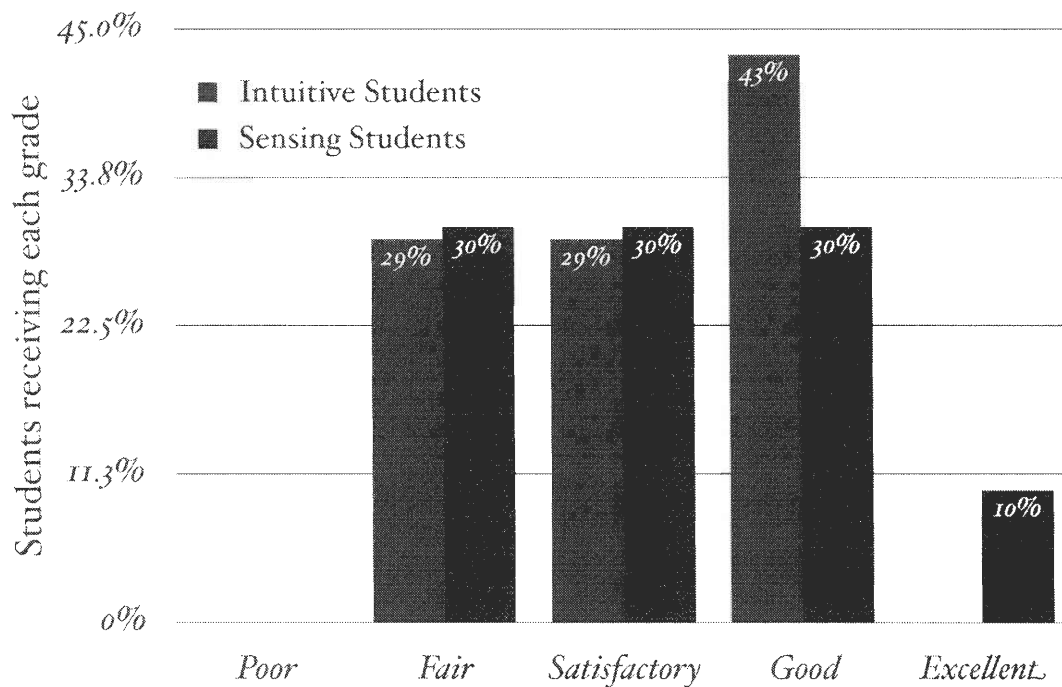


Figure 1.3:
The results of the second day's diary writing.

It is this feature of role-playing exercises that makes their future in an academic setting so particularly promising. Not only does it address a large part of the student population which is being underserved by current teaching methods, but the rest of the population continues attaining the same degree of insight.

1.2 The Goals of Role-Play

Perhaps the most striking strength of role-playing, however, is a hidden one: it appears to be able to teach certain concepts that conventional lecturing cannot address nearly as well. The role-playing curriculum at WPI actually began as a push to combat ethnocentrism and increase cultural awareness, goals to which it has generally remained true despite often overwhelming pressure to change focus. In these exercises, the socio-technical issue at hand — the one on which the players are briefed and around which the game revolves — is merely a backdrop for other issues that recur in every game: namely, how to think and act like a member of the society one is representing as a negotiator.

Students are often surprised that over half the material they are expected to study in preparation for, say, an asteroid impact game, has nothing at all to do with astronomy, and rather deals with the social structure of Russian society, the organizational mindset of the European Union and Space Agency, or (perhaps) the price of tea in China. This focus on culture, however, is the most vital element of the game system. Whether introduced into a science curriculum, a social studies class, or a conference of professionals in some field, the result is the same. The participants leave the game with a much better understanding of the social world around them as they have, for a time, adopted other values, norms, vested interests, and organizational missions based on different policies and cultural assumptions. This understanding is based less upon the relative distances from their own culture and more upon the reality of a society as seen from within.

One important fact about these games that many people overlook is that this emphasis takes priority over the more typical “model UN” aspects of the games. Whether or not the results of a game model the actual process or results of similar conferences in the real world is of secondary — though still considerable — importance so long as the exposure to cultural diversity is authentic. It has been

observed, however, that the games in which the participants were most successful at “getting into role” were also typically the games that generated the most realistic outcomes, and many of the exceptions to this involved “dirty tricks” played on leaders of rival delegations by highly involved game authors.

1.3 The Struggle for Sources

One of the biggest obstacles by far that had to be overcome in the development of the games was the lack of sources that could complement the games in a traditional class curriculum. A search for textbooks that dealt with the cultures of particular countries in a sociological context turned up Joan Ferrante’s *Sociology: A Global Perspective*, among other similar promising texts, but these books made individual countries into merely case studies in particular aspects of whatever overarching theory or concept was being presented. It quickly became clear from students’ reactions to these books that more would be gained from having similar and comparable sources for each country in the game and then using the game itself to disseminate this knowledge to the rest of the class. Fortunately, around this time a new resource became available that has since proved to be invaluable: the *Comparative Societies* series by McGraw-Hill.

The initial attempt to use these sources, in an introductory Sociology class, was not particularly encouraging. Entire books of about 200 pages were assigned on top of the normal text. Many students — balking at so much reading in addition to the work for the more traditional aspect of the class — failed to do the reading at all. As the potential of the games became more and more apparent, the suggestion was made that these readings should form the basis of the culture briefing packets used both in and out of class. As a result, and to address the lack of student participation, the readings were dramatically — but unevenly — scaled back. This resulted in a quagmire of conflicting briefings in various stages of development, with some countries and roles having 150-page packets devoted to them while others squeaked

by with ten. It is this situation especially that the current effort of this project attempts to rectify.

When this problem emerged, the readings — which had been enlarged again in the meantime — were once again drastically scaled back into five or ten page excerpts from the books. This resulted in a puzzling experience for many students, who gained just enough understanding to realize how little they really knew, but not enough to replace that doubt with anything concrete enough to help them actually play their role or understand the culture. The goal of this round of effort, then, is to provide modifiable briefings in appropriate levels of detail.

It should be noted that WPI is not the only institution that has been developing role-playing exercises for use in the humanities and social studies. Barnard College, a derivative of Columbia University in New York, developed its own series of successful games designed to teach a college history class. These games have also been incorporated into the curriculum of Smith College in Northampton, Massachusetts. The progress of these games has been wholly different, however, from that of WPI's, as the Smith/Barnard games likely stem from a different mindset: a historical one which maintains that no aspect of culture or society can be understood in a vacuum without all the context of its contemporary historical period. Therefore, cultural briefings are not necessary for these games, as they attempt to illustrate the history of the period they use rather than directly teach about cultural diversity as part of the game dynamic.

2 Creating Software to Expedite the Game Creation Process

2.1 Introduction

One of the most frustrating impediments to convincing educators to seriously consider role-playing exercises in their curricula is the issue of up-front planning and preparation time. A dynamic, proactive approach to teaching and learning requires a much greater initial investment of time and effort than does a typical lecture or lab course, as has been evidenced already by many technology and distance learning classes. Many educators who see the benefits of an interactive approach and might otherwise integrate it into their classes do not, simply because they do not have the time or resources to dedicate to it.

Various projects involving the creation of new games have shown that the process of building a new game does, indeed, take a substantial amount of time and effort, possibly more than most educators would be willing to devote. They have also shown that much of the time spent on the type of game used at WPI is spent creating culture briefings for the assorted nations involved in the game. This is perhaps a surprising fact, given that these briefings are actually the least dynamic and most reusable portion of a game, but the specific demands of a certain game in a certain setting often require all of the briefings to be rewritten from scratch, even for such countries as already have briefings in some other game. Often these pre-existing briefings are too long, too short, too broad, too specific, or wholly irrelevant, and as such are basically useless in the new game other than as a starting point. Usually new research time is not needed; rather, the time is in reworking existing materials.

It seemed clear, once this situation was recognized, that much of the problem was due to disorganization rather than an inherently faulty concept. If large, broad, detailed culture briefings were written for each country — larger and broader, perhaps, than would even be advisable in the game for which they were written —

each game to use them in the future could easily excerpt sections and graft together briefings of nearly any length. The trouble, of course, is that it takes time to read through ten 120 page culture briefings and decide which sections would be beneficial for a particular purpose, then cut and paste the relevant sections into a new document. The process is also rather tedious.

Thankfully, time-consuming, tedious processes that seem at first glance like they should be trivially simple to complete are exactly the sorts of things at which computers are especially efficient. It was decided that a piece of software should be built that could automate this process and allow users (be they educators, group coordinators, or perhaps even the students themselves) to quickly and easily generate briefings appropriate to the topic at hand for any country in the database. Consideration was also placed on the possibility that this software might eventually evolve into a more universal game creation assistant, with features that might assist in the creation of other game components such as character sheets or topical briefings.

2.2 Game Components

When the development of the software began, the primary goal was to remove the hurdle of creating culture briefings for new games. Distribution was to be on CD, with manual submissions of new material which could be added to subsequent releases of the software. The addition of other features was considered later, after the original goal had been largely achieved. In this report the features that were implemented into the product will be enumerated, the process and formats used to implement them will be explained, and the benefits of inclusion will be discussed. Also included is speculation on what further work remains to be done, how it might be accomplished, and what the ultimate scope of the project could be.

2.2.1 Culture Briefings

The most important, and to date the only, function of the software is the generation of culture briefings of various lengths and levels of detail. The importance of adaptable culture briefings that can be generated on the fly was discussed in the previous section, but it cannot be stressed enough that the inability to make briefings in this way severely limits the range of applications of the game. In theory, a game can be designed for consciousness raising, education focused on political process, or education centering on cultural diversity. These different applications place vastly different emphases on the culture briefings in the array of game preparation materials. Achieving educational goals other than those for which a game was explicitly designed is difficult without a software generator. To this end, material from the *Comparative Societies* series by McGraw-Hill was scanned, page by page, and optical character recognition (OCR) technology was used to convert the material into machine-readable ASCII text format. Certain sections of each 150- to 200-page book were omitted to save space and time; usually, the sections dealing in-depth with the religion(s) of a particular culture were omitted unless they were particularly relevant to the stratification (class structure) of the country at hand (as in the case of India).

Each country's briefing text was placed in a folder with the name of the country in question, and was then manually examined for the inevitable formatting or OCR errors. All such errors were fixed when they were found. By far the most common errors were improper line breaks (caused by the OCR software, OmniPage Pro, being unable to determine when a line break signaled the end of a paragraph rather than simply the end of the line on the page). Columns placed out-of-order were very common as well. The latter problem was fixed in OmniPage with a special tool used to reorder blocks of text to be interpreted, and the former was fixed from within Microsoft Word using its built-in find-and-replace tool (any line break not

directly preceded by a period was turned into a space). Another problem, involving periods being misinterpreted as hyphens, was also fixed using find-and-replace expressions. However, this was more complicated and required the following find-and-replace expressions to be used, in sequence, from within Word:

```
Wildcards off
```

```
Find: ^p
```

```
Replace: ^l
```

```
Wildcards On
```

```
Find: (>)-([ ^l])
```

```
Replace: \1.\2
```

```
Find: ^-
```

```
Replace: (nothing)
```

```
Find: (>)^l
```

```
Replace: \1
```

```
(last character is a space; do not select "replace all")
```

```
Wildcards off
```

```
Find: ^l
```

```
Replace: ^p^p
```

A side effect of the preceding expressions is that one paragraph break is transformed into two, thereby putting space between each paragraph. This was found to be helpful for legibility of the resulting text file.

After the formatting problems were corrected, the text was divided up into logical "chunks," each dealing with a particular topic. This proved to be more

difficult than expected. Every salient point in the text would need to be its own chunk so as to enable the user to turn it off or on, thereby fine-tuning the topics covered by the resulting report. This goal quickly proved to be unachievable, however, due to the contextual nature of how the information was presented in the original text. For example, in *Modern Brazil* by Kevin Neuhouser, one of the texts cited, the section entitled “Industrialization: 1930-1964” begins thus:

Apparent disaster, however, proved to be an opportunity. The Great Depression was so severe that Brazil’s reliance on the export sector was effectively (if temporarily) broken. Unable to sell its primary products (coffee, sugar, and rubber) abroad or to buy European and North American manufactured goods, Brazil’s leaders had to choose between continuing traditional economic policies and being prepared to endure stagnation until the world economy improved or for the first time in its history embark on a serious program of industrialization.

The exact nature of the “apparent disaster” that proved to be an opportunity might very well be entirely opaque to any reader who had not also read the previous section, entitled “The Colonial Economy” (though the fact that the disaster was, in fact, the American stock market crash of 1929 might also have been gleaned from context).

It was clear, however, that smaller chunks were still to be desired, all else being equal, because larger chunks would offer the user less ability to fine-tune the report length. That is, if each chunk was five pages long, it would be impossible to create a briefing exactly twelve pages in length. Worse, it would be impossible to create a three-page briefing at all. In the end, a compromise was made, taking into account the trade-offs mentioned above and erring slightly on the side of larger chunks, operating under the assumption that any future additions to the database would likely be of a more anecdotal (and thus less context-sensitive) nature. In the

current release of the software, the average chunk length is roughly three pages. Hence, the culture briefing for the run of a three-page “consciousness-raising” game deals only with one major topic, but a twelve-page briefing for an educational run not intended to emphasize the teaching of cultural diversity as the primary topic of concern can touch on four.

Clearly, the next step was to design the software such that it would be capable of selectively reading in, concatenating, and writing out these files. A complete source code listing of the program, written in REAL Software’s REALbasic development environment, can be found in Appendix A4, but a general outline is provided here.

The first essential step is to present the information for each country in a single hierarchical interface. A hierarchical list box with check boxes for selection is used for this. The country’s name itself is used as the top-level element (“root node”) for the list, and contains as elements each of the most general categories for that country (culture, history, politics, social structure, etc.) These categories themselves usually serve as root nodes for their own hierarchy (referred to as a “sub-tree”), each element of which deals with a more specific aspect of its parent category (for example, in the Japanese culture briefing, “Religion” is a sub-element of “Culture”, which is itself a sub-element of “Japan”). This hierarchy is more clearly illustrated in Figure 1 below.

The user can collapse or expand any sub-tree of the hierarchy, and select or deselect entire sub-trees by clicking the check box belonging to the root node of that sub-tree (the checkboxes next to all children are automatically checked or unchecked as well). As sections are added or removed from the report, the page total dynamically updates its estimate of the report’s length; this estimate is based on experimental data for the number of characters on each page at the font and size

used in the output reports, but the number given is currently hard-coded and depends on a number of very platform-specific factors such as font metrics, kerning, page margins, and font vendor (it was tested and found to be accurate using the standard-supplied version of the Courier font at 12 point on a Macintosh running Mac OS X 10.2.3 with Quartz anti-aliasing turned on). One good opportunity to advance the software further, then, would be to create a better page estimation algorithm.



Figure 2.1:
The culture briefing generator running on Mac OS X.

The data for all culture briefings are stored in a folder called “Briefing Data” stored in the same folder as the application. Within this folder, each subfolder has the name of a country, and each of these is listed in a pop-up menu at the top of the window. Within each of these folders are zero or more text files containing general information about the country which does not fall under any other category; this information is included by default, but can be turned off by deselecting the country’s name and then reselecting all its children (but not the country itself).

The text files themselves do not currently show up in the list; when the software was first created, it seemed that this would be a needless complication. Due to the large size of each chunk, however, and the general nature of each category, another improvement that could be made to the software in the future would be the inclusion of each file within the folder that contains it. Many of the

titles of the separate text files, which currently are never actually seen within the software, have been made more descriptive in preparation for the implementation of this feature.

The report itself is generated by concatenating together every section that has been selected by the user, and recursively scanning each subdirectory that is encountered (this process is known in computer science as a *depth-first search*). Care must be taken, however, to preserve the hierarchical nature of the report, and this results in a more complicated algorithm than might seem necessary at first glance. For example, let us say that the user selects "Group Dynamics" under the category "Social Structure", but deselects everything else, including "Social Structure" itself. Should "Group Dynamics" be presented as a category in its own right (that is, be moved up the hierarchy by one level), or should the title "Social Structure" be printed above it? The algorithm currently in use follows the latter convention, which was felt to be generally more clear, but a case could be made for either.

Indentation is the method of choice for preserving the hierarchical representation in the final report. For example, the opening page of a typical Japanese culture briefing might have the following structure:

```
JAPAN
  INTRODUCTION
  ...
  A SENSE OF "PEOPLEHOOD"
  ...
  "AN ISLAND NATION"
  ...
  CULTURE
    SOCIAL CHANGE AND THE FUTURE
    ...
    THE GROWTH CONSENSUS
    ...
```

It is not difficult to see that the section entitled “The Growth Consensus” is a subsection of the category “Culture,” which is in turn a subsection of the general category “Japan.” Unfortunately, due to the limitations of plain text format, only the first line of each paragraph is indented because the software does not hard-wrap the text. This is usually sufficient, as the section titles are correctly indented as shown above, but one major advantage of switching to another format (HTML, for instance) would be the ability to enclose entire chunks of text in BLOCKQUOTE tags (or the equivalent).

Aside from the concatenation itself, there were several formatting decisions that seemed best left up to the user. One of these was whether or not the hierarchical nature of the report should be preserved at all, or whether it should instead be aligned flush left. The latter approach might be desirable in a culture briefing where only one particular subsection of one particular category is to be printed; rather than have the entire report floating three inches off the left side of the paper, deselecting that option might preserve paper and increase readability. Another option is whether section titles should be printed in all capital letters, or should be left in their original case. Most of the culture briefings currently included with the software have subsections within each file, all of which have titles in capital letters, so for consistency this option should usually be on (and is by default). If the format is changed from text to HTML in the future, however, this functionality may become undesirable, and leaving the option available but changing the default will allow backwards-compatibility. Lastly, there is an option for whether or not to show the name of each file as it is included; generally this is not necessary, as the name of the enclosing folder as well as any title or header inside the file itself should serve the same purpose, but in the event that two files have the same title it may become necessary to differentiate between them.

One small but potentially useful feature added into the program is the ability to specify the amount of information about a particular topic one wishes to have available for culture briefings, and to know on the fly whether this amount is, in fact, available. Suffixing any category with “(xp)”, where x is some number of pages (not necessarily an integer), will cause the pale green sphere in its row to light up with a particular color, indicating whether or not there is enough information in the category in question. If there is less information in the folder than the number specified, the sphere will light up red. If there is more, the sphere will light up blue. If there is exactly enough (within a half a page), the sphere will light up green.

The suffix is automatically removed from the name of the folder before it is displayed in the list. It is also important to note that, like everything else in the software, the amounts are not cumulative; that is, if there are three pages of information about Culture, and twelve pages of information about Religion (a subtopic of Culture), the effective amount of information about Culture is three pages, not fifteen.

As has been shown in the previous pages, the software — while quite capable of generating meaningful, legible, and dynamic briefings — could be vastly improved by redesigning and implementing a few specific features. In particular, these features include:

Include:

Japan	5124 B
▼ Culture	9465 B
Religion	5193 B
History	9667 B
Political Structure	40951 B
▼ Social Structure	20262 B
Crime and Deviance	17006 B
Group Dynamics	22497 B
Social Inequality	38570 B
Socialization	13149 B

Include:

Japan	5124 B
▼ Culture	9465 B
Religion	5193 B
History	9667 B
Political Structure	40951 B
▼ Social Structure	20262 B
Crime and Deviance	17006 B
Group Dynamics	22497 B
Social Inequality	38570 B
Socialization	13149 B

Include:

Japan	5124 B
▼ Culture	9465 B
Religion	5193 B
History	9667 B
Political Structure	40951 B
▼ Social Structure	20262 B
Crime and Deviance	17006 B
Group Dynamics	22497 B
Social Inequality	38570 B
Socialization	13149 B

Figure 2.2:
The culture sphere changes color as the desired length is changed from 2 pages, to 3, to 5.

1. A smaller chunk size,
2. A more accurate algorithm to estimate briefing length in pages,
3. The ability to select and deselect individual files within each category,
4. The inline inclusion of images, tables, and other non-textual data,
5. More powerful indentation to reveal hierarchy of categorization.

The last two of these could be easily realized by switching the report format (both input and output) from text to HTML. This has the added benefit of allowing a teacher to easily post culture briefings on the Web, and thereby avoid having to hand out copies to students. Features 2 and 3 could be implemented merely by changing the source code. Feature 1 would require either a detailed rehashing of the available sources to generate smaller chunks, possibly at the expense of context-sensitivity, or (perhaps the better choice) the addition of more, smaller sources. These could be examined for redundant content, and the original sources could be clipped to resolve the redundancy. This process would dramatically reduce the average chunk length, and no issues of context would be raised because there would be two or more wholly separate sources.

2.2.2 Character Sheets

At present, the software only generates culture briefings. There is no notion of a character sheet, topical briefing, or any other sort of document needed to run a game; the culture briefings stand alone. This does not have to be the case, however, and in the future it is entirely possible to imagine a piece of software that deals not only with culture briefings, but indeed with every aspect of the game generation process. One of the more daunting tasks in such an endeavor would be the generation of character sheets, because a way would need to be found to take

something as qualitative as a human personality and quantify it in such a way as to facilitate diversity and interplay.

The first step would be to create a general template for a character sheet. This would promote standardization and an organized flow of ideas, and would usually result in sheets of similar length. One such template, proposed by Prof. John Wilkes, breaks character sheets down into four distinct sections:

- *Social Background*

The Social Background section would focus, in part, on the character's social class. In a typical game, most of the characters are diplomats, bureaucrats, or scientists with some official function within the government, so this section would also explain what that function is and how the character got there.

This section would also be a good place to give an indication of the character's political clout, and any "connections" — formal or informal — within the character's own or other governments.

- *Experience*

The Experience section would provide a short biography of the character, especially including life experiences that have influenced the character's knowledge and way of doing things. Traumatic events, cultural experiences, revelations, personal epiphanies, and other similar episodes would all fit in quite well here.

- *Personal Beliefs and Interests*

This section would deal primarily with the personal goals of the character; that is, what they in particular wish to accomplish by attending the conference. It would also be appropriate to include reasons for the character having been invited to the conference in the first place, as well as any special areas of knowledge or interest the character possesses.

- *Integrity and Personality*

This would probably be one of the largest sections in the briefing. It would focus on the character's personality quirks, pet peeves, ethical structure and morality, and so on. One character might prefer to make all his points out in the open where their intimidation factor could work on multiple delegations at once, while another might prefer to slip notes under the table to potential allies or engage in backroom dealings during breaks. This would also be a good place to mention any prejudices or biases that stem from the character's past experiences.

Each of these sections could be presented to the user in a manner best suited to their form. Some sections might consist of simple text areas with small explanatory labels or leading questions, while others might have specialized interfaces. For example, the Integrity and Personality section might include a list of Meyers-Briggs type indicators (MBTI's) from which the user could choose, generating a skeleton which could then be augmented based on the particularities of the situation and freeing the user from having to manually generate a balanced set of characters over a long period of time.

Human creativity is still a much better means of creating characters than a computer program, but a computerized structuring of the elements that make up a character sheet could result in a useful tool that could save substantial amounts of time and effort.

2.2.3 Topical Briefings

Another opportunity for expansion is into the realm of topical briefings. Initially, the culture briefing generation software and its accompanying briefing data were to be distributed on one CD, and topical data (as well as character sheets) were to be distributed separately on other CDs constituting individual games. While this

is useful for running pre-made games, a more useful distribution method for creating new games would be to create a repository of information on general topics such as nuclear proliferation, the International Atomic Energy Agency, space agencies and programs, Space Law, the United Nations, environmental concerns, and so on. If this repository were stored online in a central database or server, the software could connect to this server and present available topical information in a hierarchical format similar to that of the culture briefing data. (This idea is expanded upon later in the section entitled *Submission of New Material*.)

A great deal of current topical information would best be suited to PDF format, as it consists largely of brochures, letters on stationery, and other documents of that nature. There is no major obstacle in the way, however, of converting these documents into JPEG or PNG graphics instead and embedding them into HTML pages.

2.2.4 Submission of New Material

While the information that has thus far been compiled for the database around which this software is based is already useful, it will not long remain so unless it is expanded upon and updated in the future. For example, in October of 2003 the first Chinese manned space mission is expected to occur; if it does, the briefing material on that organization and its capabilities will need to be changed. Great consideration was taken in deciding upon strategies for updating various parts of the database, as there are many potential pitfalls to address. Some of the most important are enumerated here.

Accurate information is absolutely essential to the success of the project. If the database gets contaminated with inaccurate, unprofessional, or irrelevant information, it may take an inordinate amount of work to clean it back out. Obviously, this contingency should be avoided at all costs.

The topical briefings, if and when they are implemented, will contain mostly publicly available information of an official nature regarding the topic at hand. This may claim to be objective information (a UN briefing), or it may not (a Greenpeace pamphlet), but it will rarely, if ever, be second-hand. It is therefore less likely that inaccurate information will enter this portion of the database, and it is likely that a routine check of the database at periodic intervals would reveal any problematic submissions. Also, as topical submissions are not broken down into smaller files, the process of extracting and discarding any inappropriate ones is much simpler than for culture briefings.

On the side of culture briefings, however, things are much more complicated. The issue of copyright is a very large one, as most of the submissions would be previously published works on the subjects by authors expecting payment for their work. It may prove necessary to charge a small fee for access to the database due to royalty concerns on the sources embedded in the briefings. Allowing users of the software to freely submit new material, rights to which they may or may not possess, is risky at best and illegal at worst. In addition, newly submitted material may be contradictory, redundant, or written in an entirely different style than the material already in the database. If this material were simply added to the existing material, culture briefings would very quickly become questionable.

The previously mentioned strategy for incorporating new material (removing the redundant parts of the material that has a larger chunk size) would suffice to prevent some of this, but already the need for auditors or other staff to organize and incorporate the new material is evident, as such a process could not feasibly be performed with a computer. As organizing and assessing the quality of new sources are also very delicate procedures, the costs associated with verifying the accuracy and originality of every new source submitted may well outweigh the benefits (at least in the short term). Therefore, the best model for culture briefings over the next few

years would seem to be an “in-house” model, whereby all new briefing material would be carefully selected, broken down into context-free chunks of the smallest possible size, and incorporated into the existing material in an intelligent fashion, all by the same person or group of people.

2.2.5 Distribution

In February of 2003, the software was presented at the National Association for Science, Technology, and Society conference in Baltimore, Maryland. One of WPI’s pre-existing games, the Chernobyl game, was also played at the conference, although all its briefing material was in the form of a video. After both presentations, surveys were distributed to the audience. Only a few people took part in the game, and only one attended the presentation, but data were collected nonetheless.

The surveys consisted of seven questions. These questions were:

1. Based on your experiences in the game at this conference, do you think live role-playing exercises would be useful in classroom instruction?
2. On which topic(s), if any, would you like to create a game?
3. Did you feel that the briefings you saw before taking part in the game at this conference were adequate to prepare you for the game?
4. Do you feel textual paper briefings on your character’s country of origin would have been helpful?
5. If so, about how long would you say these briefings should be, in pages?
6. If you were running a game such as this one for a conference or a class of students, would you find it useful to have a piece of software that could generate culture briefings of a variable length and content from a pool of countries?
7. Would you consider such a software product useful enough to pay a small fee for the use of the source materials included with it?

Of the six questions among these which pertained in some sense to the software, Table 1 shows the results. It is interesting to note that the one response of

“Extremely” for the question of usefulness came from the person who attended the presentation on the software itself.

Table 2.1: Results of the surveys distributed at the 2003 NASTS conference.

Role-playing exercises useful?	Yes	No		
	6	0		
Briefings adequate?	Yes	No		
	4	1		
Textual briefings helpful?	Yes	No		
	5	1		
How long?	2-3 p.	3-5 p.	5-10 p.	10-15 p.
	2	1	0	1
How useful would software be?	Not at all	Somewhat	Quite	Extremely
	0	4	1	1
Would you pay a fee?	Yes	No		
	4	1		

The fact that everyone surveyed saw at least some use in the software, even though most of them had only the description in the survey to go on, suggests that the software would be well-received by those who might be interested in starting a new game, even if they had never tried to do so on their own before. The notable increase in interest when the software was more fully explained also suggests that any distribution scheme should include a cover letter (Appendix A2) outlining why the software was created and what use it might be.

The answers to the last question regarding licensing also bode well, as it seems fairly likely that at least some form of licensing fees will need to be paid for the use of copyrighted materials.

3 The NASTS Conference: A Qualitative View

On February 20, 2003, I and three other WPI undergraduates traveled to Baltimore, Maryland for the 18th annual conference of the National Association for Science, Technology, and Society (NASTS). Each of us had our own reason for being there; Patrick Groulx and Andrew Gallant were scheduled to run a role-playing game based on the nuclear accident at Chernobyl in northern Ukraine, with Jesse Hurley serving as assistant game master. All four of us were also to give a presentation that morning on the mechanics and benefits of live role-playing exercises. As for me, I was on a different mission: to collect data.

It was a long and winding road that led me to the NASTS Conference that day. I had first heard of the conference, and indeed of the organization itself, from Professor Wilkes at the end of January. At that time, the plan for gauging the effects on the public of the software I had created had nothing to do with Baltimore, and a lot to do with writing letters. The plan, as it stood then, was to send letters to the social science faculty of four other colleges; two, Barnard College and Smith College, which already had some sort of role-playing curriculum in place, and two others that did not. These letters, a draft for which can be found in Appendix A2, were to describe the purpose and potential of live role-playing exercises and to briefly present the need for (and subsequent presence of) the software to deal with culture briefings. As time passed, however, it became clear that we were having trouble getting the culture briefings digitized quickly enough. By the time we had enough diversity in our pool of countries to confidently present to other colleges, there would barely be enough time left in the school year to send out the letters, let alone receive responses, send out software on CD, cultivate reactions, and write a report.

It was at that moment that Professor Wilkes told me about the NASTS conference. We were already planning on running the Chernobyl game there, he

said; many of the social science and STS faculty we were trying to get in touch with would be there, and if I gave a presentation on the software I could hand out CDs to interested parties with no turnaround time at all. Of course, that would require some preparation.

The idea being to guarantee that as many people as possible be reached, I decided on two different surveys; one for the game itself, inserted into the character briefings, and the other given to the attendees of the presentation. I would be around to collect the ones from the game, but the others presented a problem. I certainly wasn't about to demand that people stay around until they answered my questions; that would be both rude and counterproductive, especially if the audience was small. Furthermore, asking them to pay for the price of a stamp to mail it back to me (or, for that matter, trying to estimate how many people would show up well enough to justify buying stamps myself) was out of the question. In the end, I settled on something of a compromise. It would require some effort, though I hoped not too much, on the part of the attendee, but would not require them to fill the survey out on the spot or involve the postal system. I wrote a small PHP script to format and email survey results to me, and hooked it up to a form hosted on WPI's Web servers. I copied the survey I wished to give into this form (which can still be found as of this writing at <http://users.wpi.edu/~phoenix/survey.html>) and wrote a short cover letter mentioning the survey and giving its Web address. It was my hope that enough people would remember the survey and be willing to fill it out that I'd get at least a few good results, though I didn't expect the rate of return to be anywhere near as good as for the game survey. Unfortunately, the only knowledge of the software I could reasonably assume on the game survey would be the description I provided at the top of the page, which was terse to say the least, so while the game data would almost certainly be more copious, it would also be of inferior credibility.

So a little over a month later, as I stood in the corridor of a Holiday Inn armed with what felt like a half-ream of surveys, cover letters, and presentation notes, I couldn't help but wonder how much usable data would actually be generated from this venture. I thought to myself what I would have to show in the worst case; if no one came to the game and no one came to the presentation, would all be lost? Only, I concluded, if I hadn't made an effort to talk to anyone outside those contexts. I might not bring back heaps of quantitative data, but at least I could get an intuitive idea of how the idea was being received. I resolved to involve myself in as many conversations on the subject as I could — a feat that, in the end, proved far easier than I had thought it would be.

For the moment, though, I had work to do. I walked into the room in which we were to give our presentation to find Pat, Andrew, Jesse, Professor Wilkes, and a very nice graduate student named Michele, all engaged in some sort of topical discussion. I wasn't quite sure where Michele had come from, but in my anxiety for people to show up I wasn't asking questions. I waited with everyone else for five minutes, then ten... the time for the presentation to begin came and went, and still nobody came.

I had just decided that our presentation had been unceremoniously canceled when Professor Wilkes said something unexpected: "Well, I guess it's time we got started." I looked at the rows of empty chairs to find Michele looking encouragingly (and perhaps a bit sympathetically) at us from the front row. It seemed someone had shown up after all.

The four of us gave what, in my opinion, was a rather good presentation on the history of academic role-play, the advantages and possibilities of the sort of games we were running, and some of the major hurdles that had been overcome and others that were still being negotiated. That, of course, segued well into my discussion of culture briefings and the software I'd created to tame them, and if

anything the interactivity of the process made the whole experience much better for all involved; it's much less embarrassing for your advisor to correct you mid-sentence when there's only one person watching. The opportunity to blurt out questions as they came to mind seemed helpful to her, as well.

At the end, I dutifully gave her my survey cover letter, and she stayed around for a few minutes as we discussed the potential for this sort of curriculum to make its way to a college like the one she was attending, in its own right a well-respected eastern university. She seemed genuinely excited, more so as she found out more about the mechanics of the games and the possibility of creating her own to fit the topics in which she was most interested. Eventually she bade us farewell and left, and the presentation was declared a tentative success.

Later that night came what promised to be a better opportunity — the run of the Chernobyl game. It was off to a promising start; the turnout for the dinner, during which the briefing videos were to be shown, was quite good. As the video neared its end, however, it became quite clear that (in what might be considered a highly ironic twist) most of the attendees could not grasp the fact that this was merely the initial briefing for a much larger, more interactive endeavor. One by one, they thanked us for a wonderfully educational evening and left. By the end, we were down to a handful — I counted seven, out of something like sixty at the start of dinner. Still, seven was seven times as many as I'd had an opportunity to talk to thus far, and so I made my way among the character packets slipping in cover letters.

Understandably, we ended up being a few roles short, so it was not without some wry amusement that I fished the cover letter out of my own packet a few minutes later and advertised its presence to the other players. We then wasted little time getting on with the game, which seemed to absorb everyone's attention quite completely, and as the evening progressed I could see realization dawning in the eyes of many of the players — perhaps this role-playing was, after all, a worthwhile idea.

By the end of the game, we'd learned a great deal about global politics, backroom dealings, and why you should never call a Ukrainian's native land "the Ukraine" while he's in earshot.

The game ended on a rather positive note, and as conversation drifted out into the hallway, I followed it, still trying to keep one eye on the surveys being filled out sporadically behind me. The discussions in which I found myself engaged were mainly little spontaneous debriefings, and I got the distinct impression many of the people I was talking to wouldn't at all mind another try at it — even apart from being worthwhile, it had been fun. Within a few minutes, I excused myself and walked back into the room to discover five surveys lying in a neat pile on the front table. Curious about some rather familiar handwriting on the top survey, I asked Andrew what had happened and was told that Jesse and Professor Wilkes had filled out surveys of their own. A bit bemused by this development, which not only skewed the results but also indicated that only three others had filled out a survey, I made the mistake of leaving all the results together. By the time I looked at them again, I'd entirely forgotten which ones were whose, and so unfortunately the two biased results stayed in the pile.

Our mission had been accomplished, if only barely, and while I didn't have the mountains of data I'd hoped for I had at least gotten the word out to a few people. Besides, two of the players in the game that night had been the president of NASTS, Constantine Hadjilambrinos, and his wife Diane; by my figuring, that exposure would probably result in at least a few fruitful conversations later on. Much to my pleasant surprise, however, it was the next night — the one night on which nothing special was planned — that proved by far the most exciting.

Patrick, Andrew, Jesse and I arrived at dinner that night fashionably late, having just finished going over some data from the run of the Chernobyl game the night before. Jesse and I had only just taken seats next to Constantine when Diane

introduced us as having had a role in the game the night before — a game on which the others at our table had, to my delight, apparently already been briefed. Seeing this as a great opportunity to get the word out, but not wanting to be less than genuine in my conversation (the last thing I wanted was to turn into a nameless, faceless RPG cheerleader), I was intrigued by how quickly the discussion naturally flowed to the mechanics behind the game. I helped Jesse flesh out some of the details of its conception, filling in the gaps with some amusing stories I'd heard from Professor Wilkes about the results of previous runs of the various games WPI had been involved with. Eventually, I found myself talking to a pair of equally interested gentlemen from Lehigh University, one of whom was a professor of social science and both of whom expressed much regret that they had missed the game. Professor Wilkes seemed to be having just as interesting a time on the other side of the room, having collected a bit of a crowd as well. I was frankly amazed that word had spread so quickly and widely about the game; obviously, something very good had happened the night before.

I had just finished distributing a few more cover letters containing the address of the online survey (I'd had to go back to my hotel room to get them, but it had been worth the trip) when Patrick came over and tugged on my sleeve. It seemed that, according to Professor Wilkes, sufficient interest had been generated to warrant a spontaneous run right then and there. To avoid boring those who'd played in the previous night's game, we decided to run a similar but slightly different game euphemistically referred to as "the nuclear proliferation game". I wasn't sure quite how Andrew and Patrick managed to gather the necessary briefing materials to run the game on such short notice, but gather they did, and within an hour a small entourage had assembled in the lounge. It was a slightly smaller group this time, but not by much, and it looked like it was going to be another highly insightful few hours.

That initial impression turned out to be very much accurate, as once again the benefits of having several very knowledgeable and worldly players became clear. This game too ended with a well thought-out compromise (despite some last-minute attempts from the Iranians to creatively remodel several French landmarks). I didn't want to present the previous night's players with another copy of the survey — if they decided not to fill one out the night before, it wouldn't be very nice of me to put one under their nose so soon again — but I did offer them to any who wanted one. The only taker was Michele, the sole attendee of our presentation the previous morning, and it was with great interest that I noted her answers. As the only person at the entire conference to have gotten both a thorough theoretical and hands-on look at the system, I felt safe in assigning quite a bit of weight to her responses, and indeed, they were somewhat different from those of the other participants. I was somewhat gratified to see that she had rated the usefulness of software to deal with culture briefings as “extremely”, whereas the other responses had all ranged between “somewhat” and “quite”. This confirmed the last of what I had hoped to see; as people became better acquainted with the games, and role-playing in general, they became more excited about the opportunities presented by it — often without even becoming aware of its advantages in the classroom setting.

In the end, it was not the surveys I distributed or the cover letters I sent (sadly, not one person ever did take the online survey) that provided me with the most useful information; had that been the case, there would have been no need for this narrative. It was, instead, informal conversation and consciousness-raising that made the difference, and while there are few quantifiable data to show I feel quite confident that curiosity has been piqued in the social science community, and that curiosity may, at last, prove instrumental to the acceptance and eventual integration of role-playing exercises into mainstream curricula.

4 Appendix A1: Historical Background

The following is an excerpt from "Role Playing Games in Social Science Education", an Interactive Qualifying Project submitted to Worcester Polytechnic Institute in February of 2003 by Peter S. Cooper.

This project is a part of an initiative involving several years of design, revision, and assessment of the usefulness of live role-playing games in education with technically oriented students. Games of this kind put students in the roles of delegates from various countries, working at a United Nations conference to resolve a socio-technical issue. The design work and assessment was primarily done as a series of Interactive Qualifying Projects by students at Worcester Polytechnic Institute with Prof. John Wilkes from the Social Science and Policy Studies department. Copies of these reports (back to those written five years ago) are available from the WPI library, and all of them are available from Prof. Wilkes.

The first game developed was the AEGIS game. The game itself was documented as complete in May of 1995 in a report submitted by Seann M. Ives and N. Harrison Ripps. Their two project partners, Mike Caprio and Benjamin Bennett, were delayed in completing the analysis of evaluation research data on the game's pilot run for a year by a car accident. On the surface, this game has students playing delegates from the world space agencies trying to work together so that they would be ready to stop a potential strike on Earth by a large asteroid or comet should one appear. Actually, it is about organizational mindsets, vested interests, and cultural diversity as it affects collaborative enterprises that could redirect a technology and change its social impact.

During a run, students see how difficult it is for agencies with different mindsets and agendas to work together for a common goal. Their level of success is assessed based on how well they overcome all the divisive features of the game and create an organization that can draw upon some or all of planet Earth's space

resources to address the potential threat. The more they can marshal to this cause, the shorter the time period that the Earth is vulnerable and the more capable the system is when the asteroid comes (as determined by a roll of the dice). Ultimately, the question is whether they “saved” the Earth or not by finishing the project in time.

Several Interactive Qualifying Project teams have revised and analyzed the AEGIS game since that initial report. The first of these was *Analysis of the AEGIS STS Laboratory Module* by co-authors Benjamin Bennett and Michael V. Caprio, Jr., completed in April 1996. This project was the analysis of the first run of the AEGIS game with fifty WPI students. The report focused on the degree of “engagement” in the roles expressed by the diary entries and how that related to student perception of how much they got out of the experience of playing it.

Jeff Jakobsen and Joel Waterman added a physics curriculum to go with the game for high school students, hoping that it could then be used to support science education as well as social science education. Their report, completed in October 1996, was titled *A Shield for Planet Earth?* However, the game was not adopted by either of the two high school teachers who saw the curriculum. The primary problem was how much class time could be devoted to this one topic. A month for mechanics only was not feasible in their view.

Revision of the AEGIS Space Policy Game was written by Adam Mossey, Lawrence Marcoux, Steven Lord, and Bradford Foulkes in March 1999. This was a revision of the game to fit the context of an Engineering Ethics class at Carleton College. In order that it could be run in a single typical class, the number of necessary roles was cut in half to 24. Their team also standardized the character sheets, which varied in length and format at the time. Their project was complicated by Carleton College’s decision to delay offering their Engineering Ethics course for a year. A last minute effort to rearrange the game for a run in the Worcester Public High Schools in

which each of the six schools would send a delegation to a run at WPI was a failure. Approval was contingent on making more revisions than the remaining time allowed. However, the revised unit was used at WPI, in Wilkes's Intro to Sociology class.

A spin-off revision, called *The Chinese Conundrum*, was completed a couple months later by Shaughn H. Bryant and Sean M. Cooper in May 1999. This revision stressed international competition in space, rather than cooperation. The question at issue was what the other world space agencies would do if China was the next nation to send men to the moon.

Dissemination and Revision of the AEGIS Space Policy Game was completed by Joshua Carvalho, Jeffery Gladu, and George Spino in January 2002. This ended up being primarily a revision of the cultural aspects of the game, especially the culture briefings, taking 200 page books on each nation and excerpting them to 50 pages of reading for each player. Roles changed nationality (if possible) when briefing materials were not available. No books on Italy or Britain were located, but those nations were kept in the ESA [European Space Agency] delegation anyway. German, French, and Swiss materials were located. Hence, the Swede became Swiss and the Spaniard became a second German married to a Spaniard. A new analysis was done on the engagement issue as it affects performance (grades) on the assessments dealing with materials taught via the game. The evaluation research effectively made the case that live role-playing games help certain kinds of learners that are otherwise hard to reach perform well on the final exam.

The most recent work on the AEGIS game was a report titled *AEGIS Dissemination* by Mirek Cymer, completed in April 2002. It documents a run of the game at WPI for a mix of college and high school students with the assistance of the WPI chapter of Student Pugwash and the WPI Science Fiction Society. The Science Fiction Society had developed new Brazilian delegation roles to fit those of the science fiction book *Firestar* by Michael Flynn. In other respects it was a typical run

of the game, except that Brazil was the world technology leader in Aerospace, rather than the USA or Russia. The high school students all headed a delegation and those whose support staff was subordinate enjoyed the game. Those with subordinates that had character sheets calling on them to be difficult or independent had an unhappy experience. This problem was thought to be situational. With all high school students, it should be okay to have divisive roles.

While the AEGIS game is the most developed educational game, concurrent work has been done on other live role-playing games as well. Dana Schlosser and Kenneth Volock developed a game based on a nuclear power plant siting dispute for 6th through 9th graders. Their report, titled *Nuclear Power Live Role Playing Game*, was completed in April 1996. In 2000, Pat Kaplo ran the game and did a full scale MBTI-based analysis for the Lancaster Middle School (part of the Nashoba Regional School District), with three classes of 8th graders. This one month unit was a smash hit with the classes involved. However, Pat was literally teaching the class in such a way as to prepare them for the game as a grand finale. Other work was done on Bronze Age, A Medieval Arms Race, and “Monkey” trial spin-offs at the high school level for Doherty High School in Worcester. Other games on the Ozone issue, the FDA, and Quabbin Reservoir were also produced and field tested as part of one month curriculum units for 5th and 6th graders.

When members of Student Pugwash went on a trip to visit the United Nations, the AEGIS game was mentioned to key peace activists. These people didn't seem to understand that the asteroid issue raised the same questions as did the ongoing disarmament talks. They took the position that if the game wasn't about a serious or “real” policy issue under discussion then it was a waste of time.

Frustrated by this rebuff, Prof. Wilkes advertised a new game development project at WPI. Nuclear power and proliferation was (as always) an issue of concern to the UN. The new game, titled *Global Nuclear Diplomacy*, was written in May 2001

by physics majors and Science Fiction Society stalwarts Brian Dewhirst, Christopher Dunn, and Glenn Townsend.

This game puts students into the role of delegates from various countries, assembled to determine if the world is complying with the Nuclear Non-Proliferation Treaty and moving toward eventual disarmament of nuclear weapons. Their field test was cursory, focusing on logistics and readability and involved only experienced game players from the Science Fiction Society.

It needed to be field tested with an actual class and its intended audience, high school honors students. The authors' concept was that after the AP Physics or History test the teacher would be looking for one last class project to end the year. This game was their offering to that teacher. Wilkes, of course, wanted the peace and disarmament activists to adopt it more broadly. He felt its minimalist briefing materials made it suitable for consciousness-raising events run by activists for various educational groups, churches, and other public groups such as the League of Women Voters. It had to be punchy, portable, easy to run, and self contained to be used in this way. It fell to me to field test the nuclear game in a "conference" and "classroom" environment to see how well grounded and engaging it was—compared to AEGIS, with its extensive briefing papers.

5 Appendix A2: Cover Letter

Dear [Professor/Mr./Ms.] _____:

In late 1993, WPI began development of a series of academic role-playing games designed to interactively teach sociological and cultural topics to college and high school students. A study of learning styles quickly showed that many of the harder to reach students were benefiting enormously from the games, which focused largely on cultural differences.

One of the most integral components of these games were the culture briefings, designed to provide players with the often extensive background information they needed. As the length and content of these briefings varied greatly according to context – a game designed to run in a conference setting, for example, would have a much different set of briefings than a game run in a college sociology class – a system was developed to allow existing briefings to be tailored to each context rather than requiring new versions to be created by hand. In addition to making all the resources of any one game available to all the others, this organization and collection of briefing materials made possible a long-hoped-for objective: the ability to share these games with others, and provide them the opportunity to easily create their own.

It is now possible for any educator with an interest in a given socio-technological topic to create a custom-fit role playing game armed with the briefing database, character profiles, and the resources to create a game-specific handbook and itinerary. The game can be run either in a class or in the form of a summit, or a combination of both, and WPI has had success in adapting the game materials to other topics with a minimum of new briefing materials.

I have sent you this letter because I believe you may find the prospects of this as exciting as I have. At present, we have extensive, customizable culture briefings for Japan, China, Russia, France, India, Germany, and Brazil. We have now created a set of CD-ROMs containing the briefings and game materials necessary for running a game using these briefings called AEGIS, a scenario of asteroid impact involving delegates from Russia, China, Japan, the E.U., the United States, and several member nations of the United Nations Office for Outer Space Affairs (UNOOSA). We are also in the process of field-testing several other games involving nuclear proliferation issues which, when combined with contributions to the database from educators designing their own games, should substantially add to the list of available briefings in the future (please find the list attached to this letter).

If you would be interested in receiving these CDs, please indicate your interest to me and I would be happy to send them to you.

Sincerely,

Brian Ellis

Japan	Complete
China	Complete
Russia	Complete
France	Complete
Germany	Complete
India	Complete
Brazil	Complete
Mexico	In Development
Ukraine	In Development
United States	In Development
Italy	Sources Exist*
Israel	Sources Exist*
Britain	Sources Exist*

*The sources for these briefings are the Comparative Societies Series, published by McGraw-Hill.

6 Appendix A3: Bibliography

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Window1 (Window)

Properties

c\Controller as CategoryListController
SYSTEM_FONT_SIZE as Integer
SMALL_SYSTEM_FONT_SIZE as Integer
SMALL_SYSTEM_FONT as String

Window1.DetermineSystemFonts:

Sub DetermineSystemFonts()

dim sysversion **as integer**

SYSTEM_FONT_SIZE = 12

SMALL_SYSTEM_FONT_SIZE = 10

SMALL_SYSTEM_FONT = "System"

#if targetMacOS **then**

if system.gestalt("sysv", sysversion) **and** sysversion >= &h0A00 **then**

MMiscRemovePrefsMenuItemAndSeparator

SYSTEM_FONT_SIZE = 13

SMALL_SYSTEM_FONT_SIZE = 11

else

SMALL_SYSTEM_FONT = "Geneva"

end if

#endif

#if targetPPC **then**

SMALL_SYSTEM_FONT = "Geneva"

#endif

End Sub

Window1.populateListBox:

Sub populateListBox()

```
dim i as integer
```

```
CategoryList.deleteAllRows
```

```
clController = new CategoryListController()  
clController.connectToListBox(CategoryList)
```

```
clController.loadCategories(PopupMenu1.text)
```

```
while i < CategoryList.listCount  
    CategoryList.expanded(i) = true  
    i = i + 1  
wend
```

```
Estimator.estimatePageLength()
```

```
End Sub
```

```
Window1.Close:
```

```
Sub Close()
```

```
    quit
```

```
End Sub
```

```
Window1.EnableMenuItems:
```

```
Sub EnableMenuItems()
```

```
    HelpHelp.enabled = true
```

```
End Sub
```

```
Window1.Open:
```

```
Sub Open()
```

```
    determineSystemFonts()
```

```
End Sub
```

```
Window1.AppleAbout:
```

```
Function Action As Boolean
```

```
    AboutBox.showModalWithin self
```

```
End Function
```

Window1.HelpHelp:

Function Action As Boolean

```
msgBox "Sorry, but help is currently not available for " + SHORT_APP_NAME +  
      ". It will be added in a subsequent release."
```

End Function

Window1.StaticText1.Open:

Sub Open()

```
if SYSTEM_FONT_SIZE = 0 then  
    determineSystemFonts()  
end if
```

```
me.textSize = SYSTEM_FONT_SIZE
```

End Sub

Window1.PopupMenu1.Change:

Sub Change()

```
populateListBox
```

End Sub

Window1.PopupMenu1.Open:

Sub Open()

```
dim i as integer  
dim f as FolderItem
```

```
if SYSTEM_FONT_SIZE = 0 then  
    determineSystemFonts()  
end if
```

```
me.textSize = SYSTEM_FONT_SIZE
```

```
f = getFolderItem(DATA_DIR_NAME)
```

```
for i = 1 to f.count  
    if f.item(i).directory and f.item(i).visible then  
        me.addRow f.item(i).name
```



```
    end if
  next
  me.listIndex = 0
```

End Sub

Window1.CategoryList.CellAction:

Sub CellAction(row As Integer, column As Integer)

```
  c1Controller.setHierarchyChecked( me.cell(row, 2), me.cellCheck(row, 0))
  Estimator.estimatePageLength()
```

End Sub

Window1.CategoryList.ExpandRow:

Sub ExpandRow(row As Integer)

```
  c1Controller.addContentsToListBox me.cell(row, 2)
```

End Sub

Window1.CategoryList.Open:

Sub Open()

```
  me.textSize = 12
```

```
  me.columnType(0) = 2 // checkbox
  me.columnAlignment(1) = 3
```

End Sub

Window1.StaticText2.Open:

Sub Open()

```
  if SYSTEM_FONT_SIZE = 0 then
    determineSystemFonts()
  end if
```

```
  me.textSize = SYSTEM_FONT_SIZE
```

End Sub

Window1.PushButton1.Action:

Sub Action()

dim i **as** integer

dim curCat **as** Category

dim outputFile **as** FolderItem

dim dlg **as** SaveAsDialog

dlg = **new** SaveAsDialog()

dlg.initialDirectory = getFolderItem("")

dlg.promptText = "Choose a location to save your briefing:"

dlg.title = "Save Briefing As"

dlg.suggestedFileName = popupMenu1.text + " Briefing (" + format(Estimator.
getPageLength(), "#,###.##") + " pages)"

outputFile = dlg.showModal

if outputFile = **nil** **then**

return

end if

c\Controller.generateReport(outputFile)

End Sub

Window1.PushButton1.Open:

Sub Open()

if SYSTEM_FONT_SIZE = 0 **then**

determineSystemFonts()

end if

me.textSize = SYSTEM_FONT_SIZE

End Sub

Window1.PushButton2.Open:

```
Sub Open()  
    if SYSTEM_FONT_SIZE = 0 then  
        determineSystemFonts()  
    end if  
  
    me.textSize = SYSTEM_FONT_SIZE  
End Sub
```

Window1.PushButton2.Action:

```
Sub Action()  
    if self.left + self.width + 6 + Prefs.width < screen(0).width then  
        Prefs.left = self.left + self.width + 6  
    else  
        Prefs.left = screen(0).width - Prefs.width - 6  
    end if  
    Prefs.top = self.top  
    Prefs.show  
End Sub
```

Window1.Estimator.Open:

```
Sub Open()  
    if SYSTEM_FONT_SIZE = 0 then  
        determineSystemFonts()  
    end if  
  
    me.textSize = SMALL_SYSTEM_FONT_SIZE  
    me.textFont = SMALL_SYSTEM_FONT  
  
End Sub
```

Window1.PushButton3.Action:

```
Sub Action()  
    aboutBox.showWithin self  
End Sub
```

Menu (Item of Unknown Type)

CategoryListController (Class)

Properties

rootCategory as Category
view as ListBox

CategoryListController.loadCategories:

Sub loadCategories(country as String)

```
// Static (for early debugging):  
'dim newcat, newsubcat, newsubsubcat, newsubsubsubcat as Category  
'  
'newcat = new Category("General Information")  
'newsubcat = new Category("History")  
'newcat.addSubcategory newsubcat  
'  
'newsubcat = new Category("Geographic Information")  
'newcat.addSubcategory newsubcat  
'  
'newsubcat = new Category("Culture")  
'    newsubsubcat = new Category("Values")  
'    newsubcat.addSubcategory newsubsubcat  
'    newsubsubcat = new Category("Religion")  
'    newsubcat.addSubcategory newsubsubcat  
'newcat.addSubcategory newsubcat  
'  
'newsubcat = new Category("Social Structure")  
'    newsubsubcat = new Category("Group Dynamics")  
'    newsubcat.addSubcategory newsubsubcat  
'    newsubsubcat = new Category("Socialization")  
'    newsubcat.addSubcategory newsubsubcat  
'    newsubsubcat = new Category("Crime and Deviance")  
'    newsubcat.addSubcategory newsubsubcat  
'    newsubsubcat = new Category("Social Inequality")  
'        newsubsubsubcat = new Category("Racial Inequality")
```

```
'      newsubsubcat.addSubcategory newsubsubsubcat
'      newsubsubsubcat = new Category("Gender Inequality")
'      newsubsubcat.addSubcategory newsubsubsubcat
'      newsubcat.addSubcategory newsubsubcat
'newcat.addSubcategory newsubcat
',
'newsubcat = new Category("Political Structure")
'  newsubsubcat = new Category("Government")
'  newsubcat.addSubcategory newsubsubcat
'  newsubsubcat = new Category("Military")
'  newsubcat.addSubcategory newsubsubcat
'newcat.addSubcategory newsubcat
',
'newsubcat = new Category("Science and Technology")
'  newsubsubcat = new Category("Space Agency")
'  newsubsubcat.setSingleGameRelated true
'  newsubcat.addSubcategory newsubsubcat
'  newsubsubcat = new Category("Nuclear Armament")
'  newsubsubcat.setSingleGameRelated true
'  newsubcat.addSubcategory newsubsubcat
'newcat.addSubcategory newsubcat
',
'me.rootCategory = newcat

// Dynamic (e.g., useful):

dim dp as DirectoryProcessor

if not getFolderItem(DATA_DIR_NAME).exists then
  msgBox "The " + DATA_DIR_NAME + " folder could not be found. If you have m
    oved or renamed it, please move or rename it back to continue. " +
    SHORT_APP_NAME + " must now quit."
  quit
end if
if not getFolderItem(DATA_DIR_NAME).child(country).exists then
```

end if

dp = new DirectoryProcessor(getFolderItem(DATA_DIR_NAME).child(country), me)

addRootCategory()

End Sub

CategoryListController.addRootCategory:

Protected Sub addRootCategory()

view.addFolder(rootCategory.getName())

setUpRow rootCategory, ""

Exception nObjExc as NilObjectException

if view = nil then

msgBox "You must connect this controller to a ListBox before trying to use it."

elseif rootCategory = nil then // we haven't loaded the categories yet.

msgBox "A serious error has occurred. The list cannot be displayed before categories are loaded from disk. Please contact the developer."

quit

else

raise nObjExc

end if

End Sub

CategoryListController.connectToListBox:

Sub connectToListBox(l as ListBox)

view = l

End Sub

CategoryListController.getRootCategory:

Function getRootCategory() As Category

return rootCategory

End Function

CategoryListController.addContentsToListBox:

```
Sub addContentsToListBox(directions as String)
    dim i as integer
    dim curCat as Category

    curCat = getCategoryFromDirections(directions)

    for i = 0 to curCat.countSubcategories()
        if curCat.subcategory(i).hasSubcategories() then
            view.addFolder curCat.subcategory(i).getName()
        else
            view.addRow curCat.subcategory(i).getName()
        end if
        setUpRow curCat.subcategory(i), directions + str(i) + ", "
    next
End Sub
```

CategoryListController.setHierarchyChecked:

```
Protected Sub setHierarchyChecked(value as Boolean, parent as Category)
    dim i as integer
    parent.setChecked(value)
    if parent.hasSubcategories then
        for i = 0 to parent.countSubcategories()
            if parent.subcategory(i).hasSubcategories() then
                setHierarchyChecked(value, parent.subcategory(i))
            end if
            parent.subcategory(i).setChecked(value)
        next
    end if
End Sub
```

CategoryListController.setHierarchyChecked:

```
Sub setHierarchyChecked(directions as String, value as Boolean)

    setHierarchyChecked(value, getCategoryFromDirections(directions))
    refreshListBox()
```

End Sub

CategoryListController.getCategoryFromDirections:

```
Protected Function getCategoryFromDirections(directions as String) As Category
    dim curCat as Category
    dim i as integer
    curCat = getRootCategory()

    if directions <> "" then
        for i = 1 to countFields(directions, ",")-1 // last comma has nothing after
            it
            curCat = curCat.subcategory(val(nthField(directions, ",", i)))
        next
    end if

    return curCat
End Function
```

CategoryListController.refreshListBox:

```
Sub refreshListBox()
    dim expanded(0) as Boolean
    dim i as integer

    view.cellCheck(0,0) = rootCategory.getChecked

    redim expanded(view.listCount- 1)
    for i = 0 to view.listCount- 1
        expanded(i) = view.expanded(i)
    next

    i = 0

    while i < view.listCount // dynamically update listCount
        view.expanded(i) = false
        i = i + 1
    wend
```



```
i = 0
```

```
while i < view.listCount  
    view.expanded(i) = expanded(i)  
    i = i + 1  
wend
```

```
End Sub
```

CategoryListController.drawRowBackground:

```
Sub drawRowBackground(row as integer, directions as String, g as graphics)  
    // not implemented
```

```
End Sub
```

CategoryListController.setRootCategory:

```
Sub setRootCategory(c as Category)  
    me.rootCategory = c
```

```
End Sub
```

CategoryListController.setAllChecked:

```
Sub setAllChecked(value as Boolean)  
    setAllChecked(value, rootCategory)
```

```
End Sub
```

CategoryListController.setAllChecked:

```
Protected Sub setAllChecked(value as Boolean, parent as Category)
```

```
    dim i as integer  
    parent.setChecked(value)  
    if parent.hasSubcategories then  
        for i = 0 to parent.countSubcategories  
            setAllChecked(value, parent.subcategory(i))  
        next  
    end if
```

```
    refreshListBox
```

```
End Sub
```

CategoryListController.setUpRow:

Protected Sub setUpRow(cat as Category, cellLabel as string)

const AVERAGE_PAGE_LENGTH = 3267.0

view.cell(view.lastIndex, 1) = str(cat.getSize()) + " B "

if cat.getDesiredLength() > 0 **then**

if cat.getDesiredLength() > (cat.getSize() / AVERAGE_PAGE_LENGTH) + cat.getDesiredLength/5 **or** cat.getSize() = 0 **then**

view.rowPicture(view.lastIndex) = redden

elseif cat.getDesiredLength() < (cat.getSize() / AVERAGE_PAGE_LENGTH) - cat.getDesiredLength/5 **then**

view.rowPicture(view.lastIndex) = bluedot

else

view.rowPicture(view.lastIndex) = greendot

end if

else

view.rowPicture(view.lastIndex) = greynote

end if

view.cellCheck(view.lastIndex, 0) = cat.getChecked()

view.cell(view.lastIndex, 2) = cellLabel

End Sub

CategoryListController.generateReport:

Sub generateReport(destination as FolderItem)

dim out as TextOutputStream

out = destination.createTextFile

writeFilesIn(rootCategory, out, 0)

out.close

End Sub

CategoryListController.writeFilesIn:

Protected Sub writeFilesIn(cat as Category, out as TextOutputStream, numSpaces as integer)

'dim i as integer

'dim in as TextInputStream

'dim f as FolderItem

```
'dim strbuf as String
'dim catNameWritten as boolean
,
'if cat.getChecked() then
'if cat.getFolderItem().count > 0 then
'for i = 1 to cat.getFolderItem().count
'f = cat.getFolderItem().item(i)
'if not f.directory and f.visible and left(f.name, 1) <> "." then // probably
    y text, we hope!
'if not catNameWritten then
'out.writeLine uppercase(cat.getName)
'catNameWritten = true
'end if
'in = cat.getFolderItem().item(i).openAsTextFile()
'strbuf = cat.getFolderItem().item(i).name
'if right(strbuf, 4) = ".txt" then
'strbuf = left(strbuf, len(strbuf) - 4)
'end if
'out.writeLine uppercase(strbuf)
'out.writeLine in.readAll()
'out.writeLine ""
'in.close()
'end if
'next
'catNameWritten = false
'end if
'end if
,
'if cat.hasSubcategories() then
'for i = 0 to cat.countSubcategories()
'writeFilesIn(cat.subcategory(i), out)
'next
'end if

dim i, j as integer
```

```
dim in as TextInputStream
dim f as FolderItem
dim strbuf as String
dim catNameWritten as boolean

if cat.getChecked() then
  if cat.getFolderItem().count > 0 then
    for i = 1 to cat.getFolderItem().count
      f = cat.getFolderItem().item(i)
      if not f.directory and f.visible and left(f.name, 1) <> "." then // probably text, we hope!
        if not catNameWritten then
          if app.indentSections then
            for j = 1 to numSpaces
              out.write " "
            next
          end if
          if app.capitalizeSectionNames then
            out.writeLine uppercase(cat.getName)
          else
            out.writeLine cat.getName
          end if
          catNameWritten = true
        end if
        in = cat.getFolderItem().item(i).openAsTextFile()
        if app.printFileNames then
          strbuf = cat.getFolderItem().item(i).name
          if right(strbuf, 4) = ".txt" then
            strbuf = left(strbuf, len(strbuf) - 4)
          end if
          if app.indentSections then
            for j = 1 to numSpaces+1
              out.write " "
```

```
    next
  end if
  if strbuf <> cat.getName() then

    if app.capitalizeSectionNames then
      out.WriteLine uppercase(strbuf)
    else
      out.WriteLine strbuf
    end if
  end if
end if // printFileNames
if app.indentSections then
  while not in.EOF
    for j = 1 to numSpaces+1
      out.write " "
    next
    out.WriteLine in.readLine()
  wend
else
  out.WriteLine in.readAll()
end if
out.WriteLine ""
in.close()
end if
next
catNameWritten = false
end if
end if

if cat.hasSubcategories() then
  for i = 0 to cat.countSubcategories()
    writeFilesIn(cat.subcategory(i), out, numSpaces+ 1)
  next
end if
End Sub
```

Category (Class)

Properties

name as String
checked as Boolean
subcategories(0) as Category
foldersize as double
desiredLength as double
associatedFile as FolderItem

Category.getName:

Function getName() As String

 return name

End Function

Category.setName:

Sub setName(name as String)

 me.name = name

End Sub

Category.getChecked:

Function getChecked() As Boolean

 return checked

End Function

Category.setChecked:

Sub setChecked(value as Boolean)

 checked = value

End Sub

Category.addSubcategory:

Sub addSubcategory(c as Category)

 if subcategories(0) = nil then

 subcategories(0) = c

 else

 subcategories.append c

 end if

End Sub

Category.countSubcategories:

```
Function countSubcategories() As Integer
    return ubound(subcategories)
End Function
```

Category.Category:

```
Sub Category(f as FolderItem)
    me.associatedFile = f
    me.name = f.name
    me.checked = true // default
End Sub
```

Category.subcategory:

```
Function subcategory(i as integer) As Category
    return subcategories(i)
End Function
```

Category.hasSubcategories:

```
Function hasSubcategories() As Boolean
    return (subcategories(0) <> nil)
End Function
```

Category.getSize:

```
Function getSize() As double
    return foldersize
End Function
```

Category.setSize:

```
Sub setSize(size as double)
    me.foldersize = size
End Sub
```

Category.getDesiredLength:

```
Function getDesiredLength() As double
    return desiredLength
End Function
```

Category.setDesiredLength:

```
Sub setDesiredLength(len as double)
    desiredLength = len
End Sub
```

Category.setFolderItem:

```
Sub setFolderItem(f as FolderItem)
    associatedFile = f
End Sub
```

Category.getFolderItem:

```
Function getFolderItem() As FolderItem
    return associatedFile
End Function
```

bluedot (Item of Unknown Type)

greendot (Item of Unknown Type)

DirectoryProcessor (Class)

Properties

```
rootfolder as FolderItem
rootCategory as Category
```

DirectoryProcessor.DirectoryProcessor:

```
Sub DirectoryProcessor(rootfolder as FolderItem, listcontroller as CategoryListController)
    dim i as integer
    me.rootfolder = rootfolder

    processDirectory(rootfolder, nil)

    listController.setRootCategory rootCategory
End Sub
```


DirectoryProcessor.processDirectory:

```
Sub processDirectory(f as FolderItem, parent as Category)
  dim i as integer
  dim c as Category
  dim desiredLength as String
  c = new Category(f)

  if right(f.name, 2) = "p" then
    desiredLength = nthField(f.name, "(", countFields(f.name, "("))
    desiredLength = nthField(desiredLength, ")", 1)
    c.setName trim(nthField(f.name, "(", 1))
  end if

  c.setDesiredLength cDb1(desiredLength)

  for i = 1 to f.count
    if f.item(i).directory then
      processDirectory(f.item(i), c)
    else
      if f.item(i).visible then
        c.setSize( c.getSize()+f.item(i).length )
      end if
    end if
  next

  if parent <> nil then
    parent.addSubcategory(c)
  else
    rootCategory = c
  end if
End Sub
```

PageLengthEstimator (Class)

Properties

totalLength as Double

PageLengthEstimator.estimatePageLength:

Sub estimatePageLength()

dim formattedLength as String

const AVERAGE_PAGE_LENGTH = 3267.0

 totalLength = 0

 estimatePageLength(Window1.c1Controller.getRootCategory)

 formattedLength = format(totalLength/AVERAGE_PAGE_LENGTH, "\a\b\o\u\t\ #,##
 #.##\ \p\a\g\e\s; \s\e\r\i\o\u\s\l\y\ \m\e\s\s\e\d\ \u\p\ \(\a\n\ \e
 \r\r\o\r\ \o\c\c\u\r\r\e\d\); \e\m\p\t\y")

 me.text = "Report will be " + formattedLength + "."

End Sub

PageLengthEstimator.estimatePageLength:

Protected Sub estimatePageLength(c as Category) \

dim i as integer

if c.getChecked **then**

 totalLength = totalLength + c.getSize()

end if

if c.hasSubcategories() **then**

for i = 0 **to** c.countSubcategories()

 estimatePageLength(c.subcategory(i))

next

end if

End Sub

PageLengthEstimator.getPageLength:

Function getPageLength() **As** double

```
const AVERAGE_PAGE_LENGTH = 3267.0
```

```
totalLength = 0
```

```
estimatePageLength(Window1.clController.getRootCategory)
```

```
return totalLength/AVERAGE_PAGE_LENGTH
```

End Function

Constants (Module)

Constants

```
String DATA_DIR_NAME = "Briefing Data"
```

```
String SHORT_APP_NAME = "Briefing Generator"
```

```
String QUIT_MENU_TEXT = "Quit"
```

```
String QUIT_MENU_COMMAND_KEY = "Q"
```

```
String HELP_MENU_COMMAND_KEY = "?"
```

```
String HELP_MENU_TEXT = "Briefing Generator Help"
```

```
String ABOUT_MENU_TEXT = "About Briefing Generator..."
```

AboutBox (Window)

AboutBox.Open:

```
Sub Open()
```

```
me.title = "About " + SHORT_APP_NAME
```

```
End Sub
```

AboutBox.StaticText2.Open:

```
Sub Open()
```

```
me.text = "Version " + app.LongVersion + " by Brian Ellis"
```

```
End Sub
```

AboutBox.PushButton1.Action:

```
Sub Action()  
    self.close  
End Sub
```

AboutBox.Canvas1.Paint:

```
Sub Paint(g As Graphics)  
    dim p as picture  
    p = newPicture(me.width, me.height, screen(0).depth)  
    p.mask.graphics.drawPicture appmask, 0, 0  
    p.graphics.drawPicture appicon, 0, 0  
    g.drawPicture p, 0, 0  
End Sub
```

reddot (Item of Unknown Type)

greydot (Item of Unknown Type)

appmask (Item of Unknown Type)

appicon (Item of Unknown Type)

Prefs (Window)

Prefs.CheckBox1.Open:

```
Sub Open()  
    me.value = app.indentSections  
End Sub
```

Prefs.CheckBox1.Action:

```
Sub Action()  
    app.indentSections = me.value  
End Sub
```

Prefs.CheckBox2.Open:

```
Sub Open()  
    me.value = app.capitalizeSectionNames  
End Sub
```

Prefs.CheckBox2.Action:

```
Sub Action()  
    app.capitalizeSectionNames = me.value  
End Sub
```

Prefs.PushButton1.Open:

```
Sub Open()  
    #if targetWin32 then  
        me.left = self.width/2 - me.width/2  
    #endif  
End Sub
```

Prefs.PushButton1.Action:

```
Sub Action()  
    self.close  
End Sub
```

Prefs.CheckBox3.Action:

```
Sub Action()  
    app.printFileNames = me.value  
End Sub
```

App (Class)

Properties

```
capitalizeSectionNames as Boolean  
indentSections as Boolean  
printFileNames as Boolean
```

App.UnhandledException:

```
Function UnhandledException(error As RuntimeException) As Boolean  
    #if TargetWin32 then
```

```
msgBox "Sorry, an internal error has occurred. This might be a programming error, but is more likely a result of this program's shaky support for Windows." + chr(13) + SHORT_APP_NAME + " must quit now, but if you relaunch it, the problem will probably go away. Sorry!"
```

```
quit
```

```
return true
```

```
#endif
```

```
End Function
```

```
App.Open:
```

```
Sub Open()
```

```
    capitalizeSectionNames = true
```

```
    indentSections = true
```

```
End Sub
```