Music for the Theatre:
Creating a Large-Scale Course Web Site

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Introduction
William R. Bowen

At the University of Toronto at Scarborough, I teach a course called "Music for the Theatre" which explores theoretical and practical issues pertaining to the use of music in ballets, films, musicals, and operas. The course does not have prerequisites and is primarily intended to serve the community as a whole. In this context, the course is one of the key elements in my Division's general offerings, but it is also available for credit in our Music programmes. It has proven to be very attractive to students and demand has been consistently high: 1994, 198 students; 1996, 334 (representing about 10% of the full-time student body); 1997-98, 200 (winter session) and 80 (summer session).

Although I supply students with a book of readings and translations, and give them access to audio and video recordings for about three hours of excerpts, it has been clear from the very beginning that these course materials are not sufficient. The central challenge is that students need to study critical and explanatory materials at their own pace and, most importantly, at the same time that they examine audio-visual examples. The integration of the examples with their critical commentary is essential because students for the most part have not developed the aural skills required for analyzing music while it is performed. Traditional aids do not meet these requirements. However, CD-ROM and Web technologies give students a kind of control over the learning process that is otherwise not available. Electronic delivery of the course materials have the additional benefit of relieving some strain on the Library's resources, particularly with regard to managing cassette tapes and providing conventional listening facilities for large numbers of students.

In 1996, I started to create a Web site for this course which now includes a wide range of readings, translations of song texts, a rudimentary glossary, plus audio and video files with my commentary. The site is not finished insofar as we are in the process of incorporating the QuickTime (version 3.0) film clips. But in general the framework has been designed, most of the texts, sound (RealAudio 3) and graphic materials have been digitized, and almost all of the critical commentary is currently available for student use. Access is limited through password controls. What remains to be done includes editing critical content, designing more sophisticated access to the audio-visual examples, and creating interactive exercises for review. I also plan to make better use of a bulletin board and online discussion software for announcements of events relevant to written assignments, answers to FAQs, and for discussion with and among the students. To date I have primarily used the bulletin board for posting grades and have handled queries through regular e-mail (which takes about 10

minutes a day of my time during peak periods).

The progress which has been made in developing this site would not have been possible without a great deal of effort. The University of Toronto's Courseware Development Fund (more than $11,000 in grants for 1996-97 and 1997-98) and Work Study Programme (1997-98) have allowed me to hire research assistants and experts in online instruction for this site (and to start another on early music). These programmes have paid for about 850 hours of work which have been an absolutely necessary supplement to my own efforts and the time contributed by various consultants and support staff. Credit for the original technical design of the project must be given to Dr. Andrew Zinck, with the help of William Barek, Director of the Centre for Instructional Technology Development in my College; some changes have been introduced in the past year by Dylan Reid. In sum, creating online courseware is a very time-consuming endeavour which requires a substantial support network. Nevertheless, the work is made worthwhile by the overwhelmingly favourable response of the students.

Technical Design of the Site
Andrew M. Zinck

For those readers who are already creating and integrating Web-based instructional materials into their courses, many of the aspects discussed below are probably well known. For others who may be wading for the first time into the murky waters of designing large Web sites, this short description of the Music for Theatre Web site may serve to point out some of the basic issues to keep in mind.

When creating a useful Web site for a university course, a great deal of time and energy must be devoted to the initial design stage. The temptation to jump as quickly as possible to creating HTML pages is strong – and dangerous. To create a large Web site with little or no thought to either the overall design or the details of how specific types of information are to be presented is asking for disaster at some point. The time spent early on tackling design issues is rewarded later, when one has to work with a complex site containing hundreds of files.

Over two months were spent tackling design issues for the Music for Theatre site. Because basic decisions on file organization and the presentation of information on the Web site would affect much of how the site would be constructed, a variety of approaches were sketched out and examined before one was selected. Numerous skeleton models of the Web site were then created using dummy information and simplified graphics in order to see first-hand what would work best and what potential problems could be spotted before the inevitable hours of data entry and formatting of the Web pages were to begin.

One fundamental component of the design process involved determining the minimum technological requirements needed (that is, figuring out what hardware and software we could expect the students to use in order to access the site). For this project, which was aimed specifically at students at the University of Toronto at Scarborough, we based our decisions not on what might be used by students who might dial in from home using a modem, but on equipment available locally on campus: a minimum of a PC with a sound card, running Netscape 3.0 as the Web browser, and hooked up to a high-speed

network (this would enable the delivery of multimedia-intensive content). For the audio component of the Web site, we decided to encode all the sound clips in RealAudio format. This has three advantages over some other common audio formats: 1) it provides "streaming" audio, which permits one to listen to a sound file as it is transmitted without having to wait for the entire file to be downloaded; 2) it can create relatively small files using compression techniques, and 3) the sound files can be encoded so that they cannot be saved to disk (this has ramifications for dealing with copyright issues).

The Web site is comprised of three separate modules: an "office" (administrative functions), a "classroom" (course content), and a rudimentary help system (see figure 1). The "office" includes such elements as the course outline/schedule, grades (updated after each test and assignment), and information on contacting the professor. The "classroom" module contains the main study units, a series of readings (both essays and libretto excerpts with translations), a list of the course repertoire (with direct links to audio files), and a glossary of terms used in the course. The aim of the help system is to provide answers to FAQs about the various lessons as well as how to use the Web site most effectively. The modular approach to the Web site has allowed us to develop each section and sub-section as a self-contained entity that can be designed and tested before inclusion on the Web server.

One important aspect of designing a course Web site is understanding that one cannot predict how students are going to use the site. In the lecture hall, material is presented by the professor in a certain manner, but students may want to review the material on the Web site in a completely different way. For example, the professor may introduce a musical example as part of a larger discussion of form or compositional technique, but on the Web site, a student who is reviewing for a test may want direct access to just the musical example or one particular concept (without having to go through the entire discussion again).

The ability of Web-based materials to be accessed not only sequentially but randomly means that, in order to anticipate and accommodate different uses of the information on the Web site, one must provide multiple pathways to the various files. To achieve some of that accessibility, the Music for Theatre Web site uses a dual-frame approach, in which the browser screen is always divided into two separate frames (windows), each devoted to presenting specific types of information. One frame always shows a vertical menu bar that runs down the left-hand side of the screen, providing direct access to all the main modules of the site. By clicking on a button in the menu bar, a student can easily jump, for example, from a study unit to one of the required readings or to the help system. The other (larger) frame is reserved for the actual content that is presented when an item is selected from the menu bar.

In addition to the general road map provided by the menu bar, additional access points to specific information are provided through hot links on many of the pages. For example, where a particular study unit relies on a reading that is on the Web site, links to that reading are provided within the study unit. In fact, if a lecture refers to a specific idea in a reading, a link may even lead directly to the section of the essay to which the lecture refers. Audio files that make up the musical

repertoire can be accessed directly from the menu bar or in the context of the study units in which they appear. For both the study units and the readings, important terms are linked to the glossary via additional links throughout the text. By searching for relationships among the data in the Web site and including links that highlight these relationships, one can provide a network of pathways through which students can explore the material (see figure 2). And because the menu bar is always present, navigation of the Web site is simplified: one can easily head back to one of the main paths if one "gets lost."

The implementation phase of the project is being facilitated through the assistance of the Centre for Instructional Technology Development (CITD) at the University of Toronto at Scarborough. The CITD provides a complete development environment, including hardware, software, and oft-needed technical expertise to professors who are developing courseware. One of the most time-consuming aspects of creating a multimedia-intensive Web site is the digitization of the extensive musical repertoire used in the course. Not only are entire compositions converted to a digital format, but many must also be subdivided into smaller separate files and edited in order to facilitate discussions of specific sections of the pieces. High-quality sound editor software is essential for such an undertaking, as is a great deal of hard drive space (the raw recorded data of a typical listening list for a music course can easily run over a gigabyte).

Copyright on the Web has proven to be a problematic area, fraught with arguments but no truly adequate solutions. For all Scarborough courses using Web-based resources, the CITD restricts access to copyrighted electronic material to those computers that are part of the campus network; the information cannot be viewed from any other site. Some may argue that even this severe restriction is insufficient and that the electronic replication of any copyrighted materials, even if limited to use by a single class, is a violation of copyright law. It is a problem that many professors and librarians face when attempting to provide access to course-related materials. Certainly more work (and lobbying our legislators) needs to be done in order to balance the educational and legal needs on campus.

Feedback on the Web site has involved both students and educators. During the construction of the site, students have been able to access the electronic materials while taking the course, even though the full Web site is not officially ready for use. A number of helpful comments and suggestions have already been received, and more are expected when the Web site is fully operational. The basic design appears to work well, although the details of some of the presentations are now being revised. Also, recent technological advances (such as Java and video streaming technology) have offered new solutions to some of the difficulties faced in the implementation of the Web site and these are being assessed. The help system has yet to be implemented, and some of the specifics will be determined by student needs as revealed through the feedback process. Other elements that may become part of the project include a search engine, links to other Internet resources, and online tutorial quizzes and review activities.

A characteristic shared by many Web sites is the tendency to be perpetually "under construction." The desire to refine the user

interface and the need to update the content regularly can make a Web site a particularly dynamic environment. As the Music for Theatre project evolves, we hope that we can take better advantage of this technology to foster a supportive supplemental learning environment outside the lecture hall that responds to the diverse needs and learning styles of individual students.
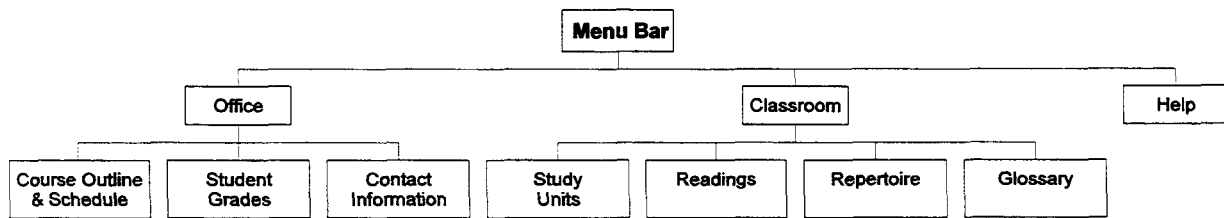
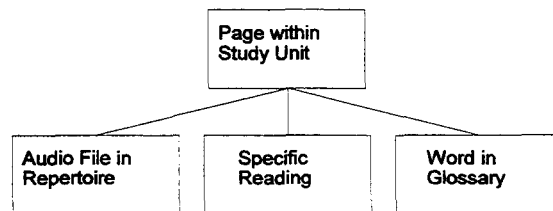Figure 1: Modular Structure of the Music for Theatre Web Site

Figure 2: Relational Pathways within the Classroom Module