ComeXos: A Networked Sound Manipulation Primer

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Abstract: The Composers' Experimental Online Suite (ComeXos) is currently being developed in the Music Department of the University of Salford. This research investigates the possibility of centralizing both software and hardware resources to be used via ComeXos, together with an analysis of its educational, economic and sociological impact in the home and classroom. We also intend to create a community through which music students and composers could work together to bring to their own desktops a broad range of computer music facilities, particularly those relating to sound design and electroacoustic music composition.

1. Introduction

It is widely acknowledged that we are now living and working in a rapidly changing world. A great deal of experimentation and trial by practice surrounds the introduction of a new medium, which tends to bring with it, unique influences and unexpected social and cultural consequences. Many examples have been elucidated by McLuhan [1994] in his book Understanding Media. Internet is not an exception; its birth and growth also reflects this on-going phenomenon.

GEMISIS (Government, Education, Medical, Industrial and Social Information Superhighway) 2000 is a multi-disciplinary European Union-funded Internet research initiative, based at the University of Salford, England. The project takes the Internet as its theme, and in each area, researchers identify the changes taking place and the implications of change for each discipline. The emphasis of GEMISIS 2000 is to use the networking technology to serve the community and to regenerate the economy in the north-west region of England.

The Composers' Experimental Online Suite (ComeXos) is currently being developed in the Music Department of the University of Salford as one of the projects in GEMISIS 2000. The project aims of ComeXos are to develop a central music resource for local schools and Universities, to provide a more effective and more efficient service to users utilizing music software via the Internet and to allow users to share their ideas and musical works with others through the ComeXos community.

To demonstrate its potential, ComeXos provides fourteen sound transformation modules (including Phase Vocoder) from the Composers Desktop Project (CDP) which can be accessed via a graphical World Wide Web browser. With online tutorials and reference materials, ComeXos aims to be a user-friendly sound manipulation primer.

In ComeXos, there are sections for users to upload and download audio samples, post and read messages online. Users can also conduct Internet Relay Chat (IRC) sessions via the IRC service provided.

2. Background

Music applications for creating digital audio can be quite costly, and often these applications are required to be run on additional hardware such as a sound card with additional digital signal processors (DSP). Owing to the cost involved, people creating electroacoustic music would be limited to those who are working in studio, or are associated with universities. Moreover, as software nowadays
constantly crave for more memory and demand faster computing processors, if one wants to keep up with the technology, one has to constantly upgrade one's equipment.

As there are still many people who cannot afford to own their own high-end computing workstations at home, people who would like to create this kind of music may need to travel to a particular studio or laboratory in order to realize their ideas. The Internet can serve as the ideal medium to change this practice with its platform neutral nature. The use of hypertext and the world wide web realize the dream of "universal access". Ideally universal access means that the materials you put on the Web can be accessed from anywhere, regardless of what computer system you're using. As long as the user has an Internet connection and a standard web browser, there should be virtually no difference in accessing the service using any machine, anywhere in the world. Valuable time for commuting can be easily converted into time for telecommuting.

According to the National Curriculum for Music [1995], "Pupils should be given opportunities, where appropriate, to develop and apply their information technology (IT) capability in their study of music." In addition, the Key Stage 3 Programme of Study also states that "Pupils should be given opportunities to ... make appropriate use of IT to explore, create and record sounds." The British government has also announced its National Grid for Learning, and has planned to network all schools in this country by the year 2002 in order to achieve the goal of turning the country into a networked learning society.

If the conditions were favourable, the service provided by ComeXos would not only benefit the learning of music in universities, but also in schools. School students would be provided the opportunity to work with this new aspect in electroacoustic music which currently is not being taught in schools. As students from different schools would be working on the same broadband network, viz. the Internet, it could also provide them the opportunity to experiment together, exchanging ideas.

Furthermore, users from schools do not need to worry about the software upgrades, as only the software in the remote server will be upgraded. If everybody is using the same set of software, they can also seek technical support from each other. Viewed from the financial aspect, the sharing of resources between schools will surely bring benefit.

The technology of the Internet is a force of convergence, bringing together the media of the printed word, visual image and sound. However, it is also true that the Internet, and its adoption by the educational community, is often hampered by lack of experience in the pragmatics of application. [Birchall and Yong 1998: 485] ComeXos, therefore, would like to contribute to the knowledge base that is gradually being built to fill the void in educational practice and the Internet.

![Login Page](image)

Figure 1. The login page to access the Composers' Desktop Project (CDP)
3. Composers Experimental Online Suite (ComeXos)

ComeXos consists of three main sections, namely Audio Application, Sample Archive and Talking Point. Other than talking to each other via the Internet Relay Chat (IRC) included in the Talking Point section, users can also read and post messages to the bulletin board in this section. Audio sample upload and download facilities are available in the Sample Archive and commonly used audio applications for different platforms (IBM-compatible PC, Macintosh and UNIX) can also be found in the section Audio Application. During this experimental period of the research, fourteen selected audio manipulating modules from the Composers Desktop Project (CDP) are used as the online audio utilities for users to create audio samples.

The Composers’ Desktop Project was formed in 1987 by Tom Endrich, Richard Orton, Trevor Wishart and Andrew Bentley, with David Malham (hardware design) and Martin Atkins (system software). The intention was to create an organisation through which composers could work together to bring to their own desktops a broad range of computer music facilities, particularly those relating to sound design and electroacoustic music composition. [CDP 1991] This intention matches very well with the objectives of ComeXos and that is why it has become an inevitable part of the research.

With the fourteen selected CDP sound transformation modules, users can create interesting audio samples simply by selecting effects such as pitch shifting, time-stretching and morphing via a web browser and apply it on their selected audio files. Once our server received the required information via the Common Gateway Interface (CGI), it will then process the request immediately. Once the computation is completed, the user would be prompted with a web page the link to the processed audio file. An email with the download details will also be sent to the users as a reference.

![Image of ComeXos interface]

**Figure 2. A selected CDP module “Specblur” adopted in ComeXos**

CDP has earned its reputation as a professional and powerful sound manipulation package. It operates almost right across the micro to macro levels of task types and maintains a balance between specific and general tasks within the digital processing domain. However CDP has proved to be very difficult for beginner computer users to come to terms with. [McCormack 1996]
Since the target users of ComeXos are not experts in high-end audio, its design therefore aims to produce a user-friendly environment for creating music and sharing music and, most of all, to introduce a primer of professional audio tools to these users. Online help and hints are provided in order to aid users in accessing the tools in a meaningful way. Selected reading and audio examples on sound transformation and the use of samplers are also included in the Audio Application section for users reference.

4. Summary

This research investigates the possibility of centralizing both software and hardware resources to be used via ComeXos, together with an analysis of its educational, economic and sociological impact in the home, classroom and studio.

By sharing audio utilities, we would also like to introduce and promote the professional audio packages to a wider audience.

A password protection system is used to access the CDP utilities. Users interaction with the server is recorded for evaluation purposes. For more up-to-date information, please visit our web site at: http:

5. Acknowledgements

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6. References


