Cathedral: An Interactive Work for the Web

Anthony De Ritis (adaritis@lnx.neu.edu or tonv@csmat.berkeley.edu)
Department of Music, Northeastern University, 351 Ryder Hall, Boston, MA, 02115, USA

ABSTRACT:
The Internet is fast becoming a valid performance venue for the creation of unique concert experiences. However, virtual concert spaces on the World Wide Web are deviations from the traditional concert model: the distinctions between composers, performers, and listeners are being blurred. How does an Internet concert experience differ from the traditional concert? What are the possible components of a large-scale musical work designed and written specifically for the World Wide Web? What are the issues involved in creating and/or experiencing a virtual concert space?

In this report I chronicle the issues involved in developing, implementing, and maintaining the virtual stage of Cathedral, an interactive work for the Internet that explores the musical and artistic potential of the Web. It includes live and on-line performances of both real and virtual instruments, and gives listeners the ability to interact with the composer and performers. Cathedral, the brainchild of composer William Duckworth, is growing toward the year 2001, when it will culminate in a live and on-line 48-hour concert, with sounds streaming into the piece from sites around the world.

Cathedral can be found at http://www.monroestreet.com/Cathedral/home.html, and has been on line since June 10, 1997.

1. The Concept Behind Cathedral: A Unique Approach to Musical Form

Any composer must consider the nature of his or her ensemble or medium. As a work of art created specifically for the Web, Cathedral must face the advantages and disadvantages of this medium, a medium that is changing all of the time.

Cathedral's approach to musical form does not unfold in a linear time domain. Since its inception, it is "always there". It has no beginning, middle, or end - time is no longer a factor. Duckworth has taken advantage of this ability to browse in a musical space.

Historically, I am reminded of three musical events that reflect the spirit behind Cathedral and Web music.

1.1 Poème électronique. Varèse's Poème électronique (1957) was originally written for projection over some 350 speakers placed in an architectural space designed by Le Corbusier where listeners could move around and witness the different sound paths. Varèse's Poème was looped, and it was hoped that when you were in a different location in the space, you would perceive the music with a different frame of reference. The Philips Pavilion also had a variety of light sources, which consisted of film projectors and projection lanterns, spotlights, ultra violet lamps, bulbs, and fluorescent lamps of various colors. One could only imagine from the available stereo recording the effect of Poème électronique in its original environment.

Poème was a multimedia installation. The audience of Cathedral is invited to experience its virtual space with this spirit in mind.

1.2. Klavierstück XI. Stockhausen's Klavierstück XI (1956) is a work in nineteen groups on a single sheet of paper. The performer, beginning with the group he sees first, continues to play moving from one to another until one group has been played three times. In this way, Stockhausen approached a non-linear presentation of his musical ideas. That is, it was hoped that during any given performance the form would not be the same twice (unless the performer followed exactly the same event sequence of moments from night to night, taking away from the concept behind the work). In actuality, it is truer that the pianist -- the performer of Klavierstück XI -- perceives the joy of this non-linear construct, as they perform the work from night to night. The listener in this case, unless travelling with the pianist, is only privy to what might as well be a linear presentation of the material.
Like the pianist performing *Klavierstück XI*, the listener may participate in *Cathedral*, moving from moment-to-moment, in a kind of a non-linear fashion.

1.3. Performance/Installations of La Monte Young and Marian Zazeela. LaMonte Young, considered by many the “Father of Minimalism,” and his longtime companion, Marian Zazeela, would often hold five and six-hour concerts in their apartment loft in New York City. Young would perform various drones that would slowly evolve and the setting would be bathed in calligraphic light patterns designed by Zazeela. Guests would be invited to visit, stay a while, listen a while, and leave occasionally before the “performance” was over. This work eventually led to *Dream House*, a much longer sound and light environment designed to exist over a period of weeks, months, or even years. *Dream House* eventually became a permanent installation in New York, ending after six years only because of economic problems within the Dia Art Foundation, which provided its financial support.

*Cathedral*, like *Dream House*, is an environment of sound and visual images where the listener is invited to come and go as you please.

Duckworth, in fact, has published a book on Young and Zazeela and is himself considered the founder of the postminimalist movement, which in many ways, is a musical style well suited for the performance environment of the web.

1.4. An Expanding Universe.

*Cathedral* was not intended to be perceived in any prescribed length of time. Time in *Cathedral* extends from moment-to-moment, and from the planning of long-term relationships and convergences, some of days and months instead of minutes. *Cathedral* is eternal. As we perceive time against the ever-expanding universe, *Cathedral* may be thought of as its own universe, also constantly expanding, where form and time evolve not as the composer unfolds it, but in how one moves through it – we can visit *Cathedral*’s eternal drones whenever we choose. *Cathedral* is more like navigating an art gallery than attending an opera.

2. The Role of the Internet in Musical Form

2.1. Latency.

In all discussions regarding the Internet and real-time performance, latency is always the first question asked. In April, during the Columbia University Interactive Arts Festival, Miller Puckette fielded a question regarding the effects of latency in his *Lemma 2* (with Vibeke Sorensen and Rand Steiger). *Lemma 2* is a multimedia interactive work (an Internet jam session) where piano and percussion sets in Oregon and New York are analyzed and then used to inform events in the other location.

Puckette stated that the latency was not a concern – the piece presupposes the latency as part of the medium of the work. This doesn’t ignore the latency issue, it is merely accepts it as a fact. Composers don’t expect a violinist to play an octave below middle C because they can’t. Latency is a given, you compose with the limitations of the medium in mind, and take advantage of what can be done well. This does not mean to say that the Internet is merely an environment for improvisation or music based on chance operations, just that the Internet is an environment ripe for musical experimentation.

2.2. Art on the Internet.

Earlier I described *Cathedral* as its own universe. Perhaps I should be more down to earth, and speak of *Cathedral* as a part of its own world, where a number of societies are living. As many an anthropologist will tell you, a society is often judged, categorized, or even dependent upon the art that it makes. The Internet is a world of living societies (perhaps the universe analogy is more apt here); as commercial developers embrace this new medium, it is equally important that art establishes itself a place on the Internet as well, from the beginning.

2.2.1. Everyone Has a Front Row Seat.

Although Web music is only beginning to be explored and developed as a new artistic medium, we do know that the Internet is a performance space where the auditorium is of infinite size and everyone has a front row seat. Each member of the audience will have a similar, but not universal, experience; and provides the ability for the experimental artist to contact people worldwide.
3. A New Concert Paradigm
Designing a piece for the Web is, in effect, an attempt to define a new concert paradigm. Boundaries between the composer, performer, and audience are much thinner, and less well defined than traditional concert environments. Within the model set forth by Cathedral, the audience is encouraged to participate in the performance experience by playing live on the PitchWeb, a virtual instrument that uses QuickTime sound files; they can submit their own MIDI files for integration into the Sound Pool; and can engage in a dialogue with the composer by writing in the Guest Book.

3.1. Interactive Web Music and Games.
For many computer musicians, the need for alternative performance environments is great. Once again referring Miller Puckette, “Who wants to watch someone else play a computer game... we want to play for ourselves”. The concert paradigm suggested by Cathedral presents a model of interactive music performance/listening not unlike the game paradigm, where each individual grabs control of their personal space and maneuvers through a playing area.

4. Basic Site Structure
Cathedral has seven main areas to explore: Mandala, Chronicles, Moments, Stage, Virtual Instruments, Codex, and Contact.

4.1. Mandala. The Mandala is an archive, or repository, of previously featured music within a web of changing visual imagery associated with the site. As the site develops, anything that is removed or replaced goes there. It can be experienced on three levels. Passively, you can watch as images change positions randomly. Mouse-overs control the location and speed of image processing. And mouse clicks yield either enlarged versions of images, or some random part of the musical archive.

4.2. Chronicles. The Chronicles is a collection of literary thoughts and postmodern documentation on the site by writers associated with Cathedral.

4.3. Moments. William Duckworth chose five visionary moments that influence his compositional thought for Cathedral, five decisive moments in human spiritual history:

- Groundbreaking for Chartres Cathedral
- Detonation of the first atomic bomb
- Building of the Great Pyramid
- Founding of the World Wide Web
- Inception of the Native American Ghost Dance Religion

Duckworth intends Cathedral to be a work of art that encourages contemplation and reflection of these five events.

4.4. Stage. The Stage is where live webcasts and performances by the Cathedral Band and others occur. This is also where previous webcasts are archived in their entirety. The Cathedral Band is an Internet combo, with both a virtual and a live identity. The members of the Band are “Blue” Gene Tyranny, John Kennedy, Charles Wood, Nora Farrell, and Duckworth.

4.4.1 The 48-hour Web Event in 2001.
The Stage is also the location of the 48-hour Web Event in 2001, the culmination of Cathedral. During that time period, all the music written for Cathedral will be performed, as will be interactive improvisations with the Cathedral Band, and on-line, real-time music making with sounds provided by groups and individual people around the world. Confirmed sites include New York, Chicago, Seattle, Phoenix, Philadelphia, Amsterdam, Berlin, Rome, Sydney, and Melbourne. These “hub” sites will be focal points of activity, both virtual and live, during the 2001 webcast. They will be responsible for local internet access, processing of MIDI submissions, staging of traditional concerts, and organizing community-centered activities around the 48-hour webcast, such as workshops and lessons on how to play and customize the new virtual instruments.

4.5. Virtual Instruments. As of this writing, there are three virtual instruments associated with Cathedral: Chaos, the Sound Pool, and the Pitch Web.

4.5.1. Chaos. Chaos deals with pictures rather than sound, the intention is for listeners to create their own visual counterpoint to a webcast. It is a browser-based instrument that collects images from other websites and allows the user to manipulate them as they see fit, including resizing, trailing, magnifying, zooming, and multiple imaging.
4.5.2. Sound Pool. The Sound Pool is a sound-plot in which each line of music in the Pool is triggered individually by clicking on nodes in a growing web of multicolored geometric patterns. Lines of music change location randomly among the nodes, allowing each listener to create a unique experience for themselves. The Sound Pool is an interactive sound share, in which users trigger sounds and images into a musical mosaic of their own creation. The intention is that, like a river, listeners will never experience the same Sound Pool twice. Listeners can contribute their own MIDI files at the Sound Pool File Upload page.

4.5.3. Pitch Web. The Pitch Web will be the primary instrument played by listeners in 2001. It is designed to be playable by people of any musical ability. Currently, the Pitch Web consists of one bank of 64 sounds, its final form, there will be multiple banks of 64 sounds each, with all sounds capable of customization by each user. There are three ways to interact with the PitchWeb. A listener can type words or phrases in any language (up to 64) and here them played back as sound, with the ability to rearrange and alter their playback characteristics. Secondly, autoplay patterns can be selected from a palette, arranged on a playing field, and heard played back in a variety of ways. Thirdly, individual sounds can be arranged into a virtual drum kit and played in real-time against a constant source feed, with a group of other players, or even with the Cathedral Band.

4.6. Codex. Here live 32 basic source texts that are the inspiration for Cathedral. They are the words of poets, prophets, mystics, psychics, seers, chiefs, medicine men, and other spiritual leaders.

4.7. Contact. An Introduction to Cathedral is located in the "Hello" link of the Contact area. This is also where the Guest Book is housed. In addition, there is a Mailing List you can join, FAQ's, Help, and a "Goodbye" Link.

5. Browsers and Plug-ins

Cathedral uses a variety of technologies, including Java, JavaScript, Shockwave, Beatnik, and Real Audio. In order to fully experience Cathedral, it is recommended that you get Netscape Navigator v3 and above. All of the music of Cathedral is played using either the Shockwave, Real Audio, Beatnik or Quick Time 3 plug-ins, depending on the page. If you go to a page and you don't have its required plug-in, you will be taken automatically to a page where you can download it.

6. Summary

Cathedral is a large-scale musical work of extended duration presented an experienced in a non-linear fashion over a period of five years, which first went on-line June 10, 1997. This work, in addition to being one of the first pieces of extended experimental music on the web, integrates a variety of computer music practices and suggests avenues for future computer music research in the areas of new virtual performance spaces, virtual musical instruments, and new perspectives on performer/listener interaction.

Cathedral consists of William Duckworth, composer and co-artistic director; Nora Farrell, designer and co-artistic director; Charles Wood, technical director; and Jon Child, instrument builder.

Cathedral@aol.com

References.


Interview with Miller Puckette, Columbia Interactive Arts Festival, NY, NY, April 1999.


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