

## New Approaches to Music and Interactive Multimedia

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### ABSTRACT

The author's current project combines modern interactive performance technology and web-based hypermedia technology to create a new kind of multimedia work, a musical setting of E. E. Cummings' brief poem "(featherrain)." The work explores and develops various modes of interacting with musical, narrative and poetic structure. By combining elements of these disparate media, a qualitatively different kind of artwork emerges that realizes in a new way the artistic possibilities of multimedia and the internet.

*(featherrain)* is meant to be experienced by a single person sitting at a computer, similar to a computer game but with the emphasis on music, painting, and poetry. It is built with Max/MSP, an object-oriented musical environment for MIDI and digital audio released by the company Cycling 74. By hiding the Max elements and covering them with large graphics (paintings and animations), the interactive mechanisms are transparent to the user, making the technology suitable for other kinds of multimedia presentations.

### INTRODUCTION

This project combines modern interactive performance technology such as Max/MSP and web-based hypermedia technology including Flash and dynamic HTML to create a new kind of multimedia work, a musical setting of E. E. Cummings' brief poem "(featherrain)." This "virtual aria" comprises graphics, text, music, and singing, all based on the Cummings poem, and has a flexible time limit between four and ten minutes. When completed it will be available both on CD-ROM and over the web. While the project shares some qualities with music video, multimedia, and computer games, it differs from these in several respects:

1. Unlike music videos, its structure is interactive and non-linear (in that the music and visuals will be different each time the work is experienced). The main engine for this interactivity is the software Max/MSP, although its machinations are hidden from the user by graphical, animated interface elements based on paintings by the artist Hua Nian.
2. Unlike many multimedia presentations, there is an overriding dramatic arc to the work, despite its surface non-linearity.
3. Unlike exploration-based computer games, which are goal-oriented (i. e., solving a mystery), the project focuses on musical and visual responses to Cummings' ethereal, enigmatic poem.
4. Finally, the user is drawn into an intimate relationship with the work. By using the mouse or optional joystick, he or she affects the musical flow (and even the large-scale form) in ways that are traditionally possible only for conductors or trained musicians.

By combining elements of these disparate media, *(featherrain)* represents a qualitatively different kind of artwork that realizes in a new way the artistic possibilities of multimedia and the internet.

## SUMMARY OF RELEVANT PREVIOUS WORK

A few works in particular have inspired this project. Robyn and Rand Miller's *Myst* and *Riven*, computer games released in 1993 and 1997, depict surreal, imaginary islands which the user explores. Gradually these explorations uncover a mystery to be solved; a plot begins to form. This combination of open-ended exploration with a more linear plot spurred me to think of a musical equivalent, a piece of music which could be shaped by a listener, but would still have a dramatic arc of its own. While music in these games is strictly incidental or ambient, (*featherrain*) focuses on music and poetry, with no plot per se.

Another influence is Char Davies' virtual reality works of the 90s, *Immersence* and *Ephemère*, consisting of immersive, wintry worlds in which leaves and stars slowly fall in a kind of perpetual twilight. For her works, the user dons a full VR helmet with other gear connected to a Silicon Graphics workstation. Although there is no plot, the experience draws naturally to an end after a predetermined time (unlike games, which end only after certain conditions have been met). This finite time scope, which is common to most musical works, I find appealing. (*featherrain*), though, requires no specialized equipment other than a standard PC or Mac (with either headphones or good-quality speakers). Also, Davies' work is predominantly visual, with music again playing a subordinate, ambient role.

## IMPLEMENTATION

There is a notated score for the work consisting of several fragments of music—some longer, some shorter—written for soprano voice and twelve instruments (alto flute, English horn, bass clarinet, bassoon, horn, harp, percussion, and string quintet; electronics are added in post-production). The musicians, conducted by myself, recorded the music at a session in a relatively dead acoustic space, with reverb being applied later (and eventually by the user in real time).

Using the digital audio multitrack recording software Pro Tools, I recorded, edited and combined the various instrumental and vocal tracks, layering some fragments on top of others to create mini-collages. The MIDI sequencing software Digital Performer allowed me to combine these edited audio files with other, purely electronic sounds to form the basic soundscapes for the work. The electronic sounds themselves are provided by software samplers and synthesizers such as Metasynth. Finally, the stereo editing software Peak helped me create one- and two-channel stereo files out of all these different audio tracks (although some mixing is done by the user in real time with Max/MSP).

The conflict between linear narrative and open-ended exploration is perhaps the project's toughest esthetic problem: once control is relinquished to a user, it is difficult to maintain a narrative tension. (*featherrain*) attempts to solve the problem by having important anchor events—the beginning, climax, and ending, for example—which will be more or less the same each time. In between these points, which consist of relatively long musical phrases, the user can freely move among brief fragments of music which can be chosen in almost any order. At some points, the user can also change the tempo, intensity, and tone color, and create new melodic and rhythmic shapes. After a certain amount of time has passed, or after the user has exhausted all the possibilities of a given section, the music and visuals progress to the next anchor event.

This interactivity is accomplished with the software Max/MSP. Using this program I created a “flowchart” of different possible events, triggered by mouse position and clicks (or an optional joystick). The flowchart determines the order in which to play and superimpose the various pre-assembled mono

and stereo tracks. Additionally, the flowchart allows in certain places—for example, in between longer musical fragments—for on-the-fly filtering, delay, and melodic/rhythmic events to be controlled directly by the user.

A brief description of this flowchart appears below:

I. Introduction--completely written out. After the opening sung phrase, the harp descends and eventually hits a loop, fading out as II starts.

II. Fragments--individual words and syllables from the text, sung in isolated bursts. Triggered by mouse action.

III. Phrases--longer sections of the text, sung in any order, triggered by mouse action. The final phrase is considerably longer than the others, and leads to

IV. Climax--highest and loudest point of the piece. Also the most interactive, with user-generated synthesizer melodies.

V. Coda--overlapping, flowing vocal lines (triggered by mouse action) sound over a background of slowly oscillating chords. Fade out.

The mechanisms of this interactivity are concealed from the user by a graphical layer (Max/MSP allows for large buttons or “hot spots” which can essentially be any image or shape, much in the manner of presentation software like HyperCard). To create the graphical layer I am collaborating with the painter Hua Nian and others. I have done part of the work myself with Photoshop and Final Cut Pro, a video editing program. There is also a set of video and animation extensions to Max/MSP known as Nato, which I use to merge the visual components for the piece with the underlying musical interactivity.

Max/MSP can be used to make standalone applications, which is how the work will eventually be disseminated via CD-ROM and the internet. There is also a website for the piece which is not as complex as the full version, but uses interactive web applications such as Flash and dynamic HTML to give a representation of the work, and provide a link to download the full version.

## CONCLUSIONS

*(featherrain)* is a test case for a new kind of interactive work, somewhere between music video, computer game, and art song. Eventually I hope to create a more large-scale work using the same technology, a kind of “virtual opera” in which the computer user is essentially one of the characters in an unfolding drama, interacting with other, onscreen characters.

## REFERENCES

- Cummings, E. E. *Complete Poems, 1904-1962*. George J. Firmage, ed. (Liveright, 1991).  
Davies, Char. *Osmose* (1995). Virtual reality work described on the website [www.immersence.com](http://www.immersence.com).  
\_\_\_\_\_, *Ephemère* (1998). Virtual reality work described on the website [www.immersence.com](http://www.immersence.com).  
Miller, Rand and Robyn. *Myst*. CD-ROM (Cyan, 1993).  
\_\_\_\_\_, *Riven*. CD-ROM (Cyan, 1997).