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Sunrise Out of Me : a multimedia work for CD-ROM

Mark Anderson Hatfield

To the Graduate Council:

I am submitting herewith a thesis written by Mark Anderson Hatfield entitled "Sunrise Out of Me : a multimedia work for CD-ROM." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Music, with a major in Music.

Kenneth A. Jacobs, Major Professor

We have read this thesis and recommend its acceptance:

Barbara Murphy, Walter Hawthrone

Accepted for the Council:
Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Sunrise Out of Me:

A Multimedia Work
for CD-ROM

A Thesis Presented for the Master of Music Degree
The University of Tennessee, Knoxville

Mark Anderson Hatfield
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Abstract

Sunrise Out of Me is a multimedia work for CD-Rom. It is in three movements lasting fourteen and a half minutes and incorporates electronic music and computer graphics. The music was composed using a Korg Wavestation EX synthesizer and Mark of the Unicorn's Digital Performer™. The images were created in Adobe Photoshop™ and then manipulated in Adobe After Effects™ to render a movie file. The music was completed in January 2001, while the visual material was completed in July 2001. The title was inspired by the poetry of Walt Whitman.

This document examines the nature of musical multimedia art through history, theory, and examples of multimedia works. Five multimedia works will be discussed: *Wavelines II* (1979) by Reynold Weidenaar, *Passage to Honor House* (1986) by Kenneth Jacobs, *The Wake of Boreas* (1980) by Thomas B. Norris, *All My Hummingbirds Have Alibis* (1992) by Morton Subotnick, and *Crystal* (1982) by Maggie Payne.

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I. AN INTRODUCTION TO MULTIMEDIA

This section will introduce various aspects of multimedia. These aspects include history, relationship with synaesthesia, and aesthetic theories.

Although multimedia is popularly associated with computers and other modern electronic technology, it is not a new artistic concept. Opera, ballet, and even church masses have existed for centuries as unified art forms which incorporate more than one media. Although the concept of Gesamtkunstwerk ("total artwork" with unified setting, drama, music, lighting, etc.,) promoted by Wagner has been strongly influential,[1] a unified art incorporating what we consider today to be different media can be traceds to the ancient Greeks. Their conception of music itself was one that was unified with the spoken word and synonymous with poetry.[2] "From earliest times [Greek] music was an inseparable part of religious ceremonies." [3] One twentieth century composer, Harry Partch, has noted that "for the Greeks the noblest purpose of music was to enhance drama," and that "the modern scholar reading ancient drama gains only a fraction of the total result." [4]

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1 Salzman, Eric. "Mixed Media." In *Dictionary of Contemporary Music*, edited by John Vinton. New York: E. P. Dutton, 1974. 489.

2 Grout, Donald J. and Claude V. Palisca. *A History of Western Music*. 4th ed. New York: W.W. Norton and Company, 1988. 7.

3 Ibid., 3.

4 Partch, Harry. *Genesis of a Music*. 2nd ed. New York: Da Capo Press, 1974. 10.

One of the first examples of multimedia art that was not connected to opera ballet is Skryabin's *Prometheus (*1910).[5] This work calls for large orchestra, chorus, piano, organ, and clavier à lumières (a lighting device controlled by a conventional keyboard).[6] *Prometheus* was never fully realized in that the technology was not adequate for the envisioned light show. Lack of adequate technology was also the fate of Schoenberg's *Die Glückliche Hand* (1913). The stage lighting capabilities of the time could not provide for a "musical translation of sound into light." [7]

Modern notions of multimedia art seem to come more directly from the advent of electronic technology (especially the tape recorder). Three international expositions in particular have promoted such electronic multimedia art works: Brussels in 1958, Montreal in 1967, and Osaka in 1970.[8] The Phillips Pavilion in Brussels featured the premier of Varèse's *Poème Electronique* (1958).

> Nearly 16,000 people per day for six months provided the audience for the performance of this primarily musique concrète work. The projected images, consisting of various photographs of paintings, were not synchronized with the sound in any particular manner (the projections

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5 Cope, David. *New Directions in Music.* 7th ed. Prospect Heights, IL: Waveland Press, 2001. 114.

6 Ibid.

7 Ibid.

8 Mumma, Gordon. "Live-Electronic Music." In *The Development and Practice of Electronic Music*, edited by Jon H. Appleton and Ronald C. Perea. Englewood Cliffs, New Jersey: Prentice-Hall, 1975. 333.

were chosen by Le Corbusier to fit the elaborate and complex internal design of the pavilion).[9]

Gordon Mumma notes that the year spent in "preparation" for the Philips Pavillion spawned pioneering events in multimedia. Such events included a weekly program series called "Vortex" at the Morrison Planetarium in San Francisco and the "Manifestations: Light and Sound" performances which took place in Ann Arbor, Michigan.[10] Innovation continued with the formation of organizations such as the San Francisco Tape Music Center in 1960 (which involved artists such as Morton Subotnick and Terry Riley), the Los Angeles Experimental Music Workshop (1963), and the 1966 organization of USCO in New York.[11]

Chance music has also played a significant role in multimedia. In 1952, John Cage and Merce Cunningham staged a multimedia theatrical performance at Black Mountain College in North Carolina consisting of indeterminate events played within a definite time span.[12] This sort of multimedia was later to be termed by Allan Kaprow as a "happening." The concept of indeterminancy has had a major impact on the nature of multimedia

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9 Cope, David. *New Directions in Music.* 145.

10 Mumma, Gordon. "Live-Electronic Music." 333.

11 Ibid.

12 Salzman, Eric. "Mixed Media." 490.

in that "it has tended to evolve in the direction of static, technology-oriented environmental forms." [13]

The phenomenon of synaesthesia is an important aspect of multimedia theory. Percy Scholes defines synaethesia as "the production from a sense-impression of one kind of an associated mental image of a sense-impression of another kind." [14] In other words, it is "seeing" color when hearing sound (or some other sensory duality). It is obvious that musicians often speak of the relationship between sound and light. Some examples of this are such phrases as tone color, brightness, darkness, harmonic color, and even the German word for timbre, klangfarbe (literally "sound-color").[15] Attempts have also been made to define a direct relationship between light frequencies and various aspects of sound. Sir Isaac Newton is one of the more famous scientists who also attempted to define such a discrete relationship. His analogy was based on frequency relationships and ultimately derived a C dorian scale as the equivalent of the color spectrum, red, orange, yellow, green, blue, and violet.[16]

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13 Ibid.

14 Scholes, Percy. "Colour and Music." In *The New Oxford Companion to Music, v. 1,* edited by Denis Arnold. New York: Oxford University Press, 1983. 424.

15 Ibid., 425.

16 Ibid., 428.

Attempts to define discrete relationships between color and sound have also been made with regard to categories of timbre, key, and even particular composers. However, such attempts have generally not been successful. It seems that light and sound associations are mostly personal and can even be inconsistent at this level. One interesting experiment involving the relationship of color and key was reported in 1886 by the journal *Musical Opinion*:

> That section of the audience that maintained the definite existence of 'key colour' by which it could aurally identify a key was submitted to a test, a well-known piece being played in both G and Ab, to which they applied and defended their usual G and Ab associations, maintaining that the transposition had totally changed the key-colour. The meeting broke up in recrimination and disorder on its being revealed that the piano possessed a mechanical transposing device, so that while those present had *seen* the performer playing in Ab major they had *heard* her playing in G major as before (presumably they had been adroitly given an interval of time to forget the pitch of the first performance).[17]

While synaesthesia phenomena tend to be subjective, there are certain people who have demonstrated a rather consistent ability. The perceptions of "Synaesthetes" are in fact discrete and stable over the individual's lifetime:

> In a recent study, when given a list of 130 words, phrases, and letters and asked to describe the color of the associated sensation, only 37 percent of nonsynaesthetes were identical to their original description a week before, while 92 percent of synaesthetes' responses were identical after a full year . . . Other studies conducted over ten, twenty, or more years yield the same results.[18]

While some people have been able to demonstrate synaesthetic skills, Kevin

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[17] Ibid., 426.

[18] Dann, Kevin T. *Bright Colors Falsely Seen: Synaethesia and the Search for Transcendental Knowledge.* New Haven, CT: Yale University Press, 1998. 6.

T. Dann notes that fascination with synaesthesia is actually rooted with the emergence of the Western materialistic society:

> The triumph of behaviorists' view of the human mind and body as reacting machines only served to intensify the Romantic quest for art forms and theories of knowledge that de-emphasized the world of material causes. Romantics held fast to the ideal of the primacy of the imagination, and synaesthetes would continue in their eyes to offer proof positive of the possibility of attaining new ways of knowing.[19]

As Dann says, the meaning of synaesthesia is then, meaning. That is, it is an attempt to penetrate the ultimate reality. This point is further illustrated by syaesthesia's association with the occult [20] and the chemical induced "psychadelic" movements of the 1960's. [21]

Multimedia works such as Skryabin's *Prometheus* (1910) and Schoenberg's *Die Glückliche Hand (*1913) are examples of attempts to exploit the synaesthetic experience. However, innovations such as Skryabin's light keyboard were certainly not uncommon. In 1877, an American named Bainbridge Bishop combined a organ with a color projection device so that one could play music and produce a blend of colors.[22] Alexander Burnett Hector exhibited his Colour Organ in Australia in 1912. His design was dominated by a direct correlation between pitch and color.[23] Mary Hallock Greenwalt also

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19 Ibid., 93.

20 Scholes, Percy. "Colour and Music." 432.

21 Dann, Kevin T. *Bright Colors Falsely Seen.* 166.

22 Scholes, Percy. "Colour and Music." 430.

23 Ibid.

created a color organ she demonstrated in 1919 in New York. This organ, however, was not based on direct synaesthetic analogy, but on variation of luminosity.[24] In 1922 Danish Thomas Wilfrid exhibited his invention, the Clavilux. It, too, was not based on direct analogy, but introduced the aspect of form by "showing upon a screen fantastic figures which move rhythmically and incessantly change their shape and colours." [25] While all these innovations reflect great enthusiasm for synaesthesia, however, Scholes points out the problems of synaesthetic color associations:

> We have all been brought up on this complex art, and suddenly to produce a new art in which the equivalents (if such were possible) were presented visually to human eyes which had not acquired any corresponding perceptions would be to present that vision with a mere bewilderment. . . . Then there is no reason to suppose that the time-periods which are proper for the appreciation of harmonic effects must necessarily be proper for the appreciation of colour effect, the eye and ear differing in their powers . . . .[26]

It can certainly be argued that film, with its use of music, is an important aspect of multimedia art. It is James Monaco's contention that film is really the first multimedia art and that Edison was the first multimedia artist.[27] Music is perhaps a necessary aspect of film in that it bolsters film's validity as an artistic medium. Film by nature is a representative medium; music on the other hand, is nonrepresentative. As Royal Brown puts it, music imposes a perception of

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[24] Ibid., 431.

[25] Ibid., 430.

[26] Ibid.

[27] Monaco, James. *How to Read a Film: Movies, Media, Multimedia.* New York: Oxford University Press, 2000. 534.

artistic structure.[28] Music "smoothes" over the roughness of visual transition in film. It even provides correlatives from previous scenes.[29] Some would go so far as to say that music hypnotises and even simulates experiences within the womb: "critics argue that background music recaptures the pleasure of the sonorous envelope, evoking the psychic traces of the subject's bodily fusion with the mother." [30]

While film is indeed a form of multimedia, Monaco does address the modern associations of multimedia with computers and attributes this development to the advent of various digital technologies. One such development is the use of the CRT computer screen in the 1960's. Monaco suggests that the IBM engineer who first thought of connecting a computer to a cathode ray tube might be a "godfather of multimedia." [31] Furthermore, "if punched cards and band printers had remained the input/output devices for digital computers, multimedia - to say nothing of the microcomputer appliance itself - might have remained a dream.[32] Another important development was the solution for the problem of digital storage space in regards to a method of

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28 Gorbman, Claudia. "Film Music." In *Film Studies: Critical Approaches,* edited by John Hill and Pamela Church Gibson. New York: Oxford University Press, 2000. 42.

29 Nasta, Dominique. *Meaning in Film: Relevant Structures in Soundtrack and Narrative.* New York: Peter Lang, 1991. 43.

30 Gorbman, Claudia. "Film Music." 45.

31 Monaco, James. *How to Read a Film.* 520.

32 Ibid.

dissemination. While the CD-ROM was introduced in 1985 as a solution to storage problems, this technology made extraordinary demands on computer processors and communication bandwidth.[33] This problem was solved with the use of DSP's (Digital Signal Processors). This hardware is separate from the main processor and serves to algorithmically compress data so that it is more manageable.[34] In 1991 Apple Computer introduced a cross platform software application called Quicktime.[35] This software is capable of processing various media (image, audio, and movies). "With Quicktime, new media producers had their first effective tool for integrating audio and video in a text environment . . . ." [36] The next development was the Digital Versatile Disc (DVD) format. Although the storage capacity of the CD-Rom greatly improved matters, it was not until the DVD that it was possible to store full length films.[37] It should be said that while all these digital technologies have been crucial to what is now considered multimedia, none would have been conceivable without the invention of the phonograph and photographic film.

Stanley Gibb has categorized all "media forms" into three groups of multimedia, mixed media, and intermedia:

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33 Ibid., 525.

34 Ibid., 529.

35 Ibid., 530.

36 Ibid.

37 Ibid.

(1) Multimedia is a loose structure in which the various media do not depend on each other for meaning. happenings represent excellent examples of multimedia in that each element can stand on its own merits.
(2) Mixed media tends toward equalization of elements, though any hierarchial order is possible. Environments fit this media form in that, though the elements depend on one another, they are mixed, but not truly integrated.
(3) Intermedia has all elements in balance and integrated to the fullest degree. Merged-medium fits this category well in that all elements are equal and integrated . . . .[38]

David Cope offers a list of familiar genres categorized accordingly:

Multimedia	*Mixed Media*	*Intermedia*
(loosely knit composite forms)	(more integrated, with varying degrees of importance of elements)	(very integrated, each element depending on the others for the work to hold together)
happenings	opera	merged-medium
collage	film and TV	environments
theatre pieces	kinetic theatre	films
ballet		meditations.[39]
light-show		

Cope points out that "composers have been very flexible in their usage of the above terms." [40] That is, a work that is titled as a multimedia work is not necessarily a loosely knit composite form.

Nicholas Cook has also categorized multimedia into three groups of a similar nature shown in Figure 1:

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[38] Cope, David. *New Directions in Music.* 7th ed. Prospect Heights, IL: Waveland Press, 2001. 115.

[39] Ibid., 115.

[40] Ibid.

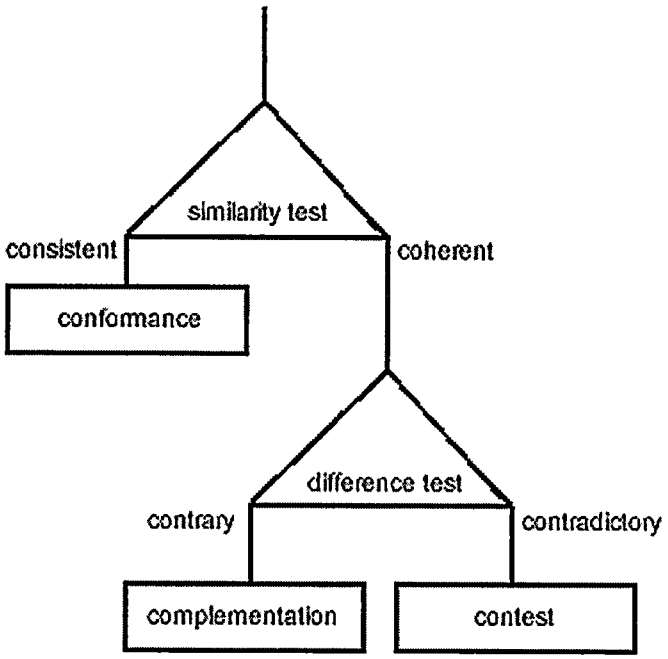

FIGURE 1 Three basic models of multimedia. Nicholas Cook. *Analyzing Musical Multimedia*. New York: Oxford University Press, 1998. 99.

Essentially, Cook's categories of conformance, complementation, and contest correspond with the genres of intermedia, mixed media, and multimedia respectively. Cook provides a metaphor comparison for the "similarity test." The metaphors, "love is a journey," "this relationship is a dead-end street," and "we've gotten off the tracks" are all **coherent** in that they are variants of "love is a journey." [41] An example of a **consistent** metaphor is the relationship between "our marriage is on the rocks" and "this relationship is floundering." Both metaphors present love as a sea voyage.[42] When media contradict one

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41 Ibid., 98.

42 Ibid., 99.

another, they are said to be in **contest**. An example of such an event might be violent visual material accompanied by peaceful music. The remaining category of contrary **complementation** can be characterized by what Cook calls a "separate spheres" model: "the theory of classical Hollywood film, for instance, asserts that pictures and words tell stories, which music cannot, but that music does what pictures and words cannot . . . ." [43]

It is clear that Cook does not favor the conformance end of the spectrum as a multimedia aesthetic. Cook states that "whereas synaesthesia [corresponding to conformance] is predicated on similarity, then, multimedia is predicated on difference." [44] He also contends that "meaning . . . inheres not in similarity, but in the difference that similarity articulates by virtue of the transfer of attributes." [45] Conformance, then, is viewed by Cook as a "null category" while contest is "to all intents and purposes the only category of multimedia." [46] Cook bolsters his argument for contest by citing examples of the contest between the medium of text and the medium of music. Such an example comes from the ideas of Carolyn Abbate:

> For Abbate, the separation of the spheres of text and music, denotation and connotation, can never be complete; the two can never really work in

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[43] Ibid., 104.

[44] Ibid., 56.

[45] Ibid., 81.

[46] Ibid., 106.

> step. Her vocabulary is instead a vocabulary of contest. She speaks constantly of intrusion; text intrudes upon music, and music upon text.[47]

Another example of contest comes from Hanslick:

> Hanslick saw music and drama as 'mutually destructive', and compared opera to a constitutional government 'whose very existence depends upon an incessant struggle between two parties, equally entitled to power'; the result was 'continual acts of trespass or concession.' [48]

Cook's theory of multimedia can be summed up in a concept that he calls "differential elaboration":

> But the principle of differential elaboration means that a relationship of processive similarity established at one hierarchical level will result in difference at another; which is why attempts to force media into close superficial alignment (for instance, by cutting film to music) have the paradoxical effect of emphasizing the difference between the two media. In other words, you can have similarity at an underlying level, which entails difference at an underlying level, but you cannot have similarity (or difference, I am inclined to add, but that is a different point) at all levels. It is not surprising, then, that the historical debate about multimedia is essentially a sustained quarrel about the right level at which to align media.[49]

Other useful terms provided by Cook are unitary, dyadic, and triadic conformance. Unitary conformance means that one medium predominates and all others slave to it. Dyadic conformance is where one medium corresponds to another, but is not dominated. Triadic conformance, however,

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[47] Ibid., 122.

[48] Ibid.

[49] Ibid., 125.

means that the media (presumably two media forms) conform to an underlying emotional quality or spiritual meaning.[50]

[50] Ibid., 101.

II. EXAMPLES OF RECENT MULTIMEDIA WORKS

This section will discuss five recent multimedia works: *Wavelines II* (1979) by Reynold Weidenaar, *Passage to Honor House* (1986) by Kenneth Jacobs, *The Wake of Boreas* (1980) by Thomas B. Norris, *All My Hummingbirds Have Alibis* (1992) by Morton Subotnick, and *Crystal* (1983) by Maggie Payne. These works are arranged in the order of Cook's classifications of conformance, complementation, and contest.

Reynold Weidenaar was born in 1945, in East Grand Rapids, Michigan. Weidenaar founded and became editor of the *Electronic Music Review* in 1967. He also worked as a recording engineer for the Cleveland Orchestra. He studied composition with Donald Erb and Brian Fennelly, and began working with 16mm film in 1978. His work, *Wavelines II* (1979) received 13 awards. Weidenaar also worked with the Experimental Television Studio in Owego, New York. Weidenaar received a B.Mus. from the Cleveland Institute of Music and an M.A. and Ph.D. from New York University. He taught at the Cleveland Institute of Music, New York University, and is currently Associate Professor of Communication at William Paterson University, Wayne, New Jersey.[1]

Wavelines II is a three movement electronic music and film work of approximately eight minutes. The first movement's audio and visual material

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[1] Magnetic Music Publishing Company, Inc. *About Reynold Weidenaar.* <http://www.magneticmusic.ws>. 2 Dec. 2000.

were both produced with the same electrical signal; a Moog synthesizer was connected to an oscilloscope. The synthesizer provided the sound while the oscilloscope provided the visual material. The second and third movements' audio and visual material were produced separately. Black and white film was used and was colorized later.[2]

This piece certainly falls within the category of intermedia (in the language of Cook, a conformance piece). The musical and visual components are completely synchronized for almost the entire piece. One might call this kind of conformance dyadic. The piece is received as a unified gesture, yet it is the oscilloscope that corresponds to the synthesizer sound. Movements II and III, though sound and film were constructed apart, still exhibit the relationship of the visual responding to music. There are moments in the third movement, however, where the conformance relationship breaks down and the visual medium interacts with the musical medium. The sound at this point consists of two tones slightly out of tune so that the listener is aware of the separate beats. The beats are reflected in the visual component in the form of a vertically revolving wave that slows and changes direction when the beats of the musical tones collide. This conformance is soon changed as the visual rotation becomes out of synch with the music. The media are then interacting in the

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2 Magnetic Music Publishing Company, Inc. *Wavelines II: Three Visual Musical Compositions.* <http://www.magneticmusic.ws>. 28 Nov. 2000.

same way the two tones are. The relationship is soon brought back to conformity and the piece ends in sync (just as the beats collide).

Passage to Honor House (1986) is a multimedia work of a different nature. Its composer, Kenneth Jacobs, was born in 1948 and grew up in Evanston, Illinois. A composer of both acoustic and electronic works, he has been guest artist and lecturer at many universities and art galleries in North and South America. He received degrees (B.A., M.M.) from New Mexico State University and the University of Texas at Austin (D.M.A). *Passage to Honor House* was the recipient of an International New Music Composers Award.[3]

This work is approximately sixty-two minutes in duration and consists of 320 art-work presentations exhibited synchronously with electronic music [4] (liner notes). The images were initially painted on glass and then photographed. The music is homophonic and has easily discernable form. There are fourteen separate movements which are divided into two parts. The visual material consists mainly of elaborate colorful images slowly dissolving into one another. The dissolves are triggered at key points which correspond to the music. On the whole, this multimedia work is in the complementation category since the visual and musical material honor the same sentiment. They are certainly not in contest, and the slow dissolves prevent the work from

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3 Jacobs, Kenneth. Liner Notes. *Passage to Honor House*. The Zyode Company, DS0008, 1991.

4 Ibid.

becoming conformist. The spectator is instead left to observe the beauty of the image while experiencing its connotation in the music. There are, however, elements of conformance. At certain points, the dissolves between images correspond rhythmically to the music in that they "dance" back and forth between images. The result is an effect of "teasing" which is resolved as the music cadences. Other elements of conformance are the fade outs which occur at the end of each movement.

The Wake of Boreas (1980) is a multimedia work of a similar nature to *Passage to Honor House*. Its author, Tom B. Norris was born in Neptune, New Jersey, in 1953, and grew up in Nashville, TN. Norris holds degrees from The University of Tennessee, Knoxville (B.M., M.M.) and The University of North Texas (D.M.A).[5]

The Wake of Boreas is also a work incorporating dissolves between images. The images come from photographs of forestry in the Great Smoky Mountains during the months of January and February.[6] The images are "controlled by a dissolve unit which synchronizes the superimposed images of two projectors with the musical portion of the work." [7] The images of this piece match the music quite well. The stark images of winter complement the barren

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5 Norris, Thomas B. "*The Wake of Boreas*: A Work in Electronic Multimedia." Master's Thesis, University of Tennessee, Knoxville, 1980. 16.

6 Ibid., 7.

7 Ibid.

quality of the music. Few steady tones are used; there is instead an abundance of low "sawing" sounds.

The interaction of the media in this piece is very similar to that of *Passage to Honor House.* It is also a complementation type of multimedia and contains "dancing dissolves" which indicate some use of conformity. Other elements of conformity include rapid dissolves in the second half of the work; these correspond with the tempo of the music. Some of these dissolves, as with *Passage to Honor House*, create the illusion of movement. One particular dissolve, one with a tree on a hill dissolving to a hill without a tree, which creates the illusion of the tree disappearing, temporarily puts the media in contest as the visual dominates by taking on the role of narration. The contest is resolved in the next frame as the music cadences and the final image is that of a tree in moonlight.

Morton Subotnick was born in 1933 in Los Angeles. He received degrees from the University of Denver (B.A.) and Mills College (M.A.). He founded and directed the San Francisco Tape Music Center, has performed as a clarinetist and conductor, has received numerous awards for his compositions, and is currently director of the Center for Experiments in Art, Information, and Technology at the California Institute of the Arts.[8]

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[8] Burns, Kristine H. "Morton Subotnick." In *The New Grove Dictionary of Music and Musicians, 2nd ed.*, v. 24, edited by Stanley Sadie. New York: Macmillan, 2001. 648.

All My Hummingbirds Have Alibis (1992) is the third work in a series based on collage novels written by Max Ernst. Subotnick views these novels as "pieces of music" in that his understanding of them is intuitive rather than cognitive.[9] Dorthea Tanning describes the second of this 1930 collage series as an additional "dimension of psychic violence to the already-fraught pictures in which night and dream are the sovereign forces that not only cover but provoke the inexorable procession of events that defines the dilemma of 'A Little Girl Dreams of Taking the Veil.' [10] The multimedia work consists of images and text excerpts from one novel, which are accompanied by music. The music is scored for MIDI keyboard, MIDI mallets, flute, cello and computer. The computer part is actually an application and programming language developed by Mark Coniglio. The computer is able to interact with the performers in that it follows the tempo, looks for certain note patterns, and triggers various devices which alter the parameters of the sound.[11]

All My Hummingbirds is certainly not a conformance multimedia work. A total of seventeen scenic images are presented for each of the seventeen movements. While the music complements the images, thus providing a connotation for the images' denotation (although it is uncertain what the

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9 Subotnick, Morton. *All My Hummingbirds Have Alibis.* CD-Rom. Santa Monica, CA : Voyager Co., 1992.

10 Ibid.

11 Ibid.

denotation actually is), there is an element of contest discernable to the viewer who is aware of Ernst's writings. It is a matter of consequence, as Cook suggests, that when an already existing work is combined with another medium, the result is that the media are at "war"; "text intrudes upon music, and music upon text."[12] For the audience who are not acquainted with Ernst's work, however, this is probably imperceivable.

Subotnick's music indeed reflects the general haunting nature of each image. One example is the use of the word "rise" in the music. This corresponds to the image of a man who is levitating above the floor by the will of another man (see FIGURE 2 below). The music that follows "rise" are various electronic sounds rising in pitch through the opening of filters.

Maggie Payne's *Crystal* (1982) is another work which contains elements of contest. Payne was born in 1945 in Temple, Texas. She received degrees from Northwestern University (B.Mus.), the University of Illinois (M.M), and Mills College (M.F.A.), where she is currently co-director of the Center for Contemporary Music. [13]

Crystal is a multimedia work using video and electronic music of approximately ten minutes in length. The music was created using a Moog III

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[12] Cook, Nicholas. *Analyzing Multimedia*. 122.

[13] Borchert, Gavin. "Maggie Payne." In *The New Grove Dictionary of Music and Musicians, 2nd ed.*, v. 19, edited by Stanley Sadie. New York: Macmillan, 2001. 257.

synthesizer with "extensive multitracking." [14] The video is referred to as "videomicrography," which is essentially the formation of crystals filmed in real

FIGURE 2 "Rise" image. Morton Subotnick. *All My Hummingbirds Have Alibis.* CD-ROM. Santa Monica, CA : Voyager Co., 1992.

time through a microscope.[15] The music for this work is of the soundscape genre and is in two parts. The first part contains lower rumbles while the second part is generally brighter. The crystal images remain the same throughout; the material crystallizes rather slowly while the camera/microscope

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[14] Mills College: Maggi Payne, Music. *Selected Program Notes.* <http://www.mills.edu/ACAD_INFO/mus_maggi.html>. 5 Dec. 2000.

[15] Mills College: Maggi Payne, Music. *Compositions.* <http://www.mills.edu/ACAD_INFO/mus_maggi.html>. 5 Dec. 2000.

clumsily follows the lines of crystallization. The crystal formations are very colorful and have a texture not unlike the peaks of a sand desert.

The music and visual materials of *Crystal* do not correspond in any rhythmical sense to each other (such as the works of Weidennar, Jacobs, Norris, and Subotnick). While the music tends to connotate the essential quality of the image, the two media evolve separately. In this sense they are both contesting for the attention of the audience. This work is rather static and even hypnotic.

III. SUNRISE OUT OF ME

Sunrise Out of Me is in the format of three Quicktime movies with a combined duration of about fourteen and a half minutes. It was created using Adobe After Effects™, Adobe Photoshop™, Digital Performer™, and a Korg Wavestation EX synthesizer. The music was created first: a sound library of about fifty electronic instruments was created, of which only half were used to compose the music. Some 170 original images in all were generated from scratch in Photoshop, then about 130 were used in After Effects to render the movie files. The title, *Sunrise Out of Me*, comes from a segment of Whitman's poem, "Walt Whitman (Song of Myself)":

> Dazzling and tremendous, how quick the sun-rise would
> kill me,
> If I could not now and always send sun-rise out of me.
>
> We also ascend, dazzling and tremendous as the sun;
> We found our own, O my soul, in the calm and cool of the daybreak.
>
> My voice goes after what my eyes cannot reach;
> With the twirl of my tongue I encompass worlds, and volumes of
> worlds.[1]

The first movement certainly has an "introductory" quality about it. I conceive it as an introduction to the wonders of the universe. Perhaps it could symbolize a sort of "cosmic birth." The second movement is much more

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[1] Whitman, Walt. *The Walt Whitman Reader: Selections From Leaves of Grass*. Philadelphia: Running Press, 1993. 61-2.

mysterious and, at times, ominous. The third movement is violent in comparison to the other movements, both in the images and the music.

I began *Sunrise Out of Me* with the notion of Weidenaar's *Wavelines II* as an aesthetic ideal (despite Cook's notions of a null medium). I wanted to create a work that was as well unified as *Wavelines II*. However, I soon realized that the images I was creating and their relationship with the music were not really compatible with this ideal. Drawn to the qualities of the images, I chose to present the visual material in a fashion similar to the works of Jacobs and Norris. Using After Effects™, I created dissolves for the images and used timed color hues for a more responsive unification. The result is the possibility of two dynamics: dissolves at key points in the music and color changes for the articulations between these points.

Sunrise Out of Me is slightly closer to being conformist than the works of Jacobs and Norris. It is complementary in the sense that music is coupled with a series of partially static images; the music provides a connotation for their form. However, the additional color changes provide another level of unity that pushes this work closer to conformity.

IV. CONCLUSION

Multimedia is a complex art form whose whole is greater than the sum of its parts. Within this genre there remain infinite possibilities of creating new media with new cultural meanings. It is difficult to imagine how it might evolve, especially with the rapid rate of technological development which has characterized the twentieth century. Morton Subotnick suggested that the CD-ROM itself is indeed an opportunity for the reemergence of "chamber music." [1] His reasoning, stated almost ten years ago, was that the personal computer didn't allow the art experience to extend beyond that of the intimate; not many more than two people can sit in front of the monitor (this is not necessarily true today). While work with a computer is certainly solitary, there is also a certain degree of connection with the outer world (needless to say, most computers are connected with the internet). It also seems that the computer has become a channel of mass dissemination for the Western materialistic society. Nevertheless, whether or not the computer moves away from the realm of the intimate, it has certainly become an important aspect of our daily lives and is thus an opportunity to create new art.

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[1] Subotnick, Morton. *All My Hummingbirds Have Alibis.* CD-ROM. Santa Monica, CA : Voyager Co., 1992.

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APPENDIX

TECHNICAL NOTES

Sunrise Out of Me was developed on a Macintosh G4 computer and requires Apple's Quicktime Player™. Quicktime is a free application that can be downloaded over the internet from Apple; using Quicktime version 4 or higher should be sufficient. Although Quicktime is cross-platform, *Sunrise Out of Me* has not been tested on a Microsoft Windows™ based machine.

Sorenson Video™ compression was used to reduce the file size so that it could be read from a CD-ROM. However, if you are getting "jerky" playback from the CD-ROM (speeds less than 24x), it is suggested you *temporarily* copy the files to your hard drive and run them from there.

*"Walt Whitman (Song of Myself)" by Walt Whitman

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Dazzling and tremendous, how quick the sun-rise would
kill me,
If I could not now and always send sun-rise out of me.

We also ascend, dazzling and tremendous as the sun;
We found our own, O my soul, in the calm and cool of
the daybreak.

My voice goes after what my eyes cannot reach;
With the twirl of my tongue I encompass worlds, and volumes
of worlds.

Speech is the twin of my vision - it is unequal to
measure itself;
It provokes me forever;
It says sarcastically, *Walt, you contain enough - why don't you let
it out, then?*

Come now, I will not be tantalized - you conceive too much of
articulation.

Do you not know, O speech, how the buds beneath you
are folded?
Waiting in gloom, protected by frost;
The dirt receding before my prophetical screams;
I underlying causes, to balance them at last;

My knowledge my live parts - it keeping tally with the meaning
of things,
HAPPINESS - which whoever hears me, let him or her set out in
search of this day.

My final merit I refuse you - I refuse putting from me what I
really am;
Encompass worlds, but never try to encompass me;
I crowd your sleekest and best by simply looking toward you.

Writing and talk do not prove me;
I carry the plenum of proof, and everything else, in my face;
With the hush of my lips I wholly confound the skeptic.[1]

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[1] Whitman, Walt. *The Walt Whitman Reader: Selections From Leaves of Grass*. Philadelphia: Running Press, 1993. 61-2.

VITA

Mark Anderson Hatfield was born in Martin, Kentucky in 1975. He graduated from Maryville College in 1997, where he received the Dorothy Bushing Award for Composition. In 1998, he began graduate composition studies at the University of Tennessee, Knoxville with Kenneth Jacobs. While studying at the University of Tennessee, he has received the 2000 Philip Slates Memorial Composition Award and participated in many composition festivals. He graduated in August of 2001 with a Master of Music degree in composition.