

UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

THE COMPOSITION AND PRESENTATION OF  
FRAGMENTS IN GENERELATIVITY

A THESIS

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

MASTER OF MUSIC

By

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Norman, Oklahoma

2002

THE COMPOSITION AND PRESENTATION OF  
FRAGMENTS IN GENERELATIVITY

A THESIS APPROVED FOR THE  
SCHOOL OF MUSIC

BY

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## ABSTRACT

"Fragments in Generelativity" is a sixty-two minute composition consisting of digitally processed sounds from a live recording of my original flute quartet "Fragments for Four". Since no performers are involved, and traditional concert hall spaces render audience members dependent on visual stimulation, I worked in collaboration with several architects to provide a stage design for the premiere performance. This thesis provides an introduction to the genesis of "Fragments in Generelativity," a description of the architectural collaboration, a movement by movement analysis of the music and the digital techniques used, as well as some conclusions about my own compositional style and new avenues for the future.

## ACKNOWLEDGMENTS

This thesis and composition are dedicated to Christian Asplund who has given me an edge (in many ways) and helped me clarify my visions. Also thanks to Michael Lee for wanting more.

## INTRODUCTION

The genesis of "Fragments in Generalativity" plays a significant role in the compositional process and final presentation of the work. In September of 2001 I began writing a sequence of short (0 to 9 measures) flute quartets, the length being determined by successive decimal places of the Golden Mean or Phi (1.61803...). The initial goal of this project was to compose one piece per day over the course of several months so that a substantial collection of flute quartets would result.

On September 1, 2001 I began writing the quartets, of which thirteen were completed. The final score, "Fragments for Four," has been included in the appendix for reference throughout this thesis. Many factors went into the abrupt halt in composition, the main reason being the attack on the World Trade Center in New York City on September 11, 2001. Following the tragedy, after a significant amount of time had passed, I realized my plan to compose one piece a day had been disrupted beyond repair. As were most Americans' lives.

But from the occurrence of these events emerged a new vision and a new plan. I was astounded at how a huge

structure such as the World Trade Center could be reduced to a mass of its own building blocks (see Illustrations page 25). Yet what I envisioned was how much more astounding it would be to construct a new, more substantial structure from those very same building blocks. In a private lesson, composer Robert Ashley further encouraged my thoughts by suggesting I think of composition architecturally. He proceeded to draw the skyline of a city with two tall towers, commenting, "...and we used to have the World Trade Center - those damn terrorists..." Thus the idea was born to use the halted quartet project to "rebuild" a bigger, more substantial composition.

"Fragments in Generelativity" is based on a live recording of the "Fragments for Four" (CD Tracks 1-13), which was performed in Pitman Recital Hall at the University of Oklahoma on November 2, 2001 (performers included Valerie Watts, Addie deHilster, Kristen Davies, and myself). This recording served as the source of building blocks from which elements were taken, transformed or distorted, and put back together. The invented word "generelativity" from the title suggests this very process. It is the combination of the two



words "generative," which describes the breakdown of the original piece to create elemental building blocks, and "relativity," which addresses the strange sense of time one feels when the distorted elements are put back together.

The digital manipulation of the "Fragments for Four" was done with the Pro Tools® program. Tools used include Time Compression and Expansion, Pitch Shift, Reverse, Automation, Reverberation, the Playback Keyboard Shortcut, Equalization, and the Preview Function in both Reverb and EQ. Each of these tools will be fully explained throughout the analysis.

Once each movement of the Fragments had been manipulated in some way and integrated into the final structure, the new, more formidable composition was complete.

## DESCRIPTION OF COLLABORATION AND PREMIERE

"Fragments in Generelativity" is a sixty-three minute piece recorded to a Compact Disc. No score exists and all one needs to hear a performance is a CD player and headphones or a stereo system. But the current traditional mode of performance is for an audience to sit in a recital hall, with their gaze fixed toward the stage. Since there are no performers needed on stage this poses a dilemma for the traditional audience. The obvious solution was to collaborate.

Even more obvious was with whom I should collaborate: an architect. I had my choice, from modern dancers to sculptors. But the nature of my composition lent itself so well to an architectural installation that could be studied by an audience for sixty-three minutes, yet not be boring or tiring. This was the main goal of the collaboration.

I met Elaine Asal, an architect at the University of Oklahoma, through chance circumstances and proposed this collaboration to her. She took interest along with three of her friends, Kevin Hensley, Hadi Seyfi, and Brandon Specketer, also architects at the University of Oklahoma.

Collaboration with this group proved to be most pleasant, as they were already a well matched, professional, and cohesive group with much experience in projects outside the University.

On our first meeting, I came to the architects with a rough recording of the composition and some ideas about what I envisioned. We listened to the music as I described the repetitive, distorted, and abrupt nature of it. We decided to have the structure ultimately reflect these attributes, and the architects immediately began sketching plans.

After several more meetings and some time spent in the recital hall, we had decided on three components to the installation. First was a structure made of black cube frames, several of which had string or wire patterns in them (see Illustrations page 24). One cube had a white ring suspended from a string, which was the only (imperceptibly) moving part of the structure. The detail of the string art was only visible when the structure was more intensely lighted (a rare occurrence) in either red or blue. This part of the installation reflected the repetition and elusive detail of the music.

The second component of the installation was an antique lamp with a red base. The marvel of this lamp was that it had a mind of its own. When turned on, the red base would glow for approximately 15 seconds, go out for 5 seconds, and then begin to blink in a calmly irregular fashion. The lamp was a perfect match for the long periods of uneven repetition of sounds that occurred throughout the composition. It was truly the star of the show, beginning and ending the whole occasion.

Lastly, the third, and most complex component of the installation was a pair of screens suspended from cables across the front of the stage (see Illustrations page 24). Due to the lack of funding for this project from the Interdisciplinary Arts Project Program, the architects came up with the brilliant idea to use shower curtains as screens. One screen ran parallel to the stage, and the other ran at an angle up to the lighting platform. The purpose for these screens was to project images on them from behind. During certain movements this was to portray the transmogrification and distortedness of the original sounds. And during other movements (such as 9/11) the projections were crystalline, abrupt flashes of reality.

Thus at the premiere performance, March 28, 2002, the three components of the installation worked in conjunction to reflect and augment the music without intrusion. Since the premiere, the piece has been performed twice: once as a twenty minute excerpt with cubes and lamp, and once more in its entirety with just cubes and lighting. In a traditional concert setting, the success of "Fragments in Generelativity" is dependent on well thought out and integrated visual stimulation.

## ANALYSIS BY MOVEMENT

(see Appendix A for the CD Track Listing)

### HALF ONE

#### The Beginning

The duration of this movement is 9:36, broken into four sections on the study CD (Tracks 14-17). Visual elements during this entire movement consisted only of the blinking lamp. The technique used on the first three sections of this movement involves the spacebar keyboard shortcut. In Pro Tools®, the spacebar begins and ends playback. So, by holding the spacebar down, a repetitive, abrupt start-and-stop effect is achieved. The point at which the program starts playback is determined by the cursor, which can be moved with a click of the mouse.

The first section (subtitled Interval I) is based on the opening low C of the sixth movement (Pedantic) of the Fragments (Appendix B, page 35). The second section (Interval II) is based on the second interval (Bb, Eb) of the thirteenth movement (Long; Phasing) of the Fragments (Appendix B, page 42). The third section (Interval III) is based on the last chord (Ab, C, D, F#) of the third

movement (Flowing; Pensively) of the Fragments (Appendix B, page 32).

Throughout each of these sections a minuscule portion of the said "intervals" has been selected and stretched with the Pro Tools® Time Expansion tool. Then from there the "spacebar technique" was used while slowly progressing through each interval.

The fourth section in this movement is a recap of each consecutive interval without the spacebar technique. This section also includes interruptions based on successive split-second repetitions of the entire sixth movement of the Fragments, the whole movement having been Time Compressed and Pitch Shifted (both up and down).

### Foundation

The duration of this movement is 5:40, broken into five sections (CD Tracks 18-22). For this movement the lamp was unplugged and two red spotlights extremely slowly and dimly lighted the cubes. The sound material for this entire movement, which happens to be all silence, comes from the fourth movement (Somber) of the Fragments (Appendix B, page 33). After Time Compressing/Expanding and Pitch Shifting the selection of

silence multiple times, digital clicks and pops were added, so the resulting texture is like white noise but more complex.

The first section of this movement (subtitled Spacebar) uses the same spacebar technique as the last movement on the new white noise texture.

The second section (Spaced Out) is a collection of random length and randomly spaced out "blips" of the white noise. These blips occur in multiple layers, each with a different pan position (left to right) and volume. The length and occurrence of blips was controlled by automation of the mutes. For example, the mutes remained on and were only taken off for short instances to let sound through.

The third section (Single Frames) uses the same multiple layers and automation of mutes techniques but this time with all exactly single frame "blips" of sound. Also during this section the number of sounds and which layer they occur in is controlled by a set of Fibonacci numbers.

The fourth section (Deletion) consists of the continuous block of white noise in multiple layers (as before), with intermittent sections deleted from layers.



This creates an abrupt change in volume and pan due to the different settings in each layer.

The fifth and last section of this movement (Fib-in) begins with a single frame blip of sound followed by 144 frames of silence, followed by another single frame of sound with 89 frames of silence, and so on, with the number of frames of silence equal to consecutively smaller Fibonacci numbers. When the sequence gets down to the number one, the process reverses, with one frame of silence sounding followed by consecutively larger Fibonacci numbers of sound, through 144, resulting in a straightforward presentation of the white noise block of sound. The end of this movement is a smooth transition into the next movement.

### Three

The duration of this movement is 4:45, broken into three sections (CD Tracks 23-25). The cubes are dimly lighted red from the last movement, when abruptly both screens turn red. This is the first point, about fifteen minutes into the piece, where recognizable versions of the "Fragments for Four" occur. This movement consists of altered versions of the first movement of the

Fragments (Appendix B, page 30), the eighth movement (Appendix B, page 37), and the ninth movement (Appendix B, page 38).

In order to achieve a smooth transition from the white noise texture into the pure flute tone, I took a selection of the first note of the first movement of the Fragments, stretched it, and reversed it. Cross-fading the white noise texture with the new sound created a more fluid shift. With some ping-pong-delayed reverb added to the flute sound, a moment of suspense and expectation is created.

The first movement of the Fragments (Presto Possible) is then presented with some special alterations and additions. The popping and choppy texture of the movement is the result of using the same automation of mutes technique as described in the analysis of the second and third sections of the "Foundation" movement (page 10). Although here, the mutes were turned off to keep sound out (as opposed to being turned on to let sound through) in order to achieve a more smooth, continuous sound. At the end of this section, just before the last accented chord fades out, it reverses and replays the final blast with more reverb and distortion.

This happens several times until at last it is allowed to fade away.

The second section (Solid) is a presentation of the eighth movement of the Fragments. Again the ending is extended by copying the ostinato figure and repeating it over and over. Then multiple layers at more subdued volume levels are added to create an increasingly blurred fadeout of this section.

The third section (Light) acts as a comic relief piece based on the ninth movement of the Fragments. At this point the blinking lamp was plugged back in and allowed to do its magic. The main technique used in this section was the deletion of note attacks. My conception of the original Fragments for Four movement was for it to go on repeating the last bar a long period of time. In the recording studio I was able to realize this by copying regions of sound and using them over and over. The result is a silly sounding argument between two groups of flutes and the blinking lamp.

### Aria

The duration of this movement is 6:22 (CD Track 26), followed by 27 seconds of silence (CD Track 27). The

projection of dark, slowly moving lines, slowly changing colors on both screens was the added visual feature of this movement. The first rumbling texture that fades in is based on the second movement (Quasi Presto) of the Fragments (Appendix B, page 31). This tiny movement was Time Compressed to an infinitesimal length, and repeated many, many times in a smooth alternation with the reversed form of the movement. The result was then Pitch Shifted to an extremely low range, after which the same compression/alternation technique was applied again. So effectively the whole texture is an enormous palindrome created from the most microscopic building block.

Above this impressive texture are the blips of digital white noise transported from the Foundation movement. The main feature of this movement is the strange, distorted electric cello or guitar-like solo. This sound is based on the twelfth movement (Sustained) of the Fragments (Appendix B, page 41). The sonorities created by this double canon were Time Compressed, Time Expanded, and Pitch Shifted multiple times with reverb added at various points in the process. To end the first half, all lights are faded to black and the audience is submerged in silence.

## HALF TWO

### Page Turn

The duration of this movement is 9:20 (CD Track 28). At the premiere, this movement was done in total darkness. Although for the other performances it was done once with the blinking lamp and once with just red lighting. The sounds for this movement were based solely on the sound of a page turn from the original recording of the Fragments. The short selection of sound was put through the preview function on a 10-band equalizer while very specific frequencies were being augmented. The preview function allowed me to repeat the sound in a loop, leaving me free to adjust and bring out different frequencies. At approximately six minutes into the movement, layers are added creating a phasing rhythmic passage.

This movement embodies many attributes the entire work explores: repetition; abruptness; digital manipulation of sound; distortion of sense of time; increased impact of change; and architecture.

## Celestial Phasing

The duration of this movement is 4:52 (CD Track 29). A brightly colored, swirling projection appeared on the skewed screen. This movement was the first to be composed. It is based on two of the Fragments for Four: the thirteenth (Long; Phasing - Appendix B, page 42) and the seventh (Celestial - Appendix B, page 36). These movements were simply Time Expanded so that they both became the same length (4:52), and played simultaneously. The Time Expansion tool holds the sound waves to the same pitch level, so if there is a considerable amount of stretching, digital imperfections occur when the program tries to create extra sound waves. This is where the distortion and "warbling" sounds come from.

I chose to stretch these pieces because I was not happy with the result of the live performance. The thirteenth movement of the Fragments is difficult for flutists to realize because of breathing issues. I imagined it much longer and slower changing, therefore it was the perfect solution to use the Time Expansion tool. When I discovered the amazing effect it had when used drastically on the Phasing movement, I decided to try the tool on another movement (Celestial). To my surprise the

two movements, when stretched, fit together perfectly.  
Hence I had Celestial Phasing.

### 9/11

The duration of this movement is 9:18 (CD Track 30). This being the most significant movement of the work, all attention is directed toward the center screen where slow television static is gradually, throughout the movement, more and more frequently interrupted by "blips" of crystalline images of the World Trade Center and the ensuing attack.

At the beginning of the movement, after a brief scatter of page turn sounds, a sped-up, layered, and even more frantic version of the eleventh movement of the Fragments (Fast; Nervously, composed on the morning of September 11, possibly during the attack) appears (Appendix B, page 40).

Short beeping sounds appear in a cavernous space, becoming more and more urgent until multiply layered and chaotic. The technique used in this movement is similar to the "spacebar technique" in the first movement. But instead of holding down the spacebar, I would manually press it repeatedly. Another difference is that instead

of using the mouse to place the cursor, I would use the mouse to select a region of sound to play as I operated the spacebar, slowly progressing through the movement. There are three total run-throughs of the original movement, each with a longer selection of sound. By the third time through, the length of selections is long enough to recognize that the same movement is being played, only fractured into pieces.

#### The End

The duration of this movement is 12:38, broken into six sections (CD Tracks 31-36). The first section (Sustained; Monotone) is played in blackness, everything shut down. Ethereal chords emerge, swell, and become other chords. This section is based on the tenth movement of the Fragments (Appendix B, page 39). The sound has been reversed and Time Expanded, not to the point of digital distortion, but just close enough. The end of this section is smoothly overlapped with the next.

Section two (C/D Preview) is derived from a small selection of a stretched version of the first interval (C, D) of the third movement (Flowing; Pensively) of the Fragments (Appendix B, page 32). This small selection



was put through the preview function of the Reverb tool. As the sound was repeated I was able to select different types of reverb, some creating large explosions of sound. At this point, on stage, the blinking lamp returned, but this time controlled by plugging in and unplugging at times coordinated with changes in reverb.

Section two gives way to the stretched, sustained interval (C, D) as the third section begins. Two blue spotlights illuminate the cubes. This section (Flowing; Pensively) is an extended version of the third movement of the Fragments as mentioned above. As happens in the original piece, the interval (C, D) is sustained throughout the section. The flute timber is increasingly added and the digitally altered timber is diminished. As the section progresses, more and more layers appear, until a drawn out "warbly" version of the last three measures is played. During this chaos, the two blue spotlights fade in and out at irregular intervals until they stabilize and the last chord of the piece is sustained.

The last chord of the third movement of the Fragments is the beginning of the fourth section (Interval III Reprise), which happens to be the same

chord as the third section (Interval III) of the first movement (The Beginning) of "Fragments in Generativity." The emergence and reoccurrence of this chord demonstrates the connection between the fragmented building blocks in the beginning of the piece and the recognizable versions of the original Fragments for Four.

The fifth section (Foundation Reprise) follows, which is a reprise of the fourth section (Deletion) of the second movement (Foundation). This serves to complete a reminder of the first two movements (a sort of "recap" of the "exposition"...?). During this section the blinking lamp returns and remains on for the duration of the performance.

From the digital white noise of the last section comes the sixth section (Carefully; Crisp) with a version of the fifth movement of the Fragments (Appendix B, page 34). The roaring, windy sound is a Pitch Shift and Time Compression and Expansion of the last chord of the movement. The rest of the movement is presented in a multi-layered form with decreasing volume levels. The windy texture increases in volume, while the blue lights slowly fade on the cubes. At the premiere performance the lamp was left blinking until a satisfactorily long

period of time had passed. Then when another satisfactorily long period of time had passed in complete darkness and silence, all house lights were turned on at once and the show was over.

## CONCLUSIONS

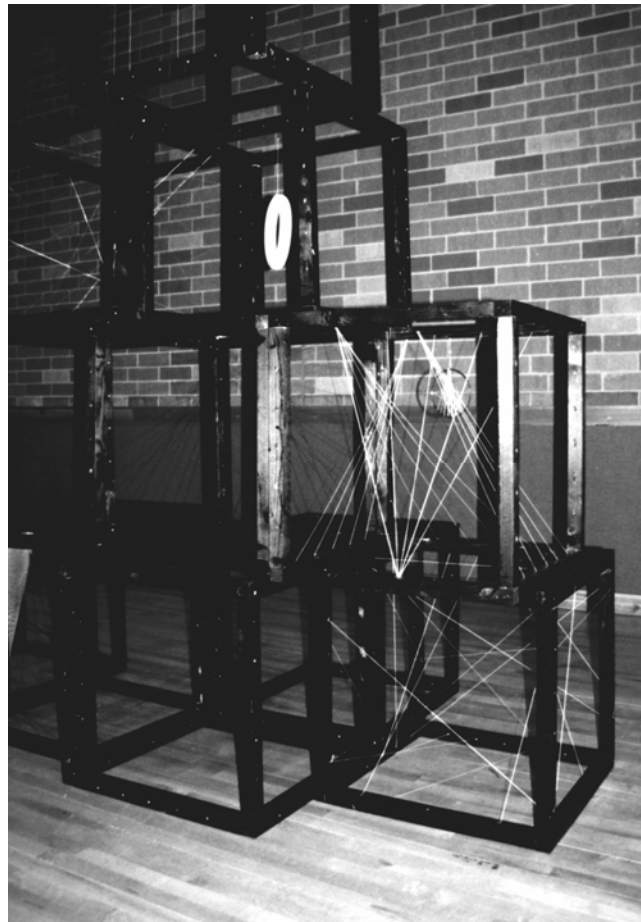
Creating a piece of music by drawing upon fundamental elements of another composition is a risky endeavor. Many sections of "Fragments in Generelativity" have no melody, nothing to grasp onto, no motivic development. Some may say that this piece is not organic. It doesn't grow from a central motive or theme (Beethoven's Fifth Symphony comes to mind). But I would argue that my music is in fact organic (an essential for success in the time-honored traditions of composition).

Just as science has broken matter down into the smallest subatomic particles possible, and is now able to work with them, it is my goal to break music down to its smallest components to see what possibilities could arise. In breaking a piece down, like I've done with "Fragments for Four," one creates a palette of fundamentally interrelated building blocks. And if one uses building blocks of this type, the resulting music is bound to be organic, stemming from a common origin.

I believe this technique to be promising for the future, as new tools are invented and new ways of using old tools. Traditional development of melodic material

was taken to its limits, and now novelty and experimentalism have reached their boundaries. Robert Ashley once told me, "If you want to be remembered, you have to push the boundaries." I think how amazing it is to be one of the first in a new generation to push the unknown.

## ILLUSTRATIONS





Carmen Taylor - AP/Wide World Photos  
<http://usinfo.state.gov/topical/pol/terror/album/attack/912a.htm>



Jeff Christensen/Reuters  
<http://www.time.com/time/photoessays/wtc/9.html>



photograph by John Albanese  
<http://www.time.com/time/photoessays/firefighter/3.html>

## APPENDIX A

### TRACK LISTING FOR STUDY CD

#### Fragments for Four {8:02}

- [1] 9/1 Presto Possible
- [2] 9/2 Quasi Presto
- [3] 9/3 Flowing; Pensively
- [4] 9/4 Somber
- [5] 9/5 Carefully; Crisp
- [6] 9/6 Pedantic
- [7] 9/7 Celestial
- [8] 9/8 Solid
- [9] 9/9 Light
- [10] 9/10 Sustained; Monotone
- [11] 9/11 Fast; Nervously
- [12] 9/12 Sustained
- [13] 9/13 Long; Phasing

#### Fragments in Generativity

##### HALF ONE

##### The Beginning {9:36}

- [14] Interval I
- [15] Interval II
- [16] Interval III
- [17] Intervals

##### Foundation {5:40}

- [18] Spacebar
- [19] Spaced Out
- [20] Single Frames
- [21] Deletion
- [22] Fib-in

##### Three {4:45}

- [23] Presto Possible
- [24] Solid
- [25] Light

##### Aria [26] {6:22}

- [27] Silence {0:27}



## APPENDIX A (continued)

### Fragments in Generelativity (continued)

#### HALF TWO

- [28] Page Turn {9:20}
- [29] Celestial Phasing {4:52}
- [30] 9/11 {9:18}
- The End {12:38}
- [31] Sustained; Monotone
- [32] C/D Preview
- [33] Flowing; Pensively
- [34] Interval III Reprise
- [35] Foundation Reprise
- [36] Carefully; Crisp

APPENDIX B

FRAGMENTS FOR FOUR

(begins on following page)