

STRUCTURE AND PRODUCTION OF *NIGHT FLAME RITUAL*

I have never cared for the use of elaborate numerical and mathematical constructs to determine musical structure. But when I came across the idea of using the Fibonacci number series in musical composition, my interest was piqued. I read a brief basic article on the topic by Barry Hufker in the June 1979 issue of *db* magazine. He explained that this number series is based upon the “golden mean” or “divine proportion,” which has appeared in art and architecture since antiquity, and occurs frequently in nature as well. Each number in the series (except the first) is the sum of the two previous numbers: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144,... Any two adjacent numbers in the series have the golden ratio of 1:1.61803. Above the number 610, the proportion is exact; the lower numbers’ proportions are only approximate. Hufker cited the use of Fibonacci numbers by composers, notably Bela Bartók, to structure the lengths of phrases and sections.

I started to work with the idea of creating a piece built up of phrases or segments of various lengths—each segment to be a certain number of beats, each number of beats to be taken from the Fibonacci series. The point is not for the listener to perceive the proportions of the segments. There is no need to be aware that, for example, here is a 13-beat segment followed by a 21-beat segment, this surely sounds like the divine ratio, how wonderful! The point is rather for the listener to gauge intuitively that there is a sense of “right proportion” in the length of the phrasing, and that there is a feeling of good timing when arriving at points where changes occur in the dynamics and the dramatic character of the music.

At this time I was working on *Pathways*, a series of pieces incorporating tap-dance sounds. I ended the series with *Pathways IV: Fibonacci Loci* (1980), a tape piece which was built up of such segments. It worked well enough so that I decided to use the same approach several years later in a new video.

For *Night Flame Ritual* (which I had originally planned to call *Night Flame Dancer*), the music was composed before the video was created. This gave me the freedom to make the music work totally on its own terms without compromises. It also saddled me with the subsequent task of having to create video that would fit the music.

There are three main sections, A-B-A, plus a coda. Each section is an arch form divided into segments. Section A has 12 segments of music (the shortest is 2.25 seconds, the longest is 15.2 seconds). These 12 segments are subdivisions of longer segments, which are subdivisions of still longer segments. Section A overall is divided into two segments, 89 beats and 55 beats, which are two adjacent numbers in the Fibonacci series. The barline dividing these two sections is labeled “ ϕ ” (phi) in the score, which is the top of the arch form and the major dividing point of the section. The several segments leading up to and away from the ϕ barline are the most intense and musically dramatic parts of the entire section. This is true for all three sections and also the coda.

Here is how the subdivisions of Section A into smaller Fibonacci-numbered segments are set up. Taking just the first segment of 89 beats, this is subdivided into 34 beats followed by 55 beats. Then looking just at the opening 34-beat segment, this is subdivided into 13 beats followed by 21 beats. Here we arrive at the first two segments of the music, which are

13 beats (measures 1-3, duration 9 seconds) and 21 beats (measures 4-8, duration 15 seconds). If you have followed this rather tedious explanation, you will know that the overall 89+55 division has been subdivided twice. That is the arrangement for the first two and last two segments of section A. The middle sections are subdivided a third time to slice them into the very short and active sections that surround the ϕ barline.

Here is a table of the segments of section A:

| | | | | | | | | | | | | | |
|--------------|------------|-----------|-----------|------------|-----------|------------|--------|------------|-----------|-----------|-----------|-----------|-----------|
| Segment no. | 1 | 2 | 3 | 4 | 5 | 6 | ϕ | 7 | 8 | 9 | 10 | 11 | 12 |
| Measure nos. | 1-3 | 4-8 | 9-13 | 14-16 | 17-19 | 20-21 | | 22 | 23 | 24 | 25-26 | 27-29 | 30-35 |
| Dynamic | <i>fff</i> | <i>mp</i> | <i>mf</i> | <i>fff</i> | <i>mp</i> | <i>fff</i> | | <i>fff</i> | <i>ff</i> | <i>mp</i> | <i>mf</i> | <i>mp</i> | <i>mf</i> |
| Seconds | 9 | 15 | 15 | 9 | 9 | 6 | | 2.25 | 3.5 | 3.6 | 5.9 | 9.5 | 15.2 |
| Beats | 13 | 21 | 21 | 13 | 13 | 8 | | 3 | 5 | 5 | 8 | 13 | 21 |
| Subdiv. 3 | | | 21 | 13 | 13 | 8 | | 3 | 5 | 5 | 8 | | |
| Subdiv. 2 | 13 | 21 | 34 | | 21 | | | 8 | | 13 | | 13 | 21 |
| Subdiv. 1 | 34 beats | | 55 beats | | | | | 21 beats | | | | 34 beats | |
| Division | 89 beats | | | | | | | 55 beats | | | | | |

The remaining sections follow a similar plan.

The first and most interesting stage of production of *Night Flame Ritual* was to film the masked dancer Nick Markovich dancing backwards on a platform in front of a large fire. It was shot on 16mm film on December 17, 1982, one of the coldest and shortest days of the year. We had a small crew and had secured a permit from the N.Y. Fire Department to burn a fire at the corner of Bowery and Stanton St., at the time a vacant lot. The shoot was scheduled for mid-afternoon, so that we could first secure some daylight shots with old Bowery buildings in the background, and then get transitional footage into the night. After the platform was erected and the fire was going, a NYFD truck roared into view, siren screaming, and New York's Bravest put out our fire. They were vastly uninterested in discussing any fire permit, their chief concern being to put out as many fires and log as many statistics as possible. All our kindling wood was soaked. We went off to scour the neighborhood for combustible trash. By the time we got the second fire going, it was dark. The only background was a single lighted window in a building. Because of the time delay, we lost several crew members and with it the ability to do much crowd control. The warm fire attracted onlookers and one or two are visible briefly in the final video.

In January 1983 I took a 10-minute video transfer of the camera-original film footage to the Experimental Television Center in Owego, N.Y. For 5 days I worked on creating various image-processing designs of the same footage, over and over again. The best way to be productive during a limited time period is to adopt a "sketchpad" approach: work out a design or idea so that it seems fairly successful, but strictly limit the valuable time spent fine-tuning it as if a finished work. Then roll the tape and go on to the next idea. By the time you are in the middle of your third 12-hour day, your mind is so overloaded from staring at weird video, you cannot trust your judgment in any case.

The result of this residency was four 1-hour tapes, each with five or six takes, 23 takes in all. Each take was a different visual design—various colors, technical transformations, etc. For the next 5 months I composed the score, without looking at any video. I had a general idea of what I had created, but did not wish to view any footage for those few months. This would give me the necessary distance so that when next viewed, it would be with a fresh eye.

As I composed the score, I created the tape part. This consisted of ¼-inch tape editing and processing, mixing, re-recording, equalization, and digital delay of sounds produced by tap dancing, cowbells, fire, fireworks, and clarinet multiphonics. The score was completed on May 16, 1983, and the audiotape on June 6.

I then screened the four hours of videotapes and noted the scenes or shots that were the most interesting or artistic. I made extensive notes on their basic “look,” color, rhythm, feeling/response/emotional content, with short descriptions of the movement, motion, gestures, and other content.

To assist me in keeping track of each shot and where it would go, and to see on one page how the various musical and visual elements would flow, I made a chart that would depict the basic musical and visual content. The original handwritten worksheet and edit list for the piece is the chart labeled “Night Flame Dancer.” The music, being already fixed, is on the left-hand side in ink. The video, subject to trial and error, is in pencil on the right-hand side. Reading the vertical columns from left to right:

- music divisions into A-B-A-Coda; ϕ locations.
- “§” = segment number.
- “dynamic” = dynamic marking of the segment.
- “contour” = line drawing of the pitch contour.
- “direction” = the ending dynamic of the segment.
- “DUR.” = duration of the segment in seconds.
- “activity” = one or two words on the character or quality of the segment.
- “take” = the take number on the 4 hours of processed images made at ETC. “3E” is the third tape, and the fifth take on that tape.
- “start time” = the starting time on the tape, of the shot to be edited into the video master.
- edit-session checkmarks and “C” if the tape was cued.
- “image” = brief description of the video material.

The video master was first recorded with the audiotape on the soundtrack, and then the video shots were edited in over the music.

--Reynold Weidenaar, Nov. 2007