GAMMA-RAY BURST

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A Thesis

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Committee:

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ABSTRACT

Christopher Dietz, Advisor

*Gamma-Ray Burst* is a single-movement work for sinfonietta with the following instrumentation: flute, oboe, bass clarinet, bassoon, horn, trumpet, trombone, percussion, piano, 2 violins, viola, cello, and contrabass. The piece is approximately ten minutes in length and has three distinct formal sections. The conceptual idea for the piece stems from a cosmic event called a gamma-ray burst. This phenomenon is one of the brightest, most chaotic explosions in the entire universe.

My composition follows a narrative which parallels the three stages of an actual gamma-ray burst: the undisturbed cosmos, the burst, and the afterglow. The calm opening develops slowly using musical representations of the Doppler Effect, increasing movement and activity. The next section, the burst, depicts the release of a tremendous amount of energy. The energy dissipates via representation of distinct regions of the electro-magnetic spectrum—radio waves, visible light, gamma rays, etc. This suggests the start of the third formal section, the afterglow. In my narrative, the afterglow represents a scenario in which a gamma-ray burst is aimed directly at the Earth. The lasting effects would be devastating to life on Earth and would result in a barren environment.

The rhythmic language employed in this piece is important in accurately depicting the extra-musical narrative. My goal is to avoid periodicity in order to create a sporadic and spontaneous musical space. To achieve this, I use syncopated gestures between contrapuntal lines and a variety of rhythmic subdivisions.
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Gamma-Ray Burst (2017)

Duration: 10”

Instrumentation
Flute
Oboe
Bass Clarinet
Bassoon

Horn
Trumpet
Trombone

Piano
Percussion (Glock and Chimes)

2 Violins
Viola
Cello
Double Bass

Program Notes
Gamma-Ray Bursts have been described as one of the most chaotic and violent events in the universe. Most Gamma-Ray Bursts (GRB) occur millions of lightyears away from Earth. The release of energy that occurs after the “Burst” is referred to as the “Afterglow” in which energy dissipates throughout the spectrum of energy frequency.
Fl.

Ob.

B. Cl.

Bsn.

Hn.

CTpt.

Tbn.

Glock.

Pno.

Vln. 1

Vln. 2

Vla.

Vc.

Cb.

key clicks, no air

breathy

p — ff — p

pp — f

key clicks, no air

air, non-pitched "sh"

senza sord., air, non-pitched "sh"

l.r. unless otherwise indicated

(dampen)
Moving forward, faster \( \dot{=} 80 \)

- Fl.
- Ob.
- B. Cl.
- Bsn.
- Hn.
- C Tpt.
- Tbn.
- Glock.
- Pno.
- Vln. 1
- Vln. 2
- Vla.
- Vc.
- Cb.
Holding back $\dot{x} = 66$

Pno.

Vln. 1

Vln. 2

Vla.

Vc.

Cb.
Energetic, explosive $j = 96$

- Fl.
- Ob.
- B. Cl.
- Bsn.
- Hn.
- C Tpt.
- Tbn.
- Glock.
- Pno.
- Vln. 1
- Vln. 2
- Vla.
- Vc.
- Cb.
Calm, slower \( \mathbf{=60} \)

\[ \begin{aligned}
&\text{Fl.} \\
&\text{Ob.} \\
&\text{B. Cl.} \\
&\text{Bsn.} \\
&\text{Hn.} \\
&\text{C Tpt.} \\
&\text{Tbn.} \\
&\text{Chim.} \\
&\text{Pno.} \\
&\text{Vln. 1} \\
&\text{Vln. 2} \\
&\text{Vla.} \\
&\text{Vc.} \\
&\text{Cb.}
\end{aligned} \]
Dying, steadily $j = 60$

Fl.  
Dying, steadily $q = 60$

Ob.  

B. Cl.  

Bsn.  

Hn.  

C Tpt.  

Tbn.  

Chim.  

Pno.  

Vln. 1  

Vln. 2  

Vla.  

Vc.  

Cb.  

solo anxiously
Fl.

Ob.

B. Cl.

Bsn.

Hn.

C Tpt.

Tbn.

Chim.

Pno.

Vln. 1

Vln. 2

Vla.

Vc.

Cb.

pp

breathy

flowing

solo (with Viola)

pizz. (dampen, do not let ring)

solo (with Bass Clarinet)

arco