



# Gravity Modulations

for string quartet



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(2004)

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## Notes on the piece:


*Gravity Modulations* explores shifts in "metrical gravity", which is the sum of all forces that tend to synchronize ("convergent forces") and asynchronize ("divergent forces") multiple concurrent layers of rhythm. These convergent and divergent forces are further divided into two categories: intrinsic and extrinsic. Intrinsic forces (whether divergent or convergent) are imbedded in the music itself. Extrinsic forces encompass all elements from sources outside the music (primarily, the musicians.) Examples of intrinsic forces include overall rhythmic complexity (or simplicity), the relative prominence of certain layers compared to others, the presence of resynchronizing devices, etc. In most cases, higher levels of complexity correlate to stronger divergent forces. Examples of extrinsic forces include the training of performers, their innate rhythmic abilities, their motivation to play well, the amount of time they practice and rehearse, how they feel during a performance, what they had for dinner that evening, etc. In most cases, higher levels of training, more acute rhythmic sensibilities, more practice, and more rehearsal correlate to stronger convergent forces. Thus, a dynamic interplay of four forces (intrinsic convergent, intrinsic divergent, extrinsic convergent, and extrinsic divergent) constantly regulates the metrical gravity at any point in any performance of music involving two or more human performers.

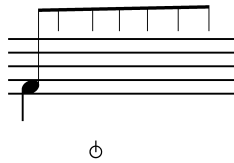

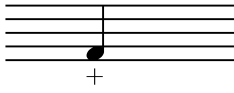

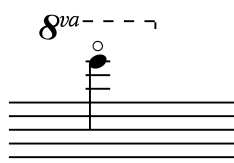
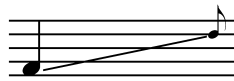




For example, let us suppose that two intermediate flute students are instructed to play *Twinkle, Twinkle Little Star* together, but one is to perform it at MM quarter = 120 and the other is to perform it at MM quarter = 118. Starting simultaneously and performed correctly, these two parts should immediately begin to phase. However, the particular rhythmic dissonance of this exercise has an overwhelmingly convergent effect (specifically, it is an intrinsic convergent force) that our hypothetical intermediate flute students are unlikely to be able to resist. Sooner or later, they will probably synchronize, if they manage to phase at all. Now, let us suppose the same exercise is proposed to two veteran interpreters of Steve Reich's phase pieces. Their background provides an extrinsic divergent force that may balance the convergent tendencies of the exercise, and coupled with sufficient rehearsal (another extrinsic divergent force, in this case), may result in a neutral metrical gravity. In other words, they can play it correctly.

These forces (and the resultant metrical gravity) are present in every performance of music involving two or more human performers. In *Gravity Modulations*, I simply recognize the forces and use them as compositional resources.

## Performance notes:

The most unconventional aspect of this piece is that it incorporates sections that are asynchronous (i.e. parts are not in the same meter or tempo.) This is indicated by dashed barlines (e.g. m. 27.) During these passages, parts will not align as written, but you don't need to worry about that. Once you cross a dashed barline, you can think of yourself as a soloist. Furthermore, tempo changes in these sections are marked as "independent" accelerandi and ritardandi (e.g. m. 35.) When executing these tempo changes, there is no need to pay any attention to anyone else. Things will turn out okay.

This piece also incorporates divergent tempo modulations, indicated by this graphical symbol:  (e.g. m. 27.) These result in ridiculously precise metronome markings, which return later in the piece (e.g. m. 48.) They are simply the result of mathematical computations, and do not imply that you have to go out and buy a special kind of metronome.

			= jeté: throw the bow on the string, producing as many bounces as possible
s.p.	= sul ponticello		= snap pizzicato: snap the string against the fingerboard
ord. → s.p.	= gradually move the bow from ordinario to sul ponticello		
s.t.	= sul tasto		= left hand pizzicato
ord. → s.t.	= gradually move the bow from ordinario to sul tasto		
c.l.t.	= col legno tratto (still using a small portion of the hair)		= artificial harmonic (indicated by the fingered pitch)
arco → c.l.t.	= gradually turn the bow from arco to col legno tratto		= natural harmonic (indicated by the sounding pitch)
1/2 c.l.t.	= half col legno tratto (i.e. using equal portions of the wood and hair)		
arco → 1/2 c.l.t.	= gradually turn the bow from arco to half col legno tratto		= glissando to the pitch indicated by the grace note (the grace note does not indicate a second note to play)
c.l.b.	= col legno batutto		= portamento from one pitch to another
-----	= changes in tempo and dynamics are indicated by a dashed line		= within glissandi and portamenti that continue through tied rhythms, noteheads are excluded
→	= changes in bowing technique are notated by a solid line with an arrow		= quarter-tone sharp
			= quarter-tone flat

# Gravity Modulations

Ryan Carter (ASCAP)  
(2004)

Relaxed, but precise  $\text{♩} = 70$

Violin 1

Violin 2

Viola

Cello

4

7

*sfz p* *sfz p* *sfz > p* *sfz* *p* *sfz > p* *sfz p*

*sfz p* *sfz > p* *sfz > p*

*sfz p* *sfz p* *sfz > p* *sfz p* *sfz p* *sfz > p*

*sfz p* *sfz > p* *sfz > p*

*sfz* *sfz* *sfz p* *sfz p* *sfz p* *sfz p*

*sfz* *sfz* *sfz p* *sfz p* *sfz p* *sfz p*

*sfz p* *sfz p* *sfz > p* *sfz* *p* *sfz* *p* *sfz*

*sim.* *sfz > p* *sfz* *p* *sfz*

*sfz > p* *sfz* *p* *sfz*

*sfz > p* *sfz* *p* *sfz*

10

Musical score for measures 10-12, featuring four staves (Soprano, Alto, Tenor, Bass) in 4/4 time. The score includes dynamic markings such as *sfz mp*, *sfz > mp*, and *sfz*. Fingerings are indicated by Roman numerals II, III, and II. A *sim.* (sustained) marking is present in measure 11. The music consists of eighth-note patterns with various articulations.

13

Musical score for measures 13-15, featuring four staves in 4/4 time. Measure 13 includes dynamic markings *sfz mp* and *sfz > mp*. Measures 14 and 15 feature a time signature change to  $\frac{2}{4} + \frac{3}{16}$  and  $\frac{3}{4}$  respectively, with dynamic markings *sfz > mp*, *sfz*, and *sfz mp*. Fingerings II, III, II, III, II are shown in measure 15. A *sim.* marking is present in measure 14. The music continues with eighth-note patterns.

16

Musical score for measures 16-18, featuring four staves in 4/4 time. Measure 16 includes dynamic markings *sfz mp* and *sfz > mp*. Measure 17 includes *sfz mp* and *sim.* markings. Measure 18 features a time signature change to  $\frac{4}{4} + \frac{3}{16}$  and dynamic markings *sfz > mp*, *sfz*, and *mp*. Fingerings are indicated by Roman numerals II, III, II, III, II. The music consists of eighth-note patterns.

19

8va s.p. ord. 8va s.p. ord. 8va s.p.

*sfz* *sffz* *mf* *ff* *mf* *ff* *mf* *ff*

*sfz* *sffz* *mf* *sfz* *mf* *sfz*

*sfz* *sffz* *mf* *sfz* *mf*

*sfz* *sffz* *mf* *sfz* *mf*

22

ord. 8va s.p. ord. 8va s.p. ord. 8va s.p.

*mf* *ff* *mf* *ff* *mf* *sfz* *mf* *ff*

*mf* *sfz* *mf* *sfz* *mf* *sfz* *mf* *sfz* *mf*

*sfz* *mf* *sim.* *sfz* *mf* *sfz* *mf* *sfz* *mf*

*sfz* *mf* *sim.* *sfz* *mf* *sfz* *mf* *sfz* *mf*

25

8va s.p. ord. 8va s.p. ord. 8va s.p. ord. 8va s.p. ord.

*mf* *ff* *mf* *ff* *sffz* *f* *ff* *f*

*sfz* *mf* *sfz* *f* *cresc.* *sfz* *f* *cresc.*

*sfz* *mf* *sfz* *f* *cresc.* *sfz* *f* *cresc.*

*sfz* *mf* *sfz* *f* *cresc.* *sfz* *f* *cresc.*

