

Beat Canon

Michael Benjamin Winter 2002

A beat is the phenomenon that occurs when two tones' frequencies are very close (within a few hertz of each other).

This piece will work with many combinations of instruments. However, there are rules for every aspect of the work.

The instruments must be chosen as such:

1. All players must have similar ranges. Players cannot glissandi beyond the range of any of the instruments in the ensemble.
2. Players 1, 2, 4, 5, 7, 8, 10, 11 must be able to perform long distance glissandi of at least one octave both up and down from a center tone.
3. Players 3, 6, 9, 12 do not perform long distance glissandi.
4. If singers are used they should sing any voiced vowel or consonant. They should change the sound every section. For possibilities consult the International Phonetic Alphabet.

-The players should be set up on a headphone matrix. It is suggested that the instruments also be separated by some sort of barrier. An ultimate scenario for this piece would be to put each player in a separate isolation booth. The instruments should be amplified accordingly so that the beats are heard. However, this may not always be necessary. Aside from player 1, each player has only one player to listen to. This is indicated by the arrows on page one stemming from the player numbers.

-In sections 2, 3, 5, 7 the conductor is to choose for each measure between 2 to 5 seconds for any given measure. By acting as 60 beats per minute being the pulse, the conductor must, in one hand, indicate the amount of seconds per measure by raising between 2 and 5 fingers and keep the pulse in the other hand, i.e. if 3 is chosen conduct as if that measure were in 3.

Dynamics:

- n stands for the quietest the instrument can get even if they cannot truly be almost inaudible.
- ffff stands for the loudest dynamic the ensemble can reach so that all instruments sound at the same volume.
- Either than n, all instruments should sound so that no instrument sounds louder or softer than any other.
- Since some sections vary in time, maintaining steady crescendi and decrescendi can be tricky. Levels will be partially determined by how long each measure is. Despite the slight variation caused by this aleatory technique, it is important that all dynamics are reached by when they are marked.
- In sections 2 and 6, the scale of the dynamic markings bare no temporal relationship to the rest of the score. Suggested time markings are given over the crescendi and decrescendi symbols. This is another aleatory technique meant to create a bubbling affect.

-The piece is practically a game of follow the leader. Every player's leader is the one person they are listening to. Most players are both a follower and a leader.

-In each section, there are "Choice Leaders." These players determine the distance of the glissandi.

-In section 4, the choice leaders also decide whether to glissando up or down. Section 4 is to be repeated 3 times. The 1st and 3rd time P1, P4, P7, P10 are the choice leaders who decide whether to glissando up or down. First, a choice between A1 and B1 must be made and then a choice between A2 and B2 must be made. The second time is controlled. Directions are on the page.

-All sections start and end on the same pitch, i.e. the pitch that is chosen to start the piece. Players should realize that even the sections where some players go up and some go down also begin and end on the same pitch even though they are split into separate systems.

-Glissandi should be between a 1/3 to 2/3's of the entire range of the limits set above.

- Y is an exact retrograde of x so that all sections begin and end on the same pitch.

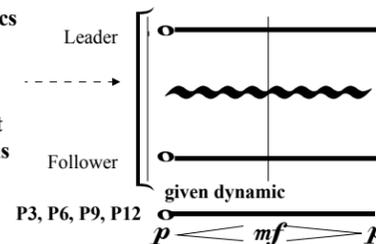
- This is not a trill sign. This is simply to represent the beating between the parts. Players are to choose between 1 and 5 beats above their leader. A set goal should be made every barline. Though it is inconceivable that they will always maintain that interval, they should try.



- This sign between the parts indicates intonation where the players actually converge with their leaders on the same pitch. This only occurs in the middle of section 4.



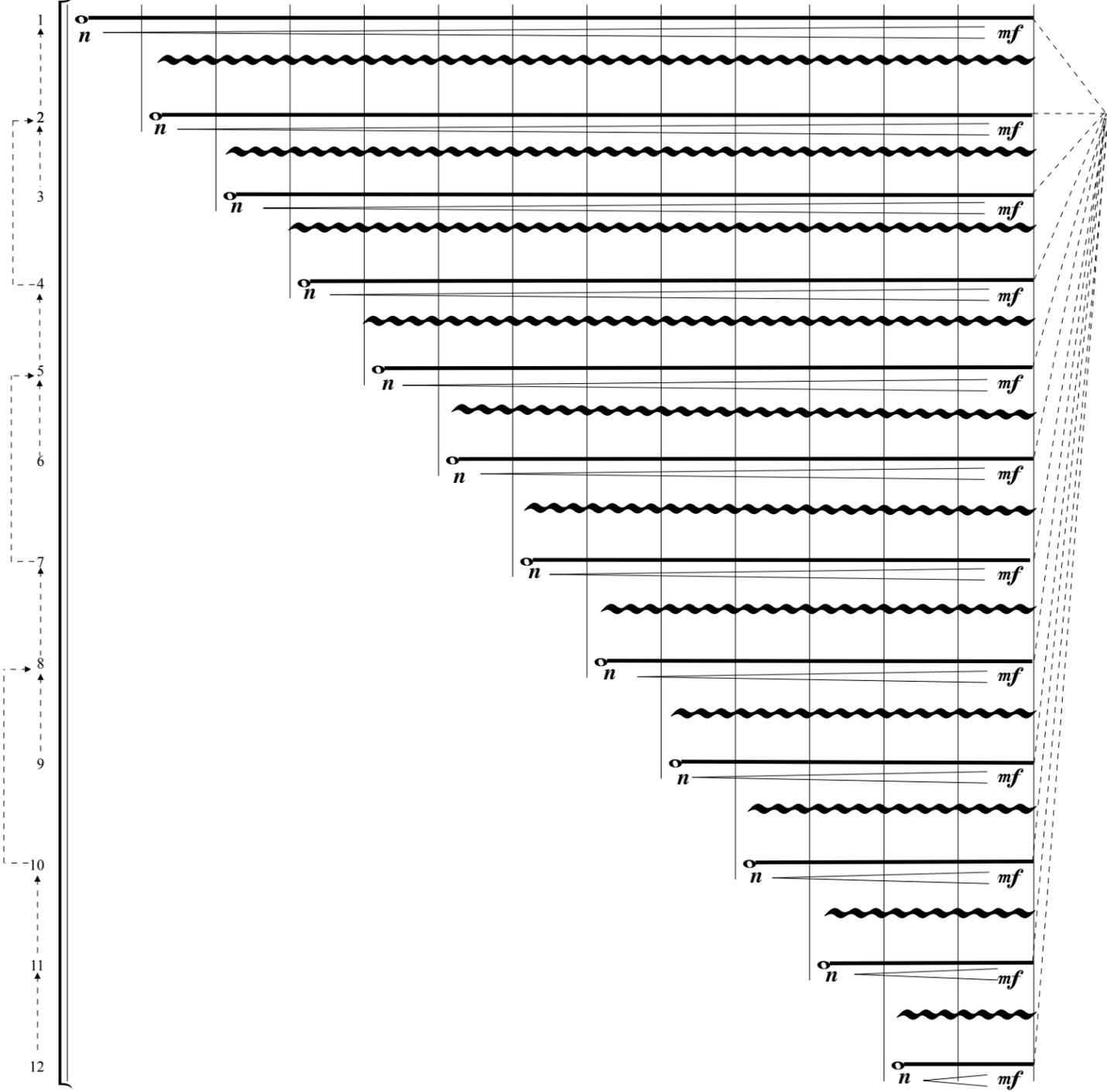
- P3, P6, P9, P12 do not perform long distance glissandi with other players. They only play in straight sections. Due to this, their dynamics are different in all the straight parts from the other players. The dynamics they are to play are given in the system here. They play all straight parts like this except sections 1, 7, and the second choice, i.e. A2 or B2, of section 4. In these sections, all players play the given dynamics. These players must listen to their leader very carefully since they do not know how far the glissandi will go until their leader stops moving. They must try very hard to come 1 to 5 beats above their leaders. If they do not hit the pitch originally, they are not allowed to change a fingering to match pitch. They can only bend up as close as possible to their target pitch. The only exception to this is in section 4 where they must intonate in unison with their leader.



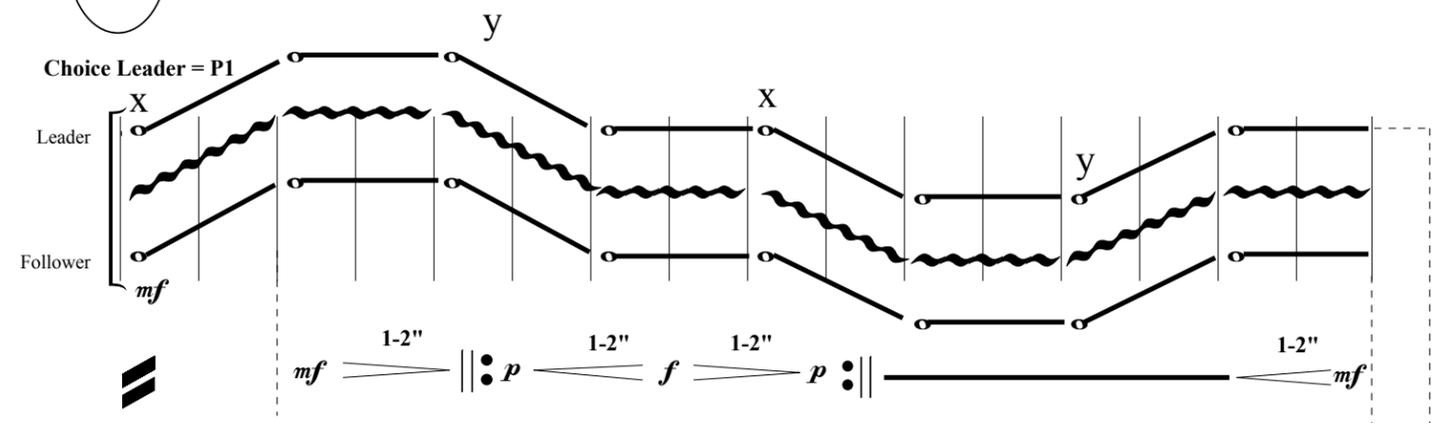
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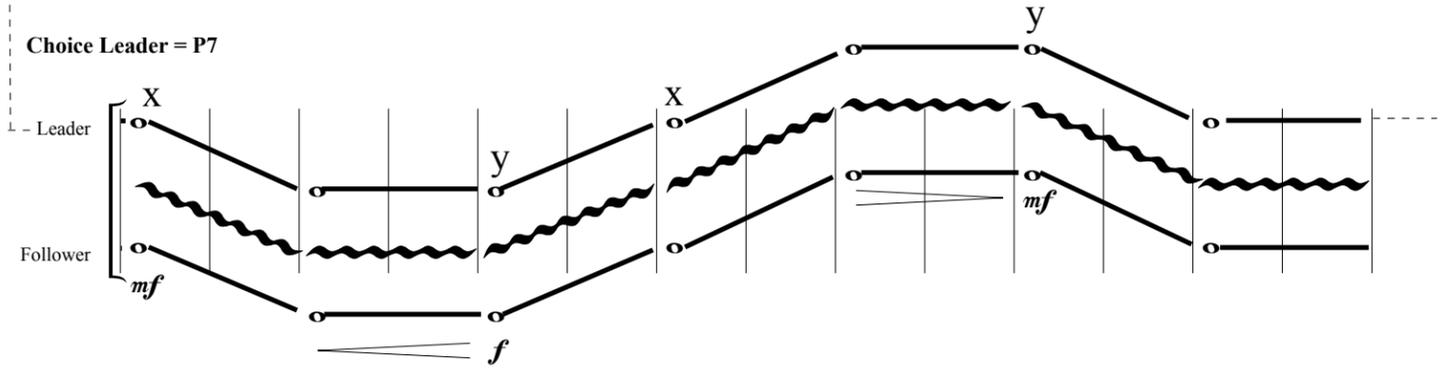
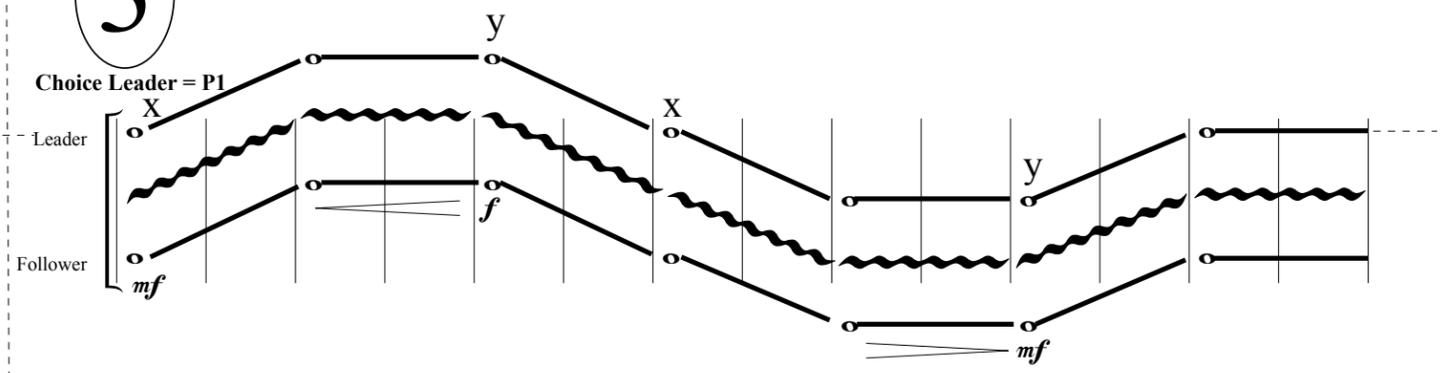
1 2 seconds per bar sim.
 1-5 resultant beats per second sim.
 Choice Leader = P1



2 2-5 seconds per bar sim.



3 2-5 seconds per bar sim.



4

A1

5 seconds per bar sim.

*3

- 1) P1, P4, P7, P10 = Choice Leaders
- 2) P1-A1A2 P4-A1B2
P7-B1A2 P10-B1A2
- 3) P1, P4, P7, P10 = Choice Leaders

After 3rd repeat go to rehearsal 5 here

After 3rd repeat go to rehearsal 5 here

B1

5 2-5 seconds per bar sim.

Choice Leader = P1

Leader

Follower

mf

f

mf

Choice Leader = P7

Leader

Follower

mf

f

mf

6 2-5 seconds per bar sim.

Choice Leader = P1

Leader

Follower

mf 1-2" || *p* 1-2" *f* 1-2" *p* || 1-2" *mf*

7 2 seconds per bar sim.

Choice Leader = P1

Leader

Follower

3

4

5

6

7

8

9

10

11

12

mf

n

