

Score

*Music from a Pile
of Sound*

Two Musical Games

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Duration: 10 min. (5 min per game)
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Structure

This piece consists of two games: **A Pile of Notes**, and **A Pile of Instruments**. Each game may be played separately, and if both games are played, they can be done in either order. There should be a short pause between games, as if they are separate movements.

Instrumentation and Performance Materials

Both Games

1 Electronics performer, with a laptop running MaxMSP. The laptop should be connected to:

- 2 Speakers – positioned so that both the performers and audience can hear from them
- Projector – projecting live video onto a screen above the performers. This screen should be positioned so that the performers can see it while playing.

A Pile of Notes

2-6 musicians

One pitched instrument per musician that can play all pitches of an equal tempered 12 note scale

1 Small Table per musician, with the following on it:

- 13 pitch cards (print out and cut from p. 13-16)
- A points reference sheet (print out and cut from p. 7)

A Pile of Instruments

3-6 musicians

At least 3 times as many instruments (pitched or unpitched) as there are musicians. At least ~4 of the instruments must be able to play all pitches of an equal tempered scale.

A Pile of Notes

Overview of the Game

This is a competitive game in which all the musicians play from a shared pitch collection. Players can add and remove notes from the collection, and their goal is to pull the collection to their **home key**.

Each musician is randomly assigned a unique **home key**. This key is limited to 24 possibilities: 12 possible tonic pitches and 2 possible modes (major or harmonic minor). The **home key** has nothing to do with the notes that the musicians will actually play throughout the game (this comes from the onscreen pitch collection), but instead defines their goal throughout the game.

The goal of the game is to manipulate the pitch collection by adding and removing notes to make it imply your own **home key** as much as possible while pulling it away from the other musicians' **home keys** as far as you can. The more the pitch collection implies your **home key**, the greater your current score will be. Every player's score is computed and displayed automatically by the Max patch using an algorithm. It is not necessary to understand this algorithm to play the game, though it may give you a strategic advantage. See **Score Calculation** for a description of exactly how the algorithm computes scores. At the end of the game, the musician with the highest score at that moment is the winner. In the event of a tie, the patch randomly chooses one of the highest scoring players as the winner.

Before the Performance

Each musician must decide on a written name (a string of less than 10 characters). This may be their real name, or an invented name for this game. Each musician must also create a "musical name" .wav file – a short (< 2 second) sound that represents them. This could be something they play on their instrument, or a different sound entirely.

Before the performance, each musician must send their written name and musical name to the electronics performer. The electronics performer should enter the names of all the performers into a .txt file, with each name on a new line, as follows:

```
Name1  
Name2  
Name3
```

This .txt file should be placed in the data folder of the Max patch. After opening the Max patch, the electronics performer should enter the name of this .txt file into the box labelled “Filename of Player Names”.

The electronics player should take all the musical name .wav files and rename them so that they exactly correspond to the written names in the .txt file, and then place all these files in the media/musical_names folder of the Max patch:

Name1.wav

Name2.wav

Name3.wav

Stage Setup

The musicians should sit in a semi-circle (or, if there are only two musicians, facing each other). Each musician should sit close to their table so that they can easily reach their cards. The electronics performer can be placed either on or offstage but should be clearly separated from the rest of the musicians, and should be able to see all of them clearly and be close enough to read the note names on the cards that they hold up. The musicians should all be able to see the projector screen.

Start of the Game

After all the musicians have taken their places on the stage, the electronics performer will begin the game by pressing INITIALIZE on the Max patch, and then “Start Pitch Collection Game”.

*NOTE: if this game is played after **A Pile of Instruments**, the electronics performer should reset the patch by pressing TURN OFF, and then re-initializing to start this new game.*

The Max patch will play a series of triads, one for each musician, that represents the tonic triad for each musician’s **home key**. Each musician’s corresponding “musical name” sound file will be played over each chord. At the same time, text will appear at the edges of the projection screen identifying each chord as it is played and the musician it is associated with (e.g. “Name – G major”, “Name – C minor”). After all chords have been played, the electronics will fade to a background of noise, and an empty staff will appear on screen (this will be the location of the **pitch collection** used throughout the game), and the number 0 will appear next to the name of each musician. This number will indicate the number of points they have throughout the game (all musicians start with 0 points). 2-3 seconds after the numbers appear on the screen, the electronics performer should press the spacebar to begin the **turn-based** section.

Turn Based Section

In this section, each musician will take turns playing. The electronics performer triggers each new turn by pressing the spacebar. The order of the musicians' turns will be determined randomly by the Max patch. The pitch collection begins completely empty, with no pitches displayed on the screen. The electronics track will play a background pad which contains the notes from the pitch collection.

Start of the turn: The electronics will play the musical name sound file of one of the musicians. This begins their turn.

Then, the musician will play a solo for 5-10 seconds, using the following parameters:

Pitch: only the pitches currently present in the pitch collection, in any order and in any octave. If no pitches are in the collection, only use pitchless sounds.

Rhythm: any rhythms, up to the musician.

Timbre/Techniques: any, up to the musician. Feel free to choose a variety of techniques throughout the solo.

End of the turn: After the musician finishes their solo, they can choose to add or remove a note from the pitch collection. To do this, they hold up their card with the name of the pitch that they want to add or remove. If the pitch does not yet exist in the pitch collection and the size of the pitch collection is less than 8, the electronics performer should add the pitch using the Max patch. If the pitch already exists, the electronics performer should remove it. If the pitch collection has 8 notes in it and the performer tries to add a new pitch, the electronics player should not do anything. If the musician does not want to change the pitch collection, they should hold up their blank card. After the pitch collection is changed, the point scores of each musician are updated (see the **Score Calculation** section), and the turn ends. The electronics performer should press spacebar to trigger the next turn 2-3 seconds after adding the note to the pitch collection from the previous turn.

The number of turn-based cycles through all the musicians depends on the number of them in the game:

2 musicians: 3 cycles

3-4 musicians: 2 cycles

5-6 musicians: 1 cycle

After the number of turn-based cycles given, the patch will automatically move on to the **real-time** portion of the game when the electronics performer presses spacebar.

Real-Time Section

The electronics will signal the beginning of the **real-time** section by starting a rhythmic backing track. This track will begin at 40 bpm, but will gradually speed up throughout the duration of this section to 100 bpm at the end of the section. The entire **real-time** section will last 3 minutes, and a timer will appear on the screen that will count down from 3:00 to zero. In addition, the electronics will continue a background pad of all the notes from the current pitch collection that will update as the pitch collection is transformed. The timbre and texture of this pad will intensify throughout this section.

Throughout this section the musicians should play simultaneously with each other. All musicians must follow these parameters at all times:

Pitch: All musicians must only play pitches from the currently displayed pitch collection on the screen (though they may transpose them to any octave they prefer). They can play these pitches in any order and can repeat them freely.

Rhythm: Any rhythms, up to the musicians. They can feel free to synchronize with the pulse in the electronics track or play independently from it. Musicians are encouraged to respond to each other musically as if playing a free improvisation.

Techniques, dynamics, etc.: The musicians may use any techniques or dynamics that they want on their instrument, as long as the most prominent pitches that result from these techniques match the pitches from the collection. The musicians are encouraged to freely vary their techniques and dynamics and listen and respond to each other in order to create interesting textures.

Changing the Pitch Collection in Real Time

At any point, a musician may stop to add or remove a note from the pitch collection, and the other musicians may continue playing while this happens (though they must now draw their pitches from the newly changed pitch collection). However, in order to add or remove a specific note, the musician must have played for a certain number of $\frac{3}{4}$ -time bars since having last added a note (dictated by the pulse in the electronics track representing quarter notes). The “cost”, or number of $\frac{3}{4}$ bars that the musician must play before adding a note, is different based on that note’s scale degree in that musician’s **home key**. The musician should have the **NOTE COST REFERENCE CARD** printed on their table to refer to during the game so they know how many bars they need to play before adding or removing a given note.

NOTE COST REFERENCE CARD

Scale Degree	ADD cost	REMOVE cost
1	8	1
#1/b2	1	5
2	2	1
3 (diatonic)	4	1
3 (chromatic)	1	2
4	6	1
#4/b5	1	4
5	5	1
6 (diatonic)	3	1
6 (chromatic)	1	2
b7	1	3
7	7	1

It is up to the musician to keep track of the number of $\frac{3}{4}$ bars that they have played and which pitches they are allowed to add. However, if the electronics performer sees that the musician has clearly not fulfilled the required number of notes before trying to add or remove a note, they can just not change the pitch collection.

To add or remove a pitch, the musician stops playing and holds up their card with the name of the pitch that they want to add or remove. If the pitch does not yet exist in the pitch collection and the size of the pitch collection is less than 8, the electronics performer should add the pitch using the Max patch. If the pitch already exists, the electronics performer should remove it. If the pitch collection has 8 notes in it and the performer tries to add a new pitch, the electronics player should not do anything. After the pitch collection is changed, the point scores of each musician are updated (see the **Score Calculation** section for how this is calculated). The electronics performer should be watching all the musicians and update the pitch collection as quickly as possible, especially in the event that multiple musicians change the pitch collection at the same time.

After adding or removing a pitch, the musician puts down the card and begins playing again. They must begin their $\frac{3}{4}$ bar count from zero again (the musician cannot “carry over” bars that they played before adding/removing a pitch that they didn’t use up, e.g. if they played 10 bars and then added scale degree 4, they don’t get to carry over the 6 extra bars they didn’t use to their next total).

Ending of the Game

After the projected 3-minute timer has run out, the electronics sustains all the pitches of the current pitch collection. Then, the electronics plays a dramatic final

cadence in the key of the winning player. As this happens, the names of all the players will be displayed on the screen one by one in order from lowest to highest points. When your name appears on the screen, stand up and play a tonic triad in your **home key** (arpeggiated if your instrument cannot play simultaneous pitches). After the electronics cuts off, this game is over and all the musicians must stop playing.

Score Calculation

The score for each musician is calculated automatically by the Max patch as follows: Given the musician's **home key**, the patch scans all the notes of the pitch collection and assigns them each a point value given their function in that musician's key:

Scale Degree	Point Value
1	6
#1/b2	-4
2	1
3 (diatonic)	2
3 (chromatic)	-1
4	4
#4/b5	-3
5	3
6 (diatonic)	1
6 (chromatic)	-1
b7	-2
7	5

For this game, all enharmonic pitches are considered equivalent. If one player has a goal key of Eb major and the note D# is added to the pitch collection, this still counts as scale degree 1 for them and is thus worth 6 points.

The musician's current score is the sum of all those values for the whole pitch collection.

A Pile of Instruments

Overview of the Game

This is a game in which players play through a series of musical cells attempting to get to the bottom of the page. Throughout the game, the electronics performer gives commands to the musicians that they must try to realize, and those that are the worst at realizing the command must switch instruments.

Stage Setup

The musicians should sit in a semi-circle. All the instruments should be placed in a pile in the middle of this semi-circle, roughly equidistant from all the musicians. If larger, less portable instruments are included (such as a piano), they may be ‘metaphorically’ in the pile but placed near the pile, and the musician who wishes to use it must move themselves to the instrument. There should be space behind each musician where they can place discarded instruments once they are done playing.

Start of the Game

Each musician should take one instrument from the central pile and take their place in the semi-circle surrounding the pile. After all the musicians have taken their places on the stage, the electronics performer will begin the game by pressing INITIALIZE on the Max patch, and then “Start Instrument Pile Game”.

*NOTE: if this game is played after **A Pile of Notes**, the electronics performer should reset the patch by pressing **TURN OFF**, and then re-initializing to start this new game.*

The Max patch will begin playing a continuous fast pulse of eighth notes at quarter = 120 bpm, with various accent patterns. All players should begin playing after around 4-12 quarter notes, but they do not need to enter at the same time.

Playing the Game

If you are currently playing an instrument that is capable of playing all the notes of the equal tempered 12 note scale, play from the **A Pile of Instruments – Pitched Cells** page. If you are playing any other instrument, play from the **A Pile of Instruments – Unpitched Cells** page. The page is divided into four sections from top to bottom, each with a set of musical cells. Begin in the top section. You must play every cell in one section once before moving down to the next section, but you can play them in any order. Play these cells in time with the background eighth note electronics pulse. You may transpose the cells on the page into an octave that works on the instrument they are currently playing. However, you should try if possible to play all the cells on the page in the same octave relative to each other.

You may insert short (quarter or half note) rests between cells if needed, but for the most part you should play continuously. If you play every cell in the page, then you have finished the game (see **Finishing the Game**).

Commands

At various points during the game, the electronics performer should press ‘c’ to trigger a command. This command will be randomly selected from a list and displayed on the projected screen along with a countdown timer. This command could be technical (e.g., pizz., sul pont., breathy) or expressive (e.g., frustrated, relaxed, bored, lonely). After this command appears, the musicians have 10 seconds to realize this command to the best of their ability while continuing to play through the written musical cells on the page. They may use any musical element that is unspecified on their page, such as dynamics, articulation, tone color, and technique. They should continue realizing this command until it disappears from the screen. After those 10 seconds has passed, the electronics performer must judge which musician, in their opinion, was the worst out of the group at realizing that specific command and point at them. This musician must then put the instrument that they are currently playing behind them and take a new instrument from the pile and begin at the top of the page again.

At the beginning of the game, the electronics performer should trigger commands quite frequently (~5-10 seconds between commands). However, they should gradually become less frequent, and once only two musicians are left in the game, only trigger commands once every ~45-60 seconds.

Finishing the Game

If you have completed playing every cell in the page, you must put down the instrument you are currently playing and walk away from the central circle. You may either walk offstage or find a place onstage to watch the rest of the game that is clearly separated from the musicians that are currently still in the game. Once you have finished the game, you are unable to influence the rest of the game in any way though you can feel free to react to the game as it progresses by making facial expressions and/or cheering the other players on.

End of the Game

Once all the instruments are gone from the central pile, the electronics player should stop triggering new commands. Once every musician has then finished playing all the cells in their page and had stopped playing, the electronics performer then presses “End Instrument Pile Game”, which triggers a short sound that stops the continuous pulse and ends the game.

A Pile of Instruments – Pitched Cells

The first system of musical notation consists of nine individual staves. The first staff contains a quarter note, an eighth note, a quarter rest, and a quarter note. The second staff features a triplet of eighth notes followed by a quarter rest. The third staff is identical to the first. The fourth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The fifth staff contains a quarter note, a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The sixth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The seventh staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The eighth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The ninth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest.

The second system of musical notation consists of six individual staves. The first staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The second staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The third staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The fourth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The fifth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The sixth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest.

The third system of musical notation consists of seven individual staves. The first staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The second staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The third staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The fourth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The fifth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The sixth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The seventh staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest.

The fourth system of musical notation consists of ten individual staves. The first staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The second staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The third staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The fourth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The fifth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The sixth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The seventh staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The eighth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The ninth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest. The tenth staff contains a dotted quarter note, an eighth note, a quarter note, and a quarter rest.

C

C#

D

E^b

E

F

F#

G

A a

A

B b

B

