

M a s t e r R e s e a r c h

M a i n S u b j e c t T e a c h e r s
C o r n e l i s d e B o n d t, P e t e r A d r i a a n s z

M a s t e r C i r c l e L e a d e r s
Y a n n i s K y r i a k i d e s, P e t e r A d r i a a n s z

R e s e a r c h S u p e r v i s o r
P e t e r A d r i a a n s z

P a p e r

HOW DO I COMPOSE MUSIC BASED ON GAME RULES?

Transforming the emotions of a game into music

Il Hoon Son

C o m p o s i t i o n

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K o n i n k l i j k C o n s e r v a t o r i u m

D e n H a a g

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I. Preface

People frequently play games, whether as a sport such as tennis or baseball, or video game, board game. Some of the people even insist that the life itself is a game. The experience of real tension during a game—the exhilaration of victory or the bitterness of defeat—is also important for some. Even if we are not actually participating, we can have an indirect experience of a game as a supporter or just a spectator.

But can we have such an experience from listening to music? What if musicians were to play a game such as chess or soccer during a concert? Let's suppose two pianists are playing a game in a concert. The audience could support one of them, and they could bet on who will win. And they might even argue with one another about the outcome.

Could this actually happen? We can imagine that a game played during a concert might be intense. But could two musicians or groups be divided in a *musical* competition? How could such a game be won? What would the rules be? How could the audience follow it? And what would the musical elements be?

With a head full of these and other questions, I started to compose and experiment with music with game rules. Here's how it works: The performers play music with game rules, and the audience follows the music with its own set of game rules. However, besides the enjoyment that both participants and audience could derive from following a game with clear-cut rules, there are serious compositional concerns involved in setting up and thinking through pieces based on "game rules". These vary from the purely musical and the linguistic to the technological and the psychological. For example, how does one construct a piece which is at uncertain throughout and yet should be "musical" from beginning to end? What is "easy", what is "hard", and what is "nearly impossible"? How does "logic" unfold, in the minds of both the performers and the audience? How does memory work? How does one explain the rules in a linguistic sense, and how does one solve all of this on stage (*i.e.*, in a way in which information can be given to the audience, for example, but not to the performers; or, in instances where circuits of devices are necessary for the performance - often technological issues involving research on their own part)?

Many of these questions involve serious research in practice, especially when the pieces deal with specific musical parameters such as pitch, polyrhythms, sight reading and harmony. In this way, the pieces automatically tend to become a form of research into specific musical topics.

II. What is a Game?

Defining “Game” and “Play”

There are many of definitions of what a game is, and there is no one definition that everyone agrees on. Before we define the term, we should distinguish between “game” and “play”.

French sociologist Roger Caillois categorized play in 4 groups.¹
He determines the criteria for classification by the existence of rules.

- Agon (competition); Chess, Sports
- Alea (chance); Dice, Slot machine
- Mimicry (role playing); Kite-flying, Masquerade
- Ilinx (vertigo); riding roller coasters, swings

Caillois also classifies the above four categories into two groups by whether they are manageable.

- Paidia: Alea, Ilinx
- Ludus: Agon, Mimicry

Agon is competition that has rules and is manageable. Sports games, board games and most video games belong to this group.

Alea is chance that has rules but where players cannot exert control over outcomes. Flipping a coin, tossing a dice, and playing slot machines belong to this group.

Mimicry is imitation whereby players pretend to be someone else. Masquerades or children playing house belong to this group. Mimicry has developed into art forms such as theatre and role-playing game.

Ilinx is vertigo in the sense of altering perception. There are no rules and no manageability. Children spinning until they fall down, and riding roller coasters, are belong to this group.

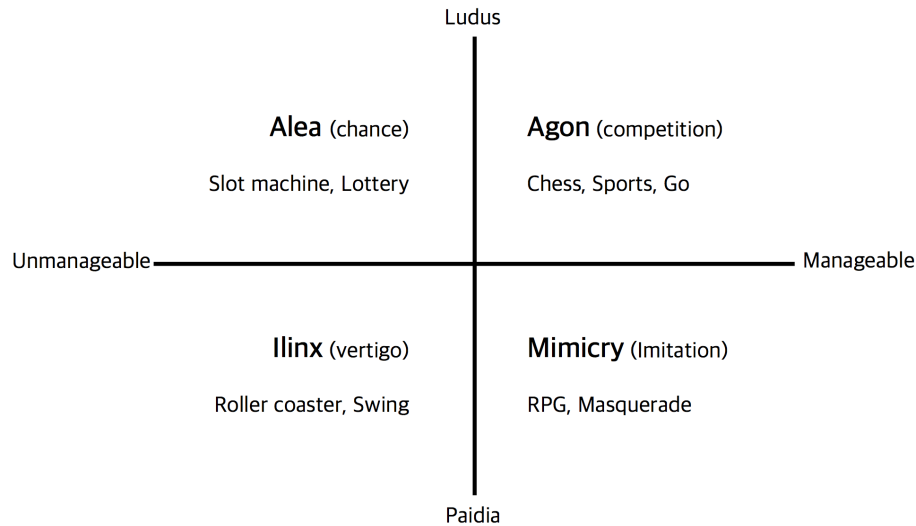
Caillois also classifies play into two groups, “Paidia” and “Ludus”, according to rules in various forms.

Paidia is spontaneous play. It’s free improvisation, like children creating rules in real time at the playground.

Ludus is controlled play. Games with rules, manuals, limits and instructions belong to this group.

I made a graph to summarize Caillois’s categories of play.

¹Caillois (1961).



Classification of games adapted from Caillois

Now let's try to define "game".

Caillois, defined a game as an activity that must have the following characteristics:

- Fun: the activity is chosen for its light-hearted character
- Separate: it is circumscribed in time and place
- Uncertain: the outcome of the activity is unforeseeable
- Non-productive: participation does not accomplish anything useful
- Governed by rules: the activity has rules that are different from those in everyday life
- Fictitious: it is accompanied by the awareness of a different reality

To complement these definitions, we can turn to these two further definitions from the Oxford Dictionary:

Game: noun

- 1) A form of competitive activity or sport played according to rules.
- 2) A complete episode or period of play, ending in a final result

On the first definition, a game requires competition, rules and finality.

And then are definitions from game designers.

"A game is a form of play with goals and structure."²

"A game is an activity among two or more independent decision-makers seeking to achieve their objectives in some limiting context."³

"A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome."⁴

The game designer Greg Costikyan even defines a game as a form of art:

"A game is a form of art in which participants, termed players, make decisions in order to manage resources through game tokens in the pursuit of a goal."⁵

Thus we see that these more-modern definitions of "game" are close to Agon and Ludus.

To summarize, then:

First, there must be players or teams that oppose each other. Second, there must be rules that the players follow and that drive them from obstacles and limits to an objective. Third, the objective is clearly quantifiable and determines the result of game. However, the outcome of the game must initially be unknown.

² Maroney (2001)

³ Abt (1987)

⁴ Katie Salen and Eric Zimmerman (2003)

⁵ Costikyan (1994)

III. Games in Music : Game Pieces

Some works by contemporary composers adapt game rules into music. These works are currently classified as “game pieces”. Some of them involve textual notations to explain how to play the piece. Here are a few short introductions that give a sense of some of game pieces from contemporary composers.

Mauricio Kagel - Match für Drei Spieler (1964)

This piece is one of the most famous works in this genre. Two cellists play a tennis match, with the percussionist as a referee. All the musical events and all the acting represent a tennis game. So the piece can be categorized as mimicry. However, it is fully notated from beginning to end and it has no rules, no objective, and no parameters to choose from. So it's a piece with a theatrical side.

If the composer described which musical events represent which events from tennis game, I am sure the audience could follow the game closely just by listening. Unfortunately, Kagel doesn't describe how he made the translation, and the piece has only one fixed scenario.

Tom Johnson - Eggs and Baskets for Narrator and Two Instruments (1987)

The narrator explains how many ways there are to put six eggs into two baskets, with the help of two unspecified instrumentalists, who play the permutations as melodies. Johnson precisely explains the practical requirements in his score:

The two instruments should be contrast, and should stand some distance apart, but they should play in the same octave and with the same articulation. Violin and oboe, flute and clarinet, trombone and saxophone, and many other combinations are all quite possible. During the didactic first part of the piece, the music should be played clearly, deliberately, with most of the attention going to the narrator. But the final four pages can be much faster, even virtuosic.

The piece also belongs to the mimicry group, but there is no mention of theatrical playing. So there are some parameters in this piece. First, the performers can decide which instruments to play. Second, they can decide whether to act or not. Third, they can decide how much faster they will play in the end. The performers are not competing with each other. They explain, musically, all the ways to put six eggs into two baskets, so the audience can distinguish these just by listening. They are somehow calculating while listening to music. Unfortunately, there is only one fixed scenario.

John Zorn - Cobra (1984)

The piece consists of a set of cues notated on cards, with rules corresponding to the cues that tell the players what to do. The number of players, the instrumentation, and length of the piece is indeterminate. Because there is no traditional musical notation and because the players improvise, the piece could sound radically different from one performance to another. I actually played the piece together with the composer when I was studying in Seoul, Korea. Zorn visited my university to have a lecture about improvisation and he brought the amazing piece along.

However, the piece is hard to categorize into a specific group, because it's basically a game with rules even though there is no objective. And the piece belongs to the category, group improvisation (Paidia, Alea), even though it's somehow governed by rules (Ludus, Agon). Furthermore, during improvisation some player can imitate someone or something or some music (Mimicry).

Curiously, the piece is still unpublished, even though it's one of the most popular game piece and frequently performed. Zorn explains why he chose not to publish in this interview:

"Many people have wondered why I have deliberately chosen not to publish (or even write down) the rules of these pieces, preferring to explain them myself in rehearsal as part of an oral tradition. The reasons are many. There is a lot more to these pieces than just the rules. For one thing, choosing the players has always been a crucial part of the performance process and the art of choosing a band and being a good bandleader is not something you can impart on paper in a written preface to the score... These pieces can go where anyone wants to take them, and since they live on in the underground as part of an oral/aural tradition, this becomes one of the dangers as well as part of the fun."⁶

Elsewhere Zorn explains:

"The rule books were intense, so thick, you know, and if you write the rules out for the game *Cobra* they are impossible to decipher. But when someone explains the practice of it, it's very simple. These games, like *Cobra*, have a kind of oral tradition. I was very influenced by these complex war games."⁷

According to Caillois's common classification of games, each game piece belongs to categories.

⁶ Zorn (2005)

⁷ Ibid.

IV. Musical game pieces by Il Hoon Son

What, then, is my game? What do I want to make?

I instinctively compose game pieces belonging to Agon and Ludus, but in a modern format. That means the game in my piece must include rules, players and an objective.

Why an objective? It's because that is the way to find and answer to my first research question, "What are the possibilities for transforming the emotions of a game into music?". Through the event "contending for victory", both players and audience can easily feel involved in the game.

The rules stipulate that the players must be in conflict with each other while playing. Furthermore, by deciphering the rules, the audience can understand and participate in the game and in the music. Finally, it is important that the outcome of piece be radically different from one game to another.

I fully agree with Zorn when he says, "But, when someone explains the practice of it, it's very simple." I always have the same problem when I notate and rehearse the piece. Usually performers are not sure whether they have correctly understood the piece with just the score. But if I just explain the practice of the piece during rehearsal, they decipher the game and the piece, too. How, then, can I make them understand the piece only with the score?

From all of these questions and a desire to make a good game piece, I started to research how to make my game pieces with clear-cut rules and understandable notation. I made a few strict rules to for the composition of musical games.

Rules for Composing Musical Games

1. The game must contain rules and objectives: win or lose.
2. The game must be played by more than 2 opposing players or teams.
3. The game requires a lot of different processes that are rarely repeated from one game to another.
4. The players must be in musical conflict with each other and the conflict from listening to the piece.
5. The players are strictly forbidden from acting or from verbally communicating during the piece. The musical game requires the ability to understand by hearing alone, in contrast with games that have a visual component.
6. The piece must be idiomatic. Even if the outcomes of the piece are uncertain, the piece must have musical identity.
7. The rules of the game must be provided to the audience.
8. The musical game must be musically interesting in and of itself.

Based on these rules, I composed six different game pieces. I am pleased to present three of them below.

Musical Game Series #1 - “20 Questions” for 2 Pianos

1) General information about the piece

“20 Questions” for Two Pianos is a pitch-guessing game. The piece was written in January 2016 in The Hague. It requires a screen and a projector to let the audience know the rules. The playing time is about 10 minutes. The musical goal or purpose or topic of the piece is to transform verbal into musical communication.

2) The original game

Twenty Questions is a spoken parlor game. One player is chosen to be the answerer. That person chooses an object but does not tell the others what it is. All other players have to ask questions. They each take turns asking a question, which can be answered with a simple "Yes" or "No." The answerer answers each question in turn. Sample questions could be: "Is it alive?" or "Can I eat it?" Lying is not allowed in this game. The player who guesses the correct answer wins. If the players ask 20 questions without guessing the answer, then the answerer wins.

3) Process of translating the game in to music

(differences and similarities)

Basically, general rules and components of the game is same but, I transformed some of rules and added extra components appropriately to music.

Objective

Choosing and guessing an ordinary object in a musical way is impossible. So instead of choosing an ordinary object, I decided that the object should be to choose a chord which consists of three different pitches. Of course there are various objects in music but, the reason that I settled on a chord is that usually pitches can be determined by absolutely correct answers whereas rhythms cannot.

Question

Since a transformation is necessary from verbal to auditory questions, the manner or method of asking question also needed to be transformed. This resulted in the following five types of questions, organized from basic to specific:

Musical:	Verbal (examples only):
1. Are there exactly 3 pitches between these intervals?	“Is it alive?”
2. Are there exactly 2 pitches between these intervals?	“Is it eatable?”
3. Is there exact 1 pitch between these intervals?	“Is it sweet?”
4. Is it this pitch?	“Is it candy?”
5. Are these your chosen 3 pitches?	“Is it mint candy?”

The questioner can calculate and guess the pitches by narrowing the gap between intervals. Questions asking the number of pitches can be distinguished from each other by the rhythm.

Answer

Two of the obviously different answers Yes and No are translated to chords.
 The octave E sound is functioning as Yes.
 The third inversion B flat 7 chord is functioning as No.

Repeat the question or answer

During the performance of the piece, the answerer might have missed the question and want to repeat the same question again as an original game (and vice versa).

Marking the questions

The answerer marks each of the questions from 1st to 20th by playing the chromatic scale from E to A. For the sake of making a dramatic scene, I chose to play the marking notes with a crescendo.

4) Extra components: ostinato

The answerer plays the ostinato during the entire piece while the questioner asks or the answerer answers. Basically the ostinato should be played pianissimo, but the dynamic and tempo could be changed by the situation of the performance. And after the game is over, the answerer keeps playing the ostinato for a while and then ends the piece. However, the ostinato's role is not only to fill in the music between question and answer but also to disturb the questioner's calculation. For example, the answerer can play the ostinato faster or much more slowly and with a bigger sound to endow the piece with some tension.

5) Practical execution**Performers focus on the piece.**

During the performance, the questioner asks exactly same question a number of times in a row. People who know the rules of the game wonder why the questioner is blowing a chance to get close to win. This perception happens only with the auditory sense. The audience knows that it is useless to repeat the question in this piece. However, people who don't know about the rule enjoy the repetition, which is one of the most important phenomena in music. In this piece, it rarely happens. I was the questioner in the performance and I engaged in repetition: I repeated the same utterly stupid question on purpose. It was a chance, not to win the game, but to make good a piece by using sequence.

Performers focus on the game (victory).

During rehearsals, the questioner lost a few games in a row and got quite upset. He asked the answerer to have a rematch and he lost his focus on the music. His obsession with victory made him lose sight of the fact that this was a musical piece. Interestingly, his emotion was identically reflected in the musical results. His strategy was strictly calculated, not considering making good sound, almost unmusical at the moment. Nevertheless, the strategy made for a piece which I had never imagined, let alone listened to.

6) Alternative performance options

The piece was originally composed for two pianos but, depending on the concert situation, it could be performed by more than two or by different instruments—keyboards, or polyphonic instruments such as guitar.

One questioner vs three answerers (version for 4 pianos)

Each of the answerers selects a pitch from the piano and shares the chord only with the other answerers. There must be no overlap between the selected pitches. The piece starts with all answerers' ostinato. Not all of the answers or ostinatos need to be synchronized. The round counting note must be played simultaneously on a cue from one of the answerers. The questioner asks a question and, if needs be, repeats it. The answerers give answers if needs be, repeat them. (The musical motif of "repeat the answers" is the same as "repeat the question".) The answerers mark the round simultaneously. The questioner should find out and ask the chord (3 pitches) within 20 questions. The questioner who figures out the chord before asking the twentieth question wins, and the game is over by the last marking note. If the questioner figures out, The Answerers win the game. However, there is an especially difficult rule for this version.

"If the Question is about a note, answer properly on the own situation."

Which means that the Questioner gets multiple answers. For example, if the answer of question is No (Answerer 1), Yes (A2), No (A3), answerer plays their own chord. If the Question is about 2 or 3 notes, Answer together. Which is singular answer same as original version.

Two or more questioners vs one answerer (version for two pianos)

The Answerer plays only on a piano and the questioner s play together on the other piano. The Answerer selects 3 different pitches from the piano. The piece starts with Answerers' Ostinato. the questioners each take turns asking a question. The answerer answers each question in turn. The answerer marks every round. * The questioner should find out and ask the chord within 20 questions. If none of the questioners can figure out the answer, the answerer wins the game.

*However, there are two options and two formats according to which the game can be played.

1. Questioners play the game as a team.

In this format, the answerer marks each of questions as a round. So there can be no more than 20 questions. Playing time: approximately 10 minutes.

2. Questioners play the game as individuals.

In this format, the answerer marks a round after all of the questioners have had a turn. So the maximum number of questions is 20 times the number of players. Playing time: undetermined.

Musical Game Series #5 - “Paradox of Losers” for Vibraphone and 4 Pitched Instruments

1) General information about the piece

“Paradox of Losers” for Vibraphone and Four Pitched instruments is a piece with a tempo-guessing game of my own design. The piece is still in progress. It requires a screen, a projector and a slide operator, who informs the audience about the rules and manages scoreboard. Also requires an ear-phone with metronome per the game player. Playing time is approximate 15 minutes. Its purpose is to allow participants to experiment with making a tempo canon through a game. Usually a canon with different tempos is played by mechanical musical instruments. However, I wondered whether it would be possible to play with different tempos if the players got technical support with a metronome while they played. As the title indicates, the piece is a paradox. The players try to win by finding the correct answer. But in the piece, only incorrect answers cause the tempo canon. So the paradox is that it is the losers who make the piece musically interesting.

2) The rules

1. Each player chooses a specific note (pitch class) which is not doubled by any other player. This note is to be maintained throughout the piece and playable in any register.
2. In each round, an appointed player (the “tempo picker”) picks a tempo on his/her metronome from a given table. The tempo picker is rotated clockwise among the game players after each round.
3. The jury opens the round by playing tempo picker’s note.
4. The tempo picker plays his/her selected note at the chosen tempo along with the metronome.
5. Once this player plays at his/her chosen tempo, the others try to guess the tempo by picking their own metronome number.
6. This tempo should then be played on the note selected along with the metronome. Play then proceeds clockwise.
7. After all players have taken their turn, the metronome numbers that have been picked are shown on the screen.
8. The player who guesses the right tempo wins the round.
9. If none of the players guesses the right tempo, the tempo picker wins the round.
10. After each round, the winner’s note is added to a melody and put on a screen visible to all. Each new note should be added ahead of the players’ individual notes, thereby gradually creating a melody.

11. The initial dynamic of the note chosen is *p*. However, if the same note is added to a melody, added degree of the dynamic for second and subsequent such notes increases. The degree of dynamics is *p - mp - f - ff*.
12. Once a round is completed and the winner known, the jury closes the round with cuts off the players and play the updated melody on screen.
13. While the jury plays the melody, the next tempo picker prepares the next round as quickly as possible.

This process (steps 3 to 13) is repeated for 12 rounds. The winner is the player to have guessed the most correct tempos (i.e., the master of the note whose dynamic is the highest). If there is a draw, the piece continues until a clear winner emerges.

3) Components of the game & the process of composing music

To have the piece turn out differently each time, I composed the game in such a way that the piece could be designed by the performers. There are some options for shaping the piece before the start. These options make the music more engaging and challenging.

Individual note: Each player chooses a specific note that is not doubled by any other player. This note represents the player throughout the piece. The jury opens the round with the current tempo picker's note, and this note functions as the ostinato for the round.

Through the ostinato, we can hear who the tempo picker for the round is. And through the appearance of each note on the melody, we can figure out who is the winning the game.

The other important function of this note or melody is communication. The player can interrupt the others' calculations or counting by playing aggressive sound. In response, the others should also play aggressively. This interaction makes the game and the piece intense.

Melody: After each round, the note of the winner is added to a melody. If the same note is added to a melody, the degree of the dynamic for the second and subsequent such notes increases, thereby gradually building up a melody. In the end, the melody will consist of 12 notes with 4 different pitches, 2 different note values, and 4 different dynamics that make the melody "swell".

Chord: The jury plays a chord made up of players' individual notes. The chord can be played in any register and in any inversion or position (open/closed) per round. Moreover, the jury plays this chord with a vibration motor to vary the sounds in the piece. This chord along with the playing of the melody, functions as the closing of the round and of the piece itself.

Tempo: Choosing and guessing the tempo per round proceeds based on the table. The table shows gaps between tempos and between rounds. Not only the gap between tempos but the gap between rounds also increase, so that the music begins to accelerate more and more. The performers cannot change the tempo table.

Values of the notes: The performers can determine the note values of the game from

♩ to ♪ and 7 to vary the melody.

Playing register: Both of the melody and individual chosen notes are playable in any register. The melody can be played on same octave (high/middle/low) or on different octaves.

Level of volume: Dynamic indications within a round are absolute. However, volume of dynamic indications among the piece are relative.

Transposition: The slide operator can make transposition of the Melody.

4) Practical execution

Timbre of the instruments

The only instrument that must be played in the piece is the vibraphone. However, I would like performers to consider this choice carefully. The sounds of the instruments do not need to be distinguishable by timbre, because the audience can follow the game by distinguishing the players' individual notes. But the real issue is how the timber affects the piece that is the tempo canon.

Ensemble with metronome/performers

The game players might have problems with playing along with the metronome. They are not supposed to follow each other's tempos and create a unison effect. The most interesting moment of the tempo canon form is the point at which different tempos converge. In order to accomplish this convergence point dramatically, the players must play their tempos with quite some precision. Nevertheless, the performers should listen to each other so they can make a musically good sound together.

Various parameters of the piece

The participants must determine all the parameters such as Pitch class, Note value, Register, Level of volume, Transposition before play the piece. This makes various outcomes of the piece. The participants can design the shape of form,

Entrance and Convergence point

The slide operator controls when the game players entrance and when they stop playing. Each round requires at least 1 cycle before they stop playing. And they stop at the convergence point.

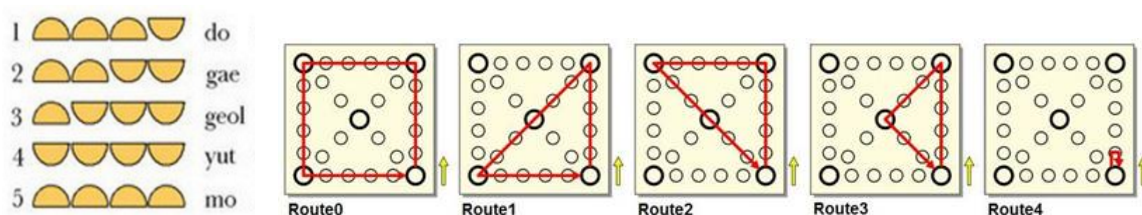
Musical Game Series #6 - “Yut Nori” for 8 Pitched Instruments and a Conductor

1) General information about the piece

A simple board game, “Yut Nori for Eight Pitched Instruments and a Conductor” was written in March 2015 in The Hague. It requires a screen and a projector with a slide operator to watch the game for the audience. Playing time is undetermined but, without considering special circumstances, it should take approximate 15 minutes. The musical goal/purpose/topic of the piece is to allow participants to transform the tension and emotions of the game to music. Tensions arise when one tries to read one participant’s intentions and strategies, and interrupting them has just that effect.

2) The original game

“Yut Nori” is a traditional board game played in Korea, especially during the Korean New Year. The combining-form yut means “dice”, and -nori means “game”. The board is rectangular, and there are 4 straight and 2 diagonal courses. Each of the straight courses comes with 5 stations. The diagonal ones also have 5 stations, but one of these is shared. This brings the number of stations to 29. Instead of dice, 4 yut-sticks are used. The sticks are thrown to determine how far a token can advance. The score is determined by counting how many sticks are left over, and how many are facing up. Each combination has a name and a move forward.



There are small tokens (marks) used for the game, called “mals”. There are four tokens for each team, and the mals of the opposing teams must be clearly distinguishable. The game is played between two partners or two teams who play in turns. (Sometimes it is played with more teams.) There is no limit to the number of participants in a game: it can be played by a large group. It is not uncommon in such cases for some group members not to throw sticks, but they can still participate by discussing the strategy.

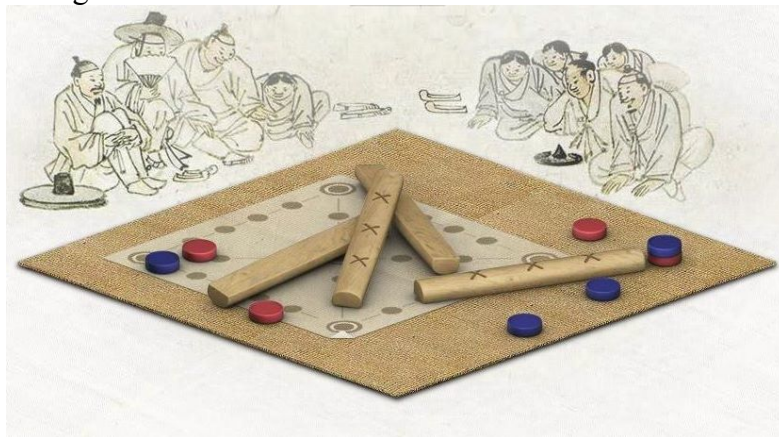
The start of the game is determined by each team’s throwing the yut-sticks. The team with the highest score starts first.

Each team then throws the sticks in turn, and moves a mal according to the score it gets. One turn usually consists of only one throw. However, a player who gets a yut or more earns an extra throw for that turn. If he or she throws a yut or a mo on the second throw, he or she earns yet another extra throw, so there is no limit to the number of times a player can throw again before the end of a turn, provided he or she keeps throwing yuts or mos. The respective scores can be played separately if that is wished, each given to another mal (or group of mals, see below). However, a score earned from one cast cannot be split into two moves—for example, three steps cannot be split into one step plus two steps.

As long as there are mals outside the board, a team can either put a new mal onto the board according to the scores it got, or move a mal already on the board. The mals travel around the board and can move forward only. However, if a mal lands on one of the big stations (in the corner and the center), the team members can choose to take the shorter way if they wish.

There are four possible courses. The default course is the longest one with no abbreviation. If a mal lands on a station occupied by the opponent's team, the opponent's mal is removed from the course and returned to the starting position, and the current player is allowed to throw again. If a mal lands on a station occupied by a mal or mals from the player's own team, it can form a group with these mals and travel together from that point on.

However, this carries a risk: If a player lands their mal on a station occupied by a group of mals owned by the opponent, all mals in the group are removed from the board. The game is won by the team that brings all their mals home first—that is, that completes the course with all their mals. A course is completed if a mal *passes* (not just *lands* on) Home, where the game started.⁸



3) The process of translating the game to music

The components of the game are the same, but I changed some of the rules to make them fit with the music, considering the duration of the piece and in order to help discussion along, without verbal communication.

Terms

Yut: the dice, the player
 Mal: the token, the player
 Jury: the conductor
 Board: the music score
 Note: the station

⁸ "Yut." *Wikipedia*. N.p., n.d. Web. 14 May 2016.
 <[https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FYut](https://en.wikipedia.org/wiki/Yut)>.

General rules

1. Eight players are divided equally into two teams.
2. The yuts determine moves by turn and according to the score, and the mal(s) move.
3. A roll of the dice determined who starts. The team with the highest score starts first.
4. If you get a score of 4 or 5 moves by Yuts, you throw the dice again in the same turn and advance the mal(s), combining all the scores.
5. If you land on your opponent team's mal(s), you remove their mals(s) and get another chance to cast in current turn.
6. Any mal removed goes back to the beginning of the board and starts again.
7. If you land on your own team's mal or mals, two mals are combined and move together as a group. However, if they are removed, they also are removed together.
8. There is no limit to the number of times one team can cast the dice again before the end of a turn, if they throw a 4 or a 5 again and again, or remove the opposing team's mal(s).
9. All of the various repetition signs in the board can be repeated infinitely.
10. The first team to move all of their mals to the *fine* of the board wins.

The board

The essential component of the game, the board is transformed to music score. Each of the notes are functions as a station. The reading of the music score functions as straight courses, while the repetition signs are functioning as diagonal courses. I designed the board to produce an average duration of 15 minutes. However, the repeat signs mean the duration of the piece will vary.

The board can be suitably reconstructed for each concert by anyone. The board must be projected on the screen during the concert. The slide operator puts the number of moves forward and controls the tokens.

Yut: the dice

Transforming the dice from a tangible object to an intangible musical object was one of the hardest things about this piece. Imagine how to describe throwing the dice musically and making the value randomly without a dice. The problem was that one player could not produce a random value without the dice because they can control their instrument well, even if they were improvising.

However, the more players there are who roll the dice, the more chances there are to get random values because players are forbidden to verbally communicate with each other.

Additionally, I made the yuts to interrupt their strategy towards each other, thus transforming a randomness issue into a strategy issue. The changed rule was as follows:

4 Yut players equally from 2 Teams determine each team's movement by playing or not. So they can defend against an opponent's advances with a strategy.

1 of 4 playing : -1 step

2 of 4 playing : 2 steps

3 of 4 playing : 3 steps

4 of 4 playing : 4 steps

0 of 4 playing : 5 steps

Mal: the token

The sounds made by the mals of the opposing teams must be distinguishable by their timbre so the players and the audience can follow whose mals are where—and not only for that. We also need to follow who's moving and who's staying. When the mal moves, it makes the sound crescendo to mezzo forte and plays all the passing notes. It also makes a decrescendo to pianissimo when it lands on a station. When the mal lands and stays on a station, it plays the note with irregular rhythms and a whispering pianissimo tone.

The mal players can choose their own clef to read the score according to their instrument. The clefs chosen are unchangeable during the piece. However, chosen clefs are not shown on the screen or the music score.

Grouping, removing the mal(s)

If a mal lands on a note occupied by another player on one's own team, they form a group and travel together from that point on. In this case, the most recent mal to land plays the note an octave higher (or lower) so the audience can follow the group. If a mal lands on a note occupied by the opponent's team, they the player removes the opponent's mal(s) from the station. In this case, all of the Yuts play "the removing sound". Each team has a slightly different removing sound that can be told apart. And the mal(s) that are removed go(es) back to the beginning of the piece and start(s) over in silence. The other mals continue playing.

4) Extra components

Repetition signs

The repetition signs can be functioning not only as a shortcut but also as a detour that repeats infinitely. However, the signs are only effective when the mal lands on the exact note. If the mal is just passing the note, the repetition sign is not valid.

For instance: ♩: 1 2 3 4 5 :|| 6 7 (numbers represent notes).

If a mal moving from 3 to 5, the advancement process will be 3-4-5-1.

If the mal(s) moving from 4 to 6, the advancement process will be 4-5-6.

Move forward 1 to -1

Even if the yuts consist of teams opposing each other, sometimes there is an “unstoppable situation” in which one team can make a plan and control the throws to keep highly advantage. For instance, if one team is aiming for 1 (a shortcut) or 2 (and opponent’s mal) steps in order to advance, the team can take advantage and can easily finish the game if Yuts does not play any notes. If one of the opposing team plays the note, they will go to the shortcut. If two of the opposing teams play, they will remove the mal. And if none of the opposing teams plays, they will advance five steps. To avoid this “unstoppable” situation, I changed the move forward 1 to -1. And this rule makes the musical sound fuller, too.

The collection of throwing notes

Each yut player has five different collections of throwing notes that consist of one to three notes and a rest. These various combinations of collections are composed based on functioning harmonies and modulations in order to make the music more interesting. The jury, the conductor gives the number of collections, and the Yuts plays either a note or a rest. The jury often changes the collections by showing cue cards to the performers.

Jury, the conductor

The Jury makes the piece musically without interfering with , the game. All players play every event based on signs from the Jury. The Jury gives signs to the Yuts every time they start to play and stop throwing. Not only can the Jury can make the collection of throwing notes—it can also have the Yuts play different types of dynamics, lengths and so on situationally, by conducting. The Jury should give all the players plenty of time to think, play and rest. In addition, the Jury can show a “yellow card” if the Yut(s) cheat by changing their status from playing to rest. In this case, the current throwing score and the turn of the team are not valid. The opponent of the team that has cheated gets to advance their mal with any scores they want. Then they can start throwing again with the advantage they have. However, this “yellow card” rule continues to transform itself into music.

5) Practical execution

Discussing without verbal communication

There are some particular issues that have to be discussed with the team such as “How many Yuts should play for the current throw?” or “Which mal moves for current turn?” However, since none of the players can verbally communicate with each other throughout the piece, they make a decision and play the game based on individual decisions. Somehow, there is a way to communicate for one team which should not be understood by the opposing team. This phenomenon of communication occurs in a way to that is quite similar to how the members of an ensemble play a normal piece together. The key difference is that they can give a fake sign to throw off the opposing team’s strategy.

Repeating signs to vary the duration of the piece

Because of the repeat signs that can be given infinitely, the duration of the piece is undetermined. There were two strongly contrasting durations from rehearsal and concert. Once, during rehearsals, the game continued almost over 30 minutes because of the retour. But on another occasion, during performance, it finished in five minutes because of the shortcut. There is an optional temporary expedient when the game continues for longer than expected: have the slide operator move the *fine* backwards on the board. However, there is no way to have the piece continue if the game finishes sooner than expected. I accept these circumstances as part of the game in the piece, and I highly recommend that performers and audience accept the result of game.

Audience actively listening to a game and supporting one player

During a performance of “Yut Nori”, one team got 3 moves forward, removed an opposing team, got five moves forward twice in a row and made a successful move ahead in the game. People who know the rules were so into the moment that they applauded during the piece. On the other hand, people who don’t know the rules listened to the unexpected pattern in the s sequence and wondered what the logic behind the piece. IN another case, one team could have finished the game if they got three moves forward. People who know the rules of the game really hoped to hear a chord with three notes at that moment. Both moments were the highlight of the piece for the people who know the rules, whereas people who don’t know them felt that the piece ended with an anti-climax. So the same musical event functioned as both a climax and an anti-climax at the same time.

6) Alternative performance options

There are various way to perform the piece. In the original game, there is no limit to the number of participants in a game. But the extra performers can only participate only in mals.

IV. Conclusion

Introducing rules and objectives to music creates tension between or among the players, who are trying to win, and the audience members, who are trying to recognise these events by listening to them. We experience exactly the same emotions while listening to game pieces in the same way as they watch sport games. However, this experience can happen only if we know about the rules and how they work. How does this melody work? What does this chord mean for the game? And if the audience doesn't know the rules, they can listen to the piece only in musical ways. Since the piece is made of rules, and since all events and processes in the game are translated into music, the pattern of the piece works in the same way as the pattern of the game. Because all the elements are controlled by a strict plan, the audience makes their own musical function or syntax. If we know the rules of game, we perceive the music differently. Furthermore, if we choose to play different options from parameters every time, the piece not only has its own identity but also has a certain diversity to it.

So in the end, it's all about music. The outcome of the game (win or lose) is completely unrelated to music. The most important thing is the process of the piece. There are no practical wins or losses for performers at the end of the musical game. There is no prize for the game, and we cannot judge which player's musical ability is better. Of course one can be a good player in the game itself, but both good and bad players are equally important to the music, because their playing, the conflict and the interactions between them, and the outcomes—all of these are more meaningful for the music.

Designing the musical outcome through transforming game rules into music just as important as making a good game. I provide another way of perceiving by composing based on game rules. So we can enjoy both listening to the music and playing a game.

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