Algorithmic Rendition of Maguindanaon Kulintang Music

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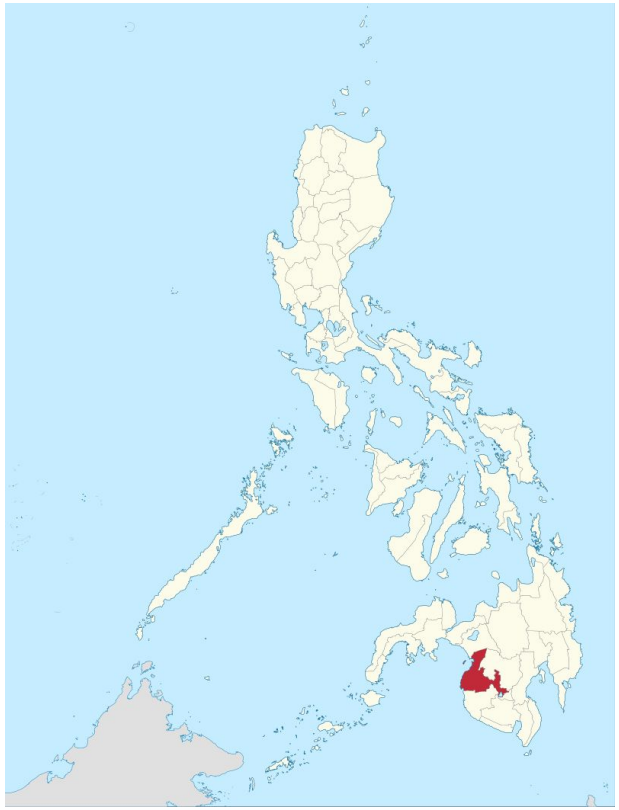
Project: a **compositional system** for rendering kulintang music algorithmically

What is **kulintang?**

Kulintang refers to the

- instrument of 8 bossed gongs arranged from lowest to highest pitch, either on wooden frame or on floor
- ensemble that uses the *kulintang* instrument
  - also called *palabunibunyan*
  - specifically part of the Maguindanao province

Where is Maguindanao?



Palabunibunyan

Palabunibunyan consists of 5 instruments:

- ***kulintang***
- ***dabakan*** (drum)
- ***babandir*** (gong hit on rim)
- **agung** (2 hanging gongs)
- **gandingan** (4 hanging gongs)

Motivation

Why did I decide to do this project?

Few reasons:

- Excuse to learn more about the (music of the) Philippines
- Properly research and learn the style
- We have one on campus!

Analysis

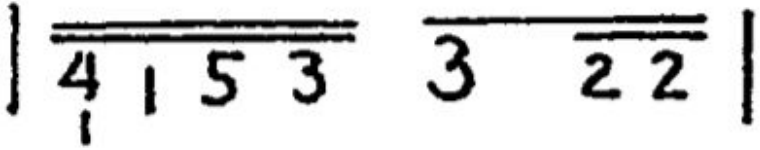
Analysis

Primary sources:

- **Harold Andre**, Manila-based musician who studied Asian Music and Musicology at University of Philippines
  - studied kulintang under **Master Aga Mayo Butocan**, who developed kulintang notation
- **Dr. Kristina Benitez**, musicologist & psychologist from University of Michigan
  - Doctoral thesis: “The Maguindanaon Kulintang: Musical Innovation, Transformation, and the Concept of *Binalig*”
- Recordings by Master **Danongan Kalanduyan and the Palabunibunyan Kulintang Ensemble**
  - Kalanduyan popularized kulintang in North America
  - recordings from Smithsonian Folkway Recordings

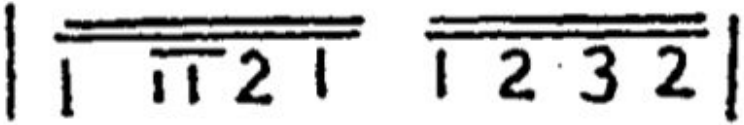
Cipher Notation

Example 1: *Duyug* (CR-1, Appendix C)

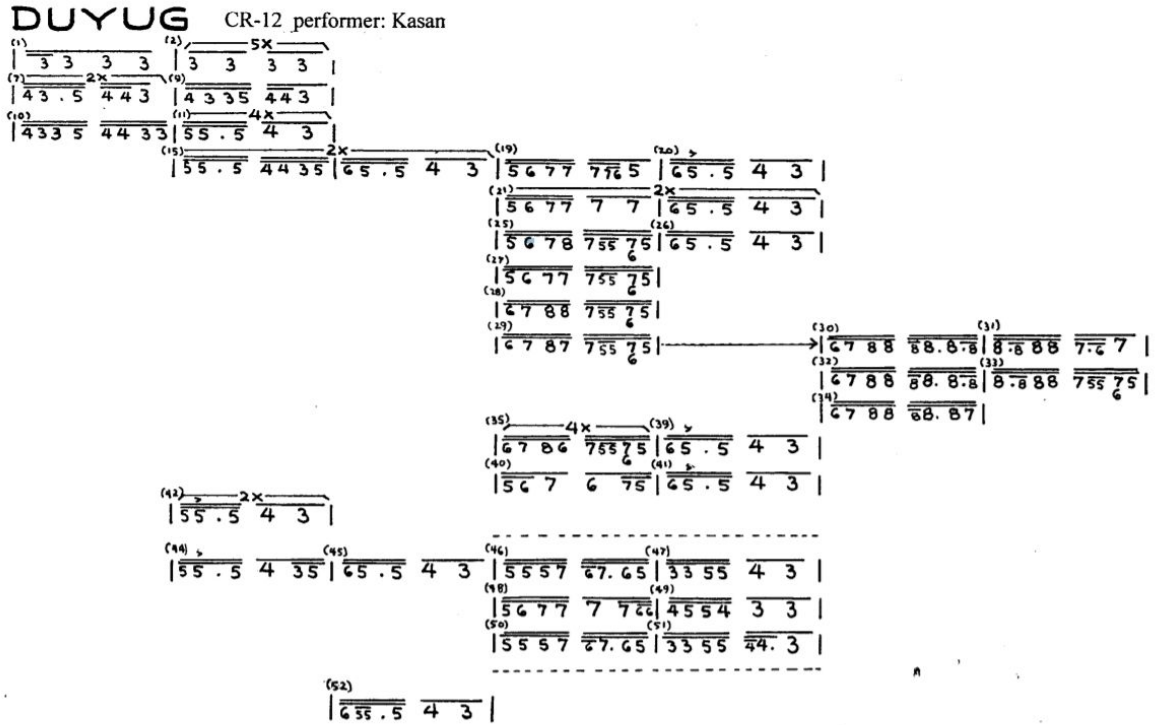


Example 2: *Duyug* (CR-12, Appendix C)

Example 3: *Duyug a binalig* (CR-14, Appendix C)



Cipher Notation



Rhythmic Mode

Despite just showing notation, traditional pieces are not memorized

- they are **improvised** through rhythmic modes!
- notation arose as a means of academic study, research, and education

In palabunibunyan, rhythmic modes are stylistic outlines for the following:

- general rhythmic pattern for all ensemble players
- where to place rhythmic accents/emphasis
- how to start/end a piece (form)

Rhythmic Modes

In **Maguindanaon** palabunibunyan music, there are 5 rhythmic modes:

- **Duyug/sirong**
- **Binalig**
- Sinulog
- Tidtu
- Tagonggo

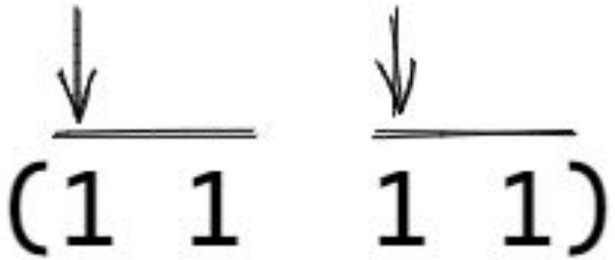
Notes

- only applies to Maguindanao; other provinces have their own modes
- the term “modes” is “genre”, “style”, etc. (no standardization on term yet)

Duyug/sirong

In duyug/sirong, all players play phrases 2 beats in length, with emphasis at the beginning of each beat

- covers a wide variety of melodies
- extended techniques are common (playing two gongs at once, double strokes, etc.)
- usually start on gong 3
- final section features ascent to gong 7, ending on gong 3



Binalig

Means “made different” in Maguindanaon

Identical rhythmic structure to duyug/sirong, with some differences:

- use of *paired* musical phrases
- greater density of repeated strokes
- ascent to gong 7 is in beginning, not end
- stylistically faster, flashier, more virtuosic

Tuning

There's no standard tuning!

Summary

GONG	1	2	3	4	5	6	7	8

Sets used in Folkways FE 4536 recordings of J. Maceda in Datu Piang, c.1955:

T-1 Kulintang	E	F#	A	B	C#	E-	F#-	G#
T-2 Kulintang	A	Bb+	D+	E+	F+	A	B	C#

Set used by A. Butocan in 1976 recording in DMR Record 1, Side 1, item 5:

T-3 Kulintang	B	C+	E	F	G	B	C#	D#

Set acquired through A. Butocan c. 1976; used by Maguindanao Lilang-Lilang in 1988:

T-4 Kulintang	F#	G#	B	C#	D#-	F#	G#-	A#

Set acquired by Assumption Antipolo Grade School through A. Butocan c.1980s:

T-5 Saronay	E+	F#	A#	B	C#	E	F#	G#-

Set used by A. Bagan and A. Lumuntod in 1980 DMR recording in *Kulintang at Kutyapi*:

T-6 Kulintang	D#	E	G#	A#	B	D#	E	F

Set used by Bainot in 1984 recording at the College of Music, University of the Philippines:

T-7 Kulintang*	A#	B	D	E	F#	G#	A#	C

Sets acquired from A. Butocan c. 1988:

T-8 Saronay	C#	D	F#+	G#	A#	C#	D	E

Design & Implementation

- Design conversion between cipher notation and code representation
- Transcribe pieces into code
- Use **musx** to facilitate
  - reading and playback of scores
  - generation of new material through Markov Chains
- Use **SuperCollider** and **VKey** to generate audio and change tunings

Demo 🙌

Next Steps

- Convert program into CLI, eventually add GUI
- Transcribe as many pieces as possible in different modes
- Utilize different tunings
- Optimize playback to not slow down
- Write generated compositions to file (MIDI)
- Auto generate cipher notation scores