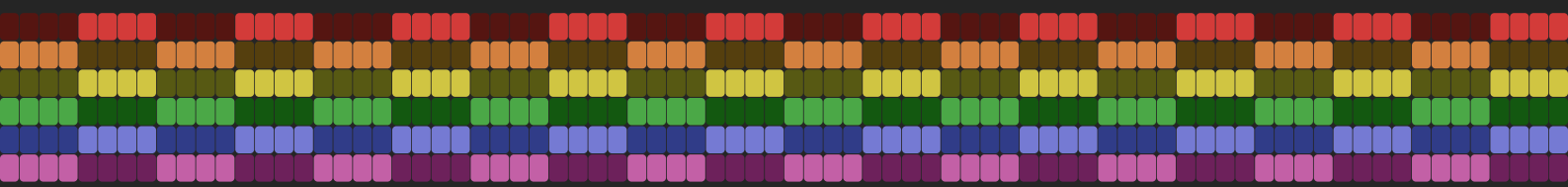
TONEBANK

AFRO-HARMONIC SEQUENCER

USER GUIDE



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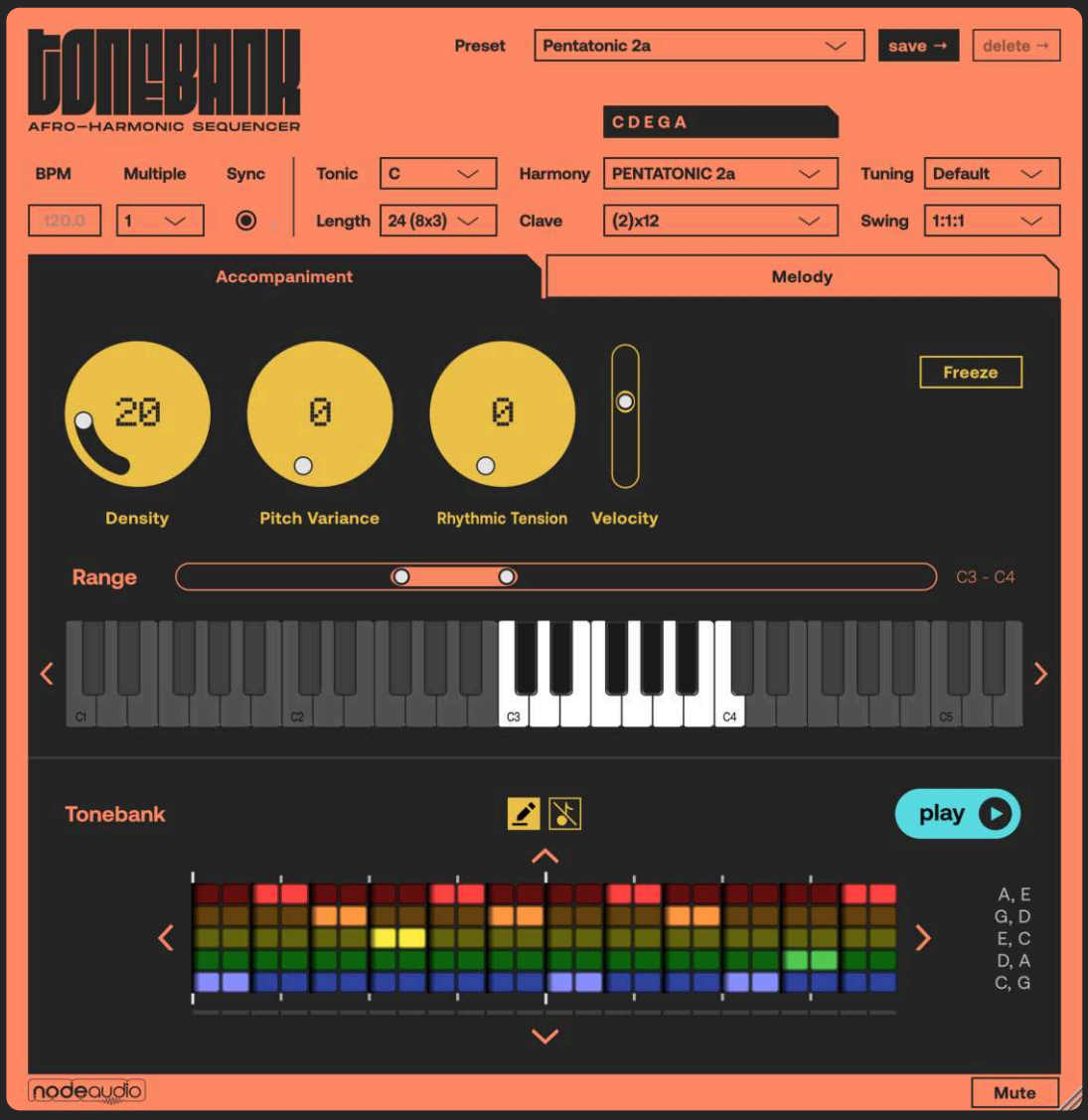

tonebank
AFRO-HARMONIC SEQUENCER
Preset
Pentatonic 2a
save
delete
CDEGA
BPM
120.0
Multiple
1
Sync
Tonic
C
Harmony
PENTATONIC 2a
Tuning
Default
Length
24 (8x3)
Clave
(2)x12
Swing
1:1:1
Accompaniment
Melody
Freeze
20
0
0
Density
Pitch Variance
Rhythmic Tension
Velocity
Range
C3 - C4
C1
C2
C3
C4
C5
Tonebank
play
A, E
G, D
E, C
D, A
C, G
nodeaudio
Mute

Contents

Background

Tonebank is a plugin that models harmono-rhythmic structures found in traditional African music. Underlying most music of xylophones, harps, kalimbas (thumb pianos) and vocal polyphony, are looping chord sequences.

The strength of traditional African music lies in several key elements that Tonebank encodes:

- Solid rhythmic formulae that create cyclic strength
- Symmetric, logical and balanced harmonic sequences
- Complex swing patterns with micro-rhythmic variations
- Traditional tuning systems

Melodies and accompaniments can be drawn from these loops. In Tonebank, the notes that the plugin 'improvises' for you are always placed in harmonic agreement with the loop. There are differences though to what you may expect from chord sequences found in other common music.

(a) African systems of harmony (various pentatonic, hexatonic and heptatonic) all have chords, some of which only have 2 notes - there are between 2 and 6 chords in traditional systems.

(b) The harmonies follow specific rhythmic patterns where chord changes occur at varied timings. Unlike Western harmonic sequences, traditional African harmonic sequences are often faster moving and create consistently strong and balanced melodies through their symmetric patterns.

(c) Musical conversation - call and response between different voices - is an essential aesthetic in many African musical traditions. Multiple instances of Tonebank can be layered to create this conversational interplay.

The term "Tonebank" was coined by ethnomusicologist Peter Cooke for any loop that the xylophones would play in Southern Ugandan music, usually with one note on every division of every beat. This plugin builds upon decades of research and collaboration with master musicians from Africa, including Hukwe Zawose (Tanzania), Nofinishi Dywili (South Africa), Albert Messomo (Cameroon), Albert Ssempeke (Uganda), Bernard Woma (Ghana), and Chartwell Dutiro (Zimbabwe). It also draws from the extensive research of Peter Cooke, Andy Cooke, Gerhard Kubik, Simha Arom, Polo Vallejo, Paul Berliner, Hugh Tracey, and David Dargie, as well as ethnographic recordings from labels including Ocora, Fonti Musicali, UNESCO, and others.

Introduction

Tonebank is what is known as a "MIDI effect" plugin. It is essentially a note generator. It does not have any sounds of its own. It requires the notes it generates to be sent or passed onto an instrument or synthesizer plugin in order to play the notes.

Each instance of Tonebank in your project acts like a separate instrument, all playing within the same musical pattern, visualised on the Grid. There are two different tabs: **Accompaniment** is good for textures, backrounds and loops (think harmonic or percussive instruments), while **Melody** is like an intelligent soloist, good for lead sounds and song-like instruments.

All the instances in your project will automatically link together. Changes to the "Shared Controls" will affect all instances, while changes to the "Instrument-Specific Controls" only apply to the current instance.

Getting Started

Ableton Live Setup

If you are on a Mac computer, please ensure you allow Ableton Live to find VST3 plugins. The AudioUnit (AU) Tonebank plugin is not compatible with Ableton Live.

1. **Create an instrument track**
   - Load your chosen instrument (synthesizer, sampler, etc.) on a MIDI track
   - This will be the sound source for Tonebank's generated notes

2. **Add Tonebank to a separate MIDI track**
   - Create a new MIDI track (Ctrl/Cmd + Shift + T)
   - In the device browser, navigate to Plugins and drag Tonebank onto this track

3. **Configure MIDI routing**
   - On the instrument track, set the Monitor control to "In"
   - In the "MIDI From" section of the instrument track, select the Tonebank track from the first dropdown
   - Select "Tonebank" in the second dropdown

4. **Start playback**
   - Press Play in Ableton or hit the Play button in Tonebank
   - Tonebank will now send MIDI to your instrument

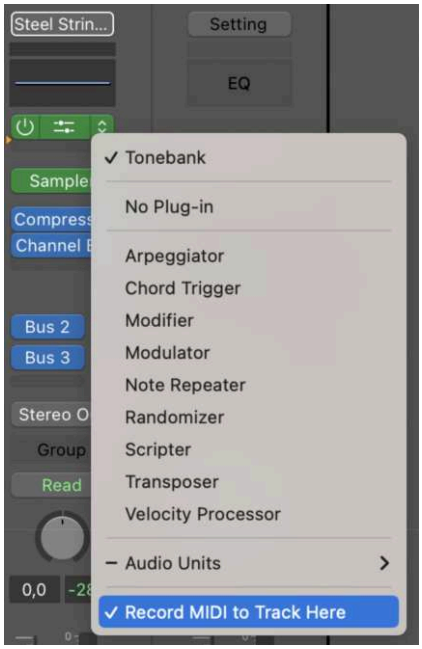
Logic Pro Setup

1. **Create an instrument track**
   - Create a new Software Instrument track (Option + Cmd + N)
   - Load your desired instrument plugin from the browser

2. **Add Tonebank as a MIDI effect**
   - In the channel strip, click on the MIDI FX slot (located above the instrument slot)
   - Navigate to Audio Units > Node Audio > Tonebank

3. **Enable plugin playback**
- Important: Logic disables plugin playback when first loading Tonebank
- Press Play in Logic once to enable Tonebank's internal transport
- After this initial play, Tonebank will work normally

4. **Record MIDI output**
- To capture Tonebank's generated MIDI, click on the MIDI FX slot again
- Select "Record MIDI to Track Here"



FL Studio Setup

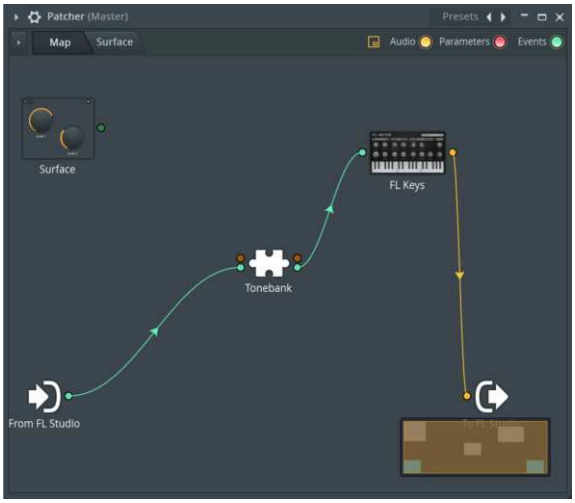
1. **Create a Patcher track**
- Right-click in the Channel Rack and select "Add one"
- Navigate to and select "Patcher" from the plugin list
- This opens FL Studio's modular routing environment

2. **Add Tonebank inside Patcher**
- Right-click anywhere in the Patcher window
- Select "Add plugin" > "More..." > "Tonebank"
- Tonebank will appear as a module in Patcher

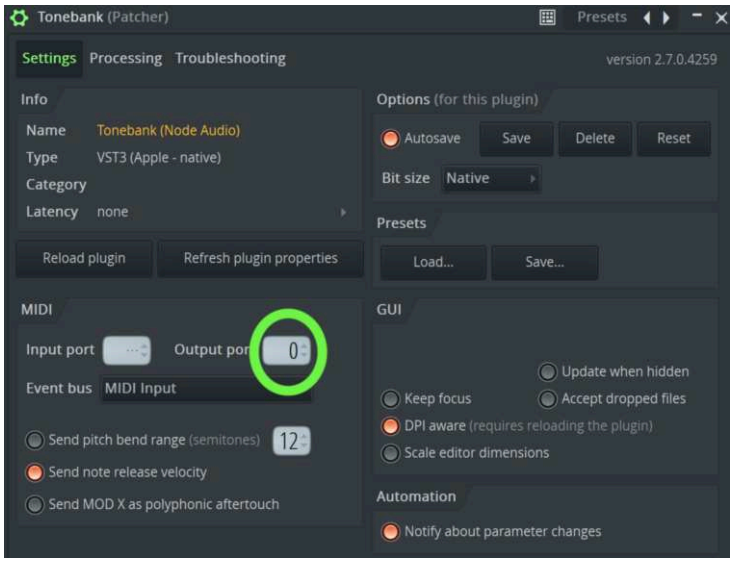
3. **Disconnect Tonebank's audio output**
- Right-click on Tonebank's audio output (right side, orange connector)
- Select "Disconnect" or simply delete the cable by dragging its final point away
- Tonebank only outputs MIDI, so audio routing is not needed

4. **Add your instrument**
- Right-click again in the Patcher window
- Select "Add plugin" and choose your desired instrument
- The instrument module will appear in Patcher

5. **Configure MIDI routing**
- Disconnect the instrument's default MIDI input (left side, green connector)
- Click and drag from Tonebank's MIDI output (right side, green connector)
- Connect it to the instrument's MIDI input (left side, green connector)
- Connect the instrument's audio output to the "To FL Studio" module

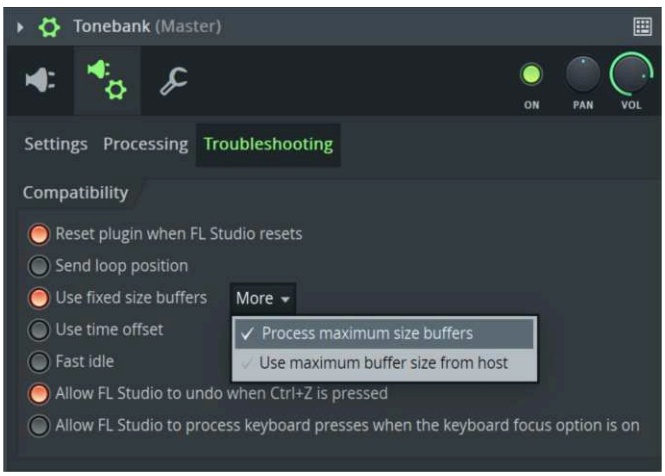


6. **Configure Tonebank settings**
   - Double-click Tonebank to open its interface
   - In Tonebank's settings, select an output port
   - This ensures proper MIDI communication within Patcher



7. **Start playback**
   - Press Play inside Tonebank or in FL Studio (if DAW sync is checked)

8. **Optional: fix sync issues**
   - If sync issues occur when pressing Play in the DAW - still in Tonebank's Detailed Settings, go to the Troubleshooting section
   - Enable "Use fixed size buffers"
   - Enable "Process maximum size buffers"



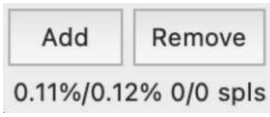
REAPER Setup

1. **Create a new track**
- Right-click in the track area or use Ctrl/Cmd + T
- This will be your instrument track

2. **Add Tonebank first**
- Click the FX button on the track

- In the FX browser, locate and add Tonebank
- **Important:** Tonebank must be placed **before** any instruments in the chain

3. **Add your instrument**
- In the same FX window (bottom-left), click "Add"



- Select your desired VSTi or AU instrument
- Make sure it appears below Tonebank in the FX chain

4. **Start playback**
- Press Play in REAPER or use Tonebank's internal Play button
- The MIDI generated by Tonebank flows directly to the instrument below it

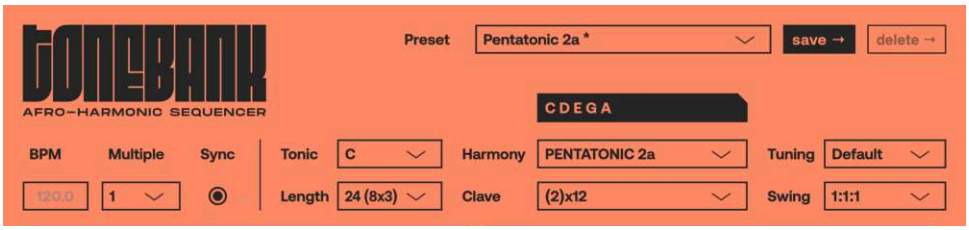
Please note: Harmony, Swing, Clave, Length and all the cells in the Tonebank grid must be selected for playback to be enabled.

Features

Shared Controls

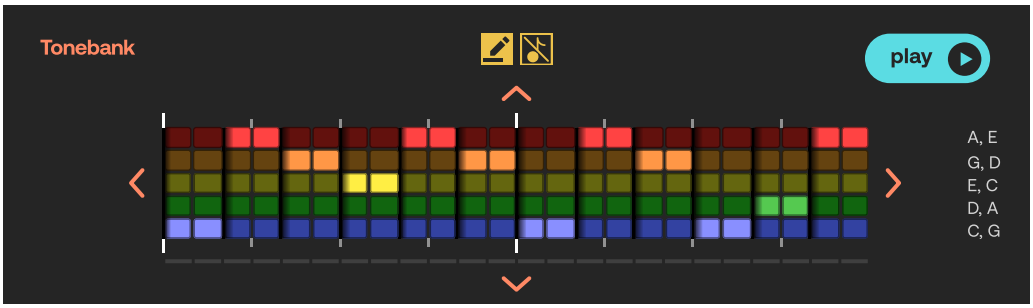
These controls define the fundamental structure of your tonebank and affect both Accompaniment and Melody tabs - they are also shared across multiple instruments (instances of the plugin), except for the Play and Mute buttons:

Top Bar Controls



- **BPM** - Sets the tempo when not synced to your DAW
- **Multiple** - When Sync is enabled, sets playback rate relative to your DAW's tempo (e.g., 2/3, 1, 4/3). This allows Tonebank to play at different rhythmic ratios to your project
- **Sync** - Toggle button to synchronise with your DAW's tempo and transport
- **Tonic** - Sets the reference note from which all chords are built and transposed
- **Harmony** - Selects the chord set to use (each row on the Grid represents one chord from this set)
- **Scale display** - Shows the complete scale formed by all chords in the current Harmony
- **Tuning** - Selects alternative tuning systems for the current harmony. Each harmonic system comes with its own tuning options that reflect traditional African musical practices
- **Swing** - Defines the swing (micro-rhythmic) ratios within each beat
- Length - Sets the number of divisions (columns) in the complete cycle (with 3 or 4 divisions per beat, like the majority of African music)
- **Clave** - Sets the harmonic rhythm pattern, shown as black vertical lines on the Grid
- **Presets** - Load, save, and delete presets

Grid Toolbar, Grid and Transport



The **Grid** is the central visual representation of your tonebank. Each column represents a division in time, and each row represents a chord from the selected harmony. The **Grid Toolbar** allows you to interact with the Grid depending whether you're in the Accompaniment or Melody Tab:

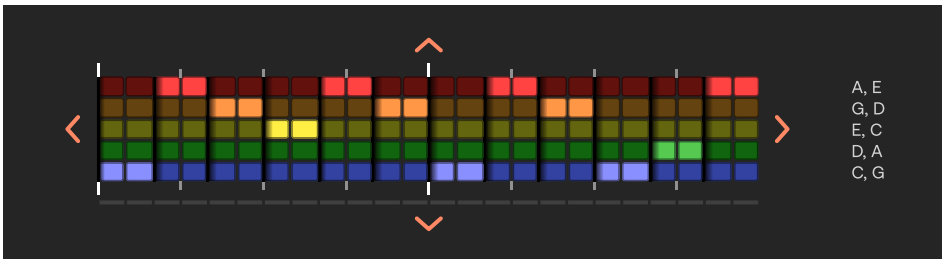
Accompaniment Tab tools

- **Edit Tool** - Click on a cell to select which chord plays at which clave point
- **Mute Tool** - Click on cell to mute it (this is also available with right-click when editing)

Melody Tab tools

- **Edit Tool** - Same as in the Accompaniment Tab
- **Fix Phrase Ending Tool** - Click on a cell to set the phrase end marker
- **Fix Phrase Beginning Tool** - Click on a cell to set the phrase start marker

Grid



- **Rotation arrows** - Use the arrows to shift the entire harmonic organisation left/right/up/down
- **Chord display** - Shows the chord names for each row (right side)
- **Black vertical lines** - These represent the clave pattern (harmonic rhythm)
- **White ticks** - These show where the beats fall (according to the Swing parameter)
- **Accentuation markers** - In Accompaniment mode, click to select the notes accentuated with the Velocity control

Instrument Play/Stop button

- Starts/stops the internal playback of the current Tonebank instance

Instrument Mute button

- Located in the bottom right-hand corner. When muted, Tonebank does not generate any MIDI notes, but maintains its place in the cycle so that it comes back in the right place when unmuted (unlike bypassing/deactivating the plugin in the DAW, which will de-synchronise the instruments). This is an automatable parameter.

Instrument-Specific Controls

These controls are set separately for each instrument (that is, for each instance of the plugin). Tonebank has two tabs with different control sets:

Accompaniment Tab

The Accompaniment tab functions like an intelligent arpeggiator, playing notes from the selected chords division by division.

1. **Density (0-100)** - Controls how many "filler" notes are added between clave points
- At 0: Only plays notes defined by the clave and Rhythmic Tension
- At 100: Plays notes at every division (except muted ones)

2. **Pitch Variance (0-100)** - Controls how much the pitch pattern changes with each cycle
   - At 0: Every division has the same note choices every time (though whether a certain division is played or not will depend on Density and Rhythmic Tension settings)
   - At 100: All pitches are chosen again at each cycle

3. **Rhythmic Tension (0-100)** - Shifts emphasis between "on-clave" and "off-clave" notes
   - At 0: Only "on-clave" notes (divisions marked with black lines)
   - At 100: Only "off-clave" notes (no divisions marked with black lines are played)

4. **Velocity** - Dual slider that sets velocity for accentuated (top slider value) and non-accentuated (bottom slider value) notes

5. **Range** - Defines the keyboard range where notes can be played. The left/right arrows scroll the keyboard. Maximum range is C1-C8

6. **Freeze** - Locks the current pattern so it repeats exactly the same way every cycle. This is the only way to ensure complete consistency if you want the exact same pattern each time, as even with Pitch Variance at 0, controls like Density and Rhythmic Tension might introduce some randomness. This is an automatable parameter.

Melody Tab

The Melody tab generates melodic phrases that "solo" over the chord progression / tonebank. These phrases are designed to mimic spoken and sung language patterns through their structure.

In the Melody tab, each melodic phrase is composed of words (groups of short (1) and long (2) notes/"syllables" - e.g., "121" "12" "2") separated by one-division rests

1. **Density (0-100)** - Controls the syllable length distribution in words
- **At 0:** Short syllables only (e.g., "11 1 111")
- **At 100:** Long syllables only (e.g., "222 22")

2. **Development (0-100)** - Controls how phrases evolve over time
- **At 0:** The exact same phrase structure repeats (e.g., if the phrase is "211 121 2", this exact pattern will repeat, though the actual pitches may change)
- **At 100:** With each new phrase, words will definitely be added, removed, or modified

3. **Phrase Mode** - Defines how phrases relate to the tonebank cycle
- **Solo Mode:** Phrases appear at various positions in the loop with spacing as defined by the Space slider
- **Fix Phrase Ending:** Each phrase ends at a marked position (set by the Grid Toolbar button or Shift+click on the Grid)
- **Fix Phrase Beginning:** Each phrase begins at a marked position (set by the Grid Toolbar button or Shift+click on the Grid)
- **Direct Mode:** Phrases play only when the "**Play Phrase Now**" button is clicked

4. **Fix Phrase Ending/Beginning Markers** - Only visible in their respective Phrase Modes, these markers are set by Shift-clicking on the Grid and define where phrases must end or begin
- **Phrase Length:** Dual slider setting minimum and maximum words per phrase
- **Space:** Sets the minimum number of divisions between phrases (Solo Mode)
- **Play Phrase Now:** Manually triggers a phrase (Direct Mode only)
- **Range:** Defines the keyboard range for melody notes
- **Freeze:** Locks the current phrase to repeat exactly with the same melodic and rhythmic content

Understanding the Interface

Harmonies and Chords

The **harmony** system in Tonebank works as follows:

1. First, you select a **Harmony** type - this defines a collection of chords (from 2 to 6)
2. Each chord in this collection is represented by a row in the grid
3. The **Tonic** sets the root/reference note, enabling transposition of all chords
4. When you select cells in the grid, you're creating a sequence of these chords over time

The scale formed by all the notes in the selected harmony is shown at the bottom right of the grid for reference.

Clave and Timing

The **Length** parameter defines the total number of divisions in the cycle. This affects both the **Clave** and **Swing** options available:

- **Clave:** Defines where chord changes can occur. Visually represented by black vertical lines on the grid. The divisions immediately after these lines are the "on-clave" notes.
- **Swing:** Defines both the number of divisions per beat (3 or 4 divisions; where the white ticks appear above/below the grid) and the relative "micro-timing" of each division within a beat.

For example, a "3:2:2:3" swing means divisions within a beat have duration ratios of 3:2:2:3, with the first and last division being slightly longer than the middle ones.

Recommended Workflow

A typical workflow in Tonebank:

1. **Begin with fundamentals:**
   - Choose a **Harmony** type and **Tonic** (or start with a preset)
   - Set a **Length** for your cycle
   - Based on your Length, select compatible **Clave** and **Swing** patterns

2. **Design your tonebank:**
    - Click on the Grid to select which chords play at which divisions
    - This will enable the Play button once you've made a valid selection

3. **Tab-specific settings:**
    - Switch between **Accompaniment** and **Melody** tabs
    - Adjust settings like **Density**, **Pitch Variance**, **Range**, etc.
    - For Melody, choose a **Phrase Mode** and related settings

4. **Playback and refinement:**
    - Use **Sync** with your DAW or hit the **Play** button
    - Adjust parameters in real-time
    - Save your creation as a preset if desired

Glossary

Tonebank: A loop played on xylophones in Southern Ugandan music. In our plugin, a sequence of “rhythmicised” chords defined by Harmony type, Clave pattern, and user chord selections.

Division: The smallest time unit in the cycle, represented as columns on the grid.

On-clave notes: Notes that fall immediately after the black vertical lines.

Off-clave notes: Notes that fall between the black vertical lines.

Phrase: In the Melody tab, a complete musical thought comprised of words. For example: "121 12 2" is a phrase with three words.

Word: A group of syllables in a melody phrase, separated by short rests. For example, in "121", there are three syllables.

Syllable: Individual short (1) or long (2) notes that make up words. These mimic patterns of spoken and sung language.

Examples

The Queen of Xhosa bows Madosini - Mvimbeni
Simple loop with 2 chords of major triads/ harmonic series from South Africa
https://www.youtube.com/watch?v=TwvJsr1CLc4

Nakibembe Xylophone Troupe
Pentatonic music using 4 chords from Southern Uganda. (the system has 5 chords - only 4 are used here)
https://www.youtube.com/watch?v=_X72cbnMHS4

Simple loop with 2 chords from diatonic hexatonic scale from Cameroon
Someone sings the flat 7th but it is not there in the xylophones
https://www.youtube.com/watch?v=ATxSrSAtlR8

Heptatonic music using 6 harmonies - a classic from Zimbabwe
The loop is 48 divisions, 4 cycles of 12/8
https://www.youtube.com/watch?v=sc47P8Vq1pg

Pentatonic music with loop using 3 harmonies from North West Ghana
https://www.youtube.com/watch?v=drj0n4mlQi4

Pentatonic (from harmonic series) music with 2 chords from Tanzania
https://www.youtube.com/watch?v=BqR6hX06dq8

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