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Infopoiēsis Operating Manual

Futurhythmachines Workshop - Black Arts & Decolonial Sciences Lab

Conceptual Overview

Colonial Science brutalizes us into bits of data to be collected and analyzed, seeking to rationally represent phenomena by reducing our complexity to visual and symbolic abstractions.

Drawing upon the (re-)creative methodologies of Black electronic dance musics, this workshop invites participants to experiment with decolonial practices of signal sampling and synthesis—methodologies that move against the grain of colonial data extraction and analysis. The aim is not to represent phenomena through reductive models, but to intuitively sense phenomena that elude representational and analytical frameworks. Using the layered polyrhythms and participatory antiphonies characteristic of Afro-diasporic musics, the practices we explore engage with phenomena dynamically, attuning to their resonances and relational patterns.

Participants will explore how the break beat, the blue note, and the ring shout offer sonic paradigms for rethinking knowledge production beyond colonial control. The polymetric break beat resists the monometric, affirming the generativity of dissensus. The polyphonic blue note bends the boundaries of correctness, challenging the symphonic demand for harmonic unity. The improvised participatory antiphonies of the ring shout dissolve the authority of the composer and conductor, transforming knowledge into a collective, call-and-response practice.

Part 1: From Data to Signal — Wave-Table Oscillators as Signal Synthesis

We begin by translating numerical datasets into wave-table oscillators using Max's gen~. This gesture literalizes the shift from data analysis to signal synthesis—a movement from rational abstraction to embodied sense-making. Participants sonify sets of "brutalized" or decontextualized data, rendering their waveforms audible and affective.

Part 2: Sampling as Errantry — SP-404 as Machine for Spectral Drift

These signals are then collected and fragmented within the Roland SP-404. The SP-404's architecture of resampling and effects processing allows us to intentionally miss the mark—pitch, time, harmonic convention—echoing the expressive offness of the blue note. Participants are invited to "play the error," bending signals into misalignment to discover spectral textures and relational drift.

Part 3: Breaking the Beat — TR-8S as Machine for Metric Dissensus

From these errant fragments, we construct break beats on the Roland TR-8S, refusing the metric consensus of gridlocked time. Here, we operationalize dissensus: building polymetric sequences in which divergent meters clash and converge. Multiple time signatures overlap, rub, and drift. Participants sequence breaks that disorient expectation, shift rhythmic emphasis, and generate emergent, relational grooves.

Part 4: Participatory Antiphonies — Feedback Loops as Ring Shouts

As the system unfolds, we entangle Max, SP-404, and TR-8S in a feedback ecology. Audio, modulation, and control-rate signals circulate between nodes. MIDI and CV connections transform the performance into a ring shout structure: participants respond to a signal (call) by transforming it through filters, LFOs, pitch effects, or spatial modulation (response). As these gestures accumulate and rebound, roles dissolve—listener becomes player, player becomes modulator, and knowledge emerges through relational resonance.

Concept Lab: Naming the Data Otherwise

Drawing upon Kodwo Eshun's *More Brilliant Than the Sun*, each session will include a collective effort to generate new languages for describing the datasets in play. Just as Eshun identifies breakbeat producers, instrumental turntablists, and mixadelic engineers as already-operating sonic theorists—activating thought at the speed of sound—we approach our datasets not as fixed objects to be analyzed, but as conceptual engines to be misused, mutated, and magnified.

These datasets are not neutral substrates but "thoughtprobes," pregnant with potential, waiting to be switched on and re-coded through the languages of our own making. Participants will draw on the vocabularies of Black sonic innovation—skratchadelia, loopdelics, machine funk—as conceptual technics, as names that refuse empiricism's closure and invite diffraction, drift, and misuse. Like track subtitles or stolen sleeve-note manifestos, these names will misrecognize the data in productive ways, distorting and bending it until it becomes a device for drilling into emergent sensory and epistemic states. Theory, here, does not impose from above—it is conducted from below, by way of machines, signals, samples, and the speculative vocabularies they demand.

Technical Specifications

Shared Infrastructure

Workstations

- **Workstations**: Laptops with
    - Max/MSP
    - Audio interface with multiple I/O

Audio Routing & Monitoring

- Audio mixer
- Sound system

Cables & Connectivity

- MIDI cables and USB-MIDI interfaces (for connecting SP-404/TR-8S to Max)
- ¼" TS and TRS cables for audio patching
- CV cables
- USB hubs and power strips for all stations

Part 1: From Data to Signal — Wave-Table Oscillators

Software Requirements:

- **Max/MSP with gen~**:
    - Patch elements:
        - CSV/TXT file import
        - Real-time wave-table oscillator via gen~

Hardware:

- Laptops with Max installed
- MIDI controllers for real-time manipulation

Part 2: Sampling as Errantry — SP-404 Workflow

Hardware:

- **Roland SP-404 MKII**
- SD cards for sample storage

Techniques:

- Import/export WAV files from Part 1

Part 3: Slipping the Grid — TR-8S Break Beat Construction

Equipment:

- **Roland TR-8S** Rhythm Performer
- MIDI clock sync with Max or SP-404 (depending on configuration)

Techniques:

- Assigning SP-404 outputs to TR-8S channels or using sampled material on TR-8S

Part 4: Participatory Antiphonies — Feedback Loops

Setup:

- **Modular Feedback Chain** between Max → SP-404 → TR-8S

Concept Lab: Naming the Data Otherwise

Station Materials:

- Large-format **whiteboards**, chalkboards, or writable wall surfaces
- Shared Google Doc, Notion board, or Miro for collaborative term-building
- **Sticky notes**, colored cards, markers for naming & categorization
- **Prompt cards**
- **Printed excerpts** from *More Brilliant Than the Sun*, with key terms highlighted
- **Projector or screen** to display evolving “Sonic Lexicon” or “Signal Misnomers” wall

Methodological Overview

This section outlines the data preparation and signal routing methods used. The objective of this process is to translate multiple global datasets into real-time control signals used to modulate the sequencing of a live-sliced Amen break in Max/MSP. The slicing is fully improvised by the performer, while dataset-driven control determines how the sequence moves from slice to slice.

Data Sources

The system uses structured, multi-year datasets representing global inequality, ecological extraction, and climate instability. The three primary data sources are:

- **World Inequality Database (WID)**
  Provides annual time series from 1980–2020 for:
    - Wealth and income shares (by percentile) disaggregated by country (e.g., USA, Brazil, UK, Tanzania), geopolitical zones (Green/Grey) and by world-system groups (Core, Periphery, Semi-Periphery).
- **ND-GAIN Index**
  Provides annual time series from 2006–2024 for:
    - Climate vulnerability and readiness indicators
    - Data is grouped by geopolitical zones (Green/Grey) and by world-system groups (Core, Periphery, Semi-Periphery).
- **Hickel et al. (2022)**
  Provides net annual flows from 1990–2015 of:
    - Embodied raw materials (Gt)
    - Embodied land (mn ha)
    - Embodied energy (EJ)
    - Embodied labor (mn person-years)
    - Flows are disaggregated by country (e.g., USA, Brazil, UK, Tanzania), geopolitical zones (Green/Grey) and by world-system groups (Core, Periphery, Semi-Periphery).

Normalization Procedures

Each time series (column) was normalized to generate control signals suitable for Max/MSP. The following normalization types were applied:

Local Normalization

Each entity's time series was individually scaled to the range -1, 1 based on its own historical minimum and maximum values. This preserves internal variation and emphasizes the entity's self-relative dynamics over time, making fluctuations legible as internally meaningful shifts.

Global Normalization

Time series were scaled to the global minimum and maximum values across all relevant entities for a given metric (e.g., all countries or all world-system groups). This enables direct amplitude comparisons between entities, revealing relative magnitudes across the entire dataset.

Perspective Normalization

For each entity, a perspective-normalized signal was generated by mapping a global reference time series into the entity's own experiential range. Specifically, a global average series (e.g., mean Influence Index across all countries per year) was computed and rescaled using the local minimum and maximum of the target entity's historical values. If the global value at a time point exceeds the entity's maximum, it is clipped to +1; if it falls below the minimum, it is clipped to –1; otherwise, it is linearly scaled into the -1, 1 range. This transformation approximates how the world appears when filtered through the perceptual limits of a single actor. It models relational distortion: how global phenomena may be perceived as overwhelming, diminished, or compressed depending on an entity's historical position.

Example: If Afghanistan's GDP per capita ranges from $500 to $2,000, while the global average ranges from $5,000 to $15,000, the global series will appear largely clipped at +1 from Afghanistan's perspective—except during rare dips near $5,000, when the signal may briefly drop toward +0.8. This reflects how entities at the margins may experience global shifts less as fluctuation and more as persistent overexposure.

Standard Deviation within Groups

For each group (e.g., zones or world-system categories), the standard deviation of member entities' values was calculated per year. These series were then normalized to -1, 1 and used as control signals to represent internal heterogeneity, structural volatility, or divergence within a group. Rising deviation may signal instability or uneven development, while lower values indicate convergence or internal cohesion.

All normalized outputs were exported as .txt files formatted for use in Max/MSP gen~, alongside corresponding .csv files for reference. Each output filename encodes the dataset, entity, indicator, and normalization method for traceability and reuse.

Integration in Max/MSP

All normalized time series are used to drive a **step sequencer** in Max/MSP that controls navigation through an **Amen break**.

- **The Amen break is not pre-sliced.** Slicing is done **live** by the **rhythmanalyst** during performance.
- The **number and location of slices** are not determined by the dataset; they are fully improvised.
- The dataset **only controls the step sequencer**, which determines which slice is selected at each moment.
- This setup allows the performer to respond in real time to the statistical behavior of the dataset, using rhythm and texture to feel through global data patterns.

In other words, the dataset determines the **order of traversal**, while the **rhythmic resolution and structure** are shaped entirely by the improvising performer.

Output Formats

For each dataset column and normalization variant, we generated the following outputs:

- .txt files: normalized floating-point values for direct input into Max/MSP's gen~.
- .csv files: human-readable structured data for documentation and archival purposes.
- .wav files: when necessary, dataset waveforms were rendered to audio for use in SP-404 or TR-8S.

All files followed consistent naming conventions for clarity and traceability.

Summary

This method transforms global statistical datasets into normalized control signals. These signals do not directly produce sound but are used to navigate a live beat slicing environment. The number and location of slices are improvised by the performer; the datasets only determine how the step sequencer advances through those slices. This approach combines structured data logic with embodied improvisation, making systemic patterns available to be felt, rather than merely analyzed.

Metadataset Summary

This dataset contains **annual data** for a wide set of countries, classified by **world-system group** and **geopolitical-ecological zone**, across multiple development and economic indicators. The time series spans from at least **1995** onward, with some missing values in certain years and fields.

Column Overview

Column	Type	Description
Name	object	Country name
Year	Integer	Observation year
Zone	object	Geopolitical classification
HDI	float64	Human Development Index (0–1 scale)
GDP_per_capita	float64	GDP per person in USD
Population	float64	Country population
Total_GDP	float64	Population × GDP per capita (≈ total economic size)
Influence_Index	float64	Composite development metric (derived from HDI and GDP per capita)
Group	object	World-system classification

Derived Variable: Influence_Index

This is a **computed scalar** representing a country's global influence as a function of:

- **HDI** (strongest weight, ~0.35)
- **GDP per capita** (moderate weight, ~2.6e-6 per USD)
- **Total GDP** (negligible weight, ~1.7e-14 per dollar)
- A near-zero intercept (-0.007)

The index favors countries with **high development and wealth per person** rather than sheer population or GDP size.