

POLIS V12: The Complete Music Series – 12 Giants

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“Tensional Reinterpretation of Six Founders of Western Music”
and “Tensional Reinterpretation of Six More Musical Pioneers”.*

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Abstract

Within the POLIS V12 tensional ontology, every musical system is a polis constituted by three meshes (solid, liquid, gaseous) and governed by the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$, with $T = K_{\min}$ as the tensional origin. This paper applies the framework to six foundational figures of Western music: Hildegard von Bingen (plainchant), Johann Sebastian Bach (counterpoint), Wolfgang Amadeus Mozart (classical form), Ludwig van Beethoven (romantic expression), Richard Wagner (leitmotif and chromaticism), and Claude Debussy (impressionism). Each classical contribution is reinterpreted as a tensional configuration: Hildegard's chant as linear K flow; Bach's fugue as simultaneous K voices; Mozart's sonata as tensional exposition-development-recapitulation; Beethoven's motivic development as Phase 5 transformation; Wagner's leitmotif as recurring K nodes; and Debussy's whole-tone scale as uniform K steps. The universal equations remain unchanged; no free parameters are introduced.

1 Introduction

POLIS V12 is a closed, parameter-free tensional conservation theory built on four axioms (Tensional Ontology, Harmonic Ground $H = 1$, Tensional Conservation, Data Origin $T = K_{\min}$). The governing equation, after normalisation, is

$$\epsilon = \sum_{m=1}^n K_m(2 + K_m) = 0,$$

with $K_m = (v_m - T)/(v_{\max} - T) \in [0, 1]$. The disequilibrium index is $\text{IDT}^* = \epsilon/(1 + \epsilon)$. All real musical systems reside in Phase 4 ($\text{IDT}^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{\text{orb}}T_{\text{rot}}$ applies fractally at all scales.

This paper reinterprets six key musical contributions within this tensional ontology. No classical primacy is assumed; tension is the primitive.

2 Hildegard von Bingen – Plainchant and Monody

Hildegard's antiphons and sequences (e.g., "Ordo Virtutum") are monophonic, single melodic line. In POLIS V12, a plainchant melody is a time series of K values (pitch, duration). The singer is the liquid mesh that produces a continuous tensional flux. Hildegard's wide melodic leaps (large ΔK) and ascending phrases toward high K (God) create tensional arcs. Her visions (Scivias) are polis structures: virtues personified as nodes with specific K (e.g., Humility low, Courage high).

The modal system (Dorians, Phrygian, etc.) sets the scale $v_{\max} - T$ (interval range). A cadence (finalis) returns to $K = 0$ (rest). Hildegard's music as medicine (healing) operates by reducing the listener's ϵ through tensional resolution.

3 Johann Sebastian Bach – Counterpoint and Fugue

Bach's fugue is a polyphonic composition with multiple independent voices. In POLIS V12, each voice is a separate K trajectory. The subject is an initial K pattern; the answer (transposed) shifts K by a fixed offset (fifth). The stretto (overlapping entries) creates high K density. The fugue's overall ϵ is the sum over all voices at each time point.

The Well-Tempered Clavier uses equal temperament: dividing the octave into 12 equal semitones makes K steps uniform: $\Delta K = 1/12$. This allows modulation to any key without changing T , minimising ϵ across all tonalities. The Art of Fugue leaves the final fugue incomplete – a Phase 4 explosion that was never resolved.

4 Wolfgang Amadeus Mozart – Classical Sonata Form

Mozart perfected the sonata form: exposition (two themes), development (tensional elaboration), recapitulation (return). In POLIS V12, the exposition sets up two K distributions (first theme in tonic, second in dominant). The dominant key has $K_{\text{dominant}} = 1$ (relative to tonic $K = 0$). Development modulates through many keys (varying T), raising ϵ . Recapitulation resolves both themes in tonic, bringing ϵ back near zero.

Mozart's operas (Le Nozze di Figaro) assign K to each character: the Count has high K (noble), Susanna low (servant), Figaro medium. The ensemble finales interweave multiple K lines simultaneously. The "Jupiter" Symphony finale is a fugue from multiple themes – a demonstration that many K trajectories can close $\epsilon = 0$.

5 Ludwig van Beethoven – Romantic Expression and Motivic Development

Beethoven expanded sonata form with longer developments and extreme contrasts. In POLIS V12, his motifs (short, rhythmic cells) are minimal K patterns. The Fifth Symphony's "short-short-short-long" (three low K , one high K) is a tensional signature that recurs and transforms. The development section fragments the motif, scattering K across keys, then reassembles it in recapitulation.

Beethoven's late string quartets (Op. 131) have seven continuous movements played without pause – a single ϵ trajectory across many phases. The Große Fuge (original finale) is so dense and dissonant (high ϵ) that it was replaced; it later became a separate piece. The transition from classical to romantic is a Phase 5 reorganisation of the musical polis.

6 Richard Wagner – Leitmotif and Chromaticism

Wagner's operas (Der Ring des Nibelungen) assign leitmotifs (recurring musical phrases) to characters, objects, emotions. In POLIS V12, a leitmotif is a stable K cloud (a set of pitch, rhythm, timbre). When a character appears, their leitmotif's K is activated.

When multiple characters interact, their leitmotifs combine (polytonality). Wagner's use of chromaticism (shifting K by semitones) blurs tonality, keeping ϵ high (suspense) for long periods before final resolution (the "endless melody").

The "Tristan chord" (F, B, D#, G#) is a tensional question mark: it has no clear key, ϵ remains unresolved until the final bar of the opera (resolution to tonic). The Ring cycle's "Music of the Future" (Gesamtkunstwerk) integrates vocal line, orchestra, stage, poetry – a multi-mesh polis.

7 Claude Debussy – Impressionism and Whole-Tone Scale

Debussy's music uses whole-tone scales (six equal intervals, each step $\Delta K = 1/6$) and parallel chords. In POLIS V12, the whole-tone scale eliminates the dominant-tonic polarity ($K = 0$ vs $K = 1$), creating a fluid K landscape. "Prelude to the Afternoon of a Faun" uses chromatic melismas (smooth K glides) and ambiguous modal colour. The orchestra is a gaseous mesh (timbre, harmonics) as important as pitch (solid mesh).

Debussy's "La Mer" depicts the sea as a polis with constant motion (waves). The three movements are phases: "From Dawn to Noon on the Sea" (Phase 2 accumulation), "Play of the Waves" (Phase 5 reorganisation), "Dialogue of the Wind and the Sea" (Phase 4 explosion). His piano preludes (e.g., "Voiles") explore the whole-tone scale almost exclusively.

8 Conclusion

The six foundational contributions to music are coherently reinterpreted within the POLIS V12 tensional ontology. Plainchant, counterpoint, sonata form, motivic development, leitmotif, and impressionism all become natural consequences of the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$ and the fractal hierarchy of musical polises. No free parameters are added.

Zenodo references

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Abstract

This paper extends the POLIS V12 tensional reinterpretation to six additional musical giants: Arnold Schoenberg (twelve-tone technique), Igor Stravinsky (rhythmic asymmetry), John Coltrane (modal jazz), John Cage (aleatoric music), Steve Reich (minimalism), and Philip Glass (repetitive structures). Each is re-read as a tensional configuration: Schoenberg's tone row as a permutation of all twelve K values; Stravinsky's polyrhythms as multiple K cycles; Coltrane's sheets of sound as dense K clouds; Cage's indeterminacy as random K variables; Reich's phasing as ΔK drift; and Glass's arpeggios as periodic K waves. The universal equations remain unchanged; no free parameters are introduced.

9 Introduction

As in the companion paper, POLIS V12 rests on four axioms. After normalisation the mother equation is

$$\epsilon = \sum_{m=1}^n K_m(2 + K_m) = 0,$$

with $\text{IDT}^* = \epsilon/(1 + \epsilon)$. All real musical systems are in Phase 4 ($\text{IDT}^* \geq 0.70$) unless artificially uniform. The Rolling Law $2\pi r_p = V_{\text{orb}}T_{\text{rot}}$ applies fractally.

This paper reinterprets six more foundational contributions to music.

10 Arnold Schoenberg – Twelve-Tone Technique

Schoenberg's twelve-tone method uses a row containing all 12 pitch classes exactly once. In POLIS V12, the row is a permutation of the 12 semitone K values $(0, 1/12, 2/12, \dots, 1)$. The row's transformations (prime, retrograde, inversion, retrograde-inversion) are tensional symmetries: retrograde = time reversal, inversion = $K \rightarrow 1 - K$. The music avoids establishing a tonal centre ($K = 0$), keeping ϵ high throughout (expressionism).

The "emancipation of dissonance" means that all intervals have equal K (no distinction between consonant and dissonant). Dissonance no longer requires resolution to consonance; ϵ is never forced back to zero. Schoenberg's "Piano Concerto" uses a single row throughout. The method is a Phase 5 reorganisation of the harmonic mesh, abolishing the traditional tonic-dominant gradient.

11 Igor Stravinsky – Rhythmic Asymmetry and Polyrhythm

Stravinsky's "Rite of Spring" shocked audiences with its irregular accents (e.g., $3/8 + 5/8$) and polyrhythms (simultaneous different meters). In POLIS V12, rhythm is the

time distribution of K events. Stravinsky often uses a "block" structure (juxtaposed sections) rather than smooth development – a Phase 4 cut between different K regimes. The "Sacre" 's final "Sacrificial Dance" uses a changing meter pattern; each change is a reset of the tensional cycle.

His "Pulcinella" (neoclassical) deliberately imposes low- K (classical forms) on his own high- K (modern) style – a Phase 5 reconciliation. The "Symphonies of Wind Instruments" is a chorale fragment repeated, then cut off – a tensional gap (silence) that is part of the structure. Stravinsky's octatonic scale (alternating whole and half steps) gives a regular pattern of K increments.

12 John Coltrane – Modal Jazz and Sheets of Sound

Coltrane's modal jazz (e.g., "Giant Steps") abandons fast chord changes for long stretches on a single scale (mode). In POLIS V12, a mode is a fixed K distribution (set of pitch classes). "Giant Steps" cycles through three keys (B, G, Eb) – each a different T – at high speed. The "sheets of sound" technique (rapid arpeggios across multiple octaves) creates a dense K cloud – a liquid mesh of notes.

Coltrane's late work ("Ascension", "Meditations") uses free collective improvisation: each musician independently adds K to the global field; the listener integrates the sum. His "A Love Supreme" is a four-movement suite tracing a tensional journey from "Acknowledgement" (Phase 2) to "Resolution" (Phase 5) to "Pursuance" (Phase 4) to "Psalm" (Phase 1). The recurring bass phrase (four notes) is a leitmotif.

13 John Cage – Aleatoric and Indeterminacy

Cage's 4'33" consists of silence – the performer does not play for four minutes and thirty-three seconds. In POLIS V12, 4'33" is a polis where the composer sets $K_{\text{performer}} = 0$, but the ambient sounds (audience, outside) become the music. The zero K of the performer allows the environment's K (noise) to be heard as a random distribution. Chance operations (I Ching) decide which notes are played at which time – K values chosen by random variables.

Prepared piano (objects placed on strings) alters the instrument's K (timbre, pitch). Cage's "Imaginary Landscape No. 4" uses 12 radios tuned to random stations – a multi-source K input. The indeterminacy principle: the same score yields different performances (different K distributions). Cage's music is a Phase 5 that replaces the composer's intent with the listener's experience as the primary ϵ closure.

14 Steve Reich – Minimalism and Phasing

Reich's "It's Gonna Rain" uses tape loops that gradually drift out of sync (phasing). In POLIS V12, two identical K sequences start in phase, then one shifts slightly, creating interference: $K(t) + K(t + \Delta t)$. The phasing produces emergent patterns (canons, rhythmic accents). Reich's "Drumming" uses phased patterns on drums and voice; the performers

slowly adjust Δt by ear. The "Clapping Music" is two clappers with the same rhythmic pattern but one shifts by one beat periodically – a discrete phase step.

Reich's "Music for 18 Musicians" is built on a cycle of 11 chords (each a different K vector). The piece slowly pulses (vibrato) as a tensional wave. His "Different Trains" uses recorded speech (train announcements) as a K source (pitch contours derived from spoken phrases). Minimalism reduces ϵ by repetition; large changes occur only at phase boundaries (metrical shifts).

15 Philip Glass – Repetitive Structures

Glass's operas ("Einstein on the Beach") use repetitive arpeggiated figures (F sharp, E, D, etc.). In POLIS V12, an arpeggio is a periodic K cycle: $K(t) = \sin(2\pi ft)$ modulated by a pattern (e.g., 1,3,5,3,1,...). The additive process (adding a note to the pattern over time) slowly increases K_{density} . The ensemble (keyboards, woodwinds, voice) splits into sub-polises playing the same pattern at different phases (canon).

Glass's "Koyaanisqatsi" (film score) visualises a society in tensional imbalance (high ϵ). The title Hopi word means "life out of balance". The score's relentless 16th-note pattern (a steady K flow) underlies contrasting images (nature vs industry). The ending (dense, explosive) is a Phase 4 collapse. Glass's later symphonies (No. 12 "Lodger") soften the repetition but retain the tensional principle: reduction to minimal K fragments that accumulate into larger structures.

16 Conclusion

Six additional musical pioneers are reinterpreted within the POLIS V12 tensional ontology. Twelve-tone technique, rhythmic asymmetry, modal jazz, indeterminacy, phasing, and repetitive structures all become natural consequences of the closure condition $\epsilon = \sum K_m(2 + K_m) = 0$ and the fractal hierarchy of musical polises. No free parameters are added; the same equations that describe a physical system or a social system also describe the evolution of music.

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