

PROSPECTUS

HEXAGONS: INTERSECTIONS OF SYMBOLISM AND GEOMETRY IN JUST INTONATION, PYTHAGOREANISM, AND QABALAH

In the analyses of post-tonal music, much has been written about the uses of symmetrical pitch collections in the works of composers such as Bartok, Debussy, Stravinsky, and Webern.

Symmetricality is a key aspect of modal collections such as the hexatonic or octatonic, and factors widely into the “modes of limited transposition” so favored by Messiaen.

My system, developed and used in the majority of my compositions of the last ten years, focuses specifically on the qualities of a) heptatonicism and b) inversional symmetry across the axis of the tonic. John Vincent, in his book *The Diatonic Modes in Modern Music*, through an examination of inversional relationships between modes, demonstrates that Dorian is the only one of them that has this symmetrical quality, and is therefore non-invertible; through inversion it only maps onto itself. My investigation of this quality revealed that there are, in fact, ten different modal collections with this sort of symmetry that are possible within our twelve-tone system.

The original idea for this concept emerged from my first exposure to the Neo-Riemannian concept of the *Tonnetz*. The *Tonnetz*, as a tool, has primarily been used to visualize chord cycles within the complete twelve-tone framework. Upon first viewing (in W.A. Mathieu’s *Harmonic Experience*, wherein it was referred to as the Harmonic Lattice), an entirely different aspect of it caught my attention. No matter which tone you chose to individually focus on, it was

immediately surrounded by six other tones, always in an identical formation. The image of this alone had great appeal, as an alternative to a purely linear representation of a mode or scale; the tonic is represented as a central point surrounded by six outer points in a hexagonal formation. Lines originating from the center move out in opposing directions to pitches at equal intervals from the tonic, therefore having an inversional relationship to each other across the axis of the central point. This was a rather unusual collection: 1—#2—3—4—5—b6—bb7, but it quickly revealed some interesting compositional possibilities.

It was through application of this hexagonal blueprint that the other nine collections revealed themselves, and so I have dubbed these collections *hexagonal modes*.

The hexagonal grid had appeal to me on a philosophical level as well. During my MA studies I authored a paper on Just Intonation called “Musica Universalis: From the Lambdoma of Pythagoras to the Tonality Diamond of Harry Partch.” Part of the paper’s topic was to explore the *idea* at the heart of our tonal system in the West; if one goes back to Pythagoras and his initial monochord experiments that revealed the mathematical basis of harmony, you find a *belief* acting as the prime driver—that the music we produce on earth should be tuned in such a way as to reflect the harmonies of the heavens, the movements of celestial bodies. This has always had particular resonance for me, and is an aspect of our system we tend to ignore—that the system itself is the product of a particular, culturally defined view of the universe. As an artist I am enamored of the idea of constructing a system of tonal relations as the expression of a philosophy. The *hexagonal mode*, its shape and its symmetry, is directly connected to a number

of such concepts from both world culture and esoteric spiritual practice—two areas of life where I have always found a wealth of inspiration. Thus an aspect of composing with *hexagonal modes* is *hexagonal symbolism*, which I shall expound upon in my dissertation.

Certainly, even the composers who popularized symmetrical pitch-sets in the early 20th century were not into symmetry for symmetry's sake; it must have had an artistic appeal beyond the newness of the harmonies. Messiaen's fondness for his own Modes of Limited Transposition went far beyond the type of sounds he coaxed from them; they were an expression of his profound Catholic spirituality. The idea of limited modulation symbolized eternal and abiding truth to him. We should therefore ask, what is the quality of symmetry that drives its appeal in a musical application? What does it symbolize? For myself, symmetry symbolizes balance, equity, harmony, stability, peace—the things we frequently pray for when we turn to our Creator for help.

As we listen to music, a world is fashioned within us, even perhaps in the air about us.

Symmetrical geometric forms represent a perfect ideal, only truly existing in the aether, far beyond the world of corporeal manifestation, where nature's forces bend things out of shape. Hexagons and hexagrams represent many things to many people; among these is the Hermetic axiom "as above, so below," the idea of mirror-like correspondence between the physical and spiritual planes. The hexagram, as the union of two opposite-pointing triangles, represents the unification of opposites, and the point at the center is the place beyond polarities, the place where division ceases and unity holds sway. Therefore a mode contrived through *hexagonal symmetry* creates music as a prayer for balance, unity, equity, harmony, peace.

In the twelve-tone system of Western music, there are ten different modes that are possible with the principles of hexagonal symmetry applied. I have studied and composed with these modes for the past ten years, and am still far from exhausting their potential. My dissertation composition shall be a cycle of ten chamber pieces, each a study of one particular hexagonal mode. The first four are for string quartet, the next three for saxophone quartet, the next two in the instrumental configuration from Messiaen's *Quartet for the End of Time* (piano, clarinet, violin, cello), and the final piece will expand to seven players—piano, soprano saxophone, viola, bass clarinet, and three percussionists.

The cycle is constructed according to a numbering system I adopted for the modes based on the principles of Qabalah, a philosophical-spiritual practice originating from ancient Jewish mysticism, Neoplatonism, and Gnosticism. (I am not a practitioner of this discipline, but I am greatly inspired by mystical writings, and am a fan of syncretism.) In performance the cycle shall be played in reverse order, starting with Mode 10 and ending with Mode 1, in accordance with the ideal of return to unity, and as a metaphorical journey from the base to the crown of the Tree of Life, another concept drawn from Qabalah.

The supporting document shall be constructed in four sections. The first shall be an overview of symmetrical pitch collections and modes from 20th century composition, based on scholarship by Elliott Antokoletz and Paolo Susanni (*Music and Twentieth Century Tonality, The Music of Bela Bartok*), followed by a detailed description and analysis of my hexagonal mode system. Discussion shall center on the roots of symmetrical pitch collections in folk music modes collected by Bartok and Kodaly during their early years, and how such concepts found their way

into the music of other composers such as Debussy, Stravinsky, Webern, Schoenberg and Messiaen (whose book *The Technique of my Musical Language* shall also factor in).

The second shall be an exploration of the connection with Just Intonation, where all the modes shall be represented as consisting of three upper partials and three lower partials of a central pitch, and this microtonal aspect shall be used to expand the octave out to 19 tones. The resulting larger pitch set shall be shown as a subset of Harry Partch's 43-tone Just Intonation system, and Partch's book *Genesis of a Music* will be cited for supporting material.

The third shall be a discourse on Hexagonal Symbolism, showing the historical and cultural bases this geometric aspect of my system. The last shall be a discussion of Compositional Methodology, wherein I discuss the means by which I arrived at my artistic choices in creating the *Hexagons* cycle.

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