On the Convergence Liberation of Makam X

Hafez Modirzadeh

On Shapeshifting Sound and Spiralling Partials[1]

Many peoples' creation stories begin with a divine resonance, a sacred intoning, a word, sound, or vibration. Following with the idea that creative source resides within the inherent plurality of sonic unity, through its spectrum a universe is realized, uttering the dynamic relational qualities that define existence. Therefore, where source is shared, archetypal expression could be shared as well, shapeshifting thought into sound, and sound/sight (Fig. 1). As circular shapes have represented the infinite, in turn, square surfaces have symbolized the materialization of the infinite within a finite experience (hence, the transformative idea of "circling the square," or its reciprocal). Line-crossings have also been used to express relationship, as in the interrelating of matter and spirit into life itself. These, in fact, are some of the earliest archetypal patterns made by humans, signifying the first abstract attempts to express being in this world. Such early Paleolithic "art" does not convey people as much as outline geometric shapes—circles, stars, crescents, spirals, quadrangles, and parallel groupings of dots or lines—that reveal some cryptic, cosmic blueprint etched during the dawn of human psyche (Fig. 2).[2]

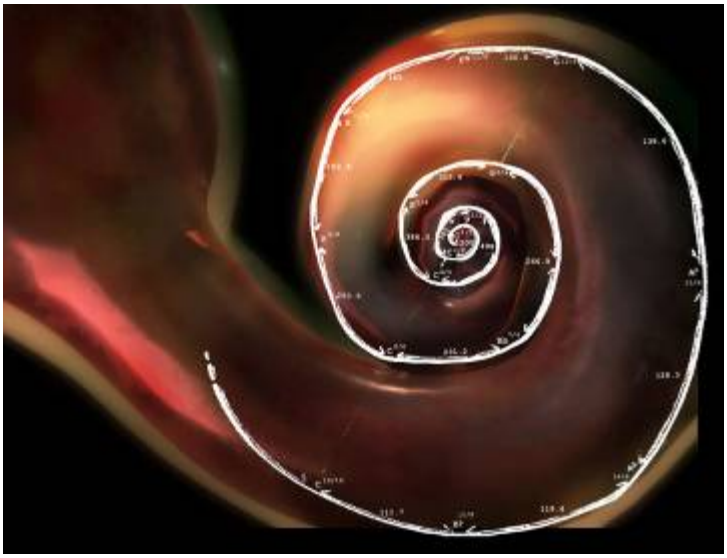

Figure 1. *Makam X The Harmonic Series: free-mapping of partials over the inner ear's cochlea.* For other versions of Makam X, see Fig. 10 and Fig. 16. Diagram superimposition by Eli Harrison. For original image, see Macy, et al. in Works Cited. **Click image to enlarge**.

Perceived as aural archetypes, such elemental shapes become homologous to fundamental tone-sequences, forming spontaneously beyond culture, transcending time beyond place or tradition. Coiled within each tone, a constellation of "partial" tones reverberates, a sonic gyre of intervallic contractions paradoxically expanding in spiral-formation. Just as visual experience is bound to the colour spectrum of light, aural experience is bound to this harmonic spectrum, set here to a divine proportion that opens metaphorical possibilities of cosmic as well as socio-political proportion. Therefore, signifying on visual representation of the aural offers an alternative perception of the development of musical practice and the autonomous drive serving as its impetus.

Essentially, musical systems are neither bound to nor described completely by fixed, geometric abstractions (including scales or tunings), for they are developed qualitatively, through a personal relating to acoustical properties and organizing principles of sound not fully understood through a quantifiable lens. Understanding, in this case—the mystical proportion between commensurate observation and non-commensurate experience—requires the oracular embodiment of harmonic phenomena with the name "Makam X": *makam* (Turkish transliteration from the Arabic *maqam*) signifying "system" and "X" marking both the act of interrelating and the unidentifiable (Fig. 1, Fig. 10, and Fig. 16). As in earlier times, personalizing the physio-acoustical helps to emotionalize the abstract, attaching to it an ethos that anchors musical orientation to both the personal and universal. This, then, is the purpose of transformative terminology: to turn thought ecstatic.[3]

Figure 2. *75,000 year-old diamond-shaped hatched-line carving found in Blombos Cave of South Africa*. See Zielinski in Works Cited.

As Makam X appears responsible for itself, this raises the larger question of what manner of spirit is shaping the matter of form. The following example suggests that creative endeavours are the result of autonomous processes beyond individual prowess: without human interference, here is the sound of a simmering teakettle, articulating from a sequence of harmonic partials (i.e. Makam X) a melody containing musical elements inherent to the playing of some bowed string. These sonic materials, ordered in complement to any modal system, rise-up in defiance of any personal culture, history, tradition, or talent (Audio 1).

> **Audio 1.** *Teakettle "melody" on Makam X, creating the sonic illusion of a bowed string or reed (poor sound quality due to recording device).*

Identifying "melismatic" descent from the "5th" above a "tonic" further illustrates a need to name and signify on the observable. This teakettle melody, however, through steam-heated expansion and aperture, follows an anonymous path that forgoes any notion of ownership. Extending this to our own notion of invention—or improvisation for that matter—brings into consideration the gravity with which spirit varies form as surely as we move through it.

On Models and Cradle-Modes

As a conceptual tool of indefinite application, the following model moves across the disciplinary divide, gauging improvisational practice along the way while pointing out potential collaboration between the arts and sciences. Basically, three interrelated parts—two axes and a curve—illuminate the "hidden harmony" underlying an observable expression.[4] The *quantifying axis* serves as a fixed and determinable value system, its gravity often defining shape and form; the *qualifying axis*, on the other hand, has a gravity of exertion, and serves as an open system of unbound dynamic flow. The *curve*, enshrouding universals inherent in what is termed "improvisation," identifies infinite designs that, depending on the focal priority, are a result of the first two axes, determining these axes by virtue of its own expression, or generated in concurrence with them (Fig.3). Altogether, this model serves as a distillation device for the properties involved with interdisciplinary play, as well as for marking creative effort. The table below lists a few interpretations of this model applied to the sciences and arts, beginning with the above teakettle and ending with an example for music.

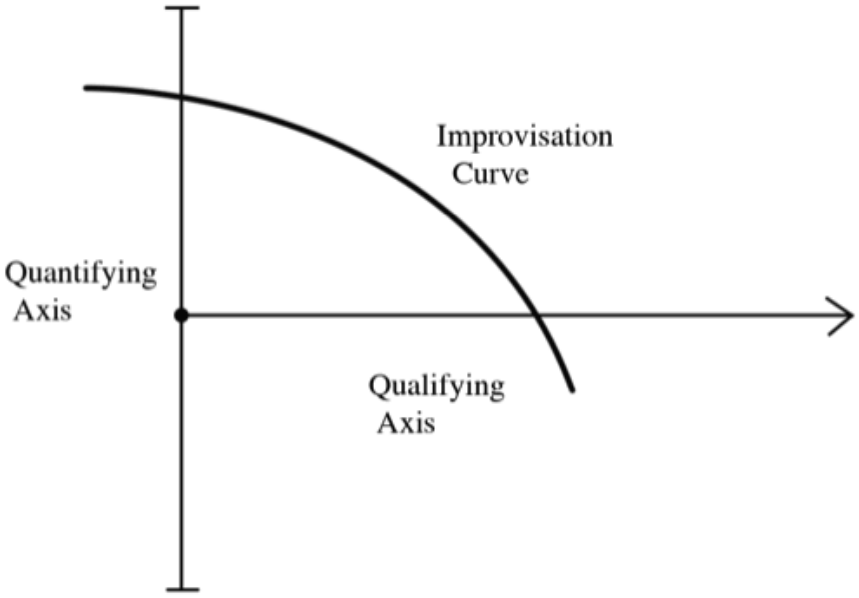

Figure 3. *Improvisation Model.* Credit: Hafez Modirzadeh.

Model Application	Quantifying Axis	Qualifying Axis	Curve
Teakettling	parameters of kettle, water, temperature	human signifying	"melody"
Superstring Theory (reconciliation of micro-/macro-universals)	Planck scale-length for Energy/Mass (10^{-30})	vibrational frequency (resonance)	string-particle (element determinant)
Geology (geo-morphology)	physical elements; earth materials; gravity	climate; geo-history (time); ecology; human activity	tectonics/erosion in topographic formation
Biology	genetic code (DNA); inherited traits	environment; inter-personal history (time/space)	individual
Theatre (interpreted by Leyla Modirzadeh)	script rehearsal; staging; blocking; character choices	actors' flow (attitude/rhythm); personal/emotional dynamics	actors' behavioural response in context
Poetry (spoken word)	phonetic/phonemic construction	communication context	language-expression
Art (adapted from Munsell and Ostwald Colour Systems)	value scale from dark to light	chromo-saturation and brightness densities	visual expression (light, hue, color spectrum)
Dance (adapted from Laban Movement Analysis)	physical/spatial parameters; shape, flow, directional movement	effort factors (attitude) for movement; qualities of flow, weight, time, space	movement-expression
Music	tonal properties (e.g. 12 chromatic tones); idiomatic anchorings	temporal phrasing; dynamics; modal exertion	human sonic expression

For musical application of the model, ancestral dialogue between two centuries of string quartet composers is here facilitated by players' improvised choosing/interlocking of various incomplete ideas (the curve): like a teakettle's sonic materials, this string ensemble may use only partials of past quartet compositions as musical compost from which to grow new performances, thereby replacing linear-chronological factors with commonly shared tonal and temporal ones (Audio 2).

> **Audio 2.** *Improvisation model applied to music, with contemporary string ensemble ETHEL (Mary Rowell and Cornelius Dufallo on violins; Ralph Farris on viola; Dorothy Lawson on cello) performing "Compost Music" (Modirzadeh 2011): based on finite tonal/idiomatic properties and infinite temporal/dynamic energies, players' improvised re-assemblings of string quartet bits opens doors towards an ahistorical dialogue between those composers usually kept centuries apart in performance.*

Applying this model to an origin-speculation for musical systems, as "cradle-mode," the curve generates the Persian mode of *Chahargah*: the quantifying axis is determined by a sound-gravity anchored by the first five partials of Makam X (i.e. the fundamental, octave, 5th, 4th, and 3rd) while a qualifying axis is determined by shapeshifting between tones (or pitches), as one becomes the other through emotional swells (rise) or ascents, and sighs (fall) or descents (quantified as "half" steps by equal tempered standards). By interrelating direction, other interval-types come into existence: 2nds by expanding unison outward, 3rds from collapsing 4ths inward (Fig. 4).

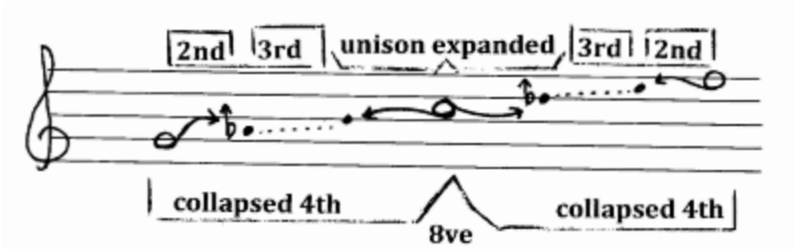

Figure 4. *Dastgah-e Chahargah as Cradle-Mode.* Credit: Hafez Modirzadeh.

Following the above with an imagined "most ancient" mode allows for the idea of some accented utterance to penetrate upward, consequently terracing downward in step-wise motion, fulfilling an elemental "cry" and ushering in the temporal; this is the opening vocal gesture of Andalucian *cante jondo* (Audio 3), also outlined with the Persian mode of Razavi (see below, "On a People's Blues"). Such structural similarity suggests a kind of modal homologue that gets conditioned, adapted, and/or manipulated by the musical cultural time/space. Furthermore, to engage in a musical discourse designed for both the rational and irrational harmonic realms of Makam X and western equal temperament, a moving balance must be struck between resonances of both finite and infinite number. Rather than remaining in a static state of complimentary opposites, moving balance initiates participation in the continual act or process of creation. The tempered 3rd, for instance, when fixed at 350 cents (12th harmonic partial), is considered in a western tonal context to serve neither major nor minor properties, but in a non-western context, this interval-type is far from neutral, carrying, as W.A. Mathieu points out, a gravity and influence of almost mystical proportion:

> The astonishing thing about this tone is its affect . . . [it] is precisely centred between two strong internal norms, the just major and just minor thirds. . . Consider the exact middle of a bridge that spans the yang shore and the yin shore; the midpoint is poised between two extremes, at the place of balance. Similarly, [this] third is balanced between major and minor, equally pulled by two complimentary states. (489)

In his treatise on “Harmonic Experience,” Mathieu reflects on the coexistence of just intonation and equal temperament, asking the question, “Are the two systems mutually exclusive, or is there a productive area of mutual existence?” (352). In many of these cases, the ear’s psycho-acoustical adjustments have leaned towards having to either adapt or represent the rational ratios of “just” intonation within the more infinitely symmetrical ratios of “equal”-tempered intervals from a piano. Mathieu points to the emergence of jazz as one particularly organic union in what he calls optimal tuning, using “the best of both worlds: the modulations of equal temperament and the affective resonances of just intonation, adjusting moment by moment according to the musical conditions,” further suggesting that “one system need not be counterproductive in relation to the other. In fact, there are undoubtedly beautiful, useful ways of combining prime-number tunings with various temperaments that have yet to be explored” (353-54).[5]

> **Audio 3.** *Cante Flamenco: Ricardo De La Juana's "Taranta," introduction on vocals, accompanied by author on tenor saxophone, Almunecar, Spain, 2005.*

The above alternative concept of “harmony” works in social/political as well as musical terms: the wilful ordering of two or more seemingly incompatible entities, when expressed together while retaining their own distinctiveness, present a unity principle which embraces plurality, thereby defining unity as more diverse in nature, in essence, as more inclusive. In light of this principle, the hegemony of “equal” temperament is realized to be a lasting vestige of a colonial mind-set of the nineteenth century embedded in the so-called “Age of Enlightenment”: where hewn or uniformly cut tones impose an abstract or geometric artificiality not reflected in the unhewn pitch-set of Makam X or in pre-equal tempered tunings that exist without key modulation as an objective. This colonization of sound unfortunately applies the quantifiable "half-" step or "semi-" tone to humans as well, denying a value of inherent differences as qualitatively "whole" (signifying that within each fundamental person, varying ancestral partials also resonate). Melodic improvisations in West Asia, well before and beyond the colonial age, have involved two to three inner tones—cultured over time, yet intrinsically without set criteria—woven between a pillar octave, 4th, and 5th intervals. Tracing this tetrachordal trajectory sets up the idea of an eventual liberation from formal systematic structuring, sought in terms of plurality convergence.

On Any Mode Necessary

The “Axial Age” of the sixth-fifth centuries B.C.E. brought about intense innovation in the realm of consciousness, abstract thinking, and the transmission of knowledge systems. During this brief albeit prolific period, spiritual and social leaders such as Socrates, Isaiah, Zoroaster, the Buddha, Lao-tzu, Confucius, and Pythagoras were contemporaries who emphasized oral/aural forms of communication.[6] Musical scales built on 4-tone cells hinging upon the primary harmonic ratios of 2:1 (octave), 3:2 (fifth), and 4:3 (fourth) have been referred to as Pythagorean “tetrachords” (Fig. 5). Pythagoras established his school after spending some 26 years of training among the Egyptian priesthood, followed by another 12 among the Persian magi.[7] This was an unprecedented period of religious and ethnic tolerance in Egypt, from 525-404 B.C.E., under considerable Achaemenid influence on scientific thought of the day.[8] Originally, there seems to have been an inherent enigmatic quality to this tetrachord’s inner structure. One interpretation states that “The ‘chroai’ or 'shades' within the otherwise normal scales, of which we read in Archytas,

Aristoxenos, Ptolemy, and other theorists, were hardly more than futile attempts to mathematize, legalize and codify what in fact was entirely left to the player's taste and whim . . . The border-notes of the tetrachord were ‘hestotes ‘or 'immovably fixed;' the infixes were freely movable” (Sachs 6).

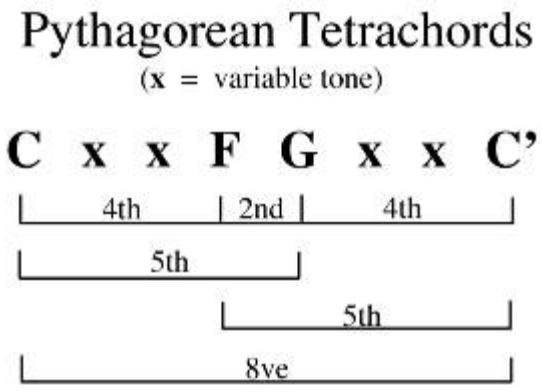

Figure 5. *Tetrachordal joining by a Pythagorean whole-step (9/8: 204 cents) to make a one-octave scale.* Credit: Hafez Modirzadeh.

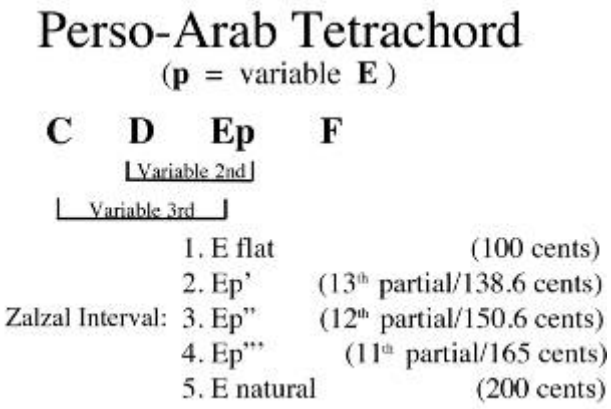

Figure 6. *Perso-Arab Tetrachord.* Credit: Hafez Modirzadeh.

While most tetrachordal approaches are codified with a determinable set of intervalic choices, lasting vestiges of a flexible inner-structure continue today among certain musical practices of the so-called Near and Middle East. As the early Arab classical tradition of the seventh-ninth centuries gave way to the Abbasid era of the ninth-thirteenth centuries, Baghdad would become the centre for the arts in the East, while Cordoba (Qurtubah) would become its western counter part in al-Andalus (present-day Andalucia in Southern Spain). Under Arab rule, great scholars and performers would contribute to a multi-musical culture stemming from Armenian, Babylonian, Byzantine, Egyptian, Ethiopian, Greek, Jewish, Kurdish, Palestinian, Persian, Roman, and other backgrounds.[9] From a variety of tetrachords originally systematized from stringed instruments, by the time of the great theorist Abu Nasr Farabi (872-950 C.E.), the following stands out:

204 cents		204 cents	90 cents	
C	D	?	E	F
motlaq (open string)	sabbabe	vosta ("middle") (variance of eb)	bansar	xansar

In theory, these tones were defined by adding up smaller intervallic units called limmas (90 cents) and commas (24 cents), and were attributed extra-musical significance. The vosta (V) was an interval found in-between the whole-step separating the sabbabe from the bansar: always some sort of lowered alteration of the latter, it was therefore a replacement of the bansar itself. By the time of Farabi, five vosta positions were realized, the fifth being "vosta-ye Zalzal": 150 cents from sabbabe and 354 cents from motlaq. At the 12th harmonic position, this particular interval is considered the “Persian third" of Mansur Jafar Zalzal, a noted musician who lived during the ninth century.[10] Indeed, as system tonic itself, related to motlaq, such a 3rd establishes the wide spread mode of *Segah* ("third position" in Farsi); with sabbabe as system-tonic, this relates to the mode of *Shur* in Iran (Fig. 6, Audio 4).

> **Audio 4.** *Daramad-e Shur played on setar, from the series* Gusheh Haye az Musiqi Sonati-ye Iran *(Kanun-e Parvaresh-e Fekri-e Kudakan va Nowjavanan, Tehran, Iran, 1975).*

Such intervals in Persian classical music can be positioned within the first 16 partials of Makam X (i.e. the harmonic series), and in similarly flexible tetrachordal systems, are also found in Turkish, Arab, and other melodic traditions relatable to so-called "just" (as in "fair" or "equitable") intonation. Even without tetrachords, these intervals can be charted across a spectrum of other sound systems, from West Africa to Southeast Asia (see below, "On Fieldworking 'Sound Come-Unity'"). Across all diasporas, the just-intoned third is always found on the Makam X series near its fundamental, as the fifth partial (with a ratio of 5:4) that resonates 14 cents lower than its "equal"-tempered counterpart. Among the Lori people of Southwestern Iran, such intonation can be heard in the indigenous playing of the mode *Mahur*—more commonly, this lowered third establishes the mode of *Rast-Panjgah*. A slightly different variation of this interval occurs in the Northern Iranian mode of *Dashti*, as its natural 5th gravitates downward towards its third degree. And when approached from the flatted 7th below its first tetrachord, the 2nd degree of the mode of *Shur* becomes a "tempered" 3rd (somewhere between 138-165 cents depending on melodic function) (Farhat 26). Once again, as system tonic for *Segah*, from Central Asia to North Africa, this interval can be located either from the 10th to 11th partial (11:8, 165 cents), 11th to 12th partial (12:8, 150.6 cents), or the 12th to 13th partial (13:8, 138.6 cents) of Makam X, which from its 7th partial upward, ascends in step-wise increments (see Figs. 1, 10, and 16). Such tones though, in equal-tempered terms (i.e. 1200 cents to an octave of twelve equal subdivisions), are perceived as low as a Pythagorean half step (256:243), usually altering the 2nd to become altogether "minor" (within 100 cent increments).

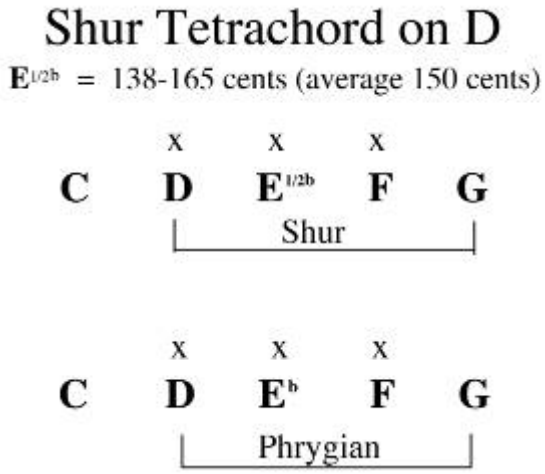

Figure 7. *Shur and Phrygian Tetrachords.* Credit: Hafez Modirzadeh.

Today, Iranian classical music constitutes several systems whose melodic traits are based on the intervallic integrity of *Dastgeh-e Shur* ("dastgah" referring to "system" in Farsi), traits of a mother-mode most likely homologous to Andalucian flamenco as well (Fig. 7, Audios 5-6). Indeed, speculation could be made on some embryonic form of a Phrygian mode occurring during the Persian and Egyptian interactions of the sixth-fifth centuries B.C.E.: consequently, through the Greeks, a tetrachord is both preserved in the West and adopted by the Arabs through interaction with African and Persian musical subjects, and later through the translation of Greek texts. Concrete historical mapping of this tetrachordal sound, however, from India to Roma, or Persian to Ottoman, remains shrouded in centuries of intercultural migration and oral transmission (Fig. 8).

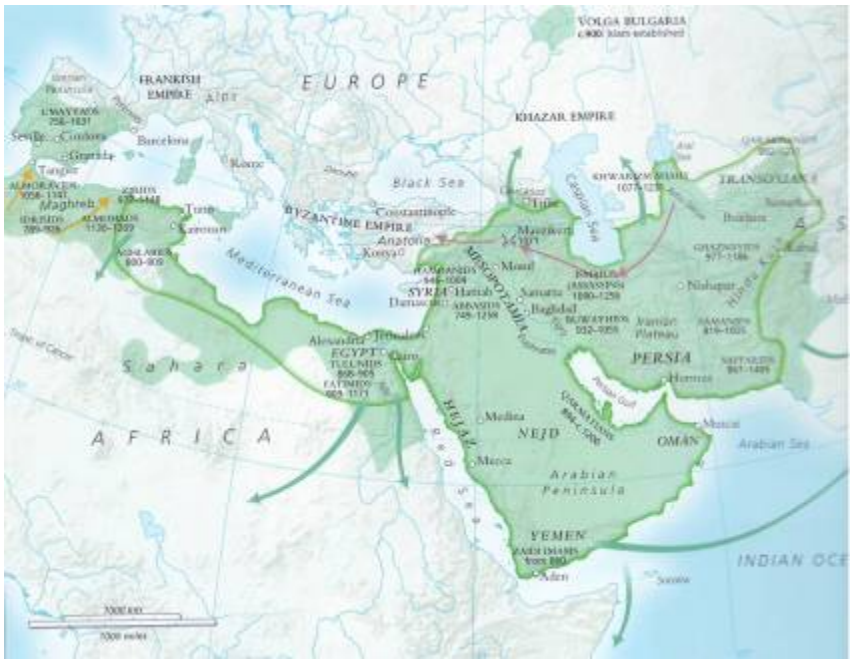

Figure 8. *Map of Arab conquests circa ninth century.* See Black in Works Cited.

Suppositions aside, anchoring system tonics by a 4th above and/or below goes well beyond any traceable source, emerging from any disparate number of cultural practices along the aural archetypal continuum.

Audio 5. *Tetrachords from Shur modality played on Persian santur, from the series* Gusheh Haye az Musiqi Sonati-ye Iran *(Kanun-e Parvaresh-e Fekri-e Kudakan va Nowjavanan, Tehran, Iran, 1975).*

Audio 6. *Tetrachords from Phrygian modality played on Flamenco guitar (Francesco Nunez* Comprende/Understanding el Flamenco*, RGB Arte Visual S.L., 2003).*

In imagining the story of Makam X within this period, musical attributes of al-Andalus are partially traced to an African and Perso-Arabic lineage, altogether stretching through more than two millennia from the Axial Age of Pythagoras through the Golden Age of Zaryab to the Colonial Age of fifteenth century Spain and beyond. To this day, compelling musical-structural connections between such times may still be considered. For example, in rhythmic terms, there is an uncanny "hand-in-glove" alignment in accentuation between several characteristic flamenco compas cycles in 12 (e.g. the Alegria, or Buleria below) with Kereshme, a Persian poetic-meter in 6 (Fig. 9, Audio 7a-c).

Audio 7a. *Persian santur playing of Kereshme (from the above-mentioned series).*

Audio 7b. *Spanish palmas/hand-clapping of Buleria ("Fiesta in Moron de la Frontera," from the Original Future Sounds CD,* Solo Compas en Vivo*).*

Audio 7c. *Kereshme compatibility with Buleria (7a superimposed over 7b).*

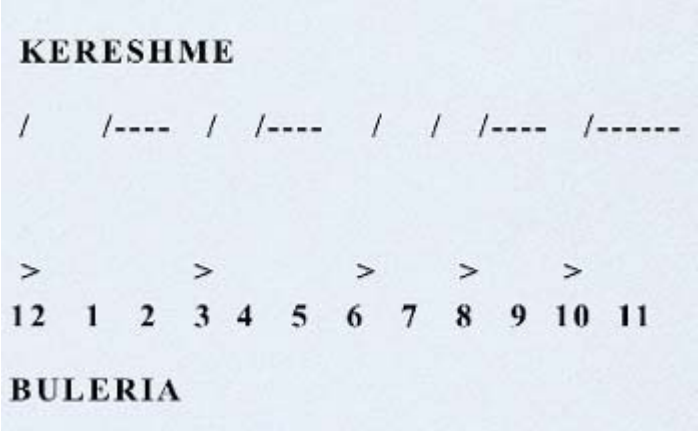

Figure 9. *Buleria and Kereshme rhythmic cycles (first noted during fieldwork in Almunecar, Spain, 2004).* Credit: Hafez Modirzadeh.

Dariush Talai, a leading master of Iranian musical arts, has devised an ingenious approach to the theory of Persian art music that shoulders the above history with present practice: by distinguishing between melodic repertory (*radif*) and modal system (*dastgah*), the latter's precedence is established with a recombinative principle for its tetrachords (*dâng*) based on the fretted string instruments of tar and setar. With an elegant reductive abstraction that posits tetrachordal traditions for ideal cross-cultural discourse, Talai's perspective aligns individual practice within a larger collective, allowing tradition to be reclaimed through fluid and open terms, rather than left to whither by rigid codification:

> The variations [of flexible melodies] should not be considered as improvisation, but as a kind of aura each melody has, that is a part of the ethnic or group collective memory of the melody . . . Persian modes are based on a very solid intellectual construct . . . better analyzed and understood in their own terms first, before analyzing melody . . . In practice the intervals are never precise. They fluctuate between . . . the four basic dângs and their tempered forms. The more complex the system and the more the dângs are transposed and interact, the more intervals need to be tempered on fretted stringed instruments [i.e. moveable frets]. (11-19)

According to Talai, active re-assemblings from four essential building blocks or *dâng* —namely, the primary tetrachords of Shur, Dashti, Chahargah, and Mahur—constitute the Persian modal system. Above all, by actively engaging in both the performance and contemplative aspects of his musical art, Talai separates the elemental integrity of the modal system from its accompanying repertory, thus allowing for a higher definition of tradition to be realized in terms of both the exclusivity of its cultural practice and the inclusivity of its human conception. It cannot be overemphasized how much an artist's own reflection, intellect, and philosophy determine the traditional path beyond any typically static fundamentalist model; a path whose lineage of tuning strings and positioning frets has guided the modal framework of sung poetry from the Iranian plateau since antiquity.

In theory then, tetrachords are static representations of otherwise fluid intervallic relationships. With the accessibility of today's practices, a logical consequent would be musicians pondering the original flexibility of Pythagorean

tetrachords that could stretch within the more recent phenomenon of a fixed chromatic system. As “mode” implies a manner or behaviour of phenomena, the perception of all melodic creations as a weaving or threading together of varying intervals with 4ths or 5ths compels meaningful cross-cultural discourse. When chromatic instruments (such as the saxophone) are able to not only adopt modal systems of variable temperament, but also transpose such systems by tetrachordal recombining around a cycle of 12 5th/4ths, idiomatic determinants shift dramatically: tetrachords soften into what can be called *tetramodes*, their melodic shapes determined by the practice-at-hand. Consequently, tetramodal bits get spliced together at any intervallic point, forming melodic ideas with or without any conscious cultural inflection—in short, they become other pathways for melody to move upon (Audio 8).

> **Audio 8.** *Example of tetramodal splicing fixed to an original piano-tuning by author. Piano solo by Vijay Iyer, with Ken Filiano on bass and royal hartigan on drums. Live excerpt from composer James Norton's "Wolf and Warp" suite (Jazz Gallery, New York City, May 12, 2011).*

Ultimately, to help contain this phenomenon of splicing within an overall theoretical construct, a tetramode-cycle can be designed: by continuing the stacking process of conjunct tetrachords, a cycle of twelve pillar 5ths/4ths is generated, rendering an indeterminable scale cycle that can be adapted to any imaginable melodic activity in the universe of musical dialects (this can be constructed by transposing/linking the original Pythagorean tetrachordal structure of Figure 5 into a cycle of 5ths or 4ths).[11] As with the genetic ability of DNA to hold and recombine primary elements of human structure, so here with musical structure, tetramodes enable one to combine or divide melodic bits at will in order to create new sonorities. Elements of the present may therefore be derived from a cultural past without necessarily recognizing or conforming to it, spinning off material from which the future can be improvised. In this way, the future is determined by indeterminable selections based on the tetramode-cycle's flexible inner-structure. As any particular scale formation (and therefore tuning aesthetic) can be assembled within such gyral motion, if desired, relationships between different musical systems can also be illuminated, as well as the offering to improviser/composers resources of diverse proportions. As such, assigning each cycle a centre of pitch gravity creates the necessary tonic reference required to determine the course of melodic progression (refer to Audio 12 in the next section).

Figure 10. *Makam X The Harmonic Series: free-mapping of partials over a nautilus shell*. For other versions of Makam X, see Fig. 1 and Fig. 16. Diagram superimposition by Eli Harrison. For original image, see Siede-Preis Photography in Works Cited. Original image © gettyimages. Downloading, republication, retransmission, reproduction or other use of the Licensed Material as a stand-alone file is prohibited. **Click image to enlarge**.

With melodic creation, to seek out shifting tetramodes and resulting system-tonics necessitates identifying hidden 4ths and 5ths. Through the unwinding of these pathways then, as a voice unveiled, Makam X travels across and connects musical expression, personifying the words of Heraclitus that “the hidden harmony is better than the obvious one” (qtd. in Ranzana 75). True equality in temperament hereby makes allowance for all intervallic relations to resonate with distinction, expressing with each its own refined shadings and melodic subtleties according to the parameters set forth by the performer; and whether conscious of this or not, these performers are the people who will always exist within the all-encompassing “blues” of Makam X!

On a Peoples' Blues

The legacy of the guitar and banjo, as with most lutes from around the world, is steeped in a legacy of itinerancy. Beyond social status and originally called to a wandering life, such player-singers' stories are inspired from dreams and visions as much as from aural history and daily life. As with the dervish or griot, troubadour or asheq, their songs are filled with ecstatic states of love and anguish, union and separation. In the United States, the vocal tradition of the blues was raised on African American migratory experiences of the mid-late nineteenth century; the musical expression of the Gitanos of Andalucia is set against a backdrop of similar social injustice. The earliest appearances of the Roma are said to have come from North India by the eleventh century, while legend already has their reputation as skilled musicians in Persia by the time of Sassanian King Bahramgur (Fig. 11).[12] In Spain, from the late fifteenth century onward, these peoples' hardships reiterated Rumi's thirteenth century account of the reed flute's universal complaint: a cry of separation having been torn from one's source. The African source of the American blues tradition, like that of Andalucian *cante jondo* (flamenco's "deep song"), is connected to an even larger diaspora of improvised music. For the millions of West African Muslims who entered the Americas during the slave trade of the seventeenth-nineteenth centuries, that part of ancestral memory having ties with the *athan* (call to prayer in Islam) would not need to rest on geo-historical occurrences alone, but rather, on the spiraling partials wound within the harmonic series of Makam X (Video 1).

Figure 11. *Plate depicting Sassanid Persian King Bahramgur (421-438 C.E.) surrounded by musicians.* See During, Mirabdolbaghi, and Safvat in Works Cited. Permission to reprint image by Mage Publishers: www.mage.com.

Video 1. *Ramin Zoufonoun on tar, while improvising in the Persian mode of Nava, matches temperament with Mississippi Delta Blues guitarist/vocalist Jack Owens (as featured in Alan Lomax's film,* Land Where the Blues Began*).*

Applying Jung's psychological description to aural archetypes suggests that they "are not disseminated only by tradition, language, and migration, but . . . can rearise spontaneously, at any time, at any place, and without any outside influences" (13). I propose that such archetypes appear in the work of tenor saxophonist John Coltrane (1926-67) through his genius of integrating into practice expansive conceptualizations of both the musical and extra-musical, the intellectual and intuitive.[13] Specifically, Coltrane marked the year 1957 as a time of personal spiritual awakening, the same year he recorded "Blue Train," foreshadowing later modal developments in jazz. In fact, "Blue Train" adheres to tonal relationships anchored by inherent universals not exclusive to jazz and blues alone. In particular, Coltrane's opening improvised chorus reveals something of a larger picture, of indeed a larger motivation: as described by Alice Coltrane, "if it is possible to realize truth through sound, then that was the essence of his search" (A. Coltrane).

System tonics, whether codified inside a blues form or not, render a progression of their own. In the modal tradition of Iran, for instance, melodic progressions emphasize tetrachordal structures that happen to relate to the revolving motive of Coltrane's "Blue Train": the overarching quality of a tonic (I) is delineated through its neighbouring 5th below (V) and 4th above (IV) (Fig. 12). Violinist Mahmoud Zoufonoun (discussed further below) has an original rendition of the Persian *gushe* (literally, "corner" of flexible melody in the classical Persian repertory) titled "Razavi." Beginning with the characteristic emphasis on the 4th above the system tonic of *Dastgah Shur* and related in step-wise phrasing to "Blue Train," the "cry" of Razavi's 5th above can be perceived as an extended 9th as articulated in Coltrane's opening solo (Audios 9-10).[14]

Audio 9. *Excerpt of Mahmoud Zoufonoun demonstrating "Razavi" on violin (March 1983).*

Audio 10. *Excerpt of John Coltrane's opening tenor saxophone solo on "Blue Train" (1957).*

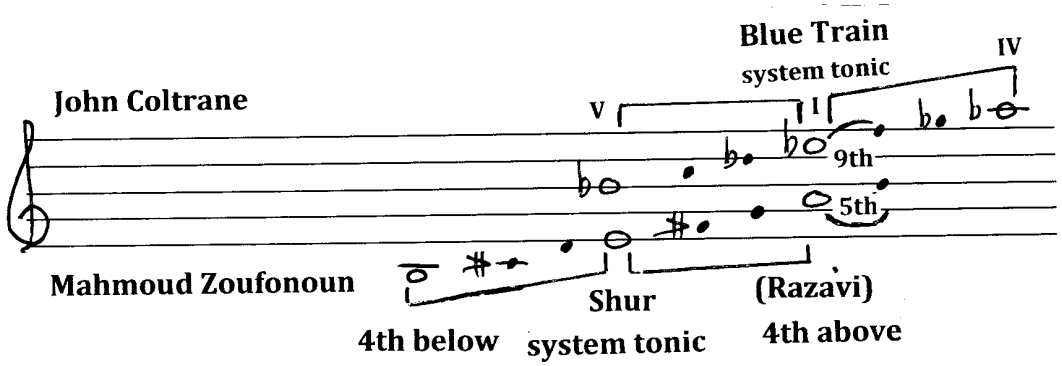

Figure 12. *Tetrachordal gravity shared between "Blue Train" and "Razavi." Note that original tonal centres are untransposed.* Credit: Hafez Modirzadeh.

Presented here is a less scalar and more fluid view of tonic gravity, placing a tonic in the centre of lower and upper tetrachords (the transposed motive for the IV in Blue Train's melody reduces this upper fourth to its lower octave). The way in which both Coltrane's and Zoufonoun's approach relate these intervals melodically through step-wise sequencing—with the 5th of Razavi and the 9th of "Blue Train" emphasized similarly—affirms an intrinsic harmonic gravity between common modal structures. Furthermore, if Razavi's 5th were aligned with "Blue Train's" 9th, the former's system tonic could interchange with the latter's dominant, creating not only a perception of one becoming the other, but also, when actualized in practice, turning both into one and the same! There are other Persian modal systems as well, such as *Nava* or *Dashti* (also intrinsically related to the mother-mode of *Shur*) which reiterate the same pitch-gravity outlined by the Blues (Audio 11 and Video 1)—and yet, a teakettle's steaming melody also holds to the same intervallic principle as that of human-made melodies (Audio 1).

> **Audio 11.** *Ramin Zoufonoun (Mahmoud's son) playing Persian-tuned piano over a Blues form in the mode of Dashti, with author on tenor saxophone; 5th degree emphasized as the extended 9th of a Blues tonality (similar to Coltrane's opening solo on "Blue Train"), yet with added adherence to Persian intonation and idiomatic inflection.*[15]

As Coltrane summarizes, "If you want to look beyond the differences in style, you will confirm that there is a common base . . . take away their purely ethnic characteristics—that is, their folkloric aspect—and you'll discover the presence of the same pentatonic sonority, of comparable modal structures. It's this universal aspect of music that interests me and attracts me; that's what I'm aiming for" (qtd. in Porter 211). Alain Danielou also elucidates the elements that give rise to the pentatonic impetus of the universal:

> Music . . . must quite naturally have this configuration of a center or tonic surrounded by four notes assimilated to the four directions of space, the four perceptible elements, the four seasons, and so on. The pentatonic scale thus presents a structure that allows it to be an adequate representation of the static influence of heaven on earth. But a static representation of a world in motion could not be an instrument of action upon that world. It is necessary, if we want to act upon the represented elements, to evolve from the motionless to the moving, from the angular to the circular, from the square to the circle. (34)

As generator of pentatonicism, the pillar 5th symbolizes existence in dual form, just as tone is defined by interval. Overall, the meaning underlying two pitches one interval apart must not be underestimated: as one is defined by two, it is the intervallic relationship between two tones that defines the singularity of each. Similarly, when two or more idioms' acoustical and rhythmic sensibilities are practiced together without compromising the integrity of each, distinctions are enhanced at a focal point rather than blurred, creating another context that sustains rather than dissolves traditional elements, ultimately allowing for all to flourish both within and beyond the boundaries of culture. From this point, the potential for a new performance context to be born from two or more musical idioms becomes more closely realized. Ironically, this creative growth comes only by agreeing on a limited set of parameters with elements familiar and foreign to both performers. It is in accepting one another's vulnerabilities that musicians expand personally—through humility and through a relationship of trust that develops from within such a situation—in short, through friendship.

In the summer of 2010, I was privileged to spend an afternoon of informal discussion, friendship, and music with tar master Dariush Talai. After some time in thoughtful conversation, we recorded our playing of two brief improvisations together, each with one of us anchoring an ostinato for the other to solo over. In one instance, Mr. Talai focused on the mode of Dashti while I played the opening motif of John Coltrane's "A Love Supreme" (Audio 12), afterwards coming to a few realizations that supported our earlier conversation. First, I came to agree with Mr. Talai that comparative notions of "dissonance" and "consonance" have no relevance outside western musical education; and second, I agreed with his regard of the role collective memory plays in an individual's approach to oral tradition. Most importantly, through musical conversation, I found that Mr. Talai's approach enabled Persian art music to embrace other systems with a naturalness befitting the integrity jazz has displayed since its inception.[16]

Lastly, to our amusement, we demonstrated for each other the less original way of playing our respective musics (a decidedly "bourgeois" way to the knowing ear): one pleasing through familiarity of line, yet of a personally compromised nature. To reveal this to a less than knowing listener like myself, before we recorded, Mr. Talai briefly played an imitative style that contrasted sharply with his own commanding voice on tar. In turn, I tried this contrast myself on alto saxophone when we recorded: with my first improvised moment alternating with Mr. Talai, I took a more original and personally satisfying approach with the tetramodal concept (described above, "On Any Mode Necessary"), while in response to his turn, my second moment followed a more technically standard approach, variating on the more familiar jazz tradition that would better fulfill expectations of the general ear. With this false notion in mind, I ended up deliberately playing in the "bourgeois jazz" manner. Mr. Talai innocently mentioned enjoying this latter style—certainly, it had been marinated with enough collective memory—for the first alto solo had "too much salt" for his taste. While the humour expressed with such impressions helps to increase understanding of one another's musical thoughts, it also further defines interpersonal commonalities through contrasting differences. With the uniqueness of an ancestral memory channelling through each musical practice to inform both player and public, a musical tradition becomes a people's sonic crystalization of their collective ideal or cosmic worldview, perfected through performance. Specialized appreciation reflects the particularity-facet of music's function "as a kind of aura each melody has, that is a part of the ethnic or group collective memory of the melody" (Talai 11).

> **Audio 12.** *Improvised duo over opening to John Coltrane's "A Love Supreme," with Dariush Talai on tar, and author on alto saxophone, Tehran, 2010. Note the modal compatibility of Talai's phrasing in Dashti with Coltrane's opening solo on "Blue Train" (audio 10), as well as the harmonic implications of the earlier Dashti blues rendition for Persian-tuned piano (Audio 11).*

In a case where the socio-musical context unites collective memory for the success of a performance, undoubtedly "good complicity with a knowing public is a major factor" (Steve Lacy).[17] On the evening of March 17, 1978, at a small San Francisco club called Christo's, saxophonist Sonny Stitt joined with his audience in such complicity wherein one unifying message managed to continually shapeshift form between oral (spoken) and aural (musical) codes of communication (Audio 13). As I was standing out as a young teenager alone in a small jazz club for the first time, Sonny Stitt (and his confrères: Red Holloway on saxophones, Ed Kelly on piano, Harley White on bass, and Smiley Winters on drums) was warm and generous with encouragement, allowing me to tape-record the evening from the front table, something which turned out to be both a fieldworking initiation and a musically spiritual awakening.[18]

> **Audio 13.** *Sonny Stitt with audience (March 17, 1978, Christo's, San Francisco)—oral (0:00-1:00) and aural (1:01-2:41) forms of story-telling: note the timing and sequencing involved between audience exclamatory remarks and the performer's own call and response development, whether in spoken testimonial fashion or musically (the climax of Stitt's tag-ending occurring at 1:55-2:05). This provides the cultural core of an original "jazz" event and others similar to it: a dynamic process of participation by both performer and knowing public, essential towards the construction of meaning during a moment of creation.*

On Fieldworking "Sound Come-Unity"[19]

Three inspired encounters in particular are important to recall here, in order to share more fully what fuels my search for Makam X. First, from 1983-86 in Redwood City and San Jose, master Persian musician/educator Mahmoud Zoufonoun transmitted his own transcribed repertory (or *radifs*) to me, from violin to tenor saxophone. This could be

done only through my developing alternate fingerings on the horn to articulate the required intonation of Persian classical music. Through some 12 years, I would pursue the potential in weaving these non-equal "tempered" tones through a cycle of 5ths and 4ths, reaching another kind of musical discourse in 1999 with Filipino kulintang master Danongan Kalanduyan. Then, in early 2007, during one of several deeply meaningful moments with Ornette Coleman, I would be led closer towards what he calls a "resolution of the soul," a place of true harmonic equalization in both music and life. Each of these three friendships is a pillar along the musical philosophical path presented here.

Mahmoud Zoufonoun's career spans over 70 years, from performing and composing for Iran's national radio orchestra to archiving volumes of musical folklore, and, since his arrival in the U.S. in 1976, to developing a refined pedagogy for Persian classical music. Starting in March 1983, I began my training with Mr. Zoufonoun with the hearing, singing, and naming of Persian intervals: half-sharps are called *sori*, while half-flats are *koron*, with corresponding symbols (see Figs. 1, 10, 12, and 16). The traditional modal system (*dastgah*) would slowly unfold thereafter, perceived with an ancient form of tetrachordal organization. Then, the first piece introduced would come from *Dastgah-e Mahur*, that modal complex that begins with melodies more closely related to a western major scale. By the time we had modulated to *Gushe-ye Delkesh* (one of perhaps 50 or more “corner” melodies that make up the *Mahur* repertory), I indeed felt its name, something “pulling the heart.” Characteristically, in *Delkesh* the 5th tone above the system tonic is emphasized with a lowered 6th degree that carries both a “sweet” and “sour” resonance. Similar to blues tonality in African American music, what is uttered sits defiantly in-between western major and minor harmonic qualities (Video 1).

More through music than words, Mr. Zoufonoun conveyed to me during our first lesson that the lowered alteration of this 6th degree is not identifiable by western half steps, but is closer to a 3/4 tone (or more qualitatively, a small whole-tone) with its adjacent tone flatted. In order to resolve, or cadence smoothly back down through *Mahur* (such a "landing" is called *forud* in Farsi), the 6th degree should be raised back to its natural state (this is the modal function of the “changing” tone, or *motaqayyer*). I recalled Mr. Zoufonoun’s words during that first lesson: “But listen carefully to the quality of the *koron*—or half-flatted sixth in the mode of *delkesh*—and you will find this to be a naturally consonant partial in the harmonics of music.” Indeed, as discussed earlier, this interval matches perfectly with the acoustical properties of Makam X's 12th partial (Figs. 1, 10, and 16). At that moment, the realization flooded my mind that there was more to the tonal story than what had met my ears up until that time. With such resonances hovering close to the fundamental, I imagined cryptic echoes from the ancients themselves—Zaryab’s Andalusian school of the ninth century or even Pythagoras' school from over two millennia ago—signals illuminating renewal for the present.

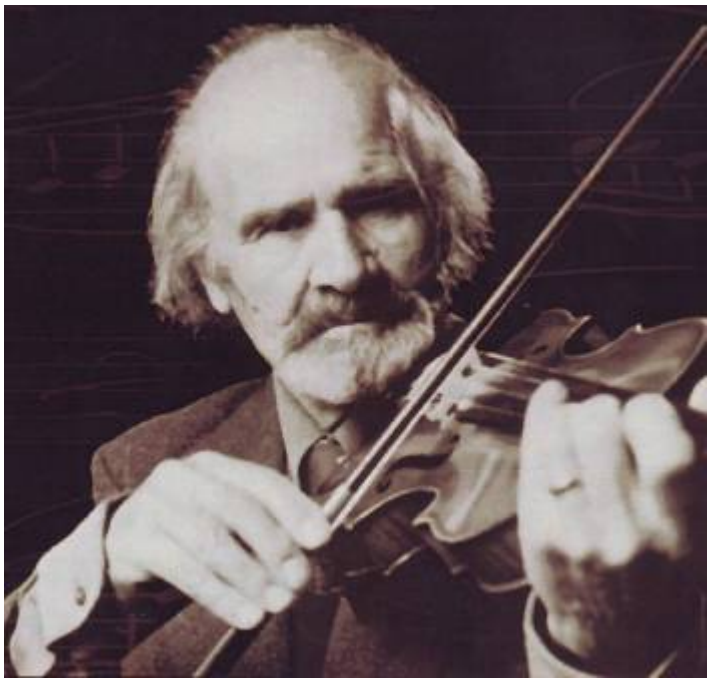

Figure 13. *Mahmoud Zoufonoun, violin, 2000.* Photo Credit: Andrew Nozaka.

Danongan Kalanduyan, a leading authority on Southern Filipino musical culture, is the most recognized exponent in the western hemisphere of *kulintang* (a set of rack-laid bossed gongs). In June of 1999, during an informal get-together with Mr. Kalanduyan at the Filipino Consulate in San Francisco, his *kulintang* tones were located on my soprano saxophone with alternate fingerings originally conceived for Mr. Zoufonoun’s Persian pieces (Fig. 14). Such tones are fixed in both Iran and Mindanao (where Mr. Kalanduyan is from), and with subtle mouth adjustments on saxophone, can be isolated and so shared by both cultural systems. Mr. Kalanduyan and I were able to follow one another through the matching of these tones—tones that on saxophone had gone from Persian to Filipino, since the context was now more *kulintang* than anything else.

At first, I would play the unornamented tones found only on *kulintang*; then, a Persian style of melismatic phrasing would interpret the shared tones between both systems before I began to introduce tones beyond the realm of the *kulintang*. (Mr. Kalanduyan, who is Muslim, enjoyed playing with this style, as it evoked phrasing reminiscent to him of Islamic culture). These tones, which are played in the Iranian heptatonic system, do not conflict with the open pentatonic core of the *kulintang*, for they are fitted between large minor 2nd and 3rd intervals. Ultimately, as the rhythmic velocity developed, Persian-Filipino harmonic bases joined a modern jazz saxophone style before resolving in a traditional Mindanao fashion. For a successful collaboration, Mr. Kalanduyan and I negotiated our compromises: I would learn a traditional cadence over *binalig*—the required rhythmic mode underpinning this *kulintang* performance (Video 2)—while he would play in the Persian heterophonic style of *avaz* (Audio 14), a long metered form without rhythmic accompaniment foreign to *kulintang* practice yet mandatory for Persian classical performance. In our own ways, Mr. Kalanduyan and I could expand both musically and personally through mutually self-imposed limitations. Where two or more musical languages interrelate in proportion to grow simultaneously beyond their formal boundaries, while retaining distinctive integrities and through the obliteration of personal ambition, structural principles from the base of each tradition meet a more unifying aspiration: the expansion of human spirit through contraction of choice—in short, through sacrifice.

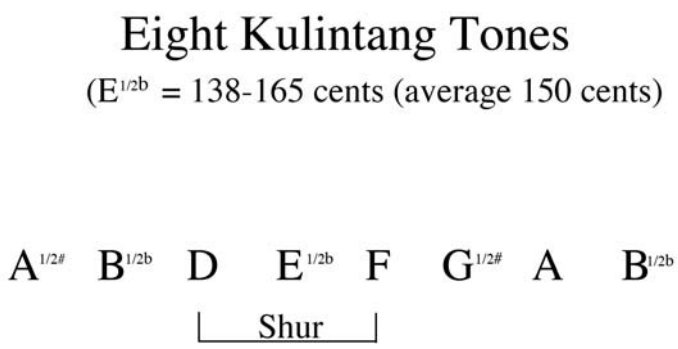

Figure 14. *Eight Kulintang Tones which include the specific ¾ 2nd also found in Persian modal systems (compare to Fig. 6).* Credit: Hafez Modirzadeh.

> **Video 2.** *"Binalig" with Danongan Kalanduyan on kulintang and author on soprano saxophone, accompanied by Dr. Danilo Begonia on dabakan and Titania Buchholdt on babendil, SF State, 2001.*
>
> **Audio 14.** *"Avaz" by author on soprano saxophone with Kalanduyan on kulintang.*

Ornette Coleman's overarching musical concepts have affected creative artists of every discipline for well over 50 years. One afternoon in early 2007, as a guest at Mr. Coleman's home in New York City, I was eager to demonstrate the saxophonic language I had developed since meeting Mr. Zoufonoun some two dozen years earlier. It seems that what had resulted, especially since playing with Mr. Kalanduyan, was sounding increasingly free of contrived keys or progressions, something possibly related to Mr. Coleman's concept of "harmolodics."[20] Once together, hours led to days of contemplating sound, where carefully articulated questions would take on a mystical proportion, answered inexplicably, from within one's self, in all confirming a natural learning process strangely foreign to institutions of "formal" education.[21]

After some time listening to me on tenor saxophone, Mr. Coleman took his alto saxophone out of its case and played a rapid two-tone motive that took less than one second to complete, yet completely squashed everything I had built up to that point: from F up to Ab, followed by the lower E up to G#, the interval sounded identical with only a slight timbral change. "You did the same thing, but without different fingerings!" I cried, to which he laughed and said, "It's about the major becoming minor, and the minor becoming major, right? . . . The third is the equalizer." Speechless, left with nothing more to play, I could only think out loud, "but what about all the alternate fingerings?" "Oh, that's only gravy!" was the kind reply. "You see, this [pointing to the horn] is just an invention, but you are a creation!" At the moment it became clear that I got it, he added, "emotion uses sound like chewing gum." In short, Mr. Coleman graciously, humorously, cryptically yet completely, expressed the alchemic ability to disintegrate all artificial distinctions in sound. He demonstrated with both raw and elegant lucidity a convergence of musical particularities that liberates order (or harmony) from all tonal/temporal hierarchy or position. In earnest, Ornette Coleman, Danongan Kalanduyan, and Mahmoud Zoufonoun, are the spirit that shapes form, never the opposite, and yet in complement to the opposite, always, by virtue of their inclusiveness, that exclusively rare beauty that is uncompromisingly human.

Ornette Coleman also helped me to find within myself more applicable definitions for terms such as "unison": multiple melodies moving in the same direction by shared intent, yet not necessarily with matching tone or rhythm. In this way,

thought-resolution would often times come long after we parted, with the inner realization that unison is naturally a plurality of sounds, reflecting a variety of individual resonances that, like partials of human overtones, are fractal partials of ancestral memory emanating from a fundamental humanity (see Video 3 and Audio 15). This realization led me to recall one cold winter morning in Bakhtiari, Iran, during some fieldwork in late 1994, when Mr. Hosseyn Heydari and Mr. Ali Akbar Mehdipur played in true unison together on *karna* (double-reeded shawm with brass bell) with Mr. Heydari's son, Ali, on *dohol* (shallow bass drum) in their home in Shah-re Kord. Ostads Mehdipur and Heydari had mentioned not playing together for some thirty years (like the *surna*, in this part of Iran, the *karna* tends to be more of a solo instrument played outdoors, for public ceremonies), yet what they played was effortless and timeless, certainly a sonic event comparable to the musical inspiration of Ornette Coleman.

> **Video 3.** *Excerpt of karna unity with Hosseyn Heydari (with his son, Ali, on dohol) and Ali Akbar Mehdipur in Bakhtiari, Iran, December 1994.*[22]

> **Audio 15.** *Inter-cultural consort in unison (with Mahmoud Zoufonoun and Danongan Kalanduyan) at St. Gregory's Church in San Francisco, July 2007.*[23]

While it is certainly easier for musical artists, after earning distinction through their own self-discipline and uncompromising integrity, to keep promoting the exclusivity of their own styles or traditions, the sacrifice for seeking a unifying consciousness through music is always more difficult. Like Rumi's "moth to the flame," all great human effort throughout time, in pursuit of Oneness, has had to obliterate borders, thus obliterating self in the process. As Malcolm X put it, "the price of freedom is death!" (*Malcolm X: His Own Story as It Really Happened*).

On a Convergence Liberation Principle[24]

con·ver·gence: the process of coming together or the state of having come together toward a common point.
lib·er·a·tion: the act of gaining equal rights or balancing full social or economic opportunities for a particular group.
prin·ci·ple: a determining characteristic of something; essential quality; an originating or actuating agency or force.

Discovering compatible qualities between universality and particularity motivates the expression of vulnerability as that human quality which strengthens bonding rather than dissolving, courage rather than fear—which radiates the incomparable and inimitable. Sufi philosophy has each individual, by reaching inward toward the Source of All Being, essentially attaining a "deepening or ebbing of the finite self in the direction of its Divine Principle" (Lings 29):

> Increase of nearness does not mean decrease of distinctness, for the nearer the centre, the greater the concentration . . . [Therefore,] originality is inseparable from uniqueness, and this, as well as universality, is necessarily increased by nearness to the Oneness which confers it. (Lings 22)

This Oneness of Presence is understood then to be both Outward and Inward, Multiple and Unison, as the eyes of duality are required to see the Unity of Reality: as incomparable through one, similar through the other (Chittick 356-363). Such a "marriage of opposites" in Sufism (and similarly with Taoism) has contraction (*qabd*) and expansion (*bast*) as interdependent within one breath cycle. The transcendent archetypes of *qabd* and *bast* are *fana* (extinction) and *baqa* (subsistence, eternal remaining), respectively: it is not as oneself, but "as the Self that one who has been extinguished can be said to subsist" (Chittick 78).

The paradox of the harmonic series—stretching and collapsing simultaneously, spiralling autonomously—embraces the metaphysical while illuminating the physical observation of our universe. For instance, if intervallic contraction through cosmic expansion (or even the reverse) indeed exists—forever driving all life towards extinction in unified oneness—rather than dissipating into oblivion, this series may eventually reach some ultimate modulation of its fundamental condition, managing to intersect with source without regression or reversion. Such points that intersect in space more so than in time deny staticity in the universe, and just as with emanating partials of sound, render distinction according to the distances between the substances of each—in short, according to relationship. Thus, it could be inferred that some fundamental accent sparked during the creation of our universe continues today to expand through a spiral reverberation of cosmic overtones, increasingly pulled together until joined frozen by some deep dark energizing spirit resounding Eternal.[25] As Makam X accelerates us towards this ultimate convergence, we find in improvisation its balancing act, with liberation forever at hand.

If everything is perceived as part of some cosmic improvisation, then no actual thing could indeed exist or be defined as such, for without two observables, there is no-thing to balance with or justify the other. With all and so nothing improvised, one could ruminate on the universe as altogether planned by design, a carefully crafted composition, systematized or perhaps even destined by fate. Given this assumption—that structure and design are themselves inherent in the universe and are the building blocks of improvisation—the order of chaos becomes defendable as well. In return, by implying such a "grand scheme" model, the elusive fate of this infinitely reflexive notion—improvisation—is sealed. So here is trickster phenomena defying the binary opposite container inscribed to institutionalize, own, or control its creation. In all, improvisation is a variance on form, fluid and fueled by the same creative energies that move life. As well, it signifies a rising consciousness that can disintegrate the academy's aperture through the applied pressure of a newly liberated artistic scholarship.[26] Is it possible then for improvisation, as a study inherently subversive towards the very parameters that set such up, to carry enough empowering potential to usher in an ultimate finality for institutional boundary altogether?

Indeed, when Rumi exclaims, "They say I circle around you—nonsense—I circle around me, I circle around me!" (Rūmī 280) it is by co-existence of multiple centres that decentralization in motion transfigures dimension of authority on an infinite scale. This secures the thought that what resonated in Egypt during the early spring of 2011 overshadows all that follows, by virtue of the peoples' eternalization of a moment, of a source that remains beyond event. In principle, Liberation Convergence is Consciousness gravitating toward a point of Equalization, removing all fear of Extinction in the process. As spirit is the shapeshifter of form, Tahrir Square stands as a mobilizer towards unification. Ahmed Rehab gives an eyewitness account with his posting, "A Walk Through Tahrir Square":

> For Egyptians who have called Tahrir Square home since that day in February, the Square is more than a symbol of the revolution; it is a symbol of a new Egypt. "Guys don't harass girls here, they treat them as their sisters; people proactively share their limited supply of food and water. We respect each other's difference; we are a united people. We come from all over the country, but share one goal: a better Egypt," said Mona, a student. Inside, other volunteers walk around with gloves and garbage bags, helping keep Tahrir Square the cleanest it has ever been despite the massive population density. Huge signs with revolutionary slogans hang between trees and lampposts and roll down from buildings. Protesters walk around with creative and highly personalized messages plastered on placards, rejecting the political status quo and demanding their rights. In one corner, a makeshift first aid clinic manned by volunteer doctors stands across from a food bank of snacks and bottles of water. As you stroll through, you see that some gatherings are devoted to speeches, others to poetry, others yet to musical bands, debates, prayer, and chanting. "Soon the world will never again mention the bloody French revolution as a historical reference but will remember the peaceful, inspiring, ethical, charismatic, emotional and spiritual Egyptian revolution as a motto of all world revolutions to come," said Kamal. A week later, I saw a woman walking around Tahrir with a sign, "My son died here, I came to replace him." "We came here to reclaim our lost dignity," Mona said, "We are willing to lose our lives rather than leave here without it."
>
> 
>
> **Figure 15.** *Tahrir Square (Cairo, Egypt, February 2011).* See Rehab in Works Cited. Photo permission by: Ahmed Rehab.

As eternity needs time, spirit needs form, and the resultant gravity of both draws the infinite towards a space and shape that compels resolution, partial by partial, a principle of convergence liberation for all. For those caught in the temporal, the sense of returning to this source is a cyclic illusion, yet as we move, we are in fact incomplete bits of eternity, a whirlpool of points, prying open square's circle towards a time-spiraled fate, threading Tahrir Square along a vast constellation continuum with many other movements now fanning out from Africa and beyond.

Figure 16. *Makam X The Harmonic Series: free-mapping of partials over spiral-galaxy.* For other versions of Makam X, see Fig. 1 and Fig. 10. Diagram superimposition by Eli Harrison. For original image, see NASA, et al. in Works Cited. **Click image to enlarge**.

And so, Makam X becomes our fractal palette to express this realization through sound, signifying the same reason Malcolm remained "X": although finding personal resolution as Malik el-Shabazz, he identified as “X” as long as the social-political situation that produced it persisted, thereby creating a symbol of unity for a collective over any single individual. Similarly, Makam “X” is a mode beyond any single culture. It is a system that defies systems, living before and beyond existence. As long as we need to continue giving names to our styles, all of which emanate from one fundamental, as a vigilant reminder, “X” remains . . . as long as the hegemony of hierarchical musical forces are imposed by any system in particular over any other, in leaderless authority, “X” remains . . . it remains as long as we remain stubborn enough to perpetuate any of the judgmental criteria we have contrived to exclude one another from our nameless source
. . . X

The search for Makam X has been supported by the following organizations in the form of invited presentations between 1999 and 2011: Society for Ethnomusicology (Austin, TX), Center for Dialogue Among Civilizations (Tehran, IRAN), Imge Kitabevi Bahcesi (Ankarra, TURKEY), Guelph Jazz Festival Colloquium (Guelph, ON), Stanford Center for Buddhist Studies (Stanford, CA), Arab American National Museum Diwan Forum for the Arts (City University of New York, NY), Middle East Studies Association (San Francisco, CA), Beijing Midi School of Music (CHINA), Conservatorio Superior de Granada, Fundacion Euroarabe, Universidad de Granada, Fulbright Espana (SPAIN), University of California at San Diego and Santa Cruz (CA), Brown University (Providence, RI), Northeastern University (Boston, MA), Rutgers University (Newark, NJ), Wesleyan University (Middletown, CT), Columbia University (New York, NY), McGill University (Montréal, QC) and Tehran University (IRAN), as well as the Djerassi Resident Artists Program (Woodside, CA), Yerba Buena Center for the Arts and Other Minds (San Francisco). Special acknowledgement goes to San Francisco State University for sabbaticals in 2004-05 and 2011, and to all those whose friendship made fieldwork possible in China, Egypt, India, Iran, Morocco, Spain, and Turkey. Additional appreciation goes to Paul Austerlitz and Fred Wei-Han Ho, for early editorial readings.

Notes

[1] In contemplation of Daniel Fischlin's all-important question, "Where *is* that sound coming from?" (7), what follows

could be characterized as "artist-centered scholarship" (Lewis 105), expressed here by infusing research with metaphorical language in order to reach across disciplinary divides, both creative and curatorial. As such, writing between realms of intuition and intellect should invite critique that can help lead towards more inclusive sets of dialogue, including the recognition for musical artists to articulate their own research within scholarly formats reflective of the personal truths derived therefrom.

[2] See Henshilwood.

[3] The "ecstatic" here is understood in relation to an aspect of *tarab* in traditional Arab secular music, as described by Ali Jihad Racy in his book, *Making Music in the Arab World: The Culture and Artistry of Tarab*: "Moreover, the term 'ecstacy' tends to fit the various conditions associated with *tarab* as a transformative state, for example those connected with intoxication, empowerment, inspiration, and creativity. The term has also been used by modern ethnomusicologists to indicate states of consciousness that are musically based, and in some ways also mystically oriented" (6). As transformative terminology, Makam X serves as an intellectual portal towards those realms of consciousness traditionally avoided through research writing. This author first introduced the term in "Makam X and the Afro-Diasporic Unconscious," unpublished paper for the Guelph Jazz Festival Colloquium (3 Sept. 2008).

[4] The Improvisation model shown here was first introduced by this author in "A Chromodal Model for Improvisation Studies," unpublished paper for the Interdisciplinary Symposium on Improvised Music (10 April 1999), University of California San Diego.

[5] One worth exploring is Indonesian gamelan: having honed a sonic aesthetic of creating dimension or residual spirit with slightly tuned differences between same instruments, a state of unison is rendered, shimmering with in-toned beats. "In-toning" refers to those pulsations that occur in between (or better, inside) one tone played slightly apart by multiple instruments. Deliberate intoning in a jazz context is formally documented between this author and trumpeter Amir ElSaffar on the album *Radif/Suite*. This concept is further developed with a "scaling-out" approach introduced on the subsequent release "Post-Chromodal Out!"

[6] See Shlain (202, 219).

[7] See Strohmeier (32).

[8] See Bernal (255).

[9] See Touma (9-11).

[10] See Farhat (26).

[11] The tetramode concept is described at length in my dissertation "Chromodality and the Cross-Cultural Exchange of Musical Structure" (124); while essentially complimentary to Talai's recombinative *dâng* approach, both concepts developed independently of one another. My primary inspiration for a tetramode-cycle comes from studying the Lydian Chromatic Concept with George Russell at the New England Conservatory during the fall of 1983, shortly after being introduced to Persian music by Mahmoud Zoufonoun earlier that spring. Also at NEC, I was introduced to overtone exercises by saxophone master Joe Allard, which produced, for the first time, a saxophonic embodiment of the first 16 partials of what eventually gets identified as Makam X. And there were other encounters—first with Armenian musical folklorist and conductor Rubik Gregorian (Boston, 1983), and later with Turkish music theorist Ertugrul Bayraktar (Ankarra, Turkey, 1995)—that revealed other modal-harmonic concepts with parallels to my own (such quartalism can be heard on Audio 11). My earliest introduction to the singular importance of transposing intervals of a 5th occurred with Paul Contos (Santa Cruz, 1978), Sonny Simmons (San Jose, 1979), and James Moody (San Francisco, 1982).

[12] See Fraser (34-35).

[13] Further research on this topic can be found in my article "Aural Archetypes and Cyclic Perspectives in the Work of

John Coltrane and Ancient Chinese Music Theory."

[14] Zoufonoun, Mahmoud. "Notated Radifs of Persian Classical Music." Unpublished. Catalogued by Faraz Minooei for the San Francisco State University J. Paul Leonard Library, 2003. Additional information can be found in my Master's Thesis: "Model and Interpretation in Iranian Classical Music: The Performance Practice of Mahmoud Zoufonoun."

[15] Excerpted from this author's CD release, *In Chromodal Discourse*: Ramin Zoufonoun on Persian-tuned piano, author on tenor saxophone, Tim Volpicella on guitar, Ken Filiano on bass, James Norton on alto flute, and Shahram Kazemi on tombak. Some twenty years later, more abstract piano tunings were created with segments of Persian intonation (i.e. Audio 8 – tetramodal splicing), most recently demonstrated by Vijay Iyer on the author's *Post-Chromodal Out!*

[16] Through Talai's approach, the intrinsic polycultural potential of jazz begins to get reflected in Persian modal practice, signifying its own historical involvement with other cultural systems as well—this goes well beyond the novelty of juxtaposition or exoticization. Sonny Rollins states clearly that jazz is both "America's classical music" and "world music," in essence pronouncing jazz as "not a body [but] a spirit" (Rollins). This "jazz consciousness"—to provide innovation from the absorption of multiple systems while retaining autonomy—has been described by Paul Austerlitz as "a musical manifestation of what W.E.B. Du Bois called 'double consciousness,' the simultaneous African American affiliation with the black in-group and the larger mainstream. Jazz—and the whole mind-set or consciousness that surrounds it—is based in African American culture and evinces parallels with other Afro-diasporic musics. At the same time, it is integral to the larger mainstream of the United States and exhibits an extraordinary openness to all manner of influences and ideas. This inclusivity is based in the syncretic nature of all Afro-diasporic culture . . . As a cosmopolitan music, jazz has engendered variegated reinterpretations around the world" (184).

[17] Ali Jihad Racy's ecstatic feedback model for the *tarab* facet of traditional Arab music also contains a social-aesthetic component that works well here: "this approach derives its significance and effectiveness from the immediate physical and temporal context. An integral part of the performance event, the creative process is considered place and time specific . . . [This component of the model] treats society (specifically the initiated listeners) as an indispensable source of inspiration, is in essence collectively based, socially experienced, and outwardly directed" (97).

[18] Consequently, this life-changing moment was transcribed in 1989 for Wesleyan University, when, as a graduate student I presented a paper titled as "Sonny Stitt in Words and Music: Code-Switching in an African American Context." Code-switching, originally a socio-linguistic term, is stretched here to apply to shifts between musical and verbal discourse that occur within the same time and place: in essence, the responsorial interaction between the audience and performer moves seamlessly through two modes of transmission intrinsic to an American jazz socio-cultural context that is inherently African American.

[19] Francis Wong first coined this term in regards to Asian Improv Arts "ImprovisAsians" events at SF State from 2008 to 2010, featuring large intercultural ensembles of students, faculty, and arts communities.

[20] In May 1992 at Wesleyan University, while defending my doctoral dissertation on chromodality, Anthony Braxton observed that my work included no reference to Ornette Coleman's music, consequently providing me with the impetus to listen to Coleman's music more discerningly than before. It was not until 1999, however, when introduced to *kulintang* music by Danongan Kalanduyan, that I perceived a breakdown of the tetramodal concept, resulting in a sound that I felt related to Coleman's. Such trajectories need this kind of explanation, as they can dispel misassumptions about one's source of influence (also see Note 11).

[21] Mr. Coleman's most mystifying question, "What is the Eternal Tonic?" unfolded itself to me at a later time and place, after considerable inward reflection: "E-tern-al", as the number 3 (the letter "E" in reverse) that "turns" (a homophone for "tern"), as "tern"-ary in music; but also related to Earth ("terra") as the "ter"-tial resonance leading to the third that moves between key orbits (the only major scale degree that occurs in all seven major scales generated from each degree of the parent scale). On contemplating the "Eternal Tonic" then, one is enlightened to not only what moves from without (i.e. 3rd planet from the Sun), but also to what moves from within each individual (i.e. the anagram "Com-E-ternal Tone" for "Ornette Coleman," signifying that which resonates inherently in each person).

Through a number that moves, our becomingness is realized, just as through the triangular a transition is stabilized between square and circle (i.e. Rumi's "I circle around me").

[22] First presented by this author in “On Traditional and Innovative Performance Techniques for Persian Double-Reeds,” unpublished paper for the Society for Ethnomusicology Conference (Northern California Chapter, 4 March 1999), UC Berkeley. Based on 1994-95 fieldwork for the Ministry of Islamic Guidance, Tehran, IRAN. This excerpt in Iran, along with the following excerpt in San Francisco (Audio 15), inspires a polyphonic character comparable to traditional New Orleans jazz.

[23] This event became the subject of my article "Musical Compost, Consorts, and Collapsing Pyramids: On the Disintegration of Traditional Performance Practices to Raise a Sound Society." Featured on audio 15 are Tom Edler, bass; AmirAbbas Etemadzadeh, tonbak; Ken Filiano, bass; royal hartigan, drums; Danongan Kalanduyan, kulintang; Masaru Koga, shakuhachi; Faraz Minooei, santur; author, tenor saxophone; James Norton, bass clarinet; Kelly Takunda Orphan, mbira; John-Carlos Perea, cedar flute; Tim Volpicella, electric guitar; Mahmoud Zoufonoun, violin; Ramin Zoufonoun, tar.

[24] First introduced by this author in "Signifying On the Convergence Liberation of Maqam, Jazz and Flamenco Musical Systems," unpublished paper for DIWAN Forum for the Arts (26 March 2011), CUNY Graduate Center, NY.

[25] A recent discovery in astrophysics complements this interpretation, marking the oracular nature of sound systems as a cosmological messenger, particularly when studied in tandem with the sciences: http://www.nobelprize.org/nobel_prizes/physics/laureates/2011/press.html (10 April 2011).

[26] For example, in regards to the descriptive preference of "variation" over "improvisation" in Javanese gamelan practice, there are expected norms from which deviations are referred to as such (see Sutton, “Do Javanese Gamelan Musicians Really Improvise?”). Milan Kundera recognizes that "the journey of the variation form leads to that . . . infinity of internal variety concealed in all things" (qtd. in Tenzer 3), just as Michael Tenzer illuminates how "variations descend deep into a paradoxical space that is both bounded and infinite" (3). Tenzer's encompassing perspective proves invaluable towards an artistic-academic discourse now long overdue, "reimagining the domain of analysis as something that is not positioned in terms of a Western/non-Western split," taking "a proactive stance against the way Western music education channels students to choose among identities such as composer, theorist, musicologist, performer, and so on" (18). Indeed, the idea that "analysis will not tame music, nor neutralize its mysteries, but . . . will gradually enlighten us" (35) aligns directly with this present work:

> As stated, there are many justifications and goals for analysis. But today one of them surely ought to be activism—the development and promotion of a relevant and timely musicianship in accord with the international and cross-cultural nature of contemporary music creation. (19) . . . The question thus becomes: which criteria are most useful for the creative musician? (22) . . . Before any implementation, music education would have to change more radically and rapidly than institutions that provide it tend to do. (Tenzer 34)

Works Cited

Austerlitz, Paul. *Jazz Consciousness: Music, Race, and Humanity*. Middletown, CT: Wesleyan UP, 2005. Print.

Bernal, Martin. *Black Athena Writes Back*. Durham, NC: Duke UP, 2001. Print.

Black, Jeremy, ed. “The Islamic Imprint c.800-1200.” *Atlas of World History*. 1st ed. New York: Dorling Kindersley Publishing, 2000. 57. Print.

Chittick, William C. *The Sufi Path of Knowledge: Ibn al-'Arabi's Metaphysics of Imagination*. Albany: State U of New York P, 1989. Print.

Coltrane, Alice. Interview by Robert Palmer. *The World According To John Coltrane*. BMG, 1990. Videocassette.

Coltrane, John. "Blue Train." *Blue Train: The Ultimate Blue Train*. Blue Note, 2003. CD.

Danielou, Alain. *Music and the Power of Sound*. Rochester: Inner Traditions, 1995. Print.

Farhat, Hormoz. *The Dastgah Concept in Persian Music*. Cambridge: Cambridge UP, 1996. Print.

Fischlin, Daniel. "Improvisation and the Unnameable: On Being Instrumental." *Critical Studies in Improvisation / Études Critiques en Improvisation* 5.1 (2009). Web. 8 Mar. 2012.

Fraser, Angus. *The Gypsies*. Oxford: Blackwell, 1995. Print.

Henshilwood, Christopher S., Francesco D'Errico, and Ian Watts. "Engraved ochres from the Middle Stone Age levels at Blombos Cave, South Africa." *Journal of Human Evolution* 57 (2009): 27-47. Print.

Jung, Carl Gustav. *The Archetypes and the Collective Unconscious*. New York: Bollinger, 1959. Print.

Lacy, Steve. Liner Notes. *Ballets*. Hat Hut Records, 1981. Print.

Lewis, George. "High Scholar." Interview by Ted Planken. *Downbeat* Oct. 2004: 104-105. Print.

Lings, Martin. *What is Sufism?* Cambridge: Islamic Texts Society, 1995. Print.

Lomax, Alan. *Land Where the Blues Began.* American Patchwork Series, 1990. Videocassette.

Macy, Jenny, Wayne Carlson, Maria Palazzi, and Kamran Barin. *3D Visualization for Benign Paroxysmal Positional Vertigo [BPPV].* 2001. Advanced Computing Centre for the Arts and Design. *College Arts and Sciences.* The Ohio State University. Web. 25 February 2012. <http://accad.osu.edu/researchmain/gallery/project_gallery/bppv.html>.

Malcolm X: His Own Story as It Really Happened. Prod. Marvin Worth and Arnold Perl. Warner Home Video, 1972. Videocassette.

Mathieu, W.A. *Harmonic Experience*. Rochester, NY: Inner Traditions, 1997. Print.

Modirzadeh, Hafez. “Aural Archetypes and Cyclic Perspectives in the Work of John Coltrane and Ancient Chinese Music Theory.” *Black Music Research Journal* 21 (2001): 75-105. Print.

---. “Chromodality and the Cross-Cultural Exchange of Musical Structure.” Diss. Wesleyan U, 1992. Print.

---. *In Chromodal Discourse*. Asian Improv Records, 1993. CD.

---. "Model and Interpretation in Iranian Classical Music: The Performance Practice of Mahmoud Zoufonoun." MA thesis. UCLA, 1986. Print.

---. "Musical Compost, Consorts, and Collapsing Pyramids: On the Disintegration of Traditional Performance Practices to Raise a Sound Society." *Leonardo* 42 (2009): 252-258. Print.

---. *Post-Chromodal Out!* Pi Records, 2012. CD.

Modirzadeh, Hafez and Amir ElSaffar. *Radif/Suite*. Pi Records, 2010. CD.

NASA, ESA, S. Beckwith (STScI), and The Hubble Heritage Team (STScI/AURA).*Out of This Whirl: The Whirlpool Galaxy (M51) and Companion Galaxy*. Digital image. *Hubble Site*. NASA. Web. 5 Mar. 2012. <http://hubblesite.org/gallery/album/galaxy/pr2005012a/>.

Porter, Lewis. *John Coltrane: His Life and Music*. Ann Arbor: U of Michigan P, 1998. Print.

Racy, Ali Jihad. "Improvisation, Ecstasy, and Performance Dynamics in Arabic Music." *In the Course of Performance: Studies in the World of Musical Improvisation*. Ed. Bruno Nettl and Melinda Russell. Chicago: U of Chicago P, 1998: 95-112. Print.

---. *Making Music in the Arab World: The Culture and Artistry of Tarab*. Cambridge: Cambridge UP, 2003. Print.

Ranzana, Conrad. "The story of gravity and Lambda—How the theory of Heraclitus solved the dark matter mystery." *Physics Essays* 23 (2010): 75-87. Print.

Rehab, Ahmed. "A Walk Through Tahrir Square: Site of Triumph and Tragedy." *Official Blog of Ahmed Rehab*. 9 Feb. 2011. Web. 26 March 2011.

Rollins, Sonny. Interview by Tavis Smiley. *Tavis Smiley*. PBS. 23 Sept. 2011. Television.

Rūmī, Jalāl Al-Dīn. *The Essential Rumi*. Trans. Coleman Barks. San Francisco, CA: Harper, 1995. Print.

Sachs, Curt. *The Wellsprings of Music*. New York: Da Capo, 1962. Print.

Shlain, Leonard. *The Alphabet Versus the Goddess: The Conflict between Word and Image*. New York: Viking Penguin, 1998. Print.

Siede-Preis Photography. *WL004019 (RF) Nautilus*. Photograph. gettyimages.*gettyimages.com*. Web. 27 Feb. 2012. <http://www.gettyimages.ca/detail/photo/nautilus-royalty-free-image/WL004019>.

Strohmeier, John, and Peter Westbrook. *Divine Harmony: The Life and Teachings of Pythagoras*. Berkeley: Berkeley Hills Books, 2001. Print.

Sutton, R. Anderson. “Do Javanese Gamelan Musicians Really Improvise?” *In the Course of Performance: Studies in the World of Musical Improvisation*. Ed. Bruno Nettl and Melinda Russell. Chicago: U of Chicago P, 1998: 69–92. Print.

Talai, Dariush. *A New Approach to the Theory of Persian Art Music*. Tehran: Mahur, 1993. Print.

Tenzer, Michael. *Analytical Studies in World Music*. Oxford: Oxford UP, 2006. Print.

Touma, Habib Hassan. *The Music of the Arabs*. Portland: Amadeus, 1998. Print.

Zielinski, Sarah. “Showing Their Age: Dating the Fossils and Artifacts that Mark the Great Human Migration.” *Smithsonian.com*. Smithsonian Institution. July 2008. Web. 25 February 2012. <http://www.smithsonianmag.com/history-archaeology/fossil-dating.html>.