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FROM BOSPHORUS TO MARAGA: THEORETICAL PURSUITS &  
APPLICATIONS THAT STRIVE FOR THE GENUINE  
IN EXPRESSING MAQAMS

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ABSTRACT

Shoud we, to this day from Abdulkadir – the famous composer-music theorist born in the city of Maraga within the boundaries of Azerbaijan more than six centuries ago and styled Hadje (Teacher) ibn el-Gaybi – embark on a surreal journey toward the Ottoman capital of Istanbul following the trail of a crescent, so too would we occasion our ears with the profuse maqam savours belonging to the Turkic sphere of culture and art. Such maqams/mugams as Rast, Hüseyini, Segah, Uşşak, Hicazkar, Saba – which were during this period shaped in the hands of the Turk to acquire their remarkable quotidian structures – have been and continue to be the subject of both native and foreign investigations & studies of countless numbers. The maqam phenomenon which has imprinted its seal on almost every route across the lands of Middle East and which has left its profound mark in the hearts of myriad nations, is practically an inexhaustible musical treasure trove with its singularly distinguished microtonal soundscape. Be that as it may, serious problems have arisen in the expression of maqams through staff notation – and through the established theories

based upon it – which has been adapted since the past two centuries under the influence of Western music. Under the blight of native Westernist music trends, it can be observed that in many countries, foremost of all Turkiye, we fall short of conserving and advancing the makam/mugam heritage in its genuine pristine form. As such, during these recent times where terminological disarray and executional inadequacy, or even decline, is much felt, an increase in various theoretical pursuits and efforts is witnessed. Herein, the prime concern surfaces in the form of redefining maqam pitches & intervals, re-specifying the scales, and establishing the particulars of melodic procedure via heeding practice – with music education serving as an underpinning. However, instances of discovering the reasons for stagnancy are rarely chanced upon. Circumstances naturally warrant questioning howcome the established theoretical model is so badly at odds with practice. The author of this paper has sought a foremost scholarly answer to this question in his Doctorate dissertation and has therein presented a 79-tone theoretical trial as a solution to the aforesaid bottlenecks. He has furthermore introduced, in several of his writings and a new book, low-resolution to voluminous tunings based on diverse mathematical constructs and optimizations that may assist in the expression of maqams as well as pave the way for contemporary microtonal polyphony endeavours. The author, who has applied his theoretical studies to a qanun, to various compositions and to sample playbacks, wishes now to place a contribution – by demonstrating novel pursuits and tools that can serve to express our maqams – that he hopes will leave their mark for centuries to come from the Bosphorus to the realm of Maraga.

**Keywords:** Maqam, theory, pitch, microtonal, qanun

# BOĞAZIÇI'NDEN MARAĞA'YA: MAKAMLARIN İFADESİNDE, ASLI GÖZETEN NAZARİ YAKLAŞIMLAR VE UYGULAMALAR

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## ÖZET

Altı yüzyılı aşkın zaman önce Azerbaycan sınırları içindeki Marağa şehrinde doğmuş ve Hacı İbn el-Gaybi lakabını almış olan meşhur bestekar-nazariyatçı Abdülkadir'den günümüze, Osmanlı payitahtı İstanbul'a doğru hilal biçiminde bir hayali seyahat gerçekleştirecek, Türk kültür ve sanat dünyasına ait zengin makam tadlarını da kulaklarımıza çalmış oluruz. Bu zaman dilimi içinde, Türk'ün eliyle şekillenip bugünkü nev-i şahsına münhasır yapılarına kavuşan Rast, Hüseyini, Segah, Uşşak, Hicazkar, Saba gibi makamlar/mugamlar, gerek yerli, gerek yabancı sayısız incelemelere-araştırmalara konu olmuştur ve olmaya devam ediyor. Orta Doğu coğrafyasının neredeyse her güzergahına mührünü basan ve pek çok milletin sinesinde derin iz bırakan makam fenomeni, güzide mikrotonal ses-iklimi ile adeta tükenmez bir müzik hazinesidir. Şu da var ki, Batı müziği etkisinde son ikiyüzyıldır benimsenen porte notasyonu ve buna dayalı yürürlükteki kuramlar üzerinden makamların ifadesinde ciddi sorunlar yaşanmaktadır. Yerli Batıcıl müzik akımlarının gölgesinde, başta Türkiye olmak üzere, pek çok ülkede makam/mugam mirasının aslını yeterince koruyamıyor ve geliştiremiyor olduğumuz gözlenebilir. Nitekim, kavramsal dağınıklığın ve icracılıkta daralmanın, hatta yozlaşmanın, epey hissedildiği son dönemlerde, Türkiye'de farklı nazari yaklaşımlarda ve çabalarda artış görülmüştür. Öncelikli sorun, müzik eğitimi temelinde, makamlardaki perdeler ile aralıkların baştan tanımlanması, dizilerin yeniden belirlenmesi ve seyir özelliklerinin icradan hareketle bulgulanması biçiminde öne çıkar. Ancak, durağanlığın sebepleri

üzerinde durulduğuna pek rastlamıyoruz. Bu durum, haliyle, yürürlükteki kuramın icra ile nasıl olup da bu kadar ters düştüğünü sorgulamayı gerektirir. Bildiri sahibi, doktora tezinde bu soruya ilk bir bilimsel yanıtı aramış ve bahsi geçen açmazlara çözüm niteliğinde 79-sesli bir nazariye denemesi ortaya koymuştur. Ayrıca, çeşitli yazılarında ve yeni bir kitabında, makamların ifadesine hizmet edebilecek, ilaveten mikrotonal çoksesli çağdaş denemelere geçit aralayabilecek, az-perdeliden çok-perdeliye, farklı matematiksel kurgularda ve optimizasyonlarda ses-düzenleri önermiştir. Nazari çalışmalarını bir kanun, çeşitli besteler ve örnek dinletiler biçiminde uygulamaya döken yazar, makamlarımızın ifadesine hizmet edecek özgün yaklaşımlar ve araçlar sunarak, Boğaziçi'nden Marağa diyarına yüzyıllar sonrasına değin iz bırakmasını umduğu bir katkıda bulunmayı arzulamaktadır.

**Anahtar Kelimeler:** Makam, nazariyat, perde, mikrotonal, kanun

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**Handicaps in the theoretical representation and propagation of the maqam heritage in the modern era**

Ongoing serious scholarly investigations for the past decade into the intonation particulars of Turkish Maqam music through the employment of scientific tools on audio recordings obtained from masters of the genre [Signell 1977: 37-47 & 157-61; Akkoç 2002; Karaosmanoğlu 2004; Bozkurt+Yarman et al. 2009; Bozkurt+Gedik et al. 2010] have established beyond reasonable doubt that the thus-far informally or semiformally attested shortcomings of the 24-tone Pythagorean theoretical model in effect known as *Arel-Ezgi-Uzdilek* [cf. Karadeniz 1965; Tura 1981<sup>-thru-</sup>82; Gürbüz 1983; Akdoğu 1991 & 1999; Zeren 1997; Yavuzoğlu 1991 & 2008; Kaçar 2002a & b] are indeed valid, and this is now a well-grounded fact.

More evidence which has since been revealed in the latterly theoretical illustrations of the 24-tone Pythagorean model as a subset of 53 equal divisions of the octave <sup>1</sup> [Uysal 1977; Zeren 1988 & 1998; Sayan 1985], implicit efforts to cover up vagrant pitches outside this subset via *glissandi* & *portamenti* [Sayan 1992], and the illicit, yet occasional allowance to overstep by “commas” the boundaries of the 24-tone Pythagorean cast depending on the maqam and seyir (melodic procedure) [Kaçar 2005; Özkan 2006] further corroborate said fact.

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<sup>1</sup> The so-called “Holderian comma” resolution.

In other words, the *Arel-Ezgi-Uzdilek* tone-system demonstrably falls short of satisfactorily representing the oft-frequented pitch continuum popularly dubbed the “*mujannab zone*”<sup>2</sup> [Tura 1981a & b, 1982; Diderot+d’Alembert 1765] or “*mujannabat*”<sup>3</sup> from the earliest of times [Arslan 2007a & 2007b: 335-6], which arguably renders Maqam music its unique texture in the body of such multicentennial maqams as *Uşşak*, *Hüseyni*, *Saba*, *Karcıgar*, and *Hüzzam* that recurrently depend on “middle seconds” or “quarter-tone alterations” in their motivic unfolding [cf. Feldman 1996: 206-18; Yarman 2008a & b].

The author has maintained in his Doctorate dissertation that the flagrant discrepancies between the *Arel-Ezgi-Uzdilek* tone-system and measurements acquired from Turkish Maqam music practice arguably stem from a deliberate Turko-centric revisionism, calculated, to all appearances, to abnegate and ward off the above-mentioned “quarter-tones” in order to prevent implicating the maqam heritage as having a Byzantine / Arabic origin – an imputation designed to illegitimize the genre as “synthetic” and “unnational” – thereby thwarting condemnation by the Westernizing Kemalist ideology.

In what seems like a vain effort to rescue the venerable tradition and redeem it as an inextricable component of the maiden Turkish nationalization project, the “Yekta-Arel-Ezgi school” appears to have condoned the significant alienating of maqam theory to the actual practice of maqams and fomented the distortion of their historical structures in the process [Yarman 2008: 7-24 & 129-57].

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<sup>2</sup> A term coined by Yalçın Tura and given as a continuum of intervals comprising 14:13, 13:12, and 12:11, all of which he associates with “eclipsis” and “spondiasme” that are attributed to Aristides Quintillianus. (See, concomitant references.)

<sup>3</sup> Anterior to the index finger position (*mujannab-i sebbabe*) on the oud described by Medieval Islamic music theorists such as al-Farabi and al-Urmavi, comprising such cent values as 99, 145 and 168, represented by 18/17, 162/148 and 54/49 respectively. (See, concomitant references.)

Homologous grievances brought about by numerous instances of non-conformance between theory and execution are observed across the Arabic maqam world in the now-classic example of how the 24-tone Equal Temperament or “the quarter-tone system” officially – and surely by direct influence of European colonialism and Westernization – adopted in the Cairo Congress of Arab Music in 1932 [Cairo Government Press 1933; Farmer 1932] against objections, at the time, by parties including Rauf Yekta (prominent music-theorist participant from Turkiye who had formulated and defended the 24-tone Pythagorean tuning that the *Arel-Ezgi-Uzdilek* theory would be modelled after) [Erguner 2003: 33-4] does not in the least embody the minute pitch inflexions required of diverse maqams [Touma 1934: 18-24; Marcus 1989: 178-255; Beyhom 2007].

We do not know with certainty whether this situation in the Levant is reflected in more remote Eastern maqam lands such as Iraq, Iran, and Azerbaijan – once home to Abdulkadir styled Hadje (Teacher) ibn el-Gaybi, the famous composer-music theorist born in the city of Maraga within the boundaries of Azerbaijan more than six centuries ago. Nevertheless, it is highly suspect that the rich mugams of Azerbaijan – a country which has remained under the sway of the Soviet regime for so many decades – could be adequately represented by any local music theory trapped/tugged between the overbearing Russia (with her altogether Western norms) and time-honoured Persia (with her quasi-Arabic quarter-tonal symbology).

At the very least, we may testify that Persian music too is far from being heedless of the artful imperative for subtle intonational nuances in her Radif [Talai 1993].

All of these together are indications enough that several supposedly theoretically anchored perdes (tones) in maqams are in fact quite flexible, and that maqam theory as either a national or an international phenomenon can no longer shelve to account for clustering microtonal savours supersaturated with harmonically

complex intervals of varying hues – despite outdated efforts to the contrary [cf. Zeren 1986 & 2001; Sayan 1992; Yavuzoğlu 2008 & 2011].

The fact that music theory is not – contrary to popular belief – just a field of discovering and establishing the rules of music, but more so the gradually flourishing incentive and impetus behind music-making as a consequence of its sheer impact on music education throughout time, is worthy of some consideration at this point.

How adversely could then the literary and oral wisdom of Maqam music be affected during the past century when Western conventions were forcefully penetrating into the heartlands of the Muslim Empires that were for centuries the principal patrons of the genre? How true are we today to the faithful rendition of the makam/maqam/mugam/dastgah repertory when in fact the established tone-systems and theoretical models that emerged to explain them are demonstrably wanting today in light of each having appropriated the artform into splintered geographic boundaries?

The author is firmly of the opinion that a novel and comprehensive maqam theory must aspire to become not only an unbiased means of guidance to the praxis, but also – and foremost of all – a faithful servant to the cherished and preserved performance traditions of the Middle East while at the same time propagating them into the future.

### **Theoretical pursuits & applications that strive for the genuine in expressing maqams**

The author has been active since the past decade in formulating and developing distinct approaches which could aid in the elaboration of subtle perde inflexions of maqams. In his master's thesis, the author attempted an egalized, quasi-fixed, yet elastic 36-tone model to identify and use in polyphonic settings the traditional pitches



of Turkish Classical/Art music [Yarman 2002]. Later on, after much progressing in the field of contemporary techniques and mathematics of tuning & temperament, he has constructed and implemented on a Turkish qanun a unique 79-tone model [Yarman 2008a & b] that can:

1. nominate *Rast* as the main maqam instead of Arel's contrived *Çargah* in accordance with historicity [cf. Levendoğlu 2003] and map its basic scale to the naturals on the staff;
2. standardize "Süpürde Aheng", whereby *Rast* maqam's pitches roughly correspond to the white piano keys in concert pitch;
3. yield the 3rd and 7th degrees of *Rast*'s principal ascending scale, here being *segah* and *awdj*, without breaking the chain of tolerable generator fifths<sup>4</sup>;
4. alterate to the slightly higher 3rd and 7th degrees named *buselik* and *mahur* again through an uninterrupted chain of fifths, allowing direct modulation to maqam *Mahur*<sup>5</sup>;
5. position myriad middle second intervals as necessary to common perde-pair locations such as *dugah-segah*, *chargah-saba*, and *neva-hisar*;
6. repeat the above procedure over sharp and flat tonalities as easily as over naturals, rendering the instrument wholly key-transposable;
7. supply a 12-tone closed cyclic subset for chromatic passages and Classical Western music texture;
8. be consistently represented with a custom-tailored *Sagittal* Microtonal Notation [Secor+Keenan 2006] suitable for complete microtonal polyphony.

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<sup>4</sup> Rast, F-(702♭)-C-(702♭)-G-(694♭)-D-(702♭)-A-(694♭)-E-(702♭)-B.

<sup>5</sup> Mahur, F-(702♭)-C-(702♭)-G-(710♭)-D-(702♭)-A-(694♭)-E-(702♭)-B.

The 79-tone tuning (Figure 1) can be straightforwardly defined as dividing the pure fourth (4:3) into 33 logarithmic parts and stacking the resultant “comma” 78 times from *yegah* to just a step below *neva* (G-g), completing *neva* at the octave (2:1).

This one-of-a-kind qanun, on which the author wishes to effectuate key demonstrations of choice maqams in the symposium, has since been played by such exponents of the instrument as Halil Karaduman, Ruhi Ayangil, Nevzat Sümer, and was also presented to music circles on various occasions receiving wide acclaim. Affixing *mandals* <sup>6</sup> in accordance with the 79-tone tuning has been detailed in the author’s recently published book “New Horizons in Our Pitch Palette” (in Turkish) [Yarman 2010].

In this book, the author has also introduced less-voluminous substitute tunings containing 24 and 36 tones to the octave respectively in case the 79-tone tuning proves too difficult to handle.

“Yarman-24” (Figure 2) is an irregular Rational Intonation-Modified Meantone hybrid with remarkable polyphonic capabilities conceived to be a direct alternative to the *Arel-Ezgi-Uzdilek* system. Actually, this quasi-fixed lightweight tuning merely serves to better pinpoint the epicentres of pliant perdes such as *segah*, *saba* and *hisar* for just the Turkish bloc and is limited to a single diapason. Even so, it has competed against rival theoretical models in a Journal of New Music Research article co-authored by Yarman [Bozkurt + Yarman et al. 2009], and emerged among the two of the most successful tone-systems <sup>7</sup> when weighed against scales derived from pitch measurements of collated histograms. Furthermore, the author had applied Yarman-24 to his own bowed tanbur and observed that it could adequately represent hitherto

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<sup>6</sup> Metallic levers arrayed across the diagonal side of the qanun that serve to alter vibrating lengths of the courses on the fly by an amount foreordained at the time of their installation.

<sup>7</sup> The other being 53-tone Equal Temperament...

problematic maqams such as *Uşşak*, *Saba* and *Hüzzam* if given modest room for pitch inflexions by a supple bending of the finger over the frets.

“Yarman-36” (Figure 3), in contrast, is an intermediary resolution mathematical construct which is a “bike-chain” of three 12-tone cyclic *Temperament Ordinaires* that can be entirely tuned by ear via listening to exact beat counts between simple intervals like the perfect fifth and thirds. This tuning was designed to operate in several diapasons with slightly less need for pitch inflexions while at the same time being nimble enough to be applied wholly to tanburs. Needless to say, Yarman-36, as distinct from the 36-tone trial in the author’s master degree study, is compatible with microtonal polyphony endeavours.

Among the many maqam scales he has worked on, the author has forged dozens of Just & Rational Intonation maqam scales on special request which are optimized so as to facilitate mapping to ordinary 12-tone MIDI keyboards that can be made fully microtonal-capable when expanded by specific hardware or software.

He has also suggested that 34 or 41-tone equal divisions of the octave are two very solid lower-resolution alternatives to the 53-tone Equal Temperament which so far appears to be confined to paper [Yarman 2008c].

The author has moreover utilized his technical expertise in maqam intonation and scale construction in several of his modern compositions like “Son Bir Kez” *Hüzzam Sharqi*, Cyprus Piano Concerto, *Saba Storm* (1<sup>st</sup> place winner at the SoOn Compo), *East Dreams West* (selected for the 60x60 Event), *Father & Daughters Sonata*, and *Nishabureyn Peshrev*.

## Concluding Words

Should we, to this day from Abdulkadir – the famous composer-music theorist born in the city of Maraga within the boundaries of Azerbaijan more than six centuries ago and styled Hadje (Teacher) ibn el-Gaybi – embark on a surreal journey toward the Ottoman capital of Istanbul following the trail of a crescent, so too would we occasion our ears with the profuse maqam savours belonging to the Turkic sphere of culture and art.

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Figure 2: *Rast* scale naturals and the general distribution of pitches in Yarman-24

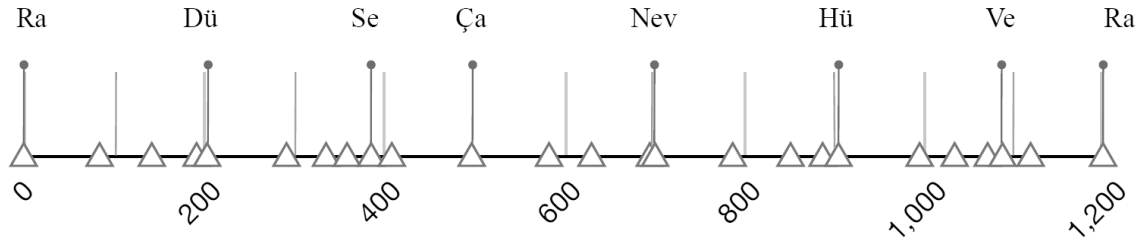


Figure 3: Staff notation schematics depicting the derivation of all pitches in three layers of Yarman-36

