

The M (Maqam/Makam - Mode) App

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Abstract: Byzantine modes, Turkish makams, Arabic maqams and Greek folk modes are four modal music systems having a very similar build and expression. These music traditions interacted, in various ways, with each other's history and musical heritage, development and essence.

The *M app* is a glossary which guides you through basic characteristics, similarities and differences of these four official music theory systems, as they are taught today. One can use this app for didactic purposes, in order to have a clear image of each maqam/makam – mode, its characteristics and the way they sound, based on each tradition's unique character. *M app* is not meant to replace a tuner but can be a great tool that will help you decode your listening and/or performance.

It contains many of the most popular maqams/makams, the Byzantine modes and the Greek folk modes individually but also in juxtaposition, based on the nomenclature or intervallic structure. Even though it does not include any historical background on how these traditions ended up using these systems, it cites all the bibliographical references used for further research.

Keywords: Maqam, Makam, Echos, Modality, Didactics of Byzantine and Oriental Music.

Introduction

The Maqam/Makam - Mode app is a mobile and tablet application which provides basic characteristics of four official music theory systems, as they are taught today.¹ A tool that guides you through Turkish Makam (pl. Makamlar), Arabic Maqam (pl. Maqamaat), Byzantine Modes (Echoi) and Greek Folk Modes (Laikoi Dhromoi).

¹ As they are taught in Universities or music schools and as they are presented in reliable sources such as books, articles and/or online.

These four traditions are strongly based on rules of melodic structure and development. Although they differ from one another in theory, intervallic subdivisions and tuning systems, they share a mutual idea of developing a musical composition as well as scale-names and scale categorization. Maqam/Makam - Mode app does not give any historical background on how or why these four traditions ended up using these systems but for this presentation it is necessary to briefly describe the common central axis around which they develop.

Because these civilizations have flourished in neighboring areas, it is widely accepted that they share common history that spans across many centuries. The coexistence of these civilizations was of course the cause of major influences between them. Focusing on music - as being one of the main pillars of any tradition/culture/civilization, we observe here many common characteristics that build a general frame of modality (mainly melodic), expressed through microtonal music theory systems. An exception to this are Greek Folk modes, a system which became equally tempered. At the same time there are many differences in important details which are the attributes of those four traditions. It is those differences that form each tradition's unique character.

Maqam/Makam – Mode app presents the basic characteristics of 25 Turkish Makams, 24 Arabic Maqams, the 8 Byzantine modes (along with some main branches of them) and 14 Greek folk modes. Apart from each mode that the user can check separately, it gives the option of juxtaposing modes which belong in different traditions but share the same name or intervallic structure.

This proposal is based on the trial version of the app. The trial version's mode selections might be limited but one can fully understand its functions. The publication of the full version is scheduled for 2020.² Maqam/Makam - Mode app is very easy to use. There is an optional introduction for every step the user might want to take, which explains the features of M app, how they appear on the screen and the way that they can be accessed and used, as well as the characteristics of each of the four theory systems.

Opening the Maqam/Makam – Mode APP

The first page (Fig. 1) of the application gives two options to the user. On the right there is the option of the general introduction. The information given in there includes a description of how the application works, a list of the four music theory systems and the details that the user will receive on each mode separately. It explains

² ©Anastassia Zachariadou.

For more information please visit <https://www.facebook.com/AnastassiaMAPP/> and <https://themusicfabrica.com/maqam-%2F-makam-mode-app>

the notations used (staff notation and alphabetical notation) as well as the features on makam selection page and the information on the main page of the modes.

Figure 1

The first page of the Maqam/Makam – Mode APP



The page that is used as an example in the general introduction is the first page of makam Rast of the Turkish makam tradition (Fig. 2). All the characteristics explained in this page delineate the character of each mode and therefore define each mode's name.

Figure 2

Makam Rast in Turkish tradition

The screenshot displays the 'MAKAM RAST - RÂST MAKAMI' interface. At the top, a navigation bar contains buttons 1 through 6. Below this, a title bar identifies the selected makam. The main area features a musical staff with notes (No 9), an intervallic structure (No 8), and a stem structure (No 10). The stem structure is divided into 'Rast 5chord (G)' and 'Rast 4chord (d)'. Below the staff is a grid of 24 buttons for various makams (No 11).

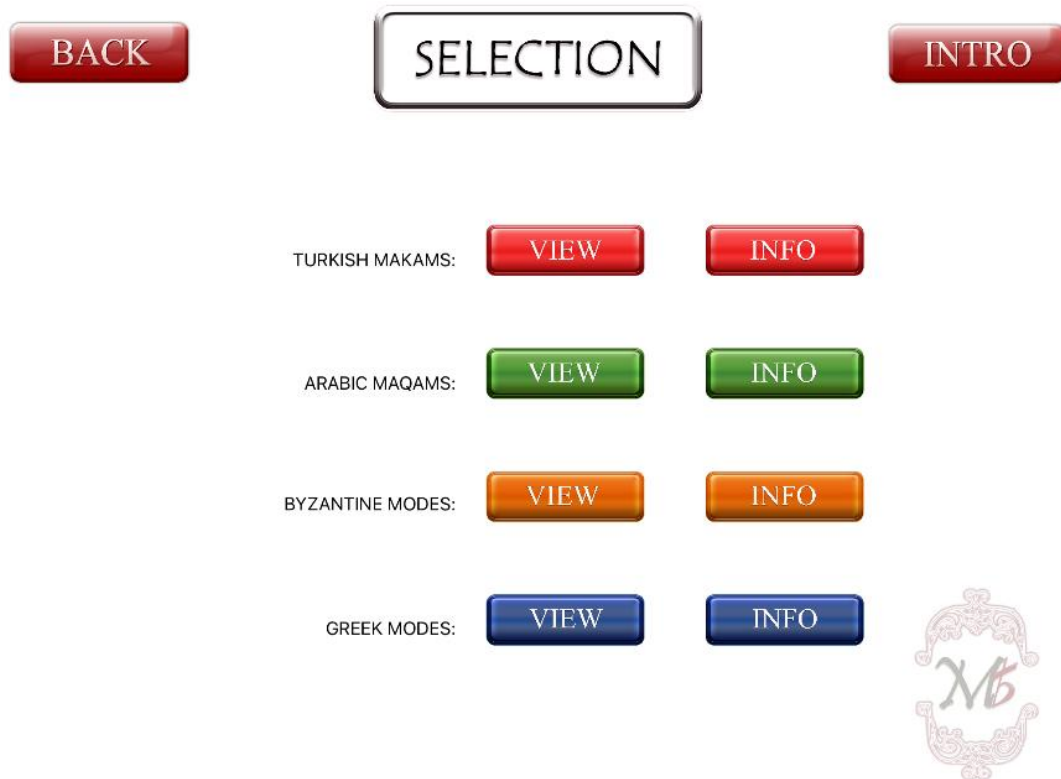
RAST	KÜRDÎ	HÜSEYNÎ	MÜSTEÂR	NİKRÎZ	ŞEHNÂZ
UŞŞAK	ACEM	HÜZZÂM	NEVA	REHÂVÎ	SÛZ-NÂK
BÛSELİK	ÇARGÂH	KÜRDÎ'LI HİCAZKÂR	NEV'ESER	SABÂ	UZZÂL
HİCAZ	HÜMÂYÛN	MÂHUR	NİHÂVEND	SEGÂH	ZÂVİL

In the center there is the main set of notes that form this makam, on staff notation (No 9); below the notes there are brackets that designate the main stem structure of the Makam (No 10) meaning the tetrachords and pentachords that form the makam. Above the notes (No 8) there is the intervallic structure of the makam expressed by the subdivisions of the corresponding theory system. On the upper left side there is the name of the makam (No 12) - as it is written in English and as it is written in the language of origin. In the upper middle part of the screen, button No 1 gives the option of listening to the selected makam.³ The next button to the right (No 2) is the selection of page – in case a mode combines two (or sometimes three) different main structures. Button No 3 is the mode extension information, meaning how the makam develops below the Root and above the Octave. Button No 4 is the Juxtaposition of the relative or homonym modes/makams. Button No 5 gives information about the accidentals used in each theory system and button No 6 takes you to the mode selection page. Either the users click on “next” or had skipped the general

³ Midi files - the midi sound files are based on the exact calculations of each system. Based on Chris Forster. *Musical Mathematics: On the Art and Science of Acoustic Instruments* (San Francisco: Chronicle Books, 2010). Marios Mavroeides, *The Music Modes in Eastern Mediterranean: The Byzantine Echos, the Arabic Maqam, the Turkish Makam* (In Greek) (Athens: Fagotto, 1999).

introduction at the opening page, they would find themselves at the “selection” page (Fig. 3).

Figure 3
Selection page



The “selection” page lists the four theory systems and gives two options for each tradition which are “view” and “info”. In “info” one can be informed about the basic characteristics of the theory system selected. That will help the user in decoding the information given in each makam page separately. By clicking the “view” button the user is transferred to the mode selection page. Now in detail, by clicking “view” in Turkish Tradition we are transferred on the page of Turkish makam selection.

Turkish Makam selection pages

Before going further into explaining how each mode selection page works, it is important to determine from which time period onwards the Turkish music system is considered official as well as its basic characteristics. The official theory system of

Turkish Classical music is the Arel – Ezgi (AE) system. It was formed around 1930 and was recognized and adopted as the official system in the 1950s.⁴

Turkish and Arabic musical cultures as they are defined by current borders, develop through maqam art music. The word Makam originates from the Arabic word Maqam (مقام) meaning place, location or position.⁵ Maqam/Makam is a system of melodic types, melodic formulas, intervallic structures, figures and patterns (microstructure). When these basic tools are combined, they form a set of rules for melodic development, improvisation and/or fixed composition (macrostructure).

Turkish Makam Theory names at least 270 modes (makams) which are categorized into families. In practice there are 40 to 50 makams in regular use. The **Turkish music system** uses staff notation. It divides the octave into 53 parts called *komma(s)* (TR. pl. *kommalar*), the whole step equals to 9 *kommalar*, the small semitone equals to 4 *kommalar* and the big semitone to 5 *kommalar*. The accidentals that are used are for intervals of 1, 4, 5, 8 and 9 *kommalar* (sharps and flats).⁶

Selecting “view” from Turkish Makams and then Rast makam, brings the user to Fig. 4.⁷ There, one can check the main characteristics of Rast makam: the Root, the dominant, the leading tone and the direction of its melodic development. Rast makam consists of a pentachord – which is the lower part of the main makam structure, and a tetrachord – which is the higher part.

⁴ Turkish Music Portal <http://www.turkishmusicportal.org/en/composers/detail/mehmed-suphi-ezgi> (14/08/2019). Ismail Hakki Ozkan, *Turkish music Theory and Methodology* (In Turkish) (Istanbul: Otuken Nesriyat, 1998). Ozan Yarman, “A Comparative Evaluation of Pitch Notations in Turkish Makam Music: Abjad Scale & 24-Tone Pythagorean Tuning – 53 Equal Division of the Octave as a Common Grid”, *Journal of interdisciplinary music studies* 1,1 (fall 2007), art. #071203, pp. 51-62.

⁵ Oxford Islamic Studies online: <http://www.oxfordislamicstudies.com/article/opr/t125/e1428> (15/08/2019).

⁶ https://www.notlar.net/system_of_music_theory.htm (16/8/2019).

⁷ Pages shown in this article are from the trial version and that is why there is no selection of “listening”. For the same reason only three makam selections are available.

Figure 4

Turkish Makam Rast, structure 1

MAKAM RAST - RÂST MAKAMI

Root: G Dominant: d Leading Tone: F# Direction: Ascending

9 8 5 9 / 9 8 5

Rast 5chord(G) Rast 4chord(d)

RAST	KÜRDÎ	HÜSEYNÎ	MÜSTEÂR	NİKRÎZ	ŞEHNÂZ
UŞŞAK	ACEM	HÜZZÂM	NEVA	REHÂVÎ	SÛZ-NÂK
BÛSELİK	ÇARGÂH	KÜRDÎ'LÎ HICAZKÂR	NEV'ESER	SABÂ	UZZÂL
HİCAZ	HÜMÂYÛN	MÂHUR	NİHÂVEND	SEGÂH	ZÂVİL

As mentioned before, 9 *kommas* equal to a whole step; therefore **G** to **a** is a whole step, **a** to **b**-one komma flat is a “small step”, **b**-one komma flat to **c** is a big semitone and **c** to **d** is another whole step.

This sequence of intervals expressed with the numbers 9 – 8 – 5 – 9 always represents the Rast pentachord in the Turkish tradition. The intervals remain the same for the Rast tetrachord 9 – 8 – 5. In general, a pentachord has the intervals of the homonym tetrachord plus a whole step at the top.

The round buttons on the upper right corner – as mentioned before – give extra information about the makam we’ve selected. The first one on the left informs us of how many basic structures this makam uses. In this case Makam Rast has two. The one that consists of a Rast pentachord and a Rast tetrachord, and the second one which consists of a Rast pentachord and a Buselik tetrachord (Fig. 5).

Figure 5

Turkish Makam Rast, structure 2

MAKAM RAST - RÂST MAKAMÎ

Root: G Dominant: d Leading Tone: F# Direction: Ascending

9 8 5 9 / 9 4 9

Rast 5chord (G) Buselik 4chord (d)

RAST	KÜRDİ	HÜSEYNİ	MÜSTEÂR	NİKRÎZ	ŞEHNÂZ
UŞŞAK	ACEM	HÜZZÂM	NEVA	REHÂVÎ	SÛZ-NÂK
BÛSELİK	ÇARGÂH	KÜRDÎ'LÎ HİCAZKÂR	NEV'ESER	SABÂ	UZZÂL
HİCAZ	HÜMÂYÛN	MÂHUR	NİHÂVEND	SEGÂH	ZÂVÎL

The second round button is the extension of the makam (Fig. 6). In this page we get information on how Rast makam develops below the Root and above the octave. So makam Rast has a Rast tetrachord below the Root and might have a Rast or a Buselik pentachord above its Octave.

Figure 6

Turkish Makam Rast, extensions

MAKAM RAST - RÂST MAKAMI

Below the Root (G) Above the Octave (g)

Rast 4chord (D) Rast 5chord (g) Buselik 5chord (g)

RAST	KÜRDİ	HÜSEYİNİ	MÜSTEÂR	NİKRİZ	ŞEHNÂZ
UŞŞAK	ACEM	HÜZZÂM	NEVA	REHÂVÎ	SÛZ-NÂK
BÛSELİK	ÇARGÂH	KÜRDÎ'LÎ HİCAZKÂR	NEV'ESER	SABÂ	UZZÂL
HİCAZ	HÜMÂYÛN	MÂHUR	NİHÂVEND	SEGÂH	ZÂVİL

The information button (i) reminds the user of the accidentals used in each theory system, by popping up a window. These are the Turkish music theory's accidentals (Fig. 7).

Figure 7

The accidentals used in Turkish music theory

MAKAM RAST - RÂST MAKAMI

FLAT	SHARP	KOMMA(S)	INITIAL	NAME
		1	F	Fazla
		4	B	Bakiyye
		5	S	Küçük mücennep
		8	K	Büyük mücennep
		9	T	Tanini

UŞŞAK ACEM HÜZZÂM NEVA REHÂVÎ SÛZ-NÂK
 BÛSELİK ÇARGÂH KÛRDÎ'LÎ HİCAZKÂR NEV'ESER SABÂ UZZÂL
 HİCAZ HÜMÂYÛN MÂHUR NİHÂVEND SEGÂH ZÂVİL

The fourth button from the left which is marked with the logo of the application, compares the selected makam, which is makam Rast of Turkish tradition, to the modes of the other three systems that have the same name or intervallic structure (Fig. 8). Here we have TR Rast, AR Rast, Rast of the Greek folk modes and Plagal of the Fourth mode from Byzantine music. Plagal of the Fourth has the same intervallic sequence with Turkish Rast, meaning whole step, smaller step, big semitone and whole step – followed by a whole step – small step and a big semitone. In Byzantine theory the correspondent intervals are called larger tone, smaller tone, smallest tone.

Figure 8

Makam Rast (Turkish), Maqam Rast (Arab), Mode Rast (Greek) and Plagal of the Fourth Mode (Byzantine) at one glance

MAKAM RAST

MAQAM RAST

MODE RAST

MODE PLAGAL OF THE FOURTH

RA

UŞ

BÜS

HİCAZ

HUMATON

MAHUR

NİHAEND

SEGAT

ZAVİL

NÂZ

NÂK

ÂL

ZAVİL

Arabic Maqam selection pages

By selecting the round button “home”, the user goes back to the “selection” page.

The Arabic music until the beginning of the 20th century was expressed through a variety of theory system versions which is easy for somebody to grasp considering the great diversity of the Arab countries (from Morocco to Lebanon, Syria and Iraq). In an attempt to unify these countries’ music theory system under the title of “Arabic music” and “Arabic music theory”, the official System of 24 Quarter Tones was created at the Cairo Conference in 1932. Arabic Makam Theory names 90-110 modes (maqams) which are categorized into families. **Arabic music system** uses staff notation and it divides the octave into 24 quarter tones. The whole step equals to 4

quarter tones and the semitone 2 quarter tones. It uses accidentals for all quarter tones of a whole step (sharps and flats).⁸

By taking two steps, “VIEW” from Arabic Maqams and then Rast, the user can see the structure of Arabic Rast.

Figure 9

Arabic Maqam Rast, structure 1

MAQAM RAST - مقام راست

Root: C Dominant: F, G Leading Tone: B \flat Direction: Ascending

1 3/4 3/4 / 1 / 1 3/4 3/4

Rast 4chord (C) whole step Rast 4chord (G)

RAST	KURD	HIJAZKAR	NAIRUZ	SIKAH BALADI
BAYATI	AJAM	HUSSEINI	NAWA'ATHAR	SIKAH
NAHAWAND	BAYATI SHURI	HUZAM	NIKRIZ	SUZIDIL
HIJAZ	FARAHFEZA	MAHUR	SABA	SUZNAK

As shown in Fig. 9, maqam Rast consists of two disjunct Rast tetrachords, meaning that they are separated by a whole step. In the second page there is the second possible structure of Arabic Rast makam which is a Rast tetrachord – whole step – and a Nahawand tetrachord (Fig. 10).

⁸ Taufiq Suleman, “A Richly Diverse Palette of Rhythm and Timbre”, 2012: <https://en.qantara.de/content/first-congress-of-arab-music-in-1932-a-richly-diverse-palette-of-rhythm-and-timbre> (17/ 08/2019). Notlar.net https://www.notlar.net/system_of_music_theory.htm (16/8/2019).

Figure 10

Arabic Maqam Rast, structure 2

MAQAM RAST - مقام راست

Root: C Dominant: F, G Leading Tone: B \flat Direction: Ascending

1 3/4 3/4 / 1 / 1 1/2 1

Rast 4chord (C) whole step Nahawand 4chord (G)

RAST	KURD	HIJAZKAR	NAIRUZ	SIKAH BALADI
BAYATI	AJAM	HUSSEINI	NAWA'ATHAR	SIKAH
NAHAWAND	BAYATI SHURI	HUZZAM	NIKRIZ	SUZIDIL
HIJAZ	FARAHFEZA	MAHUR	SABA	SUZNAK

The use of these two versions completes the Arabic Rast maqam character.

Below are the extension of the maqam (Fig. 11), the accidentals used in the 24 quarter tone system (Fig. 12) and the juxtaposition page (Fig. 8), which is the same as in Turkish Rast makam.

Figure 11
Arabic Maqam Rast, extensions

1/2

ext.

i

M

Home

MAQAM RAST - مقام راست

Below the Root (C)

Rast 4chord (G₁)

Above the Octave (c)

Rast 5chord (C) Nahawand 5chord (C)

RAST	KURD	HIJAZKAR	NAIRUZ	SIKAH BALADI
BAYATI	AJAM	HUSSEINI	NAWA'ATIAR	SIKAH
NAHAWAND	BAYATI SHURI	HUZZAM	NIKRIZ	SUZIDIL
HIJAZ	FARAHFEZA	MAHUR	SABA	SUZNAK

Figure 12

The accidentals used in Arabic music theory (quarter tone system)

MAQAM RAST - مقام راست

Root: C Dominant: F, G

Direction: Ascending

Rast 4chord (C)

FLAT

- 1/4 tone
- 1/2 tone
- 3/4 tone

SHARP

- 1/4 tone
- 1/2 tone
- 3/4 tone

hord (G)

Buttons: RAST, KURD, NAWA'ATHAR, NIKRIZ, SABA, SUZIDIL, SUZNAK, BAYATI, AJAM, NAHAWAND, BAYATI SHUH, FARAHFEZA, MATOK

Byzantine Mode selection pages

Back to “selection” page again, the user can click on Byzantine modes “info”. The system recognized and adopted as *official* for Byzantine music was completed in 1883 by the Musical Commission of the Ecumenical Patriarchate and was first published in 1888. Byzantine music in both ecclesiastic and secular music uses Octaechia. Byzantine “Octaechia” or “Oktoechos” (Ὀκταηχία, Ὀκτώηχος), etymologically derived from the Greek words “Okto” (ὀκτώ) which means *eight*, and the word “echos” (ἦχος) meaning *sound* or *mode*, is a system of eight modes. Each one of these eight modes includes various branches of their main structure. These different variations are based mainly on the musical texture of a composition, *i.e.* the ratio between the number of tones per syllable.

The Byzantine music system is not staff notation based, but a neumatic system. The neumes that constitute this system denote no specific pitch of their own. They are relative to each other and are defined by the initial given tone (signature) in the

beginning of a text or a phrase. The Byzantine neumatic system is called “Parasemantike” (παράσημαντική). The theory divides the octave into 72 parts called *moria*, the whole step equals to twelve (12) *moria* and the semitone to six (6) *moria*. The accidentals that are used are for intervals of 2, 4, 6, 8, 10 and 12 *moria* (sharps and flats). This APP transcribes BM modes (“echoi” – ἤχοι) to staff notation for those not familiar with the neumatic system (“Parasemantike” - παράσημαντική) and also for making the comparison of the four systems easier.⁹

In Byzantine music selection page there are three rows of buttons. The eight modes can be selected from the second and the third row. On the top row there are four selections that give main characteristics for each mode that is selected (Fig. 13).

Figure 13

First Byzantine Mode, with four structures of internal organization

The interface displays the 'FIRST MODE / ECHOS A - ΗΧΟΣ Α'' with the Greek text 'εσο - έσω'. The signature is 4/4 πα (Phthora: ρ) and the root is D. The musical staff shows a sequence of notes with intervals labeled in moria: 10, 8, 12, 12, 10, 8, 12. Below the staff, four internal organization structures are shown:

- A. 4chord || 5chord
- B. 4chord || 4chord whole step
- C. 4chord || whole step || 4chord
- D. 5chord || 4chord

At the bottom, there are buttons for 'intonation', 'dominant tones', 'attractions', and 'cadences'. Below these are buttons for 'FIRST MODE', 'SECOND MODE', 'THIRD MODE', and 'FOURTH MODE'. At the very bottom are buttons for 'PLAGAL OF THE FIRST MODE', 'PLAGAL OF THE SECOND MODE', 'PLAGAL OF THE THIRD MODE', and 'PLAGAL OF THE FOURTH MODE'.

⁹ Musical Commission of the Ecumenical Patriarchate, *The basic instruction of ecclesiastical music based on the Psalterion*, 1883 (In Greek) (Constantinople: Ecumenical Patriarchate, 1888. Repr. Athens: Koultoura, 1978).

The First Byzantine mode if transferred on staff notation, consists of this set of notes which can be organized in one of the four possible main structures (tetrachords and pentachords). On top of the notes there are the corresponding Byzantine signatures for each melodic scale degree.

The second page of the First mode shows the descending version of the mode (Fig. 14).

Figure 14

First Byzantine Mode, descending scale

FIRST MODE / ECHOS A - ΗΧΟΣ Α' *Descending*

eso - έσω

Signature / Martyria: $\frac{4}{4}$ Πα (Phthora: ♯) Root: D

π' 12 ν' 12 ζ' 6 ξ' 12 Δ 12 ρ' 8 6 10 π'

A. [5chord || 4chord]

B. [whole step || 4chord || 4chord]

C. There is no such alteration when having disjunct 4chords. (when melody stops on A)

D. There is no such alteration when having disjunct 4chords. (when melody stops on A)

* B is always flat (Bb) when it is the highest note of the melody.

intonation dominant tones attractions cadences


FIRST MODE SECOND MODE THIRD MODE FOURTH MODE

PLAGAL OF THE FIRST MODE PLAGAL OF THE SECOND MODE PLAGAL OF THE THIRD MODE PLAGAL OF THE FOURTH MODE

The extension of the First mode gives a tetrachord or a pentachord below the Root and a tetrachord above the Octave (Fig. 15). In Fig. 16, the accidentals used in Byzantine music texts are shown in the second and the third column, along with their equivalent sharps and flats, in the 4th and 5th columns, in order to transfer Byzantine music to staff notation.

Figure 15

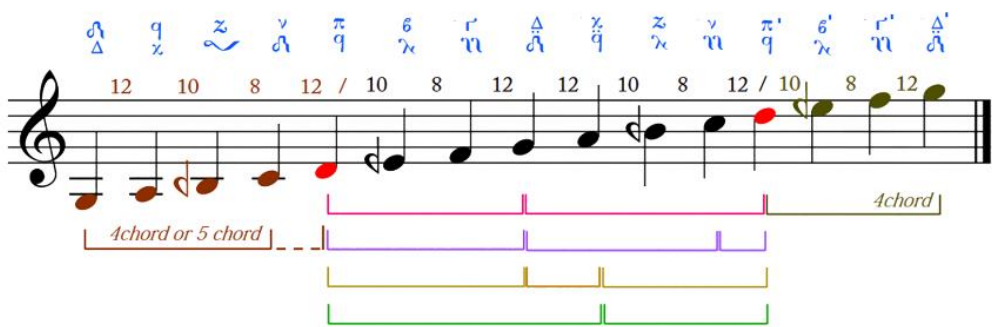
First Byzantine Mode, extensions



1/2 ext. i M home

FIRST MODE / ECHOS A - ΗΧΟΣ Α'

eso - έσω



intonation

dominant tones

attractions

cadences

FIRST MODE

SECOND MODE

THIRD MODE

FOURTH MODE

PLAGAL OF THE FIRST MODE

PLAGAL OF THE SECOND MODE

PLAGAL OF THE THIRD MODE

PLAGAL OF THE FOURTH MODE

Figure 16

Alteration signs and accidentals used in the transcription of Byzantine music

FIRST MODE / ECHOS A - ΗΧΟΣ Α'
εσο - έσω

MORIA (number of parts)	FLATS (BM notation)	SHARPS (BM notation)	FLATS (transliteration to staff notation)	SHARPS (transliteration to staff notation)
2				
4				
6				
8				
10				

Intonation dominant tones attractions cadences

FIRST MODE SECOND MODE THIRD MODE FOURTH MODE

PLAGAL OF THE FIRST MODE PLAGAL OF THE SECOND MODE PLAGAL OF THE THIRD MODE PLAGAL OF THE FOURTH MODE

As noted, the top row of buttons in Byzantine mode selection page refers to each mode selected. For example if the user selects the first mode, he/she can check the intonation formula of the selected mode, its dominant tones, its possible attractions and its cadences.

In these three systems mentioned before, all notes except the Root and the Dominant tones, are **frequency sensitive** to the direction and development of the melody. It is expected that the “weaker” notes will be attracted by the “stronger” ones, in order to emphasize them. These *possible attractions* are very important and although we cannot precisely determine their frequency, their performance is of great importance. On that note, the sharps and flats that are used do not specify an absolute frequency, but rather are an “area” of a note. For these notes and intervals (that are created) the performer should not follow the exact subdivisions of theory but think of them as a frame inside which he/she can carefully move according to the respective oral tradition, in order to create the desirable result.

Greek Folk Mode selection pages

Although there is no other reference in this APP about Greek traditional music, it should be mentioned that it uses a microtonal system, which can be explained through Byzantine music theory. That is the reason why there is no separate section about Greek traditional music in this app.

Greek folk music is a branch (an evolution) of Greek traditional music; a combination of Byzantine modes, Turkish makam and Western classical music. It is the only one from the four systems mentioned in this app, that is not microtonal. It is an equal tempered music system with harmony comping, using scales called “Dhromoi” - “modes” (lit. meaning roads, ways) and it uses staff notation, along with the tuning and accidentals of the European equally tempered system.

Although harmony is very important for this music, melodic movement as well as other maqam characteristics are of greater importance. Theory names 13-16 modes (dhromoi).

The Greek Folk modes system was formed during the 20th century. Having its roots in Piraeotiko Rembetiko¹⁰ it developed into Folk (Laiki) music through the work (performances, teachings and recordings) of some well-known bouzouki players mainly after 1946. Folk (Laiki) music can also be defined as the popular music of that time. This theory system is received, preserved and transmitted orally through original compositions of bouzouki players between the decades of 1930s – 70s. It is only after 1975 that there are valuable attempts to put on paper the general frame of the rules and characteristics of the Greek folk music style. Since there is no official system today, there are some differences in theory from one source to another, and few idiomatic musical expressions that cannot fit into general rules.¹¹

In the Greek modes of the M APP, one can select mode Rast (Fig. 17).

¹⁰ Rembetiko music that flourished in Piraeus after 1922 through bouzouki, as opposed to Smyrneiko Rembetiko that used violin, santur, kanun and oud.

¹¹ Gail Holst, “A Road to Rembetika” (Anglo-Hellenic Publishing, 1975), from the Personal archive of Panagiotis Kounadis, Athens, Greece.

Figure 17

Greek Folk Mode Rast

MODE RAST - ΔΡΟΜΟΣ ΡΑΣΤ / DHROMOS RAST

Root: C Dominant Notes: F, G

1 1 ½ 1 1 1 ½

"Rast"* (Major) 4chord (C) whole step "Rast"* (Major) 4chord (G)

RAST	HARMONIC MINOR	MELODIC MINOR	POIMENIKO MINOR
HIJAZ	KARJIGHAR	NIAVENT	SABA
HIJAZKAR	KURDI	HUZZAM	SEGAIH
NISIOTIKO MINOR	MAJOR	PEIREOTIKO MINOR	USSAK

Greek folk mode Rast has the same intervallic structure with the major scale of the European classical music. Since it uses the equal tempered scale, its intervals are tones or semitones. To avoid any confusion, the names that are used in Greek folk tetrachords and pentachords are shown in *quotation marks* (marked with an asterisk). The correspondent European classical music system terminology is shown in *parentheses*.

Exactly as in Turkish makam and Arabic maqam selection pages, Greek mode pages give information about the possible stem structure of the mode (tetrachords and pentachords), the Root, its dominant note(s), reminder of the accidentals used and the option of juxtaposing the selected mode with the makams and Byzantine mode with which the selected mode shares the same name and/or the same/similar intervallic structure. The main difference between maqams/makams and Greek modes is the use of the extension button ("ext"). As mentioned, the "ext" button in Turkish and Arabic pages provided the user with information about the tetrachords and pentachords that are formed below the Root and above the Octave of the selected maqam/makam – mode.

In Greek folk modes, the same button gives information about the harmony comping.

Harmony is very important for the character of each mode, for example in Rast mode (Fig. 18) and in Major scale (mode) (Fig. 19) the Main and Secondary chords are different, although their intervallic structure is the same.

Figure 18

Greek Folk Mode Rast: harmonic structures

MODE RAST - ΔΡΟΜΟΣ ΡΑΣΤ / DHRAMOS RAST

Main Chords: Cm, Dm, F, G and Gm / Secondary Chords: Edim, Am, Bdim

C Dm Edim F G / Gm Am Bdim C

G chord: The note B \sharp is the 3rd degree in G "Rast" (Major) 4chord - (Ascending)
Gm chord: The note B \flat is the 3rd degree in G "Kurdi" (Minor) 4chord - (Descending)

RAST	HARMONIC MINOR	MELODIC MINOR	POIMENIKO MINOR
HIJAZ	KARJIGHAR	NIAVENT	SABA
HIJAZKAR	KURDI	HUZZAM	SEGAH
NISIOTIKO MINOR	MAJOR	PEIREOTIKO MINOR	USSAK

Figure 19

Major Mode: harmonic structures

MODE MAJOR - ΔΡΟΜΟΣ MATZOPE / DHROMOS MATZORE

Main Chords: C, F, G / Secondary Chords: Dm, Em, G7, Am, Bdim

C Dm Em F G / G7 Am Bdim C

Imaj IImin IIImin IVmaj Vmaj / V7 VImin VIIdim Imaj

Conclusion

From a more general point of view, as opposed to European classical music where the set of notes within an octave defines the quality (and the name) of the scale, in Byzantine modes, Arabic and Turkish maqam and in Greek folk modes the structure of the main stem of the mode can be approached through multiple combinations of tetrachords and pentachords. The concept of the octave does exist but it is not of such great importance.

There are many common characteristics that build a general frame of modality (mainly melodic) expressed through these microtonal and equal tempered music theory systems. At the same time, there are many differences in important details which are the attributes of those four traditions that form each one's unique character, depending on the cultural origin of the music performance. Therefore, there is an inability of theoretically describing in full all these vital details of performance. These small but important details can only be understood, analyzed, and performed through careful and in-depth listening. No set of rules or descriptions *alone* can produce the desirable "sound".

In general, the creation of a theoretical framework like Maqam/Makam – Mode app, for the traditions mentioned above, can only help for didactic purposes, by giving the main pole around which the performer must *move*.

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