Octaechia and Melismaticity in Byzantine Music. Collations and Musicological Reductive – Statistical Analysis

by Dimosthenis Spanoudakis

DOI: https://doi.org/10.26262/smb.v1i2.7939
**Octaechia** and Melismaticity in Byzantine Music. 
Collations and Musicological Reductive – Statistical Analysis

**Dimosthenis Spanoudakis**

**Abstract:** Two characteristic elements of the Byzantine melos are the *Octaechia* (the system of the eight modes) and the melismatic texture of many pieces of its vast repertory. Through the 20th century and until today, attention has been drawn in Byzantine Musicology to the importance of comparative studies between the Middle-43 and New-Byzantine notations, while taking in mind the so-called *theseis* and the oral tradition. In this study we examine the so-called Greatest Kekragaria ascribed to St. John of Damascus in the eight modes, through a comparative study of manuscripts in the old notation (14th-18th cent.) and in the new notation from the *exegesis* (musical interpretation) of the Three Teachers (19th cent.). A detailed multi-perspectival musicological analysis is applied to the material, including reductive analysis of the *Kekragaria* on both micro-, medial- and macrostructural level.

The findings of this study reveal: a) structural and perceptual mechanisms of the old notation in its different evolutionary levels, b) the modality as it is stenographically embodied in the old notation, c) some elements of the technique of the *exegesis* and d) the relation between melismatic texture and *octaechia* because any change of the melismatic texture influences the idioms of the eight modes.

**Keywords:** melismaticity, octaechia, longest kekragaria (*Megista*), palaeographical musicological and statistical analysis.

The present article examines two basic characteristics of Byzantine melody, namely melismaticity¹ and *octaechia* (the system of the eight modes), *via* a combination of

---

¹ Melisma: “A group of more than five or six notes sung to a single syllable. The term may be applied universally, but has been most used in reference to medieval European music, particularly chant. ‘Melismatic’ indicates one end of a spectrum; the other is ‘syllabic’, or one note to each syllable. An
musicological and statistical approaches. It is also a continuation of our PhD thesis.

The paper is focused on the so-called Greatest or Longest kekragaria, which are attributed to Saint John of Damascus (674/5 - 753).

In the first part, there is a collation with musicological/palaeographical analysis of the kekragaria from selected manuscripts of the 14th to the 19th century. This part claims that the melismaticity is stenographically embodied in the old notation and it is described in detail in the New Method (in use since 1814/5).

The second part includes a reductive – statistical analysis and examines melismaticity in the eight modes. It shows that melismaticity is fluctuating inside every kekragarion on micro- medio- and macrostructural level.

1. Collations and musicological analysis of the Longest kekragaria (Megista)

The collation which follows in Figures 1-4 is based on the following manuscripts:
- Αγίας Τριάδος 78 (Holy Trinity 78, Meteora): anonymous writer, A.D. 1380-1381.

---

2 Dimosthenis Spanoudakis (Δημοσθένης Σπανουδάκης), “Σύγχρονα μοντέλα ανάλυσης Βυζαντινής Μουσικής. Το φαινόμενο της μελισματικότητας στα κεκραγάρια [Contemporary Models of Analysis of Byzantine Music: The Phenomenon of Melismaticity in Kekragaria],” (PhD diss., Aristotle University of Thessaloniki, School of Arts, Department of Music, 2018).

3 Ioannis Lilis (Ιωάννης Λίλης), Κοσμολογία και ανθρωπολογία στη διδασκαλία του Ιωάννου Δαμασκηνού [Cosmology and Anthropology in the Teaching of John of Damascus] (PhD diss., Aristotle University of Thessaloniki, Department of Theology, Thessaloniki, 2007).

4 The oldest written sources with kekragaria are: Σινά 1257 (Sinai 1257, y. 1332) and Εθνική Βιβλιοθήκη της Ελλάδος (National Library of Greece, A.D. 1341). See: Spanoudakis, “Contemporary Models of Analysis,” vol. 1, 48.


- Ντοχειαρίου 350 (Docheiariou 350): autograph by Apostolos Konstas Chios, end of the 18th cent., containing exegeses (traditional interpretation)\(^7\) by Petros Peloponnesios.\(^8\)

- Μετόχιον Παναγίου Τάφου 703 (ΜΠΠ 703, Sancti Sepulcri 703): autograph by Chourmouzios Chartofylax, slow exegeses by Ch. Chartofylax, A.D. 1818.\(^9\)

- Μουσική Πανδέκτη (Mousike Pandekte): printed book with slow exegeses by Gregorios Protopsaltes.\(^10\)

In this collation, the relation between the structural notes given by the Middle Byzantine notation and the notes in the New Byzantine notation is investigated. Figures 1 and 3 include the transnotations of the four older sources (14th, 17th and 18th cent.) and the schematic transcription of the slow exegeses (19th cent.).\(^11\) In Figures 2 and 4, the text is excluded and colored lines are added so as to indicate the strong relation between the notes in the old and the new notations. Green lines separate the


\(^9\) Grigorios Th. Stathis (Γρηγόριος Θ. Στάθης), Τα πρωτόγραφα της εξήγησεως εις την Νέαν Μέθοδον σημειογραφίας [The Protographs of the Exegesis into the New Method of Notation], vol. 1 (Athens: Institute of Byzantine Musicology, 2016).

\(^10\) Ioannis Lampadarios and Stephanos Domesticos (Ιωάννης Λαμπαδάριος και Στέφανος Δομέστικος), Πανδέκτη [Pandekte], vol. 1. (Constantinople: Patriarchal Printing House, 1850).

syllables of the psalmic text. Blue lines highlight the transmission of the structural notes from different old sources in Middle Byzantine notation to the musical surface in the New Byzantine notation. It has to be noticed that the structural notes of the old notation almost always have a crucial position in the respective music phrase in the new analytical notation.

These collations show:

- the uninterrupted transition of the written old melody from the 14th to the 19th cent.,
- that the syllable is the core where the melody is developed both in old and new notation,\(^\text{12}\)
- that melismaticity seems to be stenographically hidden in the old notation and it is almost fully revealed in the musical surface of the new Byzantine notation.

2. Reductive – statistical analysis of the Longest Kekragaria (Megista)

In this part, melismaticity is approached through statistical measurements.

Graph 1 shows the duration of the kekragaria by St John of Damascus in the eight modes. It is clear that melismaticity fluctuates in the whole series of kekragaria. For instance, the duration of the kekragarion in the third mode is 1408 beats, while in the varys mode (plagal of the third mode), it lasts only 957 beats.

Graph 2 shows the duration of each half verse of the eight kekragaria. Green color indicates the half verse with the longest duration for each mode. Red color indicates the half verse with the shorter duration for each mode. In this graph, we can observe the fluctuation of melismaticity both between different modes and inside every kekragarion. More specifically, in the first mode, the half verse II-Γ1 (Κύριε, ἐκέκραξα πρὸς σέ – O Lord, I call upon you) has a duration of 159 beats, while in the plagal of the fourth mode (the same half verse) the duration is only 81 beats. Additionally, melismaticity differs in the very same text when it reappears. For instance, in the first mode the sentence Κύριε ἐκέκραξα πρὸς σέ has different melismaticity in half verses I-A1 and II-Γ1. Half verse I-A1 has a duration of 59 beats, while half verse II-Γ1 has almost three times higher melismaticity, i.e. 159 beats. This shows that melismaticity is differentiated in many ways on macrostructural level.

Graph 3 shows the mean duration of the syllables in each half verse of the eight kekragaria. Green color indicates the half verse on which syllables have the longest mean duration, while red color indicates those half verse where syllables have the

\(^{12}\) On the importance of the syllable for the formation of Byzantine melody, the so called αδόμενη συλλαβή, see: Ewald Jammers, Musik in Byzanz, impäpstlichen Rom und im Frankenreich: Der Choral als Musik der Textaussprache in Proceedings of the Heidelberger Akademie der Wissenschaften (Heidelberg; Winter Heidelberg, 1962), 84-85.
shorter mean duration. It is obvious again, that melismaticity is changing all over every kekragarion. A remarkable common constant is the half verse II-Δ: προσέχες τῇ φωνῇ τῆς δεήσεως μου (pay attention to the voice of my prayer) which has the highest melismaticity in all modes (see also Graph 2).

In Graph 4, the percentage of each word in the kekragaria in the eight modes is visualized. There are specific colors for each mode, as it is described at the bottom of the graph. It seems that every single word is approached in various ways within this specific kekragarion repertoire. The words δεήσεως (II-Δ) and εἰσάκουσόν (II-Γ2) are very melismatic in every mode, as it is also described in the next graph.

Graph 5 shows the mean percentage of each word in the kekragaria in the eight modes. Two words are the most melismatic ones: δεήσεως (II-Δ) and εἰσάκουσόν (II-Γ2). Their mean percentage is 6,8% and 5,8% respectively. These two words are of crucial importance for the kekragarion because they sum up the meaning of the psalmic text and obviously this is the reason why they are highlighted melismatically.

Graph 6 includes the mean percentage of each word in the kekragaria in the eight modes, but it shows cumulatively the percentage of every word with its reappearances. As mentioned before, the composer can emphasize a word through a higher level of melismaticity. The reappearance of a word can have a similar perceptional impact on the listener. In the case of the kekragaria, some words appear in the psalmic text more than once, such as the word Κύριε (occurs five times: I-A1, I-B, II-Γ1, II-E2 and III-H2). The words with the highest cumulative mean percentage are: εἰσάκουσόν (21,2%) and Κύριε (15%). These two words sum up the main meaning of the kekragaria: Κύριε, ἐκέκραξα πρὸς σέ, εἰσάκουσόν μου... - O Lord, I call upon you; hasten to me!

Graph 7 shows the percentage of each syllable inside the word δεήσεως (II-Δ), which is the most melismatic word of the whole series of kekragaria (the mean percentage of the word is 7% in the eight modes, see also graphs 4 and 5). In other words, this graph describes the inner melismaticity of the word. It is obvious that the second and the fourth/last syllable are the most melismatic ones. In this case, melismaticity is related to the accent of the word.13

---
13 For the inner accent of the words in Byzantine melodies, see: Ioannis Arvanitis (Ιωάννης Αρβανίτης), “Η ρυθμική και μετρική δομή τῶν βυζαντινών εισών και στιχηρῶν ώς μέσο και ώς ἀποτέλεσμα μιᾶς νέας ρυθμικῆς ἐξισωτίας τοῦ βυζαντινοῦ μέλους,” [The Rythmical and Metrical Structure of the Byzantine Heirmoi and Stichera as a Mean and as Result of a New Rythmical Interpretation of the Byzantine Melos], in Οἱ δύο ὄψεις τῆς ελληνικῆς μουσικῆς κληρονομάς [The Two Sides of the Greek Musical Heritage], Publications of the Hellenic Folklore Research Centre 18, ed. E. Makris (Ε. Μακρής) (Athens: Athens Academy, 2003). See also: Ioannis Arvanitis (Ιωάννης Αρβανίτης), Ο ρυθμός τῶν εκκλησιαστικῶν μελῶν μέσα από τη παλαιογραφική έρευνα και την εξήγηση τῆς παλαιᾶς σημειογραφίας [The Rhythm of the Ecclesiastic Chant Through the Palaeographical Research of the Old Notation], vol. 1 and 2, (PhD diss., Ionian University, Department of Music, 2010).
Conclusions

Through the combination of palaeographical and statistical analyses, this paper supports two basic remarks concerning melismaticity in the so-called Longest kekragaria attributed to St John of Damascus:

- Melismaticity seems to be stenographically embodied in the Middle Byzantine notation and is written out in the New Method.

- Melismaticity is differentiated in every syllable, word, half verse and verse of the psalmic text, both inside a kekragarion and within the whole series of Megista kekragaria.

- The composer spread the melismaticity in various ways on micro-, medio-, and macrostructural level. The more melismaticity increases within a melody, the higher melismaticity becomes concentrated on the keywords of the text. This turns out to be a powerful tool for the composer to highlight the main message of the poetic text and at the same time, to shape the melody on micro-, medio-, and macrostructural level.
Figure 1

Collation of different sources (14th-19th cent.). Initial three syllables of the kekragarion of the first mode
Figure 2

Collation of different sources (14th-19th cent.). Initial three syllables of the kekragarion in the first mode. Additional lines connecting the structural notes of the old notation with the occurrences of those notes in the exegesis.
Figure 3

Collation of different sources (14th-19th cent.). Initial five syllables of the kekragarion in the plagal of the second mode
Figure 4

Collation of different sources (14th-19th cent.). Initial five syllables of the kekragarion in the plagal of the second mode.
Graph 1

The duration in beats (protoi chronoi) of each one of the kokragaria. Eight modes.
Graph 2

The duration of each half verse in the kekragaria. Green color indicates the hemistich with the longest duration for each mode. Red color indicates the hemistich with the shorter duration for each mode.\textsuperscript{14}

<table>
<thead>
<tr>
<th>Text structure</th>
<th>FEET - VERSES – HEMISTICHTHIA (HALF VERSES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td></td>
<td>A1</td>
</tr>
<tr>
<td>Number of syllables</td>
<td>-&gt;</td>
</tr>
<tr>
<td>a'</td>
<td>59</td>
</tr>
<tr>
<td>b'</td>
<td>83</td>
</tr>
<tr>
<td>c'</td>
<td>61</td>
</tr>
<tr>
<td>d'</td>
<td>69</td>
</tr>
<tr>
<td>pl. a'</td>
<td>50</td>
</tr>
<tr>
<td>pl. b'</td>
<td>85</td>
</tr>
<tr>
<td>varys</td>
<td>51</td>
</tr>
<tr>
<td>pl. d'</td>
<td>58</td>
</tr>
</tbody>
</table>

\textsuperscript{14} Panagiotis N. Trempealias (Παναγιώτης Ν. Τρεμπέλας) Το Ψαλτήριον, μετά συντόμων ερμηνειών, 19\textsuperscript{th} ed. (Athens: The Brotherhood of Theologians “The Saviour”, 2013), 531.
Graph 3

The mean duration of the syllables in each half verse, in the eight kekragaria. Green color indicates the hemistich on which syllables have the longest mean duration. Red color indicates the hemistich on which syllables have the shorter mean duration.
Graph 4
The percentage of each word in the kekragaria in the eight modes.
Graph 5

The mean percentage (%) of each word in the kekragaria in the eight modes.
Graph 6

The mean percentage (%) of each word in the kekragaria in the eight modes. Some words appear in the psalmic text more than one time.
Graph 7

The percentage (%) of each syllable inside the word δεήσεως in the kekragaria. Eight modes
Reference List


_____.


_____.


_____.


_____.


Biography: Dimosthenis Spanoudakis (1983, Thessaloniki) graduated from the Music High School (Thessaloniki). He studied Byzantine music (diploma-2009) and classical harmony-counterpoint (2007). He studied Musicology in Aristotle University of Thessaloniki (2008, School of Musical Studies). His master was in “Byzantine Musicology and Chanting Art” (Father Spyridon Antoniou-Theology-A.U.Th). His PhD thesis was in Byzantine Music (M. Alexandru-Musicology-A.U.Th) and he was supported by the State Scholarships Foundation (Greece). He is a postdoctoral researcher in Byzantine Music (Musicology-A.U.Th), member of the Study Group for Byzantine Musical Palaeography (Musicology-A.U.Th, M. Alexandru) since 2006 and research fellow of the Neurological Clinic of Papageorgiou Hospital (Thessaloniki) participating in a project in Music Medicine.