On the Methodology of Structural Analysis in Byzantine and Classical Western Music - A Comparison

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Byzantine neumes show us how to sing, not that music is this one

Background in Byzantine Musicology. The signs of the Old Byzantine notation and before the Reform of the Three Teachers (1814) are polyvalent. The very same sign can be interpreted in many different ways depending on the context. The decoding -rendition of the pieces written in middle-Byzantine notation requires the knowledge of orally transmitted performance rules which can be inferred to a great extent from the exegetical work of the Three Teachers and their pupils. During the last century the validity and age of such performance rules have been questioned in many publications (Psachos, Tillyard, Stathis, Husmann, Raasted, Lingas etc).

Background in Western Music Theory. The reason why reductional analysis methodologies have yielded so remarkable results in the analysis of Western tonal music (from the 16th to the 20th century) is that, as proved by recent research in music history and the investigation of practical sources and manuscripts, the process of composing-out (Auskomponierung in Schenkerian terminology) has always been a major compositional practice (composing-out is the expansion of a fundamental structure through prolongations and elaborations in various ways and on different levels).

Aims. The paper aims to show - through a series of composition and analysis examples - the affinity of Western and Byzantine music in terms of deeper-structural melodic organization. The paper tries to prove that in both cases the core of the creative compositional process is the application of certain elaboration techniques (in the form of a repertory of rhythmic and melodic patterns and schemata) on basic structural melodies (structural backgrounds). The creating factor of different styles or - more generally different genres - is the actual content of the repertories of rhythmic elaboration patterns and their tonal-modal background.

We also aim to explore in a wider context the multiple connections between
composition \( \leftrightarrow \) notation \( \leftrightarrow \) apprehension \( \leftrightarrow \) rendition & interpretation \( \leftrightarrow \) structural analysis

departing: a) from the composer's experience with material belonging to Western music and b) from the paleographer's inquiry with material belonging to Byzantine chant.

Main Contribution. As mentioned above, the paper explores both directions of structural analysis (from the surface to the background and vice-versa) on both contexts (Western and Byzantine music). More specifically:

a. Byzantine Music Theory and didactic manuals like the Papadike comprise various exercises assuring the prerequisites for multi-level performance skills. Similarly, in Western music theory, didactic manuals like Christoph Bernhard's Tractatus compositionis augmentatus emphasized the uses of structural aspects in composition.

b. We try to put such exercises in connection with musical pieces transmitted in middle-Byzantine notation and to show how the melody rendered by the old interval signs functions as matrix which generates the embellished melos written down in the exegesis with neo-Byzantine notation. In parallel, we show - through examples from the music literature - how abstract pitch structures can render fully articulated musical textures in Western music style.

c. Furthermore, we explore different aspects of reductional analysis and composition applied to pieces in neo-Byzantine notation and pieces in Western Renaissance or Baroque style. In particular, a certain structural melodic background is applied to both genres rendering different pieces in each context, a process that reinforces our hypothesis about the existence of a common compositional core in both practices.

Implications. The proposed comparison between structural analysis methodologies in Western and Byzantine music could shed more light to the comprehension of the middle-Byzantine notation and the multiplicity of ways that it could be used by the composer-performer. Furthermore, the process of structural analysis in both contexts emerges as a profound personal interpretational tool.

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1 Comment by prof. Γρηγόριος Στάθης during a discussion about transcription methods of Byzantine chant, at the Symposium "The Current State of Byzantine Musical Studies after 75 Years of MMB", Copenhagen, 17th June 2006.
1. Introduction

1.1. Background in Western Music Theory (a composer’s view)

The reason why reductional analysis methodologies (e.g. Schenkerian analysis) have yielded so remarkable results in the analysis of Western tonal music (mainly 18th and 19th century music, but the methodology has also been successfully applied to 16th or early 20th century music) is that, as proved by recent research in music history and the investigation of practical sources and manuscripts, the process of composing-out (Auskomponierung in Schenkerian terminology) has always been a major compositional practice. Composing-out (Cadwallader-Gagné 1998: 73) is the expansion of a fundamental structure through prolongations and elaborations in various ways and on different levels. This process is directly linked with the practice of diminution, the empirical art of embellishment (in free composition) of one or more underlying structural melodic lines in order to produce more frequent melodic material (Cadwallader-Gagné 1998: 37).

1.2. Background in Byzantine Musicology (a palaeographer’s view)

The signs of the Old Byzantine notation used before the Reform of the Three Teachers (1814) are polyvalent. The very same sign can be interpreted in many different ways depending on the context².

The so-called exegesis (ἐξήγησις), i.e. the traditional decoding-rendition of pieces written in middle-Byzantine notation (ca. middle of the 12th - middle of the 19th cent.) requires the knowledge of orally transmitted performance rules which can be inferred to a great extent from the exegetical work of the Three Teachers and their pupils³.

During the last century the validity and the age of such performance rules have been discussed in many publications⁴.

1.3. Aims

The paper aims to show - through a series of composition and analysis examples - the affinity of Western and Byzantine music in terms of deeper-structural melodic organization, thus contributing to the investigation of the phenomenon of exegesis in Byzantine chant. In Western music the core of the creative compositional process is the application of certain elaboration techniques (in the form of a repertory of rhythmic and melodic patterns and schemata) on basic structural melodies (structural backgrounds). The creating factor of different styles or - more generally different genres - is the actual content of the repertoires of rhythmic elaboration patterns and their tonal-modal background. Similarly, in Byzantine chant there exist different elaboration techniques applied in the creative processes of musical composition and interpretation/performance of a poetical text, which become operative at different levels of the melodic structure and at the musical surface.

This hypothesis presupposes the musical universality of concepts such as musical structure, reduction and elaboration. Analytical research already conducted successfully on ethnomusicological material points to this direction (see for example Agawu 1990, Stock 1993, Blacking 1970, Cook 1987:202-5). In particular, Agawu argues that music analysis can concentrate on aspects not explicitly articulated by the creators of the music themselves taking of course into account the special anthropological and sociological performance issues (Agawu 1990: 228, Stock 1993: 223) and advocates the universality of the above musical concepts. Stock (1993: 236) claims that Schenkerian-inspired forms of analysis can provide a convenient reductive analytical insight and shows in three different cases how an underlying melodic progression is elaborated in composition and performance. Of course, some main ideas of the methodology are applied in these cases rather than individual elements that pertain to Western music only, the most important being the concepts of reduction, diminution and prolongation.

In this context, we aim to explore the multiple connections between

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³ Cf. Στάθης 2001.

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Composition <-> notation <-> apprehension + rendition & interpretation <-> structural analysis

departing: a) from the composer's experience with material belonging to Western music and b) from the palaeographer's inquiry into material belonging to Byzantine chant (fig. 1).

2. Structural aspects in Byzantine Music

As mentioned above, the paper explores both directions of structural analysis (from the surface to the background and vice-versa) on both contexts (Western and Byzantine music). More specifically:

2.1. Evidence in Music Theory

Theoretical and didactic manuals like the Papadike⁵ comprise various exercises assuring the prerequisites for multi-level performance skills: Figs. 2-3 & mus. ex. 1-2

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Figure 1. Two-directional course from melodic structure to musical surface

Figure 2. Old Byzantine intonation formula for the first authentic mode⁶

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Sources and comments on figs. 2 & 3:

Fig. 2 compares different Byzantine and post-Byzantine theoretical sources:

1. Diagram of the "perfect voice" («τελεία φωνή»), comprising two octaves, from ,A to a': EBE 968, f. 176, 17⁰/18⁰ cent. (Zannos) and Zannos 1994: 160, 541. Ison⁷ and Main signature (= key) of the first authentic mode in its high position (τετράφωνος/ἔξω).


3. Solmisation exercise in middle-Byzantine notation, with brief intonation formulas (χήματα) for each degree of the pentachord of the first authentic mode: Codex Chrysander (ed. Fleischer 1904: B 17, C 1), 17th cent. or

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⁵ Cf. Alexandru/Troelsgård, "Σημασία".
⁷ The ison is the symbol used to indicate a) the first utterance of the voice, when one begins to sing and b) the repetition of the previous pitch. It is considered to be the "beginning, middle, end and system of all the signs": cf. the facsimile-edition of the Papadike from ms Iviron 970, A.D. 1686, f. 2a, in Στάθης 1997: 37. It is also related to the practice of isokratema (ἰσοκράτημα = pedal tone) characteristic to Byzantine musical performance practice. The composer Christos Samaras pointed to the fundamental importance of this sign connected to the key note of each mode, by saying: 'give me a musical piece and I'll show you how everything can be reduced to the ison'.
⁸ For the notions of transnotation (= transfer from one kind of notation into another one, without reference to the oral tradition) and transcription (= transfer from one kind of notation into another one, with reference to the oral tradition), cf. Ellingson 1992 b: 111. In this paper, the examples in middle-Byzantine notation are transnotated into staff notation, by rendering only the interval signs through approximate pitches, without rhythm, and indicating the lengthening neumes diple, dyo apostrophoi syndesmoi and kratema conventionally with whole notes. Transcription into staff will be used for the examples written in neo-Byzantine notation. Cf. Makris 1996. Alexandru, Εξηγήσεις: § 3.1.1-3.1.2 et passim.
later (Makris 1996: 33). Supplied with transnotation into staff notation⁹.

4. The melody of the intonation formula of the first mode in neo-Byzantine notation, written down "as preserved by tradition" («καθὼς ἐκ παραδόσεως διασῴζεται»): Χρύσανθος 1832: § 308. Supplied with schematic transcription¹⁰ into staff notation.

**Fig. 3:**
The graphic representation of the different levels of rendition for the intonation formula of the first authentic mode shown in fig. 2, comprises:

- *Ison/Isokratema* on Π/Δ and Κ/α, the low and the high key note of the first authentic mode
- The pentachordal descending and ascending movement of the intonation formula for the first authentic mode in its high position (tetraphonos/exo)
- The small *echemata* (ηχήματα/ἀπηχήματα = intonation formulas) of the modes corresponding to each degree of the pentachord
- The melodic line according to the slow *exegesis* of Chrysanthos (traditional way of decoding/singing from the old Byzantine notation, resulting in the *melos*).

For the spacial coordination of the pitches on the graph, on the left side the new Byzantine

keys (*martyriai*) for the tones occuring in our example are given (cf. Καράς 1982: I, 238, 312)

Figures 2 & 3 showed that in the acception of Byzantine and post-Byzantine musical theoreticians, one symbol can indicate not only a single tone, but also a small melody, according to the chosen mode of rendition (nr. 2 and 3 in fig. 2). The *parallage* (nr. 3) and the slow *melos* (μέλος = the melody, the actual sound of a musical piece, as received by oral tradition) written down by Chrysanthos at the beginning of the 19th cent. (nr. 4) are quite similar, revealing nevertheless the difference between a theoretical exercise for training modal structures (nr. 3) and the artistic rendition of an intonation formula in slow pace (nr. 4). As suggested by the vertical lines, in the slow *exegesis* almost each *thesis* (θέσις = melodic formula) which corresponds to a single sign of the middle-Byzantine intonation formula shown at nr. 2, has the duration of 4 time units. Such a rendition is suitable at the beginning of a slow melody, in order to introduce the singers and the congregation into the atmosphere of the first authentic mode (nr. 4).

### 2.2. From the written neume to the performed sound: On the old way of apprehension of Byzantine chant

Going a step further, we try to put such theoretical exercises in connection with musical pieces transmitted in middle-Byzantine notation and to show how the melody rendered by the old interval signs functions as a *matrix* which generates the embellished *melos* written down in the *exegesis* with neo-Byzantine notation¹¹: **Fig. 4 & mus. ex. 3-6.**

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⁹ The idea to combine sources of the type shown at nr. 2-3 goes back to EBE 2401, f. 10r (A.D. 1452-1459, Πολίτης/Πολίτη), published by Raasted 1966: 50. For the intonation formulas of the Old Byzantine chant, cf. ibid. *passim*.

¹⁰ For the notions of a. schematic transcription (transfer of basic pitch and rhythm only), b. detailed transcription (minute rendering of as possible as many details of a certain performance, including the ornaments, fluctuations of tempo etc.) and c. combination of schematic & detailed transcription (where the basic elements of a melody are distinguished from the variable ones belonging to a certain performance), cf. Stockmann 1979: 225-226. In the present paper, the examples in neo-Byzantine notation are supplied with schematic transcriptions, based on the written form of the pieces and serving as a tool for musicological analysis. A division into metrical units is given according to the principles explained by Καράς 1982: I, 142-166. A combination of schematic & detailed transcription is given in fig. 14, nr. II-IV, allowing thus to compare the basic shape of the piece with the small-scale ornaments added during the performance. Further, a special, paradigmatic use of small ornaments in staff-transcription is applied in fig. 4, nr. 7, showing to the singer a possible way of performing a transcription from the middle-Byzantine notation. See also Alexandru, Ἐξηγήσεις*§ 3.1.1.3.

¹¹ All the examples of Byzantine chant in the present paper are in the first mode, in order to facilitate their comparison.
Fig. 4. Beginning of the sticheron Χορὸς τετραδεκαπύρσευτος according to the old system of apprehension of Byzantine chant: metrophonia - parallage - melos\textsuperscript{12}

Sources and comments on fig. 4:

This example shows the beginning of the sticheron Χορὸς τετραδεκαπύρσευτος (= The choir of forty martyrs set on fire), ascribed to St. Theodore the Studite (759-826)\textsuperscript{13} and written in honour of the Forty St. Martyrs from Sebasteia (9\textsuperscript{th} March, ca. A.D. 320\textsuperscript{14}). It contains the following elements:

1. Hymnographic text.
2. The neumation in fully developed middle-Byzantine notation, according to the Sticherarion A 139, f. 120v (A.D. 1341, eds. Perria/Raasted 1992, MMB 11), a transnotation on staff and the indication of the names of the melodic formulas (Θέσεις) according to Byzantine theoretical texts\textsuperscript{15}.
3. The same sticheron in middle-Byzantine notation, as an exercise of metrophonia (Μετροφωνία = counting of intervals, shown with the black signs) and parallage (Παραλλαγή = solmisation, shown with red ink), from the ms EBE 2401, f. 20v, A.D. 1452-1469 (Πολύτης/Πολύτη). Supplied with transnotation of the metrophonia on staff.
4. The short intonation formulas for each signature, written down in middle-Byzantine notation, according to the model shown in Codex Chrysander (see above, fig. 2, nr. 3) and following the indications about the old form of parallage given by Χρύσανθος 1832: §
5. The slow exegesis in neo-Byzantine notation by Chourmouzios, from EBE 709 (f. 104r, first quarter of the 19th cent.: Παπαδόπουλος-Κεραμεύς), followed by schematic transcription into staff notation.
6. A generative or reductional analysis\textsuperscript{16} of the slow exegesis along with the coordinates of musical time and space, which contains:
   a. the sum of chronoi protoi (χρόνος πρώτος = time unit, beat\textsuperscript{17}) for each syllable
   b. the indication of the main tones (with white notes), the melodic contour (with black notes for the extremes and oblique lines for the stepwise movement of the melody) and he ambitus for each performed syllable. It can be observed that through the process of traditional rendition-exegesis, almost every sign of the old notation is developed musically in the temporal & diastematic frame of 8 beats & an interval of a third or fourth\textsuperscript{18}
7. Rhythmical interpretation or syllabic exegesis for the version of A 139, rendered in neo-Byzantine notation and transcribed into staff\textsuperscript{19}.
8. A generative or reductional analysis for the rhythmical interpretation of the first kolon. Compared to nr. 6, the temporal frame is seven times smaller and the diastematic frame is reduced as well.

\textsuperscript{12} For this figure, cf. also Alexandru (ed.) 2008: 17-19.
\textsuperscript{13} Cf. A 139, f. 120v and Δετοράκης 2003: 421-446.
\textsuperscript{14} Cf. Σάκκος 2001: 37.
\textsuperscript{15} An alphabetical catalogue of Byzantine theseis can be found in Alexandru: II, 28-77.
\textsuperscript{16} The type of analysis exemplified below is based on palaeographical investigation. It might be labelled generative, if viewed progressively, from the old notation towards the new one, and reductional, if viewed regressively, from the new notation back to the old one. It offers a minute description of the exegesis-process in different forms (large, short, syllabic), and aims to search for the rules which govern the transformation of the notated structural ground into the performed musical surface. Cf. also fig. 1 in this paper, Stock 1993: 218 (about the influence of Chomskyan linguistics on the ethnomusicologist John Blacking, trying to define the ‘transformational rules’ according to which deep structures develop in performance), and Alexandru 2000: I, 344 & III, 75-90.
\textsuperscript{17} Cf. Μιχαηλίδης 1999: 357, Καράς 1982: I, 54.
\textsuperscript{19} This kind of exegesis is based on Arvanitis 1997, 2003 and Jammers 1962 & 1966. At nr. 7, the transcription into staff notation contains also some small ornaments, which in this case do not reflect a concrete performance of this piece, but function in a paradigmatic way, i.e. as an indication of a suitable rendition of that formula by the singer. For the paradigmatic function of old Byzantine musical neumes, as differentiated from the descriptive or prescriptive use of notations, cf. Troelsgård 1999.
Fig. 4 exemplified the three steps, *metrophonia* - *parallage* - *melos*, i.e. counting of intervals - solmisation - melody, which constituted the traditional way of apprehension of musical pieces written in middle-Byzantine notation. We can see how the interval signs of the old notation result into a background musical structure, measured by stepwise notation and rendered artistically, at slow pace. Each syllable of the poetic text is prolongated in musical time and space, according to performance rules transmitted orally and crystallized in a highly refined technique of traditional decoding of the written sources. Thus, the old notation functions as a mnemotechnic tool, both fixing the melodic skeleton with the interval signs, and showing to the singer the way of melodic elaboration, by means of the combination of interval signs and *megalasmeladia* (μεγάλα σημάδια = big signs) which constitute the respective formula. In our case, at nr. 2: *dyo*, *thematismos eso*.

On the other hand, the syllabic *exegesis* (nr. 7) searches to produce an alternative viable short rendition of the same piece, by suggesting the rhythm and ornaments needed in order to transform the structural background into an intelligible performance.

3. Structural aspects in Western Music - Evidence in Music Theory and compositional craft.

Similarly, in Western music theory, didactic manuals like Giovanni Battista Bovicelli's *Regole Passaggi di musica* (Rules of Musical Embellishment - 1594), Christopher Simpson's *The Art of Playing Extremore upon a Ground* (1665), Christoph Bernhard's *Tractatus compositionis augmentatus* (c 1657), Heinichen's *Thorough Bass in Composition* (1728) or Friderich Erhard Niedt's *Musicalische Handleitung, Part 2* (1706) - to name just a few of the manuals published mainly in the 17th and 18th century - emphasized the use of structural aspects in composition, and mainly the use of diminution through embellishment or elaboration. This paper focuses on melodic diminution, but this practice can also produce harmonic diminution if applied on multiple melodic layers (or voices in voice-leading terminology). Figures 5 and 6 show the concept of diminution in Giovanni Batista Bovicelli's *Regole Passaggi di musica* (cited from Forte & Gilbert 1982: 8) and in Christopher Simpson's *The Division Viol* (also from Forte & Gilbert 1982: 9).

Fig. 5. Diminution of a ascending fifth interval. From Giovanni Battista Bovicelli’s *Regole Passaggi di musica* (transcription by Allen Forte)

Fig. 6. Diminution (Division) of a Ground Bass. From Christopher Simpson’s *The Division Viol* (1665)

Several writers of the past and present have described the basic elements of diminution, e.g. Forte (1982, ch. 1) focuses on passing notes (P), neighbours notes (N), consonant skips (CS), and arpeggiations (Arp). Perhaps the most exhaustive text on the subject was Christoph Bernhard's *Tractatus compositionis augmentatus* (c 1657). His basic division between *stylus gravis* (stylus antiquus) and *stylus luxurians* (stylus modernus) goes back to Monteverdi's prima and seconda pratica. In *stylus gravis* only four figures are used – in modern terminology the passing note, auxiliary note, suspension and prepared appoggiatura. In *stylus luxurians* 15 more figures are added, including most of the dissonances associated with 17th-century style (see excerpt in fig. 7).

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21 Chrysanthos (1832: § 170-171) speaks about the *emeles makros ton sylabon* (τὸ ἐμμελὲς μάκρος τῶν συλλαβῶν = the melodic length of the syllables), a notion which helps to understand the long *exegesis* as the practice of slow and ornamented rendition of a chant.


23 Cf. a somehow similar issue in Stock 1993: 235.

24 The most famous 18th century didactic book on composition, J.F. Fux's *Gradus ad Parnassum* (1750) does not actually teach the art of diminution per se, as Joel Lester explains in *Compositional Theory in 18th Century* (p. 37) but emphasizes on voice-leading and texture aiming at creating new counterpoints on given cantus firmi and not at reworking previous examples through elaboration.

25 This text is included in Müller-Blatau 1963, pp. 40-132.
A representative example of the use of this concept as an actual compositional practice is the extraction of complete themes for choral prelude composition from abstract choral cantus firmi. In fig. 8 the pitches of the original choral theme in J.S.Bach's melodies are circled. The original material is considered abstract and almost ametric by the composer, as the multiplicity of meter signatures and rhythmic devices reveals.

**Figure 8.** Choral phrase and J. S. Bach choral prelude themes (from Kennan’s *Counterpoint*, ch. 18)

*Melodic reductional analysis* aims at revealing the structural background of embellished melodies by identifying elements of diminution and arriving at an abstract structure through rhythmic reductions. Abstract melodic structures incorporate the principle of linear prolongation, i.e. the notion of a tone remaining active in its context, even though other tones may intervene (Cadwallader-Gagné 1998: 22). The techniques of melodic prolongation or melodic *composing out* have been mentioned and explained by several authors, most of which agree upon four basic expansion techniques: the *initial ascent*, the *arpeggiated ascent*, *unfolding*, motion into or from an inner voice, *voice exchange* and *shift of register* (Cadwallader-Gagné 1998, ch. 6).

In fig. 9 a simple reduction is carried out (Forte & Gilbert 1982: 9-10) in rhythmic and analytic notation. Note that the original theme (Air) is not the structural background, but an embellished variation of it (N. Cook correctly addresses the theme in the classical *Theme and Variations* form as "Variation 0" because of this property, Cook 1996: 89). At the deeper level, pitch D (from bar 1) is prolonged until its resolution to C at the end of the phrase (bar 4).

**Figure 9.** Air and Variation 3 from Handel’s *Lecon in Bb* with Allen Forte’s reductional analysis

Similar to melodic diminution as a concept but expanded to full four-part harmony context was the theoretical and practical tradition of the *Thorough Bass* (or Figured Bass), where a structural figured bass line functioned as a basis for improvisation or composition (its value as a compositional tool was stressed by prominent composers, theorists and tutors of the 17th and 18th century like J.S. Bach, Mathesson, Heinichen, Telemann, Niedt or C.P.E. Bach). *Thorough Bass* practice was grounded on the embellishment and elaboration of the structural harmony that was defined by the structural bass and its figuration with the use of a repertory of consonant or dissonant rhythmic elaboration dependent on the style of the improvised or composed piece. For example (fig. 10), in ch. 12 of his *Musicalische Handleitung* (Part 2, published in 1706), F.E. Niedt shows how various types of dance styles can be composed from the same *General Bass* through elaboration:

**Figure 10.** Composition of different Baroque dance styles based on the same Figured Bass. From Niedt 1706, Chapter 12
4. A comparison of structural analysis and composition in Byzantine and Western music

In particular, the structural melodic background re-la-sol-fa-mi-re (D-A-G-F-E-D or \(1\rightarrow 5\rightarrow 4\rightarrow 3\rightarrow 2\rightarrow 1\)) is applied to both genres rendering different pieces in each context, a process that reinforces our hypothesis about the existence of a common compositional core in both practices.

4.1. Application paradigms in Western music

**Analysis example** (in Baroque style) by J.S.Bach (Fugue in f# minor from WTC II, b. 55-57). In this case the structural melody is not identical to the D-A-G-F-E-D \(1\rightarrow 5\rightarrow 4\rightarrow 3\rightarrow 2\rightarrow 1\), but it is similar enough to serve as a compositional paradigm.

The structural melody is D-C#-B-A-G#-F# \(6\rightarrow 5\rightarrow 4\rightarrow 3\rightarrow 2\rightarrow 1\). The analysis shown in fig. 11 attempts a paradigmatic re-composition of this excerpt, which contains the simultaneous appearance of all three subjects of the triple fugue (shown as S1, S2 and S3 in fig. 11). The structural descent of D-C#-B-A-G#-F#, which is the skeleton of S1, is elaborated by parallel sixths in first-species counterpoint. The resulting structural line F#-E-D-C#-B-A is the skeleton of S3. At the next compositional stage 4th-species counterpoint is applied, yielding continuous suspensions and an inner voice is added, which contains the leading note and its resolution and corresponds to the skeleton of S2. The final level, which is the musical surface, is produced by the application of various elaborational techniques (mainly neighbor and passing notes) to the structure of the previous level.

**Figure 11.** Analysis of bars 55-57 from J.S.Bach’s Fugue in f# (WTC II) from the structural skeleton to the musical surface (paradigmatic re-composition of the excerpt)

**Composition example** (in Renaissance style)\(^26\) (Fig. 12 and mus. ex. 7-10). Three-voice counterpoint writing was preferred for this compositional paradigm instead of single-voice melodic development, since this corresponds better to the polyphonic style of the prima pratica.

The Dorian structural line D-A-G-F-E-D is initially harmonized homophonically by the addition of two more voices (the cantus firmus remains in the middle voice). This gives a simple three-voice harmonic skeleton \(1^{st}\)-species counterpoint. At the next compositional level, all three voices are elaborated according to the 16th century style elaborational techniques (mainly suspensions, passing notes, neighbor notes and cambiatas) while the overall length remains unchanged and the initial structural notes remain in the musical surface (the initial notes of the middle voice are circled in fig. 12). A second elaboration is also composed, in which all structural durations are doubled (again the structural notes of all three voices remain in the surface and the middle voices skeleton is circled in fig. 12).

**Figure 12.** Compositional example in Renaissance style

4.2. Application paradigms in Byzantine music

4.2.1. From the composition to the structural background (regressive approach)

**Fig. 13 & mus. ex. 11-12** illustrate how we could adapt Schenkerian format analysis for Byzantine chant, in order to investigate the processes of *exegesis* and composition. The analytical reduction leads, through a hypothetical regressive process, from two

\(^26\) This compositional example was created by one of the authors of this paper (Costas Tsougras).
related melodical surfaces in the heirmologic style (short and long), to the common structural background Re - La - Sol - Fa - Mi - Re.

Figure 13. The beginning of Τὸ θεῖον καὶ ἄρρητον κάλλος, supplied with reductional analysis of the Schenkerian style

Sources and comments on fig. 13:

This example contains a fragment from the first Kanon for the Dormition of the Holy Virgin Mary, celebrated on the 15th August. The text is written by St. Kosmas the Melodist (ca. 675-ca. 752). The following elements are displayed:

1. The poetical text of the first two verses of the fifth Ode: "I will describe the divine beauty of Thy virtues, O Christ, which cannot be expressed in words". For the Greek text cf. Μηναῖον του Αὐγούστου 2002: 199.

2.-4. The text rendered as heirmos, in the short heirmological style, a composition by Petros Byzantios († 1808):

-> Nr. 2: in middle-Byzantine exegetical notation, from the composer's autograph Heirmologion ms EBE 964, A.D. 1806, f. 9v, and transnotated into staff.

-> Nr. 3: in new Byzantine notation, as short exegesis of the heirmologic genre, from Πέτρος Βυζάντιος, Εἱρμολόγιον αὐτοῦ 1825: 16, and followed by schematic transcription into staff.

-> Nr. 4: Number of time units for each syllable and Schenkerian-style analysis.

5.-7. The text rendered as katabasia, in the long/slow heirmological style, a composition by Petros Peloponnesios, the 'Beethoven' of Byzantine music (ca. 1735-1778):

-> Nr. 5: in middle-Byzantine exegetical notation, from a Heirmologion of Petros Peloponnesios, ms of the Holy Synod of the Church of Greece, end of the 18th cent., f. 2v, and transnotation into staff.

-> Nr. 6: in new Byzantine notation, as long/slow exegesis of the heirmologic genre, from Πέτρος Πελοπονήσιος, Εἱρμολόγιον τῶν καταβασιῶν 1825: 4, and followed by schematic transcription into staff.

-> Nr. 7: Number of time units for each syllable and Schenkerian-style analysis.


From the above example it can be inferred that both compositions (see nr. 3 & 6) are grounded on the tones of the low pentachord of the first authentic mode, although the correspondence of the respective tones with the syllables of the text is slightly different in the two versions (compare nr. 4, 7 & 8). In the heirmos, the syllables are performed in a short 'way' (in the relation 1 syllable: 1 time unit: see nr. 3 & 4), whereas the katabasia is made up by long syllables (mainly of 2 time units: see nr. 6 &

27 For the musical development of the heirmos and katabasia Τὸ θεῖον καὶ ἄρρητον κάλλος, according to Balases the Priest and to the old, anonymous style, cf. Alexandru, Εξήγησες: ex. 12.

28 Kontakion (κοντάκιον) and kanon (κανών) represent the two genera maiora of Byzantine Hymnography. The kanon production belongs mainly to the 8th-10th cent., the period during and after iconoclasm (726-787, 815-843). A kanon comprises several odes (initially 9, usually 8, during Lent 3, 4 or 2), each of which shows the following internal structure: heirmos (εἱρμός = metrical and musical model-strophe), 3-4 troparia (τροπάρια = stanzas following the model strophe) and katabasia (καταβασία, from καταβαίνω [about orators: come down from the tribune: Liddell/Scott 1990: 884] = repetition of the model-strophe, sung at slower pace and more ornamented by the choir which came down from the pews). Cf. Wellesz 1962: 198-245. Velimirović 1973. Πρ. Αντωνίου 2004: 226. Δετοράκης 2003: 389-395. Popova 2005: 49-49.


31 The small grace notes are used conventionally for the transnotation of the small ison or apostrophos inserted at places where the text has a double consonant. For these 'small' or 'shewa' interval signs, cf. Troelsgaard, *Introduction*: § 30.

32 Cf. Ζτάθης 1980 & Course on Byzantine Music by prof. Stathis at the University of Athens during the academic year 1997-1998.

33 Thanks to prof. Lykourgos Angelopoulos for the indication of this source.
7). This allows the use of small melisms\textsuperscript{34}, especially on the accented syllables of the keywords \textit{θεῖον} (\textit{thion} = divine), \textit{κάλλος} (\textit{kállos} = beauty), \textit{Christé} (\textit{O}, Christ), which are prolonged to 4 time units. Furthermore, in the second verse one can observe the application of the diminution principle on the words \textit{ἀρετῶν} (\textit{aretón} = of the virtues) & \textit{διηγήσομαι} (\textit{diighísome} = I will describe), since the tones notated with middle-Byzantine neumes (at nr. 5) are rendered in the slow exegesis (at nr. 6) with neighbour notes. In Western tonal harmony, such ornaments would be labelled as broderies, appoggiature, anticipations, échappées.

4.2.1. From the structural background to the composition (progressive approach)

Complementary to figs. 11 & 13, the following example (Fig. 14 & mus. ex. 13-17) explores the process of musical composition in the sticheraric style, beginning from the structural background Πα/Re - Κε/La - Δι/Sol - Γα/Fa - Βου/Mi - Πα/Re and progressing towards three related musical surfaces: short, medial and long.

Sources and comments on fig. 14\textsuperscript{35}:

I. Structural background

II.-IV. The first step in the creation of the examples shown above, was the choice of a liturgical text, which would fit metrically and semantically with the main melodic gesture suggested by the structural background and would allow a composition/rendition according to different styles and 'ways'/manners (δρόμοι/τρόποι) of the \textit{melos}\textsuperscript{36}. From the index of first lines in the catalogue of the Sticherarion A 139 (eds. Perria/Raasted 1992: Pars Suppletoria, p. 17), the text of the sticheron \textit{Ἀγάλλεται σήμερον} (\textit{Today rejoices}), in the first authentic mode, for the Translation of the relics of St. John Chrysostom from Komana in Cappadocia to Constantinople, 27th January 438, was elected\textsuperscript{37}. It presents the metrical scheme - / - - / - -At nr. II, the short, syllabic manner of the new sticheraric style is presented\textsuperscript{38}.

\textsuperscript{34} Cf. a similar phenomenon in Chinese operatic music, where "differing metrical presentations of the outline entail diverse ranges of tempo and melisma": Stock 1993: 233.

\textsuperscript{35} This example was created by the other author of this paper (Maria Alexandru), who wishes to thank Costas Tsourgas for his suggestion to try such a composition and for his explanations concerning Schenkerian-style analysis, and Ioannis Liakos and Pavlos Chatzipapas for inspiring discussions about the art of melopoeia in Byzantine chant. We were quite hesitant in the beginning, since the compositional craft requires deep knowledge of the different styles, coupled to a long practical experience with the liturgical chant. In the theoretical writings about Byzantine chant, indications of how to actually compose music of this kind are rare: cf. some hints in Chrysaphes, ed. Conomos 1985: lines 91-175, a first comprehensive "Kompositionslehre" in \textit{Χρύσανθος} 1832: § 400-431, further developed for actual use by \textit{Παναγιωτόπουλος} 2003: § 146-166. For the theological and philosophical background, cf. Wellesz 1962: 55-63, 96-97, 148 and \textit{Αλυγιζάκης} 1985: 74-82. Cf. \textit{Zannos} 1994: 223-245, for a highly interesting presentation of "form-shaping principles" ("formbildende Prinzipien") extracted from the analysis of Greek ecclesiastic chant and Turkish art music.


\textsuperscript{37} Cf. \textit{Τσολακίδης} 2001: 104. This sticheron, which in A 139, f. 111v, is ascribed to Anatolios (probably Anatolios the Studite, 8th cent.: cf. \textit{Στριμπλάς} 1997: 361), is missing from the \textit{Menaion} for January actually in use in the Greek Church (ed. \textit{Αποστολική Διακονία}). It belongs to the so-called \textit{stichera idiomela} (\textit{stichhē ἱδιόμελα}), i.e. poetical strophes sung together with psalm-verses at Vespers or Mattins, having their own metrical form and melody.

\textsuperscript{38} In order to transfer the neumatic notation used at nr. II-IV into staff, a combination of schematic and detailed transcription was used, where the black notes show the pitches and the rhythm prescribed by the neo-Byzantine interval and temporal signs, whereas the red notes describe the small ornaments added during the performance (mus. ex. 15-17. See also Stock 1993: 226-
At nr. III, the medial 'way' is exemplified, emulating Petros Peloponnesios' new slow sticheraric style, where each syllable usually has the duration of two time units (known as argosyntomon melos). This temporal frame allows the composer and the performer to embellish the structural tones by means of diminution, using neighbour notes and resulting into the characteristic formulas of homalon, tsakismata and the perfect cadence of the kylisma-type\(^{39}\) (on the word simeron [= today]).

At nr. IV, a long, melismatic version is given, having as source of inspiration the new embellished sticheraric style of Chrysaphes the New (akme ca. 1650-1685\(^{40}\)), especially his doxastikon Ἀναστάσεως ήμέρα in the first plagal mode\(^{41}\). Most of the syllables have the duration of 8 time units, and this very slow pace of performing the poetical text invites the composer to display characteristic formulas (θέσεις) of the old/classical and of the new embellished sticheraric style (e.g. the main body of thematismos eso in the first kolon, on the syllables -λεται\(^{42}\) and the epegerma in kolon 3, syllables -σία). The structural background functions in this case as an outline for the cadences on the main tones (despozontes phthongoi) of the first authentic mode in its high position (tetraphonos/exo), which is commonly used by the Byzantine and post-Byzantine composers for the old and the new embellished sticheraric repertory Κέ/α, Δι/Γ, Γα/Φ, Πα/Δ\(^{43}\). At the same time, these tones offer the possibility of modulation into related modes, where they act, in their turn, as finales or main tones (e.g. Δι/Γ → could support a modulation to the 4th authentic mode or to the first plagal, Γα/Φ→ may lead us to the third authentic mode or its plagal barys).

In the short and medial version of Agálleta simeron, the structural melody appeared almost in its pristine form, with the addition of few ornamental tones at the melodic surface, in order to fit the requirements of the poetical text and to give an aesthetically adequate performance (nr. II & III)\(^{44}\). In the long version (nr. IV) however, the structural melody remained in the background, constituting the modal attraction poles and therefore the driving structural force behind the fluent melodical formulas by which the melody is woven.

Furthermore, the last version required more textual syllables in order to develop the whole structural background (i.e. for nr. II & III, Αγάλλεται σήμερον was sufficient, but for IV, one had to continue with the text ...η ἐκκλησία τοῦ Θεοῦ [Today rejoices the Church of God], also enlarged by repetitions of syllables and the insertion of the euphonic n [νε, Ζου etc.]). In its turn, the meaning and metrical structure of the text led to the choice of appropriate melodic formulas, registers and modulations, which could illustrate the key-words: Αγάλλεται - rejoices: double ascending skip on main tones of the mode (Πα/Δ → Κέ/α → Νη/Γ), which derives naturally from the prosodical accent (oxeia) carried by the second syllable of the text and thematismos eso in the high register, with a first culmination on Πα/Δ | ἐκκλησία - Church: epegerma, an 'exciting' melodic gesture ending with a cadence in the plagal of the third mode on Γα/Φ which is associated with prayer, consolation,

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227. Some of these ornaments are suggested by the neumes belonging to the category of the so-called semadia tropika (psephiston, bareia, antikenoma, homalon, heteron), some others by the petaste or the klasma. Such ornaments can be subsumed to the notion of kalialepeia, i.e. the beautiful rendition of the musical text, which is facilitated by the movements of the hand performed by the singer or by the conductor of the choir (cheironomy): cf. the systematic presentation of the so-called cheironomiai by K οράς (1982: I, 180-219) and the comments by Angelopoulos 1998. For the historical dimension of the issue, cf. Moran 1986. See also Alexandru 2000: I, 239-286. For the idea of combining schematic and detail transcription in a very similar form on the same staff, we thank our student Sophia Yoldasi (ΓιόλΔάθη 2006: 12-19).

40 Cf. Χατζηγιακου 1999: 41-44.
43 Cf. the description of this branch of the first authentic mode with finals on Κέ/α, in Κοράς 1982: I, 311-316. According to the same theoretician, if the melody goes into the upper register, imperfect cadences can also be produced on the high Νη/Γ. For the short and medial versions of Agálleta simeron, we used the same mode in its low position, the so-called protos eso, with finals on Πα/Δ, according to the habits of Petros Peloponnesios who represents the new sticheraric style.
encouragement\textsuperscript{45} (\textit{θεοῦ} - of God: anabasis-gesture, with climax on the upper d/Πα and descending movement in the ambitus of one octave, to the lower finals of the first mode, an extended katabasis-formula, as a tentative musical depiction of God’s highness and His descending from heaven to earth in order to save His creation\textsuperscript{46}. Fig. 15 summarizes some main elements of the long version of Αγαλλεται σήμερον. At the same time, the reduction functions as a "blueprint" against which the subsequent embellishments both in the composing-out process (as required by the poetical text and the characteristic melodic formulas-theses) and in the performance process can be compared\textsuperscript{49}.

5. Conclusions

The present contribution comes to stress the importance of the hypothesis of universal or almost universal features in music making and music perception, expressed by some of the leading ethnomusicologists of the last decades. Similar procedures in developing musical surfaces from deeper melodic structures could be traced with the help of Western and Byzantine theoretical texts and composition samples belonging to the two traditions. Byzantine neumes were transnotated or transcribed into Western staff, in order to facilitate the different types of analysis and the comparison of the two musical cultures. However, there remains the fundamental difference between the two notations, the Western one belonging to the type of 'acoustic' notations, which show the result, the 'product', whereas the Byzantine to the 'articulatory' notations, which focus on the action, the 'process' by which music comes into life\textsuperscript{50}. There could be observed a different stylistic "repertory" of elaborational techniques, but not entirely different, since the main embellishment techniques (use of neighbour notes and passing notes) are quite similar. The elaboration through skips is of course different in concept: In Western music these skips are called consonant skips and they are based on entire different, since the main "repertory" of elaborational techniques, but not entirely different, since the main embellishment techniques (use of neighbour notes and passing notes) are quite similar. The elaboration through skips is of course different in concept: In Western music these skips are called consonant skips and they are based on underlining tertian harmony. In Byzantine music, which is monophonic/heterophonic and relative pitches of "primary structural salience" (the beamed notes), the reduction indicates two levels of ornamental pitches (unbeamed whole and black notes). At the same time, the reduction functions as a "blueprint" against which the subsequent embellishments both in the composing-out process (as required by the poetical text and the characteristic melodic formulas-theses) and in the performance process can be compared\textsuperscript{49}.


\textsuperscript{47} The symbols for the melodic contours are adapted after Charles Adams’ classification given in Cook 1994: 197. For the other analytical elements, cf. Alexandru 2006 b.

\textsuperscript{48} The last but one structural tone (Bou/E) is indicated at nr. V with a black beamed note, since it doesn’t belong to the main tones of the first authentic mode, thus being also excluded from the cadential plan of this mode. Cf. Καρδάς

\textsuperscript{49} See fig. 14, nr. IV-V and Stock 1993: 228-230, where the embellishment-process in Chinese traditional music is described as resulting into "secondary and tertiary clusters of embellishments" formed "around each primary structural note and its original decorations".

\textsuperscript{50} Cf. the motto of this paper and Ellingson 1992 b: 157-158 et passim. For a panoramic view over different types of notation used in world music and main musicological issues connected with them, cf. Jaschinski (ed.) 2001. Thanks also to prof. Eleni Lapidaki for a fruitful discussion about the role of notation in the context of Western and of Byzantine music.


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does not have vertical sonorities except from pedal notes (*isokrates*), skips occur more seldom during the elaborational process and their choice is based on the gravitational attraction of structural modal pillars. The original concept of diminution in Western music, at least in the way it was taught through didactic manuals, essentially means keeping the original structural durations intact and breaking them down to shorter durations through the use of certain elaborational techniques. However, in Byzantine chant elaboration does not only means breaking into smaller durations but mainly *expanding* a melodic phrase or gesture into a melodic surface substantially longer in duration. This of course also occurs in Western music composition through the concept of *prolongation*, the virtual expansion of a structural event (a certain pitch or a complete polyphonic structure) in time without its actual presence in the musical surface. Concerning Byzantine chant, the primary importance of the poetical text in the processes of creation, performance and analysis has to be emphasized, since this music is conceived as an iteration and explanation of the sacred word51.

The proposed comparison between structural analysis methodologies in Western and Byzantine music could shed more light to the comprehension of the middle-Byzantine notation and the multiplicity of ways that it could be used by the composer-performer. The neumatic notation used before the Reform of the Three Teachers in 1814 can be viewed, at least in the case of the long/slow melodies, as a 'middle-ground', from which, on the one hand, the performer unfolds through the traditional technique of *exegesis* the slow and heavily embellished *melos*. On the other hand, the analyst can extract from the same middle-ground notated in middle-Byzantine notation, a structural background/deep structure by means of reduction, suggesting a "plausible cognitive skeleton" for that individual piece52.

The use of different reductional forms of analysis in Byzantine chant and the comparison with similar approaches in Western and other musics offers the opportunity to connect basic notions and apprehension exercises found in Byzantine and post-Byzantine theoretical treatises with the actual performance practice of Greek ecclesiastical chant, exploring at the same time its historical dimension53. *Exegesis* is not a bare reproductive process, but a creative one. It seems that in the older tradition, chanting and composing were more tightly bound together than they are in the actual practice. *Exegesis* in its various forms emerges as a particular, traditional technique of orally supported melodic elaboration-rendition of old Byzantine neumated texts, which has its distinct place in the large family of melodic elaboration techniques occuring in many other musical cultures worldwide.

Furthermore, such investigations can lead to the uncovering of hitherto hidden/not yet theoretized facettes of the Byzantine art of melopoeia, of composing this music, which aims at representing sonor icons of the divine beauty, at bringing "our hearts into concord with the divine, with ourselves and with one another"54.

Thus, the process of structural analysis in both contexts emerges as a profound personal and interpersonal interpretational and cognitive tool55, creating bridges between researchers of Eastern, Western and other musical cultures.

7. Acknowledgements

We would like to thank our colleague Dr. Ioannis Liakos and the members of the Study Group for Byzantine Musical Palaeography from the School of Musical Studies of the Aristotle University Thessaloniki, as well as Mr. Dimitris Christodoulidis for their support in preparing the Byzantine musical examples. Thanks also to Mr. Pavlos Chatzipapas and Mr. Liakos for elucidating discussions about the art of composition in Byzantine music.

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52 Cf. Stock 1993: 227. Schenker 1969: 15, 24 et passim. See also Widdess 1992: 225-226, who argues that "the original notation itself involves an act of analysis on the part of members of the musical culture concerned, for notation preserves those aspects of the music which the notator considers essential for its transmission or recall. In analysing an early notated repertory, therefore, we are in fact carrying a stage further the analysis already undertaken by members of the culture concerned."

54 From the *Ecclesiastical Hierarchy* by St. Dionysios the Areopagite (chapter 3, § 5), quoted and explained by Wellesz 1962: 58, with note 2.
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**Ethnomusicology**


### Byzantine Musical manuscripts

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56 For the way of presentation of the mss in the above table, cf. Γιαννόπουλος 2005: 127-128. See also Alexandru (ed.) 2008: 54-55.