

The chromatic scales of the Deuterios modes in theory and practice*

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ABSTRACT. *The idea that the Deuterios modes (second authentic and second plagal) of Greek liturgical chant already had a chromatic character before the end of the Byzantine era has gained wide acceptance in the last decades. Trying to go one step further and reconstruct the scales of these modes, the present article attempts a new interpretation of certain crucial passages in late Byzantine treatises, which can provide important clues, if interpreted in connection with the description of the modes in modern Greek music theory and their actual characteristics in the written and oral tradition. The resulting structures can serve as a basis for future transcriptions of chants, at least for the late and post-Byzantine repertory.*

The intervallic structure of the Greek church modes was not systematically described until the publication of Chrysanthos of Madytos' theoretical works in 1821 and 1832.¹ The lack of explicit references to the chromatic character of the Deuterios modes before this time led Western scholars to consider the Byzantine tonal system as a purely diatonic one,² ascribing the establishment of chromaticism to Turkish influence after the end of the Empire in 1453.³ Nevertheless, certain indications pertaining to the use of medial signatures in Byzantine chant, brought to light only in the last few decades, require a re-examination of the entire question of chromaticism.⁴ The present article intends to present a new attempt at establishing a plausible interpretation of the late Byzantine theoretical evidence for chromatic structure in the Deuterios modes.

Leaving the problem of the medial signatures aside for the moment, I will discuss the most significant indications found in Byzantine music theory that might permit a reconstruction of the scale(s) of the second authentic and second plagal modes, which

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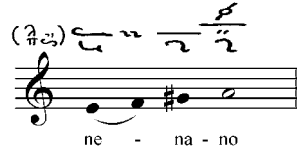
¹ Chrysanthos from Madytos, *Εἰσαγωγή εἰς τὸ Θεωρητικὸν καὶ Πρακτικὸν τῆς Ἐκκλησιαστικῆς Μουσικῆς* (Paris, 1821) and *Θεωρητικὸν Μέγα τῆς Μουσικῆς* (Trieste, 1832).

² One of the most significant articles on this topic is Oliver Strunk, 'The Tonal System of Byzantine Music', in his *Essays on Music in the Byzantine World* (New York, 1977), 3–18.

³ Egon Wellesz, *A History of Byzantine Music and Hymnography*, 2nd edn (Oxford, 1961), 366. This theory was never seriously discussed among the Greek cantors and chant scholars, since belief in the continuity of the tradition was (and still is) very strong in Greece.

⁴ George Amargianakis, 'The Chromatic Modes', *XVI. Internationaler Byzantinistenkongress, Akten II/7 = Jahrbuch der Österreichischen Byzantinistik 32/7* (Vienna, 1982), 7–17; Jørgen Raasted, 'Chromaticism in Medieval and Post-medieval Chant: A New Approach to an Old Problem', *Cahiers de l'Institut du Moyen-Âge Grec et Latin*, 53 (1986), 15–36.

are believed to represent the chromatic genus in Byzantine chant. This will take into account not only the medieval music theory, but also the Chrysanthine tonal system and the living practice of Greek church music.



Ex. 1 The *nenano* apechema and the respective phthora on *a*.

The most appropriate starting point is the *nenano*, which is both a ‘phthora’ (modulation sign) and an ‘apechema’ (intonation formula), representing an ascending interval of a fourth (Ex. 1). The acceptance of its chromatic nature is nothing new, since it was thus interpreted by H. J. W. Tillyard in his *Handbook*.⁵ This phthora is normally positioned on *a*, the basis⁶ of the first authentic mode, and it affects the tetrachord between *a* and low *E*, the latter being the natural basis of the second plagal mode: ‘And three steps [a fourth] above the second plagal mode lies the first authentic, which, adding a phthora, makes the *nenano*’.⁷ It must be remembered that the connection between *nenano* and the first authentic mode, a commonplace among late Byzantine theorists,⁸ has to do with the highest note of the tetrachord (this is both the ending-note of the *nenano* intonation formula and the starting-note of phrases beginning with *nenano*), not with its lowest note. By misunderstanding this concept, one could be misled to believe that the *nenano* tetrachord is positioned normally not on *E* (*a*), but on *D* (*G*), the basis of the first authentic as well as the second plagal modes in the Chrysanthine system.⁹

⁵ *Handbook of the Middle Byzantine Musical Notation*, Monumenta Musicae Byzantinae, Subsidia 1/1 (Copenhagen, 1970), 35; also Max Haas, *Byzantinische und slavische Notationen*, Palaeographie der Musik I/2 (Cologne, 1973), 48.

⁶ The term ‘final’ of Western modal theory is not appropriate for the Byzantine modes, because many chants end on a tone other than the ‘tonic’ of the mode. It is very common, for instance, that a chant belonging to an authentic mode ends on the ‘tonic’ of the respective plagal mode. The term ‘basis’ is commonly used in Chrysanthine theory and in current Greek practice.

⁷ ‘Ὁ δὲ πλάγιος τοῦ δευτέρου, ἐν ἀναβάσει τριφώνων ἔχει τὸν πρῶτον, ὃς φθοριζόμενος [. . .] ἀποτελεῖ τὸν νενανῶ . . . Ioannes Plousiadenos (15 c.), ‘Ἐρμηνεῖα τῆς παραλλαγῆς (Cod. Athos, Dionysiou 570, fols. 119^r–123^v, esp. 122^r), in Antonios E. Alygizakes, *Η οκταηχία στην ελληνική λειτουργική υμνογραφία* (Thessalonica, 1985), 237, lines 101–3.

⁸ Manuel Chrysaphes, for example, writes that the *nenano* phthora is equal to the first mode in terms of the *parallagé* (τὴν τοῦ νενανῶ φθορᾶν, ἣ τις ἐστὶν ἀπὸ παραλλαγῶν ἡχος πρῶτος . . .; see *Περὶ τῶν ἐνθεωρουμένων τῆ ψαλτικῆ τέχνης καὶ ὧν φθοροῦσι κακῶς τινες περὶ αὐτῶν*, ed. Dimitri E. Conomos, *The Treatise of Manuel Chrysaphes, the Lampadarios: On the Theory of the Art of Chanting and on Certain Erroneous Views that Some Hold About it*, Monumenta Musicae Byzantinae, Corpus Scriptorum de Re Musica 2 (Vienna, 1985), 64, lines 494–5. ‘Parallagé’ was a kind of solmization, using for each tone the apechema of the respective mode; ‘in terms of the *parallagé*’ means in this case: ‘if we use the names of the modes, which are normally assigned to each tone’.

⁹ Such a misunderstanding can be found in Ioannis Zannos, *Ichos und Makam. Vergleichende Untersuchungen zum Tonsystem der griechisch-orthodoxen Kirchenmusik und der türkischen Kunstmusik* (Bonn, 1994), 112.

The theorist Gabriel Hieromonachos (flourished in the middle of the fifteenth century) refers to the ‘nenano phoní’, which ‘seems to be in some way halved’.¹⁰ The term *phoní* (literally: ‘voice’) in Byzantine music theory has generally the meaning of one step up or down the scale, corresponding to an interval of a second. An anonymous fifteenth-century writer tried to determine the position of the nenano characteristic interval in the tetrachord in the following way:¹¹

It is then called phthora when you sing a half-step in downward direction [i.e., below a tone],¹² [followed by?] one and a half steps, as in the nenano. Listen to this: [nenano apechema]. So is the phthora in an upward direction. Behold, the step of -no, this half-step, was sung on -na-.¹³

Despite this rather obscure formulation, it is clear that the ‘half-step’ falls between *-na-* (*G*) and *-no* (*a*), thus causing the formation of a larger interval (‘one step and a half’) below *-na-*. Since *F-G* and *G-a* are both whole tones, the former interval must become an augmented second (*trihemitonion*) and the latter a semitone; all that is required is a *G#* (Ex. 1).

The ‘nenano phoní’, i.e., the interval *G#a* (*F#-G* in the Chrysanthine tonal system), is considered to be smaller than semitone in modern Greek music theory. It represents a quarter-tone according to Chrysanthos,¹⁴ a third of a tone according to the Patriarchal Committee of 1881.¹⁵ This has to do with the *elxis* phenomenon (from the verb *elko*, to attract), which refers to the fact that certain dominant tones ‘attract’ towards themselves the neighbouring tones, depending on the direction of the melody. In case of the nenano tetrachord, the third degree comes closer to the fourth, whenever the melody ascends to the latter (as in the nenano apechema) or moves around it. It is perhaps what Gabriel Hieromonachos implies in trying to explain why the melody sometimes strays from its tonal centre because of an incorrectly sung interval:

Because when we sing a nenano melody, we don’t end on the tone, from which we started, but if you look at it closer, you will find that we come down to a somewhat lower pitch. The reason

¹⁰ *Περὶ τῶν ἐν τῇ ψαλτικῇ σημαδίων καὶ φωνῶν καὶ τῆς τούτων ἐτυμολογίας*, ed. Christian Hannick and Gerda Wolfram, *Gabriel Hieromonachos. Abhandlung über den Kirchengesang*, Monumenta Musicae Byzantinae, Corpus Scriptorum de Re Musica 1 (Vienna, 1985), 98, lines 682–3.

¹¹ The passage was presented for the first time by Ioannes Zannos (with a German translation) in *Ichos und Makam*, 112. The treatise in question is contained in a manuscript of the Papadiké type, Cod. Athens, National Library 899, fols. 2^r–13^v. For a description of the manuscript see Ioannes Sakkelion, *Κατάλογος τῶν χειρογράφων τῆς Ἐθνικῆς Βιβλιοθήκης τῆς Ἑλλάδος* (Athens, 1892), 163.

¹² Zannos (*ibid.*) inserts at this point the following words: ‘or, to be more precise, a third of a step, while in upward direction [you sing]’. This interpolation originates probably from a later source, Cod. Athos, Xeropotamou 317 (18 c.), used by Zannos in his ‘Wissenschaftliche Hausarbeit zur Erlangung des akademischen Grades eines Magister Artium’ (University of Hamburg, 1985) to expand the text of Athens 899 in a few places (see esp. 31, lines 13–17). Still, Zannos neglects to inform the readers of *Ichos und Makam* that the additional material is not found in Athens 899, but in a much later manuscript.

¹³ *Τότε λέγεται φθορά, ὅταν τῆς φωνῆς τὸ ἥμισυ εἴπῃς ἐν ταῖς κατιούσαις*, [Zannos: ἢ κατ’ἄκριβολογίαν τὸ τρίτον, ἐν δὲ ταῖς ἀνιούσαις] *μίαν καὶ ἥμισυ, ὥσπερ εἰς τὸ νενανῶ. Ἄκουσον γὰρ: [ve-na-vō]. Αὐτὴ ἢ φθορὰ εἰς τὰς ἀνιούσας. Ἴδὸν γὰρ εἶπε τοῦ νῶ τὴν φωνὴν, τὴν φωνὴν τὴν ἥμισυ* [correct: ἡμίσειαν] *εἰς τὸ νά* (Athens, National Library 899, fol. 5^v). For the original orthography and punctuation see Fig. 1 on the next page.

¹⁴ *Θεωρητικόν*, diagram on p. 106.

¹⁵ See *Στοιχειώδης διδασκαλία τῆς ἐκκλησιαστικῆς μουσικῆς* (Constantinople 1888, repr. Athens 1978), 57, 96. Xeropotamou 317 (18 c.) speaks also about a third of a tone (see nn. 12 and 13).

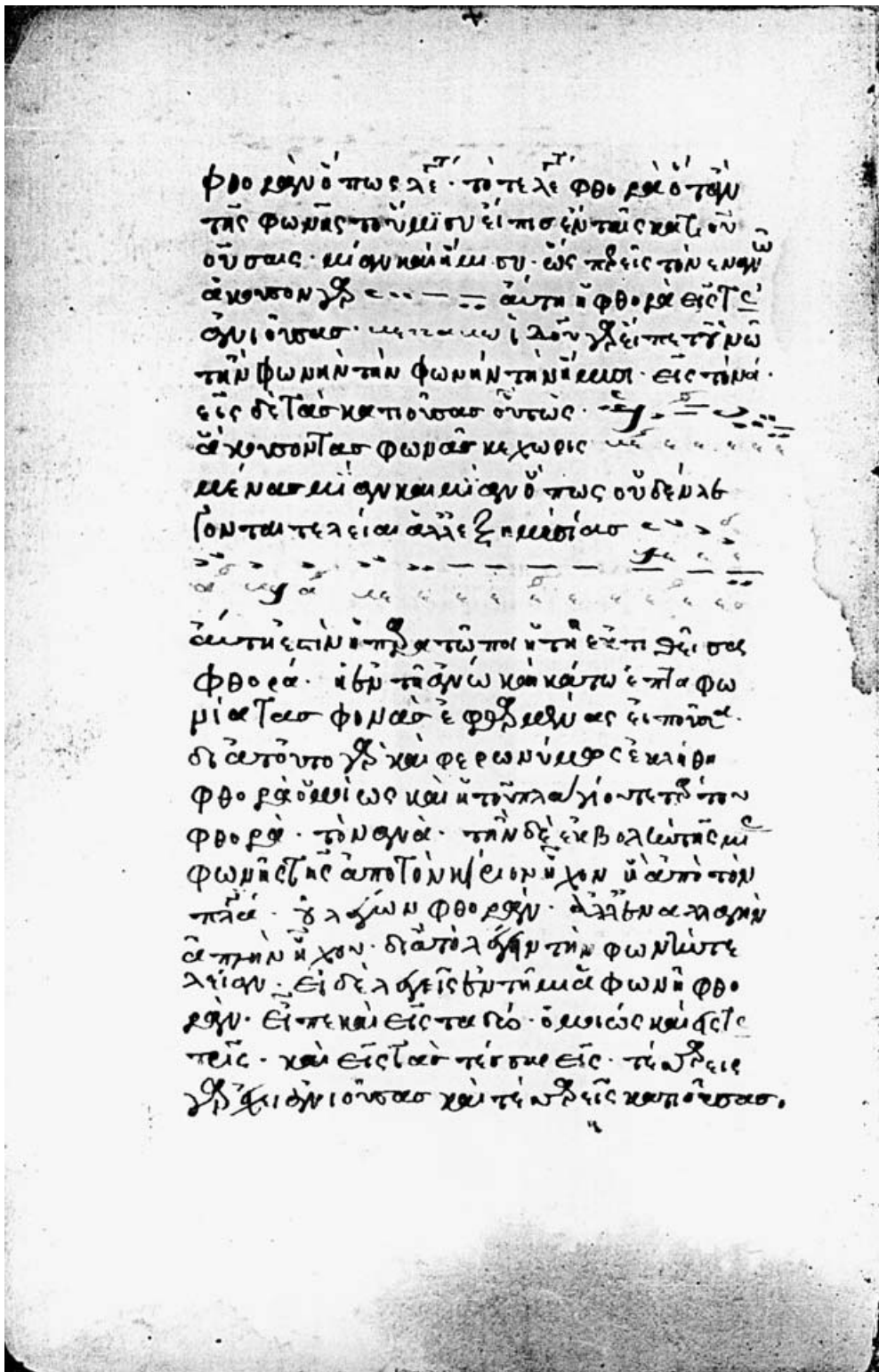


Fig. 1 Cod. Athens, National Library 899, f. 5v.

for this is the nenano interval; for it seems to be in some way halved, even if we are not aware of it; in other words, we perform the nenano intervals weakly [=flattened] in upward direction, in order to give the characteristic colour of nenano, but in downward direction [we perform them] correctly, and this causes the melody to get out of tune.¹⁶

Such an analysis of intonation problems is really unusual in Byzantine music theory. It is clear that a 'halved' interval cannot here mean 'semitone' but an interval smaller than it should be.

The nenano apechema (intonation formula) is frequently used in the repertory of the second plagal mode, in place of either an initial or a medial signature, indicating that the next phrase must begin on *a*. Does it also mean that the use of the nenano chromatic tetrachord was the rule for this mode, as it is in the current practice? Manuel Chrysaphes (flourished c. 1440–63) is quite positive about it, though in an indirect way. Referring to the Plagios deuterios phthora:

One could probably say, concerning the phthora of the second plagal mode, that there would be a need for it if there were no nenano phthora. Since the phthora of the nenano is able both to make up for the deficiency of this phthora and fulfil its own purpose, what was the point of using the phthora of the second plagal mode?¹⁷

He goes on to explain that the only difference is that the nenano phthora is used to 'bind' whole phrases and needs another phthora to terminate its effect, while the Plagios deuterios phthora affects only short passages (ending on its basis, *E*), without having to get 'unbound' (nullified by a subsequent phthora).

It is therefore obvious that the second plagal mode uses the nenano as its basic tetrachord. Does the second authentic mode use this tetrachord as well? The authentic modes locate their bases four steps (a fifth) above their respective plagals and are closely related to them, since they are characterized by frequent cadences, medial or final, on the bases of the plagal modes. Thus they should logically share the same scales with them. If the second authentic mode uses the nenano tetrachord, its apechema (intonation formula) should contain a *G*[#] and take one of two forms: *b-a-G[#]-a-b* or *b-a-G[#]*, depending on the starting-note of the melody. Manuel Chrysaphes confirms this, describing the effect of the Deuterios phthora:

If this phthora is used in order to bind, it functions as follows: the first mode, frequently tetraphonos,¹⁸ changes to second mode in melodic terms¹⁹ – this is effected by the strength of the

¹⁶ 'Ὅπταν γὰρ ἀλλάωμεν νενανὸν μέλος, οὐκ εἰς ἣν ἠρξάμεθα καὶ τελευτῶμεν φωνήν, ἀλλὰ σκοπῶν ἐνρήσεις ἐπὶ τὸ κάτω μᾶλλον ἐρχομένους ἡμᾶς. Αἴτιον δὲ ἢ τοῦ νενανῶ φωνή· αὕτη γὰρ ἡμίσεια δοκεῖ πως εἶναι, εἰ καὶ ἡμῖν ἀγνοεῖται· ἄλλως θ' ὅτι ἀσθενεῖς ἐκφέρομεν τὰς τοῦ νενανῶ ἀνιούσας φωνάς, ἵνα ἢ τοῦ νενανῶ ἰδέα χρωματισθῇ τὰς δὲ κατιούσας σφας, καὶ ἐκ τούτου συμβαίνει τὸ μέλος ὑποχαλᾶν (Hannick-Wolfram, *Gabriel Hieromonachos*, 98, lines 680–6).

¹⁷ Περὶ δὲ τῆς τοῦ πλαγίου δευτέρου ἡχοῦ φθορᾶς ἔχει τις ἂν ἴσως εἰπεῖν, ὅτι εἰ μὴ ἦν τοῦ νενανῶ, ἦν χρεῖα τῆς τοῦ πλαγίου δευτέρου· ἐπεὶ δὲ τοῦ νενανῶ φθορὰ δύναται καὶ τὸ ταύτης ἀποπληροῦν ὑστέρημα καὶ τὴν ἐαυτῆς χρεῖαν, τίς ἦν χρεῖα ἵνα τεθῇ ἢ τοῦ πλαγίου δευτέρου; Translation (slightly revised) from Dimitri Conomos, *The Treatise of Manuel Chrysaphes*, 62, lines 454–8.

¹⁸ 'Frequently tetraphonos' means that this mode descends often into the respective plagal mode, four steps (a *tetraphonia*) below its basis tone.

¹⁹ The expression 'ἀπὸ μέλους', which is translated here as 'in melodic terms', is used in Byzantine music theory as a reference to the intervallic structure of the melody, in contradistinction to 'ἀπὸ παραλλαγῆς' ('in terms of the parallage', see n. 8), which refers to the names of the tones.

phthora of the second mode. If a phthora were not placed on the [basis of the] first mode, the melody would descend into the respective mesos [mode], that is the Barys. So for this reason the phthora is used, which corresponds to the [second] mode, and instead of the Barys it binds the melody and becomes the mesos of the second mode, thus: [apechema of the second mode, see Ex. 2].²⁰



Ex. 2 The apechema of the second authentic mode in its shortest form, indicating G (*sharp*) as starting-note.

The *mesos* ('median') is a theoretical construction, indicating the mode (always plagal), whose basis can be found two steps (a third) below an authentic mode, lying thus midway between authentic and corresponding plagal. Descending from *a* (Protos) to *F* (Barys) gives a major third. If the second mode was also diatonic, then descending from its basis (*b*) to its mesos (*G*) would give a major third too, and the phthora of the second mode on *a* would make no sense. On the contrary, a *G#* in the second mode becomes an *F#* if transposed into the first mode, which makes the above-cited passage perfectly intelligible.

One could object that, according to Byzantine music theory, the mesos of the second mode is the fourth plagal, a diatonic mode based normally on *G*.²¹ Chrysaphes does not fail to clarify this issue in his discussion of the Deuterios phthora:

Therefore, the termination and the resolution of this phthora is the mesos of the second mode, that is the fourth plagal, except that the melody does not descend simply into the fourth plagal mode, but is bound by the phthora, and this is called *eso* [=inner, i.e., lower] deuterios. For if the fourth plagal mode were not bound, what would be the point of using the phthora of the second mode? So the phthora is placed for this reason, to bind the melody, which is being thus attracted.²²

The term 'attracted' refers obviously to the change of the intervallic relations, since the fourth plagal mode (*G*) comes closer to the first authentic (*a*), becoming *eso deuterios* (*G#*).

²⁰ Εἰ δὲ διὰ δεσμὸν τέθειται ἡ φθορὰ αὐτή, γίνεται οὕτως. Ὁ πρῶτος ἦχος πολλακίς τετραφωνῶν γίνεται δευτέρος ἀπὸ μέλους. Ποιεῖ δὲ τοῦτο ἡ τῆς δευτέρου ἤχου φθορᾶς δύναμις. Εἰ γὰρ μὴ ἐτίθετο φθορὰ εἰς τὸν πρῶτον, κατήρχετο εἰς τὸν μέσον αὐτοῦ τὸν βαρῶν. Ἀλλὰ διὰ τοῦτο τίθεται ἡ φθορὰ ἢ ὁ ἦχος, καὶ ἀντὶ τοῦ βαρέος δεσμεῖ τὸ μέλος καὶ γίνεται μέσος τοῦ δευτέρου οὕτως. [ve-a-ves]. Translation (slightly revised) from Conomos, *The Treatise of Manuel Chrysaphes*, 54, lines 315–21.

²¹ See Hannick and Wolfram, *Gabriel Hieromonachos*, 78, lines 456–7: Τοῦ δὲ δευτέρου μέσος [ἐστὶν] ὁ πλάγιος τοῦ τετάτου.

²² Ἡ κατάληξις γοῦν ταύτης τῆς φθορᾶς καὶ ἡ ἀνάπασις ἐστὶν ὁ μέσος τοῦ δευτέρου, ὁ πλάγιος τοῦ τετάτου. πλὴν οὐ κατήρχεται ἀπλῶς εἰς τὸν πλάγιον τοῦ τετάτου, ἀλλὰ δεσμεῖται παρὰ τῆς φθορᾶς καὶ λέγεται ἔσω δευτέρου. εἰ γὰρ μὴ ἐδεσμεῖτο ὁ πλάγιος τοῦ τετάτου, τίς ἦν χρεῖα ἵνα τεθῆ φθορὰ δευτέρου; Ἀλλὰ διὰ τοῦτο τίθεται ἡ φθορὰ, δεσμοῦσα τὸ μέλος ἐλκόμενον. Translation (slightly revised) from Conomos, *The Treatise of Manuel Chrysaphes*, p. 54, lines 328–35.

There is, nevertheless, a lack of evidence concerning the basic tetrachord of the second authentic mode (*b-e*), which forms the high register of both Deuterios modes.²³ The corresponding tetrachord of the second mode in current Greek practice (*G-c*, positioned a third lower) belongs to the ‘soft’ chromatic genus. The semitones of the nenano tetrachord are replaced here by an interval equal to one and a third semitones, and the augmented second is replaced by an interval equal to a whole tone plus a third of a semitone. The tetrachord takes thus the form 133.33-233.33-133.33 cents (or 8-14-8 segments, each segment being equal to a sixth of a semitone).²⁴ Modern music theory requires that the lower tetrachord of the same mode (*C-F*) have a similar structure, but the current musical texts show a quite different reality. When the melody descends into the plagal mode (*C*, a fifth below the basis) and makes a medial cadence, the genus always changes to ‘tense’ chromatic through the use of the nenano phthora, thus confirming our assumption that the nenano tetrachord is used by both Deuterios modes (Ex. 3).

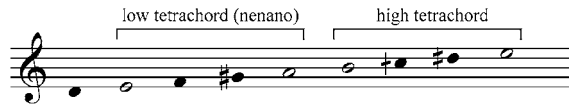
Ex. 3 A characteristic cadence of the second authentic mode (transcribed here from its original basis tone *b*, a major third higher than the Chrysanthine one), descending into the second plagal; *Ἀγούστου μοναχῆσαντος*, Doxastikon for Christmas vespers, from the Doxastarion by Petros Peloponnesios (1st edition, Bucharest 1820, p. 114).

An indication of the stability of the second authentic mode through the centuries may be seen in the fact that, unlike the other authentic modes, it retains in the ‘new’ repertory most of its old characteristics: cadences a fifth below the basis tone (as

²³ The second mode, being an authentic one, can ascend up to a fourth above its basis tone *b*, reaching thus high *e*; see Hannick-Wolfram, *Gabriel Hieromonachos*, 82, lines 509–10: οἱ κύριοι [ἦχοι] μέχρι τριῶν φωνῶν προΐασι τὸ ὑψηλότερον . . . (the authentic modes ascend up to three steps at the highest). The second plagal mode can reach *d*, a seventh above its basis *E*; and *ibid.*, 84, lines 525–7: Ὁ δὲ πλάγιος τοῦ δευτέρου καὶ ὁ βαρὺς κοινονοῦσιν ἀλλήλοις κατὰ τὸ μὴ ποιεῖν διπλασμόν· μέχρι τῶν ἑπτὰ φωνῶν οὗτοι οὐ προέρχονται (The second plagal and the Barys have this in common, that they do not reach the octave; these modes can move less than seven steps upwards).

²⁴ See Demetrios G. Panagiotopoulos, *Θεωρία καὶ πρᾶξις τῆς βυζαντινῆς ἐκκλησιαστικῆς μουσικῆς* (Athens, 1947), 104, § 34. The specific calculation of the ‘soft’ chromatic intervals, generally accepted today, is based on the findings of the Patriarchal Committee of 1881, which corrected Chrysanthos’ calculations as having no scientific basis (*Στοιχειώδης διδασκαλία*, 9–10). Simon Karas found it necessary to make his own calculation, giving the following intervals: 7.5-16-6.5 segments or 125-266.66-108.33 cents (*Γένη καὶ διαστήματα εἰς τὴν βυζαντινὴν μουσικὴν* (Athens, 1970), 30).

mentioned earlier), ambitus, which in most cases does not exceed the central octave *E-e* (or *C-c* in its new position, but in the 'old' repertory: *D-e*), and its main dominant tones, *b-G#* (or *G-E* in its new position).²⁵



Ex. 4 The mixed 'tense' and 'soft' chromatic scale.

According to what has already been said about the second mode, we could consider a low nenano tetrachord and a high 'soft' chromatic (Ex. 4) as a possible reality in the fifteenth century. The question must be posed about whether the second plagal mode uses a 'soft' tetrachord, whenever it moves beyond the fifth degree (*b*). Viewed in terms of the 'new' repertory, the question must be answered in the negative. In most cases either a diatonic or a 'tense' chromatic tetrachord, similar to the lower one, is used. Nevertheless, a look into the *Doxastarion* by Iakovos Protopsaltes (*d.* 1800),²⁶ which preserves many elements of the 'old' repertory, leads to the discovery that a high 'soft' tetrachord makes its appearance with the same frequency as a diatonic or a 'tense' chromatic one. Our sole indication concerning the tetrachord *b-e* in the Byzantine era comes from Gabriel Hieromonachos, who continues his analysis of the intonation problems (see above) as follows:

So in the nenano melodies we come down to a lower pitch, but the opposite happens when the second plagal mode uses [not the nenano, but²⁷] the second mode in the high position. Because you would see that we tend towards a higher pitch in case of such a melody, especially when we sing a *Katabasia*. The reason for this is again the fact that the intervals of the second mode are performed deficiently in a downward direction; when we ascend, we perform these intervals correctly, but descending we perform the two of them deficiently and quasi-halved, so that the melody reaches a higher pitch; and the reason is, as we have already said, the halved intervals.²⁸

Indeed, the intervals of the second mode are considered as the most difficult to sing in living practice, especially the interval of approximately 233 cents (*ab-b* in the new tonal system), which in downward melodic direction becomes sometimes a whole tone, being performed (in Gabriel's words) 'deficiently' or 'halved'. Still, it is puzzling why Gabriel does not refer simply to the second mode but prefers to speak about the second plagal, when it ascends to the basic tetrachord of the second mode.

²⁵ See *Στοιχειώδης διδασκαλία*, 52, §§ 67, 69.

²⁶ *Δοξαστάριον* [...] μελοποιηθὲν παρὰ Ἰακώβου Πρωτοψάλτου τῆς τοῦ Χριστοῦ Μεγάλης Ἐκκλησίας [...], 2 vols. (Constantinople 1836, repr. Katerini, 1990).

²⁷ For the words in brackets see edition of Lorenzo Tardo, *L'antica melurgia bizantina* (Grottaferrata, 1938), 204: ὁπότεν οὐ νενανὸ ἕξω ἀλλὰ δευτέρου καταλέγη . . .

²⁸ Ἐπὶ τὸ κάτω οὖν ἐρχόμεθα εἰς τὰ τοῦ νενανὸ μέλη, ἐπὶ δὲ τοῦ πλαγίου δευτέρου γίνεται τὸ ἀνάπαλιν, ὁπότεν δευτέρου καταλέγη ἕξω. Ἴδιοι γὰρ ἡμᾶς ἐπὶ τὸ ἕξω φερομένους ἐπὶ τούτου τοῦ μέλους, καὶ μᾶλλον ὁπότεν ψάλλομεν καταβασίαν· αἴτιον δὲ καὶ τούτου ὅτι αἱ φωναὶ τοῦ δευτέρου αἱ ἔσω ἐφθαρμένως λέγονται· ἀνερχομένων δὲ ἡμῶν τὰς ἀνούσας ταύτας φωνὰς ἀνελλιπεῖς, τὰς δὲ δύο κατιούσας ἐφθαρμένας καὶ οἰνοειήμισιαις, προέρχεται τὸ μέλος ἐπὶ τὸ ἕξω· καὶ εἰσὶν αἱ ἡμίσειαι φωναί, ὡς εἶπομεν, τὸ αἴτιον (Hannick-Wolfram, *Gabriel Hieromonachos*, 98–100, lines 686–95. For the term *Katabasia* see the commentary, p. 135).

The answer might be simply that, having spoken about nenano, which corresponds to the lower tetrachord of the second plagal mode, he wanted to show that the same mode can use two different tetrachords, with different intonation problems in each of them.

It seems, therefore, that the mixed scale applies to both Deuterios modes, even if certain restrictions apply to the second plagal mode. It is quite important to keep in mind, however, that the term 'scale' in Byzantine music does not always refer to equal octave-patterns, but sometimes also to equal fifths or fourths, depending on the way the tetrachords are joined to each other (Chrysanthos calls this parameter *systema*). When the melody moves beyond the central octave of the Deuterios modes, the same intervals are not repeated. The low *D* was probably natural in both modes, since the medial signature which is used for cadences on this tone is a diatonic one, namely that of the first plagal mode.²⁹ The same tone is the lower limit of the second mode, but the second plagal sometimes reaches *C*. Whether this was a *C*_♭ or a *C*_♯ can only be a matter of speculation. In the living practice the third below the basis tone of the second plagal mode is a minor third, indicating thus a low disjunct tetrachord *A-B_♭-C_♯-D* (or *G₇-A_♭-B-C*, since the second plagal mode in modern practice is positioned on *D*).

Finally, we must turn our attention to the *positioning* of the Deuterios modes in the Chrysanthine tonal system, currently in use. The term 'transposition' is not appropriate in this case, because the 'old' music theory did not embrace the concept of absolute pitch.³⁰ On the contrary, Chrysanthos takes into account the actual vocal range of an ordinary male voice when he gives each mode an appropriate basis tone. The following passage represents his reflection about the second plagal:

It [the second plagal mode] must have such a basis that permits it to ascend seven steps without difficulty and to demonstrate the second authentic mode four steps upwards or at least three [i.e., to move upwards three or four steps beyond the fifth degree, which is normally the basis of the second authentic mode]. Such a tone is *Pa* [= *D*] and this is the basis tone for the chants of the Papadiké and of the Sticherarion in the second plagal mode.³¹

Consequently, the second authentic mode should be positioned a fifth higher, on *a*,³² which proves not to be the case. Chrysanthos desired a more 'natural' basis for this mode in relation to the diatonic scale, involving a minimum of altered tones. The tone *G* is ideal for this purpose, since the tetrachord *G-c* needs simply a slight flattening of *a* to become a 'soft' chromatic one. Additionally – and this is the main argument of Chrysanthos – the apechema of the mode (*G_♯-a-b* in its new form, that is *E-F-G* if the

²⁹ See Amargianakis, 'The Chromatic Modes', 9.

³⁰ See Eustathios Makris, 'The Significance of Pitch in the "New Method" of Greek Church Music', *New Sound: International Magazine for Music*, 16 (2000), 88–96.

³¹ Βάσις δὲ ἡ ἴσον [Βάσις ('basis') and ἴσον ('pedal note') are in this case synonymous] πρέπει νὰ ἔχη τοιοῦτον, ὥστε ἐλευθέρως μὲν νὰ ἀναβαίνει τόνους ἐπτά, νὰ δεικνύη δὲ τὸν δευτέρου ἴσον τέσσαρας τόνους ἐπὶ τὸ ὄξύ, ἢ κὰν τρεῖς. Τοιοῦτος δὲ εἶναι ὁ τόνος πα, καὶ τοῦτον ἔχουσιν ἴσον τὰ παπαδικὰ καὶ τὰ στιχηρὰ εἰς τὸν πλάγιον τοῦ δευτέρου ἴσον (Θεωρητικόν, 160).

³² That is exactly what some years later Georgios Rhaidestenos, Protopsaltes of the Ecumenical Patriarchate, proposed in order to retain the natural relation between the two Deuterios modes (G. Rhaidestenos, *Ἡ Ἀγία καὶ Μεγάλη Ἐβδόμας* (Constantinople, 1884), p. ζ').

mode starts from G) uses the diatonic scale, without any alteration.³³ The natural intervallic relation between the two Deuterios modes was thus destroyed.

Complicating the problem further is Chrysanthos' view that the scale of the second mode is based on equal conjunct trichords, each of them consisting of a major semitone (seven segments) and a whole tone (twelve segments).³⁴ This theory creates a scalar pattern similar to *C#-D-E-F-G-ab-bb-cb*, etc., which passes beyond any traditional sense of modality. Chrysanthos' mistake was corrected in part a few years later by Chourmouzios Chartophylax and Theodoros Phokaeus,³⁵ and finally by the Patriarchal Committee of 1881.³⁶ This proved to be too late, however, since many chants of the melismatic genre had been transcribed into the new system not from G, but from E.³⁷ If one accepts the scale above, the identical intervals can be found starting either from G or from E, so the transcriber can choose the most convenient basis without resorting to a transposition!

Many other complications of the 'new' melodic repertory, such as the fact that Heirmoi of the second authentic mode are sung in the second plagal and vice versa, cannot be taken up in this context. My purpose here was to make a contribution towards a plausible interpretation of the Byzantine sources, taking into account the living tradition. The considerations presented in the foregoing pages cannot bring us back to a time earlier than the 'kalophonic' era (fourteenth to fifteenth centuries). If it were to be argued that the Deuterios modes acquired a chromatic character during this late period, no evidence could be presented to refute this view. It can be taken as certain, however, that the introduction of chromaticism is not a post-Byzantine development, originating in a period of Ottoman influence.

³³ ... τὸ ὁποῖον ἴσον εἶναι φυσικώτερον, ἐπειδὴ δίδει καὶ τὸ ἀπήχημά του ἢ διατονικῆ κλίμαξ μὲ τὰ διαστήματα βου γα, γα δι (which basis [G] is more natural, also because its apechema is given by the diatonic scale with the intervals Vou-Gha, Gha-Dhi [E-F, F-G]); *Θεωρητικόν*, 147, §327).

³⁴ *Θεωρητικόν*, 105–106, §244 and diagram of the scales.

³⁵ They proposed equal disjunct tetrachords, each of them having the following structure: minor tone, major tone and major semitone, or 9-12-7 segments; see Theodoros Phokaeus, *Κρηπὶς τοῦ Θεωρητικοῦ καὶ Πρακτικοῦ τῆς Ἐκκλησιαστικῆς Μουσικῆς* (Constantinople, 1842), 57–8, 61.

³⁶ *Στοιχειώδης διδασκαλία*, 18–19 and 52, 65.

³⁷ Many examples can be found in Iakovos' *Doxastarion* (see n. 26).