New Light on the Function of "Borrowed Notes" in Ancient Greek Music:

A Look at Islamic Parallels

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In several of the fragments of ancient Greek music, a note that does not seem to belong to the established *tonos* for that piece appears in an unexpected and hitherto unexplained place in a melodic line.[1] The occurrence of these as "borrowed notes" has been hypothesized, if not thoroughly investigated, by those who study the ancient fragments.[2] The exact relationship between the *tonos* of the piece in which the odd note appears and the *tonos* to which the odd note belongs has yet to be determined, and the reason for the odd note's very existence and its intervallic relationships with the notes surrounding it have remained a perplexing problem. One approach to understanding these "borrowed notes" might be through Persian and Turkish music.[3] Turkish music has much in common with Persian music, including the same modal system,[4] and both Persian and

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[2] E.g. by S. Eitrem, L. Amundsen, and R. P. Winnington-Ingram, *Fragments of Unknown Greek Tragic Texts* (Osloae, 1955), 46n.

[3] In this paper all uses of the words "Turkish music" will refer specifically to Turkish art music, of which the earliest historical evidence comes from the thirteenth century. Since the earliest historical evidence of Greek music comes from the fifth century B.C., there is an obvious gap in time which cannot be avoided. Modern Turkish art music as presented by K. L. Signell in *Makam: Modal Practice in Turkish Art Music* (Washington: Asian Music Publications, 1977) is based primarily on the works of three theorists who were profoundly influenced by the nationalism of the Ottoman Empire—Yekta, Ezgi, and Arel. The "Turkishness" of their work is evident, but the Arabic lineage and historical background of Turkish music is well presented by Signell.

[4] For the common Arab and Persian system, see O. Wright, *The Modal System of Arab and Persian Music A.D. 1250–1300* (Oxford, 1978), 3–8.

Turkish music show significant borrowings from the system of the ancient Greeks. At least four similarities can be immediately observed: 1) both ancient Greek and Islamic (Persian and Turkish) music are monophonic with some heterophony, 2) both are organized on the tetrachord system,[5] 3) both contain "pure" or "simple" melodies, or melodies without modulation and melodies with modulation,[6] and 4) both are based on texts.[7]

While the first specific mention of Arabo-Greek translations of Aristotle, Aristoxenus, Euclid, Ptolemy, and others occurs in the writings of tenth-century authors, there were Arabic translations of Greek theorists available from the mid-ninth century.[8] In the treatises of al-Kindi (d.c. 874) and al-Farabi (d. 950), two of the most influential Islamic music theorists, references can be found to the theories of the "Ancients." Al-Kindi wrote: "as to how the Ancients named them [the notes] and how we follow them worthily, and the reasons for that, then we have already explained this."[9] Al-Farabi, in the introduction of his *Kitab al musiqi al Kabir* (Grand Book on Music), stated, "the principles which the Ancients framed and employed in their books gave explanation of the art to us, for it is from the Ancients and not the Moderns that we take directions."[10] Among the theoretical and ideological principles adopted from the ancient Greeks with or without modification by Islamic theoreticians are: 1) musical notation,[11] 2) rhythm, 3) the idea of music as a science, 4) mathematical/practical applications, 5) Platonic

[5] E. Zonis, *Classical Persian Music: An Introduction* (Cambridge, 1973), 30.

[6] A fifth similarity proposed by Zonis (p. 30) is that both Arabic/Persian and Greek music are improvised using melody types (*makam/dastgah* and *nomos*). There is, however, no written evidence proving that improvisation was a Greek practice (although it is also an unwritten phenomenon in Arabic music); the word *nomos* may refer to a style of composition with heavy modulation corresponding to Turkish *ara* or *geçki taksimi,* which are improvised forms. See Signell, 114. For a description of *nomos* as a melody type, see R. P. Winnington-Ingram, "Greek Music, Ancient I," in the *New Grove Dictionary of Music and Musicians VII,* 661 (hereafter, *Grove*). For *nomos* as a solo piece see A. Barker, *Greek Musical Writings,* vol. 1 (Cambridge, 1984), 249–55.

[7] Zonis, 128; Signell, 80f.

[8] H. G. Farmer, *Historical Facts for the Arabian Musical Influence* (London, 1929), 274.

[9] Al-Kindi, "British Museum MS" 2361, fol. 165v. Translation in Farmer, 63.

[10] Al-Farabi, "Leyden MS" 1423, fol. 2. See also Baron R. Erlanger, *La Musique Arabe,* vols. 1–2 (Paris, 1930), 1.

[11] Alphabetic systems for the notation of music existed in Islamic countries at least as early as the ninth century, but were seldom used, because most teaching was done by rote (see Zonis, 27). K. L. Signell refers to the use of "cipher notational systems" from the thirteenth century in the Muslim world, adding that these were probably used only to "illustrate a theoretical point or to collect known pieces" (Signell, 2). Greek notations are set out by Alypius who, in his *Isagōgē Mousikē* (3rd or 4th century A.D.) gives a set of *tonos* scales with reproductions and verbal descriptions of the corresponding symbols in two notations. The notation contains fifteen symbols, many of which are alphabetic but not in alphabetical order, and the rest are inverted letters and non-alphabetic signs. The first

doctrines of "ethos," and 6) certain instruments (*luth/ūd, barbaṭ*).[12] The synthesis of ancient Greek and Arabic (including Persian) music can easily be seen by comparing the treatises of Aristoxenus and Aristides Quintilianus with those of Safiyu-D-Din, al-Farabi, and al-Kindi,[13] in which many parallels can be drawn between the use of melody, rhythm, and text-music relationships. In sum, to the Greeks, music theory was one part of a larger scientific/philosophical construct, and it was borrowed and adapted into the Islamic scientific/philosophical construct as part of the whole.

Before delving into the comparison between Arabic and ancient Greek use of "borrowed notes," the problem of terminology must be discussed in order to establish a clear definition of the modal systems in which the borrowed notes function. Turkish *makam* and Persian *gusheh* can be defined as "modal systems": a set of compositional rules by which the melodic component of a piece of music is realized.[14] There are thirteen "basic" *makam-s,* and altogether sixty to seventy, each with its own name and own distinctive structure.[15] The Persian *gusheh-ha* are a special repertory of melodies used as genetic materials for the creation of new pieces.[16] They provide "the modal and rhythmic features of the melody, its shape, and other features of mood and character that may be the sum of the above plus other, indefinable ingredients. . . ."[17] Similar in many ways to the *makam* and *gusheh* is the Greek *tonos.* There have been many attempts in recent times to find a suitable definition of

notation is called "vocal," the second, "instrumental." Like the early Islamic notation, Alypius' tables were primarily used as a mere numerical cipher for *tonoi* of no real pitch-value. See the discussion of notation in Isobel Henderson's "Ancient Greek Music," in *Ancient and Oriental Music,* ed. Egon Wellesz (London, 1957), 358ff (New Oxford History of Music 1).

[12] Erlanger, 258ff. The doctrines of Plato, Aristotle, Pythagoras, Aristoxenus, the Neo-Platonists, and Ptolemy all contributed to the development of Arab music theory, though reconciliation with certain indigenous Arab or Persian features was effected. See Wright, 12, 21.

[13] See the comparison chart in E. Werner, "Greek Ideas on Music in Judeo-Arabic Literature," in *The Commonwealth of Music,* ed. G. Reese and R. Brandel (New York, 1965), 72. For Arab texts and translations, see H. G. Farmer, "Musiki," *Encyclopaedia of Islam* (Leiden, 1913–38). For a complete listing of Arab texts, translations, and other references, see A. Shiloah, ed. "The Theory of Music in Arabic Writings (900–1900)," in *Répertoire International des Sources Musicales* BX (Munich, Duisberg. 1979).

[14] Signell, 16. It is important to note that the modern Western interpretation of the word "mode" cannot be used here. "Modal framework" or "system" would be better terms, for *makam, gusheh,* and *tonos* prescribe not only a scale with a given ambitus and center tone—as does a mode—but also typical motifs and tone progressions. See the definition of melody types in Willi Apel, *Harvard Dictionary of Music,* rev. ed. (Cambridge, MA, 1969), and Don Randel, *The New Harvard Dictionary* (Cambridge, MA, 1986).

[15] Signell, 16.

[16] Zonis, 45–46.

[17] Ibid.

tonos and other musical terms (i.e. "octave species" and "harmonia"),[18] but as yet no one has looked at Islamic parallels for possible answers. The ancient Greek theorists were confusing in their discussions of terminology, but an ethnomusicological look at the similarities between *makam, gusheh,* and *tonos* may provide some new insight. *Tonos* (sometimes *tropos*) has been frequently defined as a "transposition scale."[19] At the time of Aristoxenus there were thirteen such *tonoi,* and two more were added later. They held the ethnic names commonly associated today with modes—Dorian, Lydian, Phrygian, and the like—but, like the *makam-s* and *gusheh-ha, tonoi* are more like "modal systems."

The number of similarities between *makam-s, gusheh-ha,* and *tonoi* is striking: 1) each has its own distinct structure and its own name, 2) some *tonoi* have "tribal"[20] names, and titles for the *gusheh-ha* are sometimes taken from "towns, villages, or tribes,"[21] 3) each is based on a series of tetrachords (and in Arabic, pentachords), 4) each contains "fixed" and "variable" notes, 5) within the tetrachord system, each pitch making up a *makam/tonos* has its own name indicating its intervallic relationship with its neighbor, 6) there are thirteen "basic" *makam-s,* and there were thirteen *tonoi* at the time of Aristoxenus, 7) each has tonal centers, 8) modulation can occur between *makam-s, gusheh-ha,* and *tonoi.*[22] The three systems are not exactly alike in that Arabic theorists

[18] The most recent set of discussions are by C. V. Palisca, A. Barbera, J. Solomon, C. M. Bower, and T. J. Mathiesen, "The Ancient Harmoniai, Tonoi, and Octave Species in Theory and Practice," *The Journal of Musicology* III/3 (1984). Although more questions are posed than answered, these five articles are among the noblest attempts to explain the theoretical and practical problems of terminology. The word *tonoi* will be used in this paper to refer to the fifteen "transposition scales" presented by Alypius. Five are low (*hypo-*) five are high (*hyper-*) and five have non-compounded ethnic names. See "Alypi Isagoge," *Musici scriptores graeci* (Leipzig, 1895. Reprint, Hildesheim, 1962), 359–406. References to Cleonides and Bacchius are also taken from this edition.

[19] J. F. Mountford and R. P. Winnington-Ingram, "Music," in the *Oxford Classical Dictionary,* Second Edition (Oxford, 1970. Reprint 1978), 708 (hereafter, *OCD*[2]); *Grove,* 665. It is misleading to refer to *tonos* as a "transposition scale," because that definition limits the functions *tonoi* might serve in a piece. For example, a *tonos* may, in some cases, be "transposed," like the *set* (transposed) category of *makam.* Here, "transposition" refers to an "identity or similarity of intervallic structure between two abstract scales," formed by moving a *makam* from its original place (i.e. up or down a fourth, etc. See Signell, 134). If *tonoi* provide a relative pitch register and a tonal sequence, then there may well be "transposed" types of *tonos.* As with the *makam,* however, each *tonos* (whether it was "transposed" or not) would have a distinct and separate quality; other criteria need to be considered in identifying a *tonos,* including what Signell (p. 137) calls "melodic direction, characteristic modulations, and . . . tessitura."

[20] J. Solomon, "Towards a History of Tonoi," *The Journal of Musicology* III/3 (1984), 249: The tribal *harmoniai* become the *tonoi.*

[21] Zonis, 51.

[22] Signell, 114. For ancient Greek discussions of modulation, see Cleonides, 204f (cf. note 18 above); Bacchius, 304; Aristoxenus, *Harmonics,* ed. H. S. Macran (Oxford, 1902), 2.38; Aristides Quintilianus, *De musica libri III,* ed. R. P. Winnington-Ingram (Leipzig, 1963), 22–23. For the English translation, notes, commentary, and annotations, see Aristides Quintilianus, *On Music in Three Books,* trans. T. J. Mathiesen (New Haven, 1983).

modified the theory they learned from the Greeks and were influenced by other writers as well.[23] Still, a comparison of the two is easily made with regard to many theoretical if not practical phenomena.

Concerning the problem of "borrowed notes" specifically, many similarities can be seen in the way the Greeks and the Turks use them; a comparison between ancient Greek and the better preserved, better documented Islamic theory may shed light on the problem of "borrowed notes" in Greek music. In Turkish music, a note is very often introduced from another *makam* for a variety of reasons: "single note borrowing"[24] is a chromatic alteration that does not cancel out the established tonality, but may 1) simply supply color and decor, serving no specific function, 2) create a distinction or connection between *makam-s,* or serve as a pivot for modulation.[25] In Turkish music, modulation occurs regularly "according to strict, if unwritten rules."[26] One note, a phrase, or an entire passage of note borrowing can indicate modulation, which is usually brief, and occurs most frequently in the "B" section of the ternary ABA or ballade AABB forms.[27] Ancient Greek *metabole* was explained by theorists such as Cleonides and Bacchius as being a modulation either between conjunct and disjunct tetrachords or diatonic and chromatic genera,[28] but the "borrowed notes" were never accounted for. Cleonides wrote that every modulation requires the presence of some element, and that element may be a single note;[29] he did not, however, describe any further function a single note might serve in a *tonos* other than its own. The occurrence of "borrowed notes" in the Berlin Papyrus, Mesomedes Hymns One and Two, First Delphic Hymn, Oslo Papyrus, and others[30] may be shown to function in a way similar to those in Turkish music.

[23] For Greek and other influences on Islamic thought, see M. Fakhry, *A History of Islamic Philosophy* (New York, 1983), 1–36.

[24] Signell, 68f. The term "single note borrowing" is his own.

[25] Ibid., 84. i.e. to another *makam,* sometimes having the same tonal center.

[26] Ibid., 66. it is important to stress "unwritten" rules as being as strict and important to follow as written ones. In Arabic, and in all likelihood in ancient Greek music, there are many unwritten modes of practice which, although difficult to assess theoretically, should not be considered immaterial. The lack of written treatises explaining "single note borrowing" need not prove that it was rare, occurring only in folk music.

[27] Signell, 68. The exact form of the extant pieces of Greek music has not been established. Several fragments (especially Mesomedes Hymns One and Two, the Delphic Hymns, and the Berlin Papyrus) seem to show a free style abc. . . form with no repeated sections, not completely unlike a melodic sequence. The ballade form AABB which was so popular in Persian music does not appear to have any parallels in ancient Greek relics.

[28] Cleonides, 294; Bacchius, 304. See also R. P. Winnington-Ingram, *Mode in Ancient Greek Music* (Cambridge, 1936), 53.

[29] Ibid.

[30] Collected in E. Pöhlmann, *Denkmäler altgriechischer Musik* (Nürnberg, 1970). The Pöhlmann numbers of the pieces listed on page 4 are, in order: Berlin Papyrus, ♯32; Mesomedes Hymns One and Two, ♯1-2; First Delphic Hymn, ♯19; Oslo Papyrus, ♯36. This list is by no means all inclusive. The Second Delphic Hymn (Pöhlmann ♯20 and the Epidauros Inscription (ΑΡΧΑΙΟΛΟΓΙΚΗ ΕΦΕΜΕΡΙΣ, Markellos Th. Mitsos, 1980) also

First, the "borrowed notes" never occur at the very beginning or end of a piece, but in the middle, which would be equivalent to the B section of a Turkish ternary piece. In the Greek fragments at least one line is given to establish the *tonos* before an intrusive note appears.[31] Borrowed notes occur in the following sections: Berlin Papyrus: note E (f) lines 17–19, four times; Mesomedes Hymns One and Two (these may be two sections of the same piece)[32]: note N (d-flat/c♯) lines 3–6, four times; First Delphic Hymn: note O (b) lines 10–16, line 23, eleven times; Oslo Papyrus: note Λ (d-flat/c♯) lines 6, 7, 11, seven times.

Second, the repeated note Λ (d-flat/c♯) over the words *phásgana katà* (sword down [over the earth]) in line six of the Oslo Papyrus and the note N (d-flat/c♯) over *ap'alséōn* (from the sacred grove) in line eight of Mesomedes Hymn One may exemplify the use of single note modulation in phrases, as might the occurrence of O in the repeated phrase ΛMO in the middle section of the First Delphic Hymn.

Third, the function of "single note borrowing" as described above can be seen in several relics. The possibility that these "borrowed notes" are purely decorative and serve no function always exists, but Turkish music supplies us with a more basic and theoretically justified conception of their use, namely that the "borrowed notes" support the tonal center in the piece in which they occur by being one-half step above or below the tonic.[33] In the Berlin Papyrus, the *tonos* is Hyperaeolian,[34] *mese* is note A (f♯), and the borrowed note is E (f). this places E one-half step below *mese*. In Mesomedes Hymns One and Two, the *tonos* is Lydian, *mese* is M (c), and the borrowed note is O (b), again one-half step below. In these relics the borrowed note is made an upper or lower neighbor of *mese*, supporting it as in Turkish practice. Moreover, the borrowed note can appear as a neighbor to either *paranete hyperbolaion*

appear to use borrowed notes, but because of the state of the preservation these problematic texts will not be fully discussed in this paper.

[31] Because of the poorly preserved state of most of the relics, it is impossible to guess the total amount of times or places a borrowed note appears in any one piece. For example, in the First Delphic Hymn, the single occurrence of note O (b) on line 23 does not necessarily mean that it actually occurs only once in that section. Much of what comes before and after is indecipherable owing to the fragmentary condition of the stone on which it was inscribed.

[32] See the discussion in Pöhlmann, 64–76. The Mesomedes Hymns are problematic because they are only attested (in terms of musical notation) in late manuscript sources. The authenticity of the relic has therefore been questioned.

[33] Signell, 69. In most *makam-s* the dominant can be emphasized by raising either the upper or lower neighbor a half step. For example, in *makam Hicazkar* the borrowed note *Nim Hicaz* (d-flat) is often placed next to the dominant (c) for support and color (Signell, 30). The *mese* in ancient Greek scales is the "middlemost" note, or "dominant," though it sometimes has the function of a "tonic" as well. It connects the two tetrachords *hypaton* and *synemmenon*.

[34] Each fragment of Greek music has an assigned *tonos* according to how accurately the type of notation used matches with the *tonoi* organization in the Alypian tables.

(fourth from *mese*) or *nete hyperbolaion* (fifth from *mese*) for added support: In the Berlin Papyrus, the borrowed note E (f) occurs on line 19 after the note K (c♯), a fifth above *mese*. In Mesomedes Hymn Two, the borrowed note N (d-flat/c♯) occurs on line six after Φ (g), a fourth from *mese,* and on the same line before C (a), a fifth from *mese*. In the First Delphic Hymn, the borrowed note O (b) occurs on lines 11, 16, and 23 before Φ (g) and Ⅎ (e), a fifth and fourth, respectively, from *mese*. And, in the Oslo Papyrus, the borrowed note Λ (d-flat/c♯) occurs on line six before Ⅎ (e), a fourth from *mese,* and on line seven it outlines *mese* by being placed between it ascending and descending. From these examples it seems clear that the placement of borrowed notes within a melodic line is a conscious and deliberate act on the part of the composer.

Yet another strong parallel with Turkish music lies in the fact that when the borrowed note does not stand next to *mese* or a fourth or fifth from *mese* of the established *tonos* for that piece, it instead often stands next to a note that is either *mese,* a fourth or fifth from *mese,* or the "leading tone" to *mese* in the *tonos* to which the borrowed note belongs. Moreover, the borrowed note can be seen as *mese* itself in its own *tonos*. In this way, the borrowed note creates either a distinction or a connection between the *tonos* in which it appears and the *tonos* to which it more properly belongs; the same occurs in "single note borrowing" between *makam-s*.[35] In the Berlin Papyrus, the *tonos* is Hyperaeolian, and the borrowed note E (f) belongs to the Lydian, Hypolydian, and Hyperiastian *toni*. It appears in the piece as either an upper or lower neighbor to the note I (d),[36] which is *mese* in the Lydian *tonos,* a fourth from *mese* in the Hypolydian *tonos,* and the "leading tone" to *mese* (*lichanos meson*) in the Hyperiastian *tonos*. In Mesomedes Hymn One, which is in the Lydian *tonos,* the borrowed note N (c♯) belongs to the Hypolydian, Iastian, and Hyperiastian *tonoi*.[37] It appears in the piece after Z (e) three times, which in the three *tonoi* respectively stands a fifth from *mese,* a fourth from *mese,* and as *mese* itself. Similarly, in the First Delphic Hymn, the *tonos* is Phrygian and the borrowed note O (b) appears as a lower neighbor to K (d), which can be found in four of the nine *tonoi* containing O

[35] Signell, 77. "Single note borrowing" occurs in both the exposition and middle sections. Passing phrases of recognizable tetrachords from other *makam-s* are commonly introduced as well, sometime having the same tonal center as the given *makam* but sometimes temporarily cancelling out the original centers. Similarly, in Persian music, a modulation can be effected by a few notes with only *one* indicating the change. See Wright, 262.

[36] The occurrence of the note E after I in line 19 is hypothetical because the papyrus is illegible at this point.

[37] It should be pointed out that in all three of these *tonoi* the note equals d-flat/c♯, but in three other *tonoi,* namely the Hypoaeolian, Dorian, and Hyperdorian the note equals c-natural. Despite this discrepancy, there is no reason not to regard the note here as d-flat/c♯ as does the consensus of modern scholarship.

(b):[38] It is *mese* in the Aeolian, a fifth from *mese* in the Hyperaeolian, a fifth from *mese* in the Hypoiastian, and a fifth from *mese* in the Iastian, where the borrowed note O is itself *mese*. In these instances the borrowed note serves either to support the centers of the *tonos* to which it is foreign, or to emphasize the centers of the *tonos* to which it belongs—in effect, creating a connection or distinction between *tonoi* and facilitating a brief or potential modulation.

Cleonides states that "a modulation is melodious or unmelodious according to whether the notes that coincide in pitch are similar or dissimilar regarding their participation in the pycnum."[39] According to the Aristoxenian system, a modulation is the most harmonious when the two "scales" involved are separated by a fourth or a fifth, and when they are separated by a tone or five tones, modulation is again melodious, though in an inferior degree.[40] In Mesomedes Hymn Two, the borrowed note N (d-flat/c♯) may serve to facilitate a modulation from the Lydian in which *mese* is I (d) to the Hypolydian in which *mese* is C (a) on the words *mousōn prokathagéti* (leader of the [delightful] muses), line six (melodic progression NCCCCCI or c♯-a-a-a-a-a-e); since the two *tonoi* are separated by a fifth, this brief modulation would be melodious in the highest degree. Similarly, as stated above, in the First Delphic Hymn the borrowed note Λ (d-flat/c♯) occurring in the repeated phrase ΛMO (d-flat-c-c-flat—OMΛ also occurs) may indicate a modulation, though not as melodious as in Mesomedes Two. The phrase occurs six times, on the words *pheróploio* (bearing arms), line 10; *taoúrōn* (bull), line 12; *anakídnatai* (spread upwards [toward Olympus]), line 13; *ligù dé lōtoòs brémōn,* (ringing of the sweet flute), line 14; *ōâdaàn krékei* (play the song), line 15; *anamélpetai* (praise in song), line 16. The *tonos* of the First Delphic Hymn is Phrygian, and in the Dorian *tonos,* which is a tone away, the ΛMO-OMΛ progression supports M (c), one of its tonal centers; since the Dorian and Phyrgian *tonoi* are separated by a tone, according to the Aristoxenian system, a modulation—though less melodious—could be occurring.[41]

[38] The note Y (a-flat) never appears in the same *tonos* as O (b), and although the two occur together many times in the First Delphic Hymn, on these occasions the borrowed note is also next to *mese* M (c) most likely acting to support this tonal center.

[39] Cleonides, 205–06.

[40] See H. Macran's discussion of Aristoxenus' intermodulation theory (n. 22, above, 229–32.

[41] Since M (c) is also *mese* in the *tonos* of the fragment, a modulation here would be very subtle. However, subtle modulations are common in Turkish music. Two *makam-s* can be blended or shifted by altering *one* note or emphasizing different tonal centers (see Signell, 73–74). Moreover, Wright (p. 262) gives a description of "tantalizingly brief" modulations, noting a circumstance in which all the notes of two modulating sections were the same save four, with one final note identifying that the modulation had taken place.

As in Turkish music, when the borrowed note serves the function of emphasizing the centers of either the *tonos* in which it appears or the *tonos* to which it belongs, it usually does so at a significant textual moment.[42] In almost every instance, the borrowed note will occur on a carefully chosen syllable of a word, usually the first or last, and can often be seen at a significant grammatical pause or stop in the text. Examples of borrowed notes occurring on the first syllable are: Berlin Papyrus: line 18, *alitrón* (wicked); Mesomedes Hymn One: line 3, phrase *ap'alséōn* (from the sacred grove); First Delphic Hymn: line 12, *anakídnatai* (spread upwards [toward Olympus]), line 15, *ōidaàn* (swell in song), line 16, *anamélpetai* (praise in song); Oslo Papyrus: line 6, phrase *phásgana katà* (sword down over [the earth]); Second Delphic Hymn: line 32, *árēs* (Ares). Borrowed notes appear on the last syllable of words in: Berlin Papyrus: line 17, *aīan* (earth), line 19, *helkesin* (wound); Mesomedes Hymn One: line 4, *emàs* (my/mine); Mesomedes Hymn Two: line 6, *mousōn* (of the Muses); First Delphic Hymn: line 12, *taoúrōn* (bull), line 13, *anakídnatai* (spread upwards), line 14, *ligù* (sweet, clear), line 16, *anamélpetai* (praise in song); Oslo Papyrus: line 6, *phásgana* (sword), line 7, *thársei* (take courage); Second Delphic Hymn: line 33, *hugrāi* (water/flow). And borrowed notes occur at a pause/stop in: Berlin Papyrus: lines 17, 19; First Delphic Hymn: lines 12, 14, 16; Oslo Papyrus: lines 7, 11. It seems clear that the composer wished to emphasize certain key words in the narrative by changing the melodic tone or mood at the moment when that word occurred in the text. This is common practice among the Persian and Turkish composers.[43]

Thus far it has been suggested that the "single note borrowing" so popular in Turkish music seems to be a device used in ancient Greek music as well. The borrowed notes serve a variety of functions both aesthetic and structural. They may simply be colorful additions to provide a little contrast;[44] however the borrowed notes may provide a support for the tonal centers of all *tonoi* involved or facilitate a blending of boundaries between *tonoi.* Modulations on a grander scale are seen in Greek music, but ancient theorists mention that a single note can function as the common element in modulation between *tonoi.*[45]

[42] Signell, 80. Often the borrowed note occurs on an odd rhymed line, on a carefully chosen word, and/or at the end or beginning of a line.

[43] The relationship between the poetry and the music is seen not only in melody structure but in rhythm especially. Persian and Turkish composers follow the ancient Greek practice of relating the rhythm of the music to the meter of the poetry. For a discussion of Greek meter and music, see J. Solomon, "Orestes 344–43: Colometry and Music," *Greek-Roman-Byzantine Studies* XVIII (1977), 71–83. See Zonis, 127; Signell, 80f.

[44] For example, the repeated use of Λ on the words *phàsgana katà* (sword down across [the earth]), line six of the Oslo Papyrus may serve to emphasize the narrative action or change the emotion; any isolated occurrence of a borrowed note may serve to color a line.

[45] Cleonides, 205; Aristides Quintilianus, trans. Mathiesen (above, n. 22), 89.

Another point that might be examined is the use of borrowed notes for improvisation. In both Turkish and Persian music modulation is employed in improvisation.[46] Despite the fact that almost nothing about it appears in the literature, unwritten law dictates that "a musician who would remain blandly in the same *makam* for more than, say, three minutes, would be considered to have played something 'tasteless' or 'colorless'."[47] Accidentals may be introduced in certain cases as models for the improvisation, or in other words, to provide genetic materials such as modal/rhythmic features of a melody, shape, and mood/character upon which the musician is expected to expound.[48]

There is no unassailable source from which we can be sure that ancient Greek music was ever improvised, but considering the increase in the variety of musical composition, freer rhythmic structure, and the possible rise of vocal and instrumental embellishments in the fifth century,[49] it should be considered as a possibility that borrowed notes could indicate a point of departure for improvisation in ancient Greek music. The notation that stands without text in the Orestes Papyrus (Pöhlmann ♯21)[50] lines 4–6 and in the Oslo Papyrus line 2b may indicate that either instrumental or vocal improvisation is being signalled.

The strange combination of instrumental notation with vocal text in the Second Delphic Hymn may show the collaborative efforts of a vocalist and an instrumentalist who, as in improvised Persian *Radif*, would follow the singer echoing each phrase or playing a slight variation.[51] Theodore Reinach proposed several theories as to why the instrumental notation was placed over vocal text in this piece. He thought it "invraisemble qu'on ait songé à perpétuer sur le marbre l'accompagnement de morceaux de chant dont on aurait supprimé la melodie."[52] He argued that instrumental notation was always written below the melody, not above, and that in some instances one symbol stood for two different notes, an unusual phenomenon in an instrumental piece.[53] He did reiterate the suggestion of other writers that the instrumental signs could have been used to indicate that accompaniment was in unison with the singing (as in Persian *Radif*).[54] There is, however,

[46] Signell, 66; Zonis, 46.

[47] Signell, 66.

[48] Zonis, 46f. This is also a feature of songs from the Yemen. See W. Gerson-Kiwi, "Women's Songs from the Yemen: Their Tonal Structure and Form," in the *Commonwealth of Music*, ed. G. Reese and R. Brandel (New York, 1965), 100.

[49] *OCD*², 711.

[50] Solomon, 76, n. 13.

[51] Zonis, 138.

[52] R. Reinach, "La Musique des Hymnes de Delphes," *Bulletin de Correspondance Hellenique* XVII (1893), 605.

[53] Ibid.

[54] T. Reinach, "La Musique du Nouvel Hymne de Delphes," *Bulletin de Correspondance Hellenique* XVIII (1894), 373. See Aristides Quintilianus, *De musica*, 23 (above, n. 22), and

another alternative: the Second Delphic Hymn could indeed be an instrumental piece. Ella Zonis remarks that in Persian music, the words are so important that "even when there is no singer, the solo instrumentalist may play . . . as if the poetry were being sung."[55] Persian *avaz,* primarily a vocal improvisation form, is unmeasured and depends on the meter of the text for rhythmic shape.[56] Zonis states that "in the Saba instruction manuals the poetry is written out for each *avaz* even though these pieces are for solo instrument."[57] It is interesting to note that Sacadas, a soloist on the aulos, won a musical contest in the sixth century B.C. with an instrumental song composed in honor of Apollo's victory over the Python of Delphi,[58] and the Second Delphic Hymn, though much later in date, is also in honor of Apollo. Is it possible that the composer, knowing that the First Delphic Hymn was a vocal piece, decided to compose an instrumental piece with the intention that it be positioned next to the older hymn and the two be played together, either as vocal with accompaniment or vocal and instrumental solos, or perhaps alternating between the two as in Persian practice?[59]

Since we do not possess enough evidence to prove that ancient Greek instrumental music was composed without the poetry in all cases, it can be suggested that poetry was important enough to be written down even if the piece was for solo instrument. The Second Delphic Hymn is full of modulation—a new *tonos* appears almost every section—and borrowed notes are common, which are traits characteristic of Persian and Turkish improvised music.[60] The fragmented condition of the stone causes great difficulty in deciphering the music of this Hymn, but more investigation may bring to light further and more conclusive evidence about the form of this piece.

Whether or not the borrowed notes serve as signals for an impending improvisation, their other functions now seem clearer from the comparison with Turkish "single note borrowing." Further parallels can be drawn from Persian and, although not considered in this paper, Judaeo-Arabic and Indian traditions.[61] The observations made here

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Anonyma Bellermanniana, *De musica,* ed. D. Najock (Leipzig, 1975), 22 for discussions of the different notations used for vocal and instrumental music.

[55] Zonis, 130.

[56] Ibid., 128.

[57] Ibid., 127, n. 3.

[58] Plut. *De mus.* 8; Paus. 9.30.

[59] Zonis, 124.

[60] Signell, 66.

[61] An interesting comparison can be made between Indian use of "borrowed notes" in their *raga* system, which is much akin to Turkish *makam* and Persian *gusheh.* See B.C. Wade's discussion of "foreign notes" in her *Music in India: The Classical Traditions* (Englewood Cliffs, N.J., 1979), 61, and Lewis Rowell, "Early Indian Musical Speculation: The Theory of Melody," *Journal of Music Theory* XXV (1981).

can only scratch the surface, however, because of the paucity and damaged condition of the extant Greek musical fragments and because of the lack of any written, theoretical basis for these procedures. Moreover, it is always risky and unverifiable to draw conclusions about Greek matters from ethnological analogy, since chronological and various cultural differences inevitably make parallels or even direct borrowings imprecise. Nonetheless, because the "borrowed notes" have been hitherto inexplicable, because it is evident in the works of al-Kindi, al-Farabi, and their followers that much of Islamic music is derived from ancient Greek theory, and because the criteria for the functions of the Turkish "single note borrowing" can be shown to resemble so closely these heretofore inexplicable notes in the Greek fragments, it would be unwise not to explore what little evidence and parallels we have. For the moment we have put aside western theory and examined instead the eastern parallels that help to isolate, categorize, and account for what has been a theoretical mystery in the study of ancient Greek music.

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