

The Practical Muse:
Reconstructing the Contexts
Of a Greek Musical Papyrus

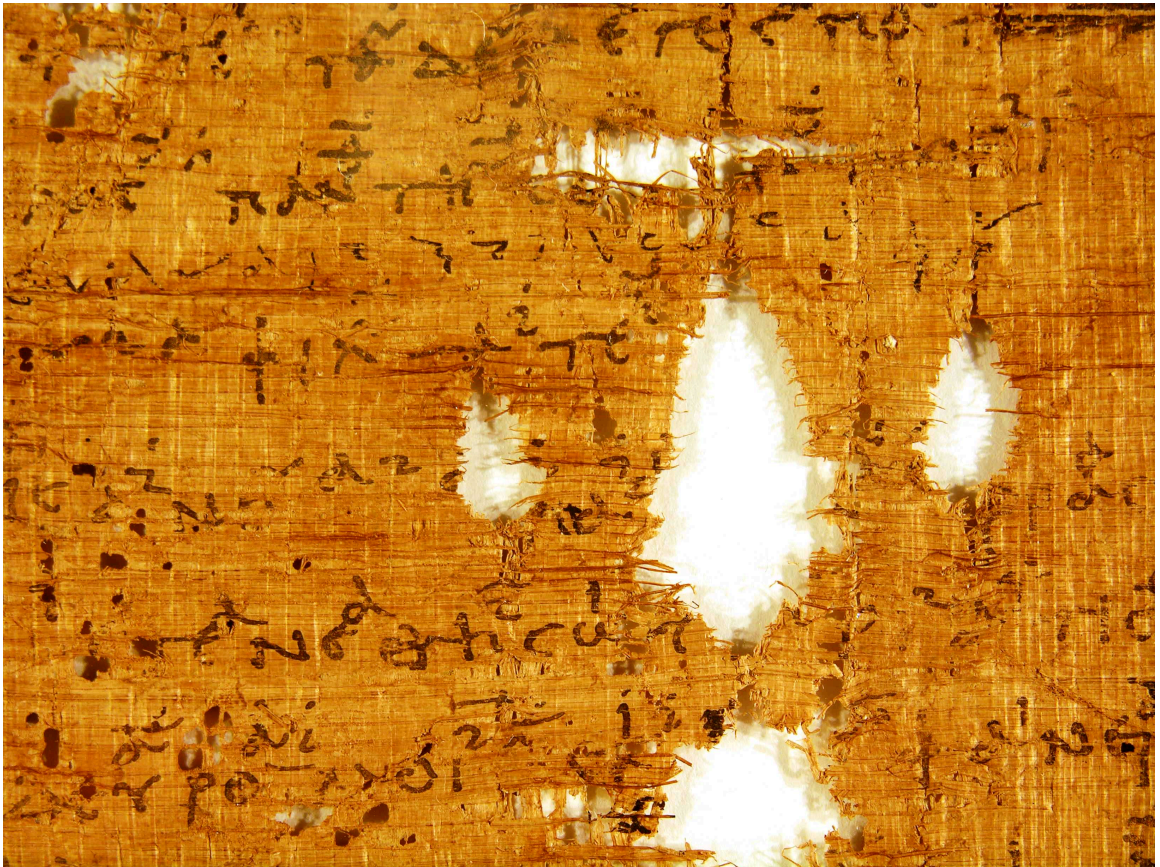
by

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P. Mich. inv. 2958 recto, close up of lines 3-8

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Dis Manibus

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Prologue

In this dissertation, I undertake an extensive re-examination of the recto of P. Mich. inv. 2958, a second-century C.E. musical papyrus excavated by the University of Michigan at Karanis (Kom Aushim) in the Fayum, Egypt in 1924. Although this papyrus has a significant publication history, the text continues to present editors with challenging textual and interpretive questions. In my investigation of this papyrus, I utilize methodological approaches from a variety of disciplines, including papyrology, musicology, and archaeology, in order to contextualize the physical document as well as the text and notation that it preserves. My research emphasizes the evidence this unique papyrus can provide concerning non-elite Greek musical practices in Roman Egypt during the second-century C.E., and further discusses how this papyrus relates to the writings of the ancient Greek musical theorists. From this investigation, I conclude that P. Mich. inv. 2958 represents a rare example of community-oriented, professional (or semi-professional) musicianship and demonstrates that high-quality music making was not restricted to the elite contexts of courts, cities, and the major pan-Hellenic festivals.

The first chapter, *The Musical Milieu of Karanis*, focuses on the excavation context of this papyrus, represented through the accession number 24-5006E2-A, and on reconstructing a provisional impression of the musical community of the Fayum in the early to middle Roman period. This papyrus belongs to a large group of diverse papyri, over 136 inventory numbers, found in the same archaeological context, including the approximately 39 documentary papyri of the archive of Gemellus Horion (also known as the archive of Gaius Apol(l)inarius Niger). Therefore, this papyrus is one of a very few musical documents which can be associated with other papyri, even if only through its reuse as an account. I then turn to an examination of other papyri, ostraka, and even

fragments of musical instruments in order to reconstruct some sense of the musical milieu of the Fayum. On the basis of this evidence, I conclude that, despite the rural, agricultural character of the region, musical performance formed an integral part of social activities in this mixed Egyptian, Greek, and Roman community.

My second chapter, *Text and Music*, presents my re-edition of the text and notation (*semeia*), an *apparatus criticus*, and substantial commentary discussing alternative readings of both aspects of the papyrus. Although there have been three previous editions, the generally poor preservation of the papyrus has created significant obstacles to the establishment of secure textual and musical readings. The presence of the *semeia* further complicates reading the papyrus for a variety of reasons, including the irregular spacing of the text, which problematizes textual reconstruction by occluding the number of letters missing in a lacuna, the occasional confusion of the textual and musical registers, and the difficulty in determining what a ‘correct’ reading of the musical line might entail. While the possible interpretations of a damaged character in the text are restricted by the known language (Greek), the limited information on Greek melodic practices hinders parallel determinations for the *semeia*. I also include in this chapter a translation of the music into modern Western notation with its realization in sound presented in the WAV format, created through the musical composition software, Finale; a second transcription intended for modern performance and an accompanying recording of a reading of that transcription; and finally, a discussion of the problems inherent in and the techniques required for such reconstructions.

My third chapter, *The Practice of Ancient Musical Theory*, presents a musicological commentary on certain aspects of the notation, including the relationship of this papyrus to surviving theoretical treatises. I focus on a metrical and rhythmic analysis, a close examination of the melismata, a discussion of cadential patterns, two specific examples of text setting, and finally, the technique of modulation (*metabolē*). Through this discussion, I demonstrate that even though the literary merits of the text may be dubious, the musical score is both sophisticated and nearly unparalleled in the extant corpus of Greek musical documents. The sophisticated use of the Greek vocal

notation system, including the extensive use of rhythmic signs and other performance markings, supports the idea that P. Mich. inv. 2958 comes from a professional context, and may well have been used for a performance of this tragedy.

My fourth and final chapter, *Composition and Performance*, explores several theories about the possible use contexts of P. Mich. inv. 2958. In this discussion, I examine the question of the authorship of the papyrus in relation to the composition of both text and music through the reconstruction of two hypothetical scenarios. Then I draw upon material first presented in Chapter One, as well as some new evidence, in order to recreate several contexts in which P. Mich. inv. 2958 may have been used by professional Greek musicians in Egypt. This chapter is intensely hypothetical, although nevertheless based on the evidence gathered in the previous three chapters. I offer these suggestions as a thought experiment designed to provoke a re-examination of the customary scholarly assumptions about the musical papyri.

In conclusion, the musical significance of P. Mich. inv. 2958 should not be understated: this papyrus presents a rare and valuable window into the practical relationship of musical theory, composition, and performance in Greco-Roman Egypt. Although most studies concerning ancient Greek music focus on the development of musical practices in Archaic period and their culmination during the Classical period, much of our evidence, both theoretical and papyrological, comes from the Hellenistic and Roman periods. The musical sensitivity and complexity of this fragment challenges the perceived decline of Greek music from the Classical ideals of fifth-century Athens, and instead signifies a differing aesthetic, one that may well have influenced the development of early Christian chant, and therefore, the course of Western musical history.

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List of Abbreviations

- APIS Bagnall, Roger S, and Columbia University Libraries Digital Program. *APIS: Advanced Papyrological Information System*. Accessed February to April 2012. <http://www.columbia.edu/cu/lweb/projects/digital/apis/>.
- CIG Deutsche, Akademie der Wissenschaften zu Berlin. *Corpus Inscriptionum Graecarum*. Berolini: ex Officina Academica, vendit G. Reimeri Libraria, 1828.
- DAGM Pöhlmann, Egert, and M. L West. *Documents of Ancient Greek Music: The Extant Melodies and Fragments*. Oxford: Clarendon Press, 2001.
- O. Mich. I Amundsen, Leiv. *Greek Ostraca in the University of Michigan Collection*. University of Michigan Studies. Humanistic Series, vol. XXXIV. Ann Arbor, MI: University of Michigan Press, 1935.
- O. Mich. III Winter, John Garrett, and Herbert Chayyim Youtie, eds. *Papyri and Ostraca from Karanis*. University of Michigan Studies vol. 50. Ann Arbor: University of Michigan Press, 1951.
- P. Col. VIII Bagnall, Roger S, and Columbia University Libraries Digital Program. *APIS: Advanced Papyrological Information System*. Accessed February to April 2012. <http://www.columbia.edu/cu/lweb/projects/digital/apis/>.
- P. Corn. Westermann, William Linn, and Casper John Kraemer, eds. *Greek Papyri in the Library of Cornell University*. New York: Columbia University Press, 1926.
- P. Mich. IV, Pt. 2 Youtie, Herbert Chayyim, and Orsamus Merrill Pearl, eds. *Tax Rolls from Karanis*. University of Michigan Studies vol. 43. Ann Arbor: University of Michigan press, 1939.
- P. Mich. V Husselman, Elinor M., Arthur Edward Romilly Boak, and William F. Edgerton, eds. *Papyri from Tebtunis, Part II*. University of Michigan, Humanistic Series 29. Ann Arbor: University of Michigan Press, 1944.
- P. Mich. VI Pearl, Orsamus Merrill, and Herbert Chayyim Youtie, eds. *Papyri and Ostraca from Karanis*. University of Michigan Studies vol. 47, 50. Ann Arbor, MI: University of Michigan Press, 1944.

- P. Mich. IX Husselman, Elinor M., ed. *Papyri from Karanis, Third Series*. Philological Monographs 29. Cleveland: Published for the American Philological Association by the Press of Case Western Reserve University, 1971.
- Papyri.info Bagnall, Roger S, and New York University, Institute for the Study of the Ancient World. *Papry.info*. Accessed February to April 2012. <http://papyri.info/>.
- SB Preisigke, Friedrich, et al., eds. *Sammelbuch Griechischer Urkunden Aus Ägypten*. Strassburg: K. J. Trübner, 1931-present.
- SIG³ Dittenberger, Wilhelm. *Sylloge Inscriptionum Graecarum*. Lipsiae: apud S. Hirzelium, 1915.
- TM Depauw, Mark. *TRISMEGISTOS: An interdisciplinary portal of papyrological and epigraphical resources dealing with Egypt and the Nile valley between roughly 800 BC and AD 800*, Accessed February to April 2012. <http://www.trismegistos.org/index.html>.

Glossary

anceps (×)	a position in a metron which can be filled by either a long or short syllable, as in the first position in the iambic metron
aulete	[αὐλητής] a performer on the aulos, either as soloist or as accompanist to vocalist(s)
aulos, pl. -loi	[αὐλός/-λοι] the premier Greek wind instrument: the aulos used a double reed (probably similar to a modern bassoon) and was almost always played in pairs; the complexity of instruments ranged widely, with the tendency for increased complexity over time; in the second century C.E., professional instruments used two types of keys to extend the range to approximately two octaves
cadence	sequence of notes that closes a phrase, or, more prominently, a section of a composition (adj., cadential)
choregos	[χορηγός] "chorus-leader;" the individual who financed the performance of a Greek tragedy by underwriting the cost of hiring and training the chorus (and actors)
chronos, pl. -noi	[χρόνος/-νοι] in musical and metrical terminology, a single unit of time equivalent to the duration of a short (weak) syllable (˘)
colon, pl. -la	a metrical unit comprised of several feet (adj., colometric)
dicolon (:)	a symbol used in Greek musical notation which has a contested, possibly rhythmic or divisive, function; also known as a colon or double-point
diesis, pl. -seis	[δίεσις/διέσεις] the smallest interval in Greek music, whose exact size depends on context (usually either a ¼ tone, ⅓ tone, ½ tone, or ¾ tone)
diseme (¯)	[δίσημος] the horizontal bar placed over a <i>semeion</i> to indicate a long (or heavy) syllable (–), roughly the equivalent of two short (light) syllables (<i>chronoi</i>)
<i>ductus</i>	the overall speed and competency of the handwriting of a text
half step	half of a whole step (i.e., c#-d, white note to black note on a keyboard)

<i>holmos</i> , pl. -oi	bulb-shaped mouthpiece of an aulos; the internal bore was unaffected by the external shape; a second similarly-shaped piece called the <i>huphomos</i> was inserted between the <i>holmos</i> and the rest of the instrument
hyphen (┘)	[ύφέν] a symbol written below a group of two or more semeia that creates a rhythmic group, typically used to indicate a 2-3 note melisma sung to a single long syllable
kithara	the premier professional form of the Greek lyre, which used anywhere from seven to eleven strings
kitharist	a performer on the kithara
<i>kollesis</i>	the overlap between two sheets of papyrus joined to make a larger sheet or a roll
<i>leimma</i> (Ϟ)	[λειμμα] a stylized λ (l) used in both notation systems to indicate a pause (rest) or to lengthen the preceding <i>semeion</i>
melisma, pl. -mata	[μέλισμα] a group of notes sung to the same syllable
<i>mesē</i>	[μέση] the central note of a Greek <i>tonos</i> ; roughly equivalent in function to the tonic of a modern scale (e.g., C in C Major)
<i>metabolē</i>	[μεταβολή] in the Greek musical theorists, modulation in any of its various recognized aspects
metron, pl. -tra	the basic unit of ancient Greek meters, composed of a specific arrangement of long and short syllables: e.g., × – ∪ –, the iambic metron
<i>mise en page</i>	the physical layout of a document, including, e.g., margin and column sizes, interlinear spacing, organization of the text and semeia
nome (1)	[νόμος] in ancient Greek music, a multi-part, virtuoso composition, usually for solo instrumentalist, but sometimes for choros
nome (2)	[νομός] an administrative district in Egypt
ostrakon, pl. -ka	piece of pottery re-used for writing
<i>phorbeia</i>	[φορβειά] a leather headpiece worn by auletes designed to support the mouth and cheeks when playing for extended periods
recto	the front side of the papyrus sheet, with horizontal fibers
resolution	in meter, the practice of substituting two short syllables (∪∪) for one long syllable (–)
<i>semeion</i> , pl. -eia	[σημεῖον/-εῖα] a note in either of the Greek musical notation systems

sistrum, pl. -tra	a shaken percussion instrument of ancient Egyptian origin, used in Egyptian religion, especially the worship of Isis, and adopted by the Greeks and Romans for similar purposes
<i>stigmē</i> (\cdot)	[στιγμή] a dot placed over a <i>semeion</i> that typically indicates (metrical) arsis
<i>systema</i> , pl. -mata	[σύστημα/-τήματα] the arrangement of tetrachords to create a scale
tetrachord	a group of four notes whose outer pair form a perfect fourth and whose inner pair were moveable; the basic building block of ancient Greek music
tetraseme ($\overline{\quad}$)	[τετράσημος] the T-shaped horizontal bar placed over a <i>semeion</i> to indicate the equivalent of four short (light) syllables (<i>chronoi</i>)
<i>tonos</i> , pl. -noi	[τόνος/νοι] in Hellenistic and Roman period Greek musical terminology, a specific scale pattern composed of five tetrachords often referred to as a key, although quite different in function from the modern term; in the fully developed system, there were fifteen <i>tonoi</i>
triad	in Western music, a chord composed of two stacked thirds
triseme ($\overline{\quad}$)	[τρίσημος] the L-shaped horizontal bar placed over a <i>semeion</i> to indicate the equivalent of three short (light) syllables (<i>chronoi</i>)
<i>trupēmata</i>	[τροπήματα] the finger-holes of an aulos
verso	the back side of the papyrus sheet, with vertical fibers
whole step	in ancient as in modern music, the difference between a perfect fifth and a perfect fourth (i.e., c-d, two white notes on a keyboard)

Chapter One:

The Musical Milieu of Karanis

In this chapter, I approach P. Mich. inv. 2958 from two closely-related perspectives: first, through an examination of the archaeological environment of the papyrus, which is one of a limited number of musical papyri for which information about the excavation context has been preserved, and which can be securely associated with a specific structure; and second, through an investigation of the archaeological and papyrological evidence for the general musical milieu in the Fayum and neighboring communities. These two avenues of research reveal that the general scholarly assumption concerning the musical papyri, namely that they must have inevitably originated in Alexandria,¹ need not necessarily be the case. In fact, my analysis of the evidence presented below suggests that skilled professional musicians did operate in rural Egypt, and there is no identifiable justification for restricting knowledge of the musical notation systems to a few select individuals in Alexandria. Therefore, I contend that there is a significant need for a re-contextualization of each of the musical papyri, paying close attention to other archaeological and papyrological evidence of musical competency in the communities where these papyri have been found (e.g., Oxyrhynchus). Moreover, since the musical papyri have been presupposed to come from Alexandria, scholars have largely ignored the potential for

¹ As, e.g., Gammacurta 2006: 203 on P. Mich. inv. 2958.

influence from the multi-cultural contexts of these Egyptian communities. In the following discussion, I hope to show that this type of research can productively illuminate the contents of the P. Mich. inv. 2958.

Archaeological Context

Structure 5006 and the Archive of Gemellus Horion

P. Mich. inv. 2958 was excavated during the 1924-1925 season at Karanis and assigned accession number 24-5006E²-A. Unfortunately, the organization and record keeping of this first season leave much to be desired. In most of the published, and even the unpublished, material, descriptions of the entire season are limited to a few pages, which discuss the acquisition of a permit for excavation, the problems posed by the activities of the *sebbakhin*,² and the areas selected for excavation during the initial campaign.³ Even from these brief comments a fairly vivid picture of the circumstances surrounding the 1924-25 season emerges, one which revolves around the tension between local Egyptians, who viewed the mound at Kom Aushim as a valuable source of fertilizer, and the American archaeologists, who viewed it as a valuable source for papyri, ostraka, and other artifacts. It is clear from the general tenor of the Boak and Peterson report, moreover, that the driving force behind this excavation was the desire to establish an archaeological context for the papyri that had become available on

² Cf., e.g., Boak 1926: 20; and Starkey undated 1: 1–2, 9–10. *Sebbakh* (or *sebakh*) refers to the nitrogen-rich soil frequently found in the mounds of archaeological sites, *sebbakhin* to the individuals who mined *sebbakh*, primarily for use as fertilizer, during the nineteenth and early twentieth centuries. The nitrogen content results from the decomposition of mud-bricks and organic material.

³ E.g., Boak 1926: 3–5, 20; and Starkey undated 1: 11.

the antiquities market in large numbers,⁴ and that Karanis was chosen for this purpose because the Egypt Exploration Committee, in the persons of B. P. Grenfell and A. S. Hunt, had previously found papyri there during exploratory digs.⁵ The appearance of unsystematic haste given by descriptions of that first season, however, and the decision to begin excavating two areas simultaneously, were a direct result of pressure from the *sebbakhin* to continue providing *sebbakh*. These first two areas, designated A and B, were on the rim of the crater dug to bedrock in the center of the town by the *sebbakhin*, and were located at the two heads of the pre-existing rail-lines installed to facilitate removal of *sebbakh*.⁶ Figure 1.1 reproduces a sketch of the site by S. Yeivin, which clearly shows the

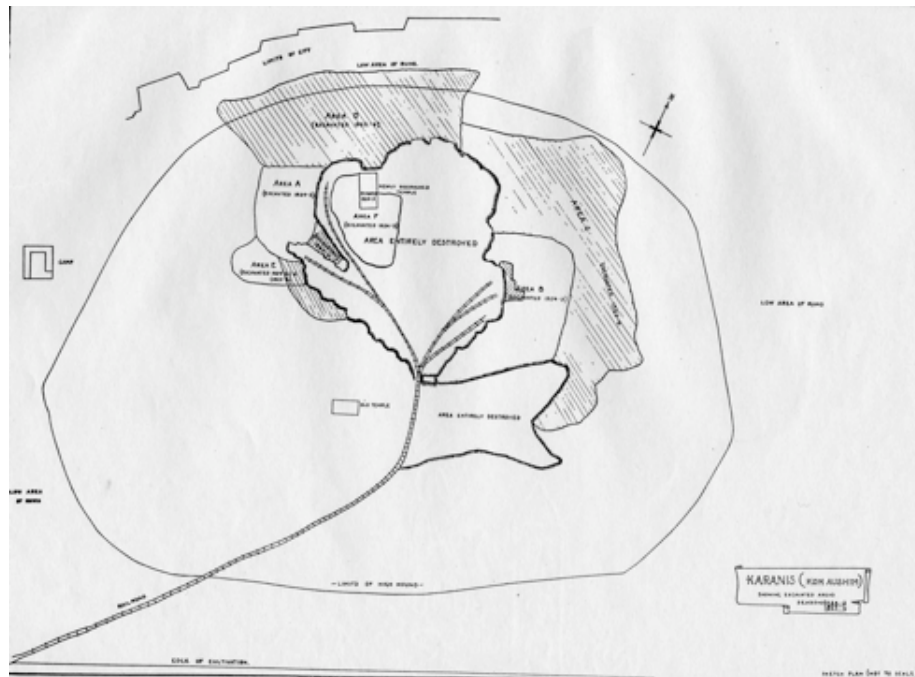


Figure 1.1: S. Yeivin's Sketch of Karanis

⁴ E.g., Starkey undated 1: 3–4. Cf. the comment in Boak 1926: 21 on the scarcity of literary papyri found in the first season. This paragraph seems relatively weighty in light of the brevity of the article and its general paucity of detail.

⁵ Boak and Peterson 1931: 1–2; Boak 1926: 20; Starkey undated 1: 2; and van Minnen 1998: 131.

⁶ Starkey undated 1: 9–10; and Starkey undated 2: 14.

location of the crater, railways, and the positions of the various areas of excavation. Area E, the two temple structures, and the northern boundary of the site were also investigated in the foreshortened first season.⁷ It seems quite probable that the poor documentation of the 1924-25 season arose at least in part from these external pressures.

P. Mich. inv. 2958 was found in a large cache of papyri in the so-called middle level⁸ of Area A. The unpublished *Record of Objects* describes the find thus:

5006E² – storage chamber

A – 165 papyrus in lower half of filling of chamber mixed with sand and broken mud bricks.⁹

A handwritten note added to one copy of the typescript comments that the papyri “range in date from Tiberius 14-37 A.D. through 323 A.D.”¹⁰ and further refers to a more detailed list of the papyri, roughly organized by inventory number, written on the back of pages 214 and 215. It is clear from these lists that the initial investigation of this find was focused on establishing that date range as

⁷ Boak 1926: 20; and Starkey undated 1: 11.

⁸ Based on the exposed edges of the *sebbakhin* crater, the excavators had determined that there were three distinct levels of occupation at Karanis. Excavation soon revealed an intermediate layer between the top and middle layers. During the first two seasons, which only excavated as far as the middle layer, structures were numbered based on these layers and whether they lay east or west of the crater. Numbers 1-1000 were assigned to the top level of Area B (the east side), numbers 4000-5000 were assigned to the same level in Area A (west side), and numbers 5000-6000 were assigned to middle layer structures in both areas. Intermediate level structures appear to typically have numbers higher than 5000. In 1926 this imprecise scheme was abandoned in favor of designating the levels by the letters A-F: Boak and Peterson 1931: 6. The stratigraphy at Karanis remains contested and problematic, and level designations may have different date ranges in different sections of the site; cf. Schwendner 2007: 992–993. His discussion focuses on the east side of the crater, which was excavated more completely and has better documentation than the west side, where structure 5006 is located.

⁹ *Record of Objects*: 215. Yeivin elsewhere describes 5006E and F as vaulted storage chambers with low east-west dividing walls: Yeivin undated: 8.III.28.

¹⁰ *Record of Objects*: 215.

part of the process of dating the stratigraphy of the site, which turned out to be more complicated than the excavators had thought.¹¹ The back of page 215, which may have been written first, contains a list of some 27 inventory numbers (some both recto and verso) with dates given as specifically as possible and a brief description of the contents of the document. Some have the appellation “P. Mich. VI” added, indicating publication status,¹² and others are stamped “in Cairo” in red, indicating that they were either left in Cairo as part of the division of the artifacts from the excavation, or else returned to Cairo in the early 1950’s as part of a subsequent arrangement. The list on the back of page 214 is considerably less organized, consisting of a column of dates and inventory numbers, and a second column of inventory numbers and some other numbers whose function is unclear (but which may relate to distribution with Cairo or to shipment of the papyri to Michigan). P. Mich. inv. 2958 is not included in these lists, which appear to be a quick assemblage of the most readily and accurately datable papyri from 5006E².

In addition to the cache of papyri in room E², the *Record of Objects*¹³ identifies archaeological evidence of literacy from other rooms of the same structure including a reed pen (24-5006A-AG), fragments of wax tablets (24-5006A-A and -B; 24-5006A-AT), ostraka (24-5006A-ADx5;¹⁴ 24-5006A-AJ and

¹¹ Documentary papyri, as one of two types of artifacts with absolute dates (the other being coins), assist in the determination of a *terminus post quem*, the date after which a level can be said to be abandoned.

¹² Pearl and Youtie 1944.

¹³ The relevant pages from the unpublished *Record of Objects* are 211-216; see Appendix One on page 163 and following.

¹⁴ O. Mich. inv. 4366-4370, published in Amundsen 1935 (O. Mich. I). The *Record of Objects*: 213 places these above the papyrus cache and identifies them as late third century C.E. in a handwritten note on the back of the page. This note also refers to a “potsherd with drawing of human figure” (24-5006A-Ad).

-AKx2), and other papyri (24-5006A-AE, stamped “in Cairo”; 24-5006A-AF;¹⁵ 24-5006F¹-N, stamped “in Cairo”¹⁶). Taken cumulatively, these finds may indicate the presence of one or more literate individuals in the immediate area of structure 5006 at some stage of its occupancy. Other artifacts, including glass (e.g., 24-5006A-AB; 24-5006D-D), fine pottery (e.g., 24-5006A-AAG) terracotta and bronze statuettes (e.g., 24-5006A-AH and -AI; 24-5006A-AM), and coins (24-5006A-W, 274 C.E.; 24-5006D-A, 7 coins including ones dated to 169 C.E. and 283 C.E.) demonstrate that the occupants possessed reasonable, if not excessive, wealth.

These findings support the identification of the mid-second to early third-century C.E. occupants of structure 5006 with the family of Gaius Iulius Niger, a retired Roman cavalry veteran whose grandson’s family archive was found in the same papyrus cache as P. Mich. inv. 2958.¹⁷ The archive of Gemellus Horion (also known as the archive of Gaius Iulius Niger or Gaius Apol(l)inarius Niger) consists of some twenty seven certain texts, as well as nine texts which are too fragmentary to positively assign to the archive and two others that are related through ownership of the same house and courtyards in Karanis.¹⁸ The documents in this archive consist primarily of petitions, tax receipts, and property records related to three generations of the same family: Gaius Iulius

¹⁵ P. Mich. inv. 2877, published as P. Mich. VI 394. Cf. APIS: “michigan.apis.1668” and TM 12201.

¹⁶ A handwritten note in *Record of Objects*: 216 identifies these “papyri in filling half of chamber” as third-century C.E., apparently collected into a single box (5.7616) and not assigned inventory numbers, probably because they were immediately distributed to Cairo.

¹⁷ Descriptions of this archive are given in Alston 1995: 129–133; van Minnen 1998: 132; and a PDF file accessible through the archive entry for “Gemellus Horion” (archID: 90; <http://www.trismegistos.org/arch/detail.php?tm=90&portalpage=1>) on the Trismegistos website (<http://www.trismegistos.org/index.html>). This document is hereafter cited as “Gemellus Horion.”

¹⁸ “Gemellus Horion:” 1.

Niger, his son Gaius Apollinarius Niger, and his grandson Gemellus Horion. Figure 1.2 provides a *stemma* of the known members of the family.¹⁹

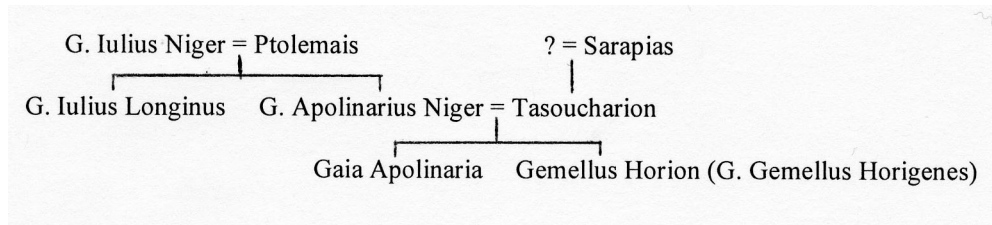


Figure 1.2: *Stemma* of the Family of Gemellus Horion

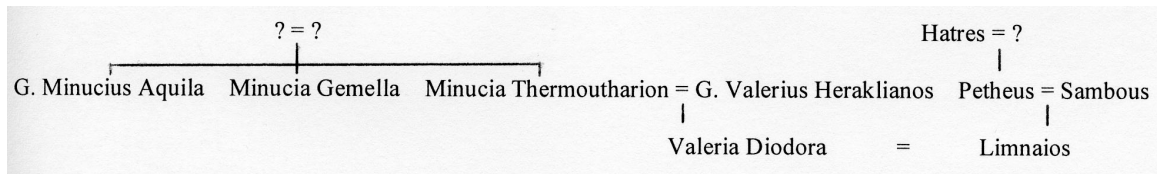


Figure 1.3: *Stemma* of the Minucii Family

The documents directly connected to the family range from the bill of sale for a house and two courtyards in 154 C.E. (P. Mich. inv. 3001²⁰) to a tax receipt from 214 C.E. (P. Mich. inv. 2916²¹). When Gaius Iulius Niger purchased the house after his discharge from the *ala veterana Gallica*,²² he apparently acquired several documents pertaining to previous ownership of the property, including P. Mich. IX 554 (81-94 C.E.),²³ which describes the division of the inheritance of the Minucius family among the three siblings Minucius Aquila, Minucia Gemella, and Minucia Thermoutharion.²⁴ Figure 1.3 provides a *stemma* for this

¹⁹ The *stemma* is reprinted from Adkins 2008: 14 with permission. Cf. “Gemellus Horion:” 5.

²⁰ Published as P. Mich. VI 428. Cf. APIS: “michigan.apis.1740” and TM 12266.

²¹ Published in Youtie 1974; cf. SB IV 7360.

²² Alston 1995: 129; “Gemellus Horion:” 3; and P. Mich. VI 428 (line 3).

²³ Cf. APIS: “michigan.apis.1684” and TM 12047.

²⁴ Alston 1995: 132. References to this house and two courtyards also appear in P. Mich. VI 370 (Aug. 9, 189 C.E.) lines 14-15 (with reference to Valeria Diodora’s former ownership). Possible other references occur in P. Mich. IX 539 (53 C.E.) lines 10-11 and P. Mich. IX 570 (105-106 C.E.) lines 12-14, both of which were found in this same papyrus cache. The case for associating these documents has been made in Adkins 2008.

family.²⁵ Niger bought the property from Valeria Diodora, the daughter of Minucia Thermoutharion, who had apparently inherited the combined holdings of her mother, aunt and uncle. Niger presumably acquired P. Mich. IX 554 along with the house, and retained the earlier deed to establish the legality of his purchase by demonstrating the property's prior ownership by the Minucii. Both documents provide detailed descriptions of the house and surrounding properties that, while they do indicate some structural changes in the intervening years, nevertheless appear to refer to the same property.

The crucial question concerning all this discussion involves whether the houses described in P. Mich. IX 554 and P. Mich. VI 428 are, in fact, the same house, and, even more significantly, whether that house is identical to structure 5006, where the papyri were excavated. The following figures demonstrate the relationship between these documents and S. Yeivin's unpublished Interim Report, which describes the location of structure 5006: Figure 1.4 provides a chart

	P. Mich. IX 554	P. Mich. VI 428	<i>Interim Report</i>
North	house of Peteeus son of Petheus	House of Petheus son of Heras and Heras son of Petheus	Street 5000
East	sites of Heras son of Dioskoros and Tetosiris daughter of Heras	sites of Petheus son of Heras, part of entrance and exit	5005
South	royal road	dovecote of Valeria Diodora, part of entrance and exit	5016
West	house and dovecote of Minucius Aquila	house of Valeria Diodora	5007 or 5009?

Figure 1.4: Comparison of Property Boundaries

of comparison between the verbal descriptions between these sources;²⁶ Figure 1.5 reproduces provisional maps drawn from this information by Evelyn

²⁵ *Stemma* reprinted with permission from Adkins 2008: 13.

²⁶ Cf. Adkins 2008: 3–9. The house discussed here is the east house, inherited by the two Minucia sisters.

Adkins;²⁷ and finally, Figure 1.6 shows a close-up of the unpublished map of Area A drawn by S. Yeivin during the first season.²⁸

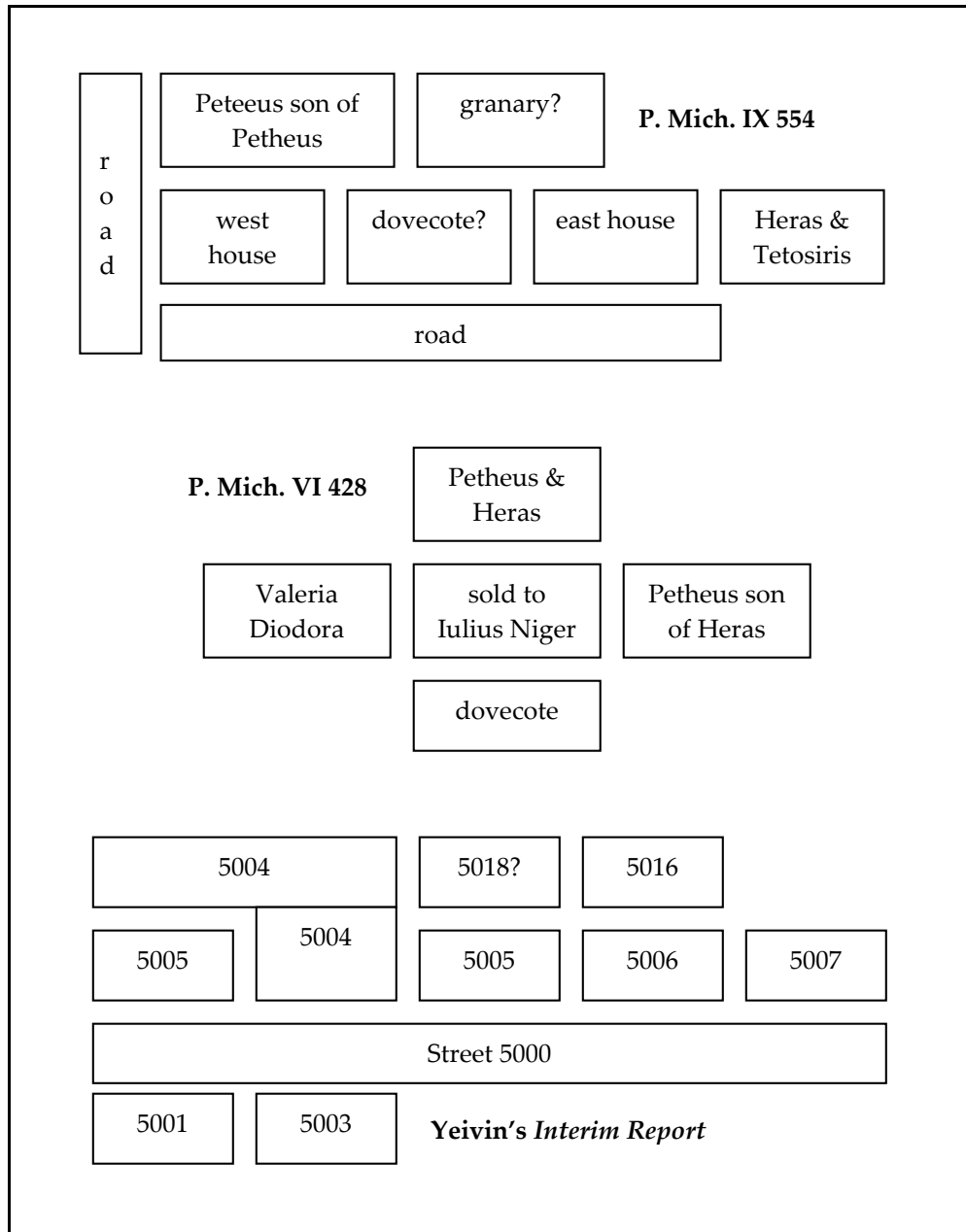


Figure 1.5: Comparison of Provisional Maps

²⁷ Adkins 2008: 3–9 and 24 (Figure 3). At the time her paper was written, Yeivin’s Plan 3 was unavailable due to renovations of the Kelsey Museum, so the orientation of the plan drawn from Yeivin’s Interim Report is reversed.

²⁸ Yeivin 1925.

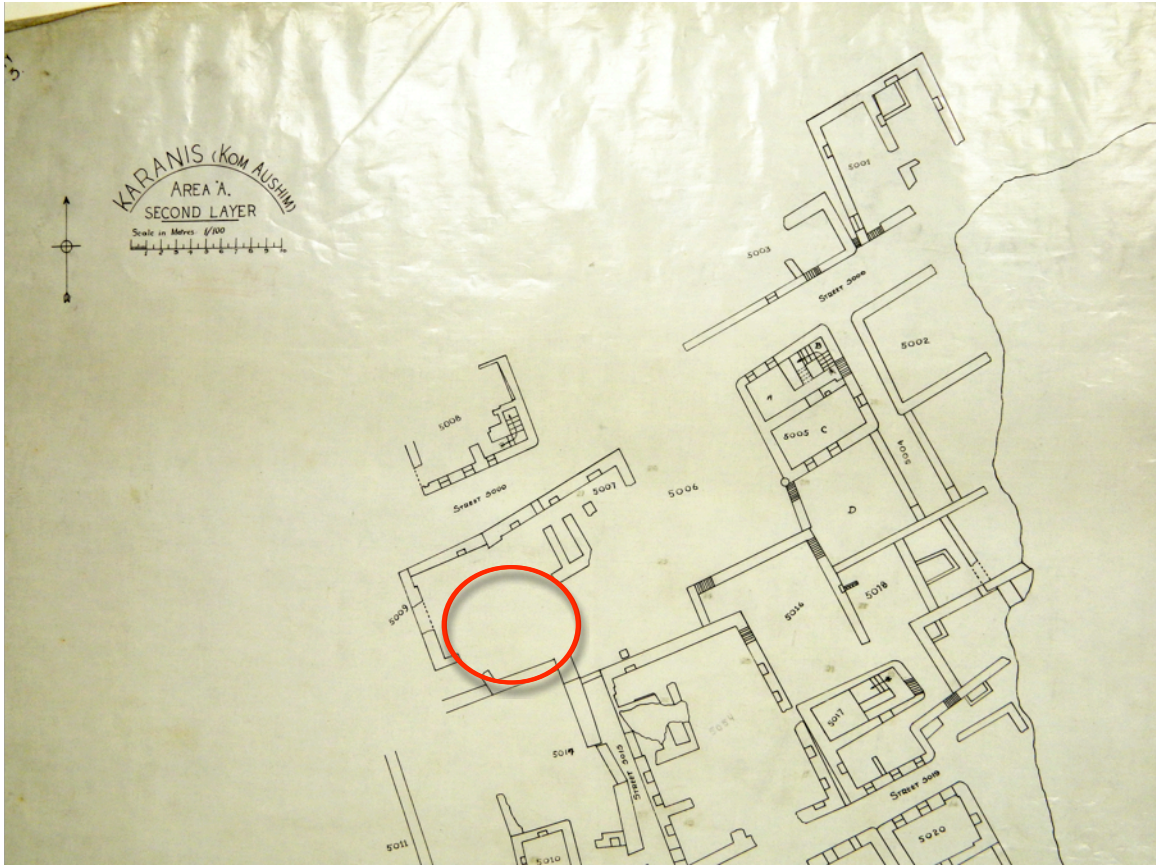


Figure 1.6: Plan 3 close-up

Yeivin's map presents several paradoxes that do not arise as clearly when only the texts are considered. First, although Plan 3 lacks many of the details found in later site maps, it is striking that 5006 is depicted with none of the internal divisions found in the accession numbers (A, B, D, E¹, E², F¹, and F²),²⁹ even though similar subdivisions are indicated for the neighboring house 5005. Moreover, the absence of a wall drawn facing the street suggests that this space was an open courtyard, rather than a fully enclosed house. Of greater concern for the identification of structure 5006 with the property described in the two papyri is the location of the road relative to the house. P. Mich. IX 554 describes a "ῥύμη βασιλική"³⁰ as the southern boundary of the property, while structure 5006 is

²⁹ *Record of Objects*: 211-216.

³⁰ P. Mich. IX 554 (line 24).

clearly located to the south of Street 5000; however, there is another road, Street 5019, bordering the housing block on the south, which could be the road referenced in the papyrus.

I am unsure of how to confidently resolve these contradictions, since the textual and archaeological evidence do suggest that structure 5006 should be identifiable with the house bought by Niger in 154 C.E; moreover it seems hard to reconcile the presence of so many different documents and familial archives³¹ connected to a single property in the same cache unless they were found in or near that structure. The omission of the internal divisions in structure 5006 might be resolved by analysis of Yeivin's handwritten description of the structure in an unpublished table labeled "8.III.28."³² While the relative positions of these subdivisions are generally unclear, based on the locations of doorways and the association of 5006D with Street 5015, it appears that 5006E² was somewhere in the vicinity of the red circle drawn on Figure 1.6. In this same table, Yeivin also notes that a "dwarf" wall divided structure 5006 from Street 5000, and that the walls dividing 5006B and C from 5006A were "broken down" and covered by a single floor. Therefore, it appears that Yeivin may have drawn only the primary walls of the structure on Plan 3, and simply omitted marking the location of the various subdivisions. Moreover, since superscript numerals in the accession numbers indicate the division of rooms by low partitions,³³ the omission of these

³¹ I.e., those of Gemellus Horion and the Minucii, discussed above, as well as an earlier archive (41/61 C.E. to 117/118 C.E.) belonging to the large Egyptian family of Petaus and Tamystha, whose connection to the other two families is unclear from the papyri; cf. Adkins 2008: 11–12. Both the dates and their Egyptian ethnicity render it unlikely that they have any direct association with P. Mich. inv. 2958.

³² Yeivin undated; see Appendix Two on page 176.

³³ Starkey undated 2: 17. These are called "storage chamber" or "storage bin" in the *Record of Objects*. The vast majority of the artifacts from structure 5006 were found in 5006A, which could indicate that all the subdivisions were small chambers located around a large, central courtyard.

from a large-scale plan is not, perhaps, surprising. Finally, it is possible, given the generally poor record keeping during the 1924-1925 season, that the artifacts come from a layer below what is represented on Yeivin's map, especially since Starkey acknowledges a long period of occupancy for structures 5001-5008.³⁴ It seems most likely that structure 5006 actually was a courtyard connected to several enclosed rooms to the west,³⁵ and therefore is probably one of the two courtyards mentioned in the papyri as related to the property owned first by the Minucii and then by Niger and his descendants. Since the papyri were found in fill, and therefore might well have been discarded (likely after the death of Gemellus Horion sometime in the early third-century C.E.), they could have been moved from inside one of the adjacent houses and dumped in the courtyard to facilitate renovations by individuals who were either illiterate (in Greek) or uninterested in their contents.

As regards the more problematic dilemma about the location of the road, it might be remotely possible to theorize that P. Mich. IX 554 has somehow reversed its orientation, and thus intended to indicate that the road was the northern, rather than the southern, boundary. This, however, seems to me to be quite unlikely. The description in the papyrus is both specific and detailed, and given the importance of such descriptions, I find it difficult to believe that such basic and crucial information was misrepresented. Alternatively, Yeivin's "Street 5000" might not be the "royal road" described in the papyrus, which then would have run south of the housing block in which structure 5006 is located, or the

³⁴ Starkey undated 1: 57. Some entries in the *Record of Objects* describe the relative depths of finds, perhaps indicating that structure 5006 had multiple stratigraphic layers corresponding to different periods of occupancy. If structure 5006 is the structure described above, it was occupied for at least two centuries, which would likely entail a large number of renovations and modifications to meet the needs of different occupants.

³⁵ E.g., van Minnen 1998: 132 on the early uncertainty regarding this structure, referred to both as "courtyard south of S5000" and as "C5006".

house described in the papyri was, in fact, located on the other side of street 5000 (which would then be identified as the “royal road”) from the house/courtyard 5006, and the papyri were moved across the street and used as fill sometime in the third century. Yeivin’s map does indicate a few structures diagonally across street 5000, but it appears that excavations directly across were not undertaken that season.³⁶ Unfortunately, it seems unlikely that a clear resolution to these problems can be ascertained unless new information about the 1924-1925 season comes to light in the Kelsey Museum archives.

Before concluding this section, I would like to briefly address the relationship between the recto and verso of P. Mich. inv. 2958, since the verso account has been used both to support the paleographical dating of the recto and could moreover tentatively link this papyrus to the Gemellus Horion archive with which it was found. I assert that the relevance of the verso account to any interpretation of the musical text on the recto is highly debatable. The original editors of this papyrus, O. M. Pearl and R.P. Winnington-Ingram, suggest that there is a possible connection between a name in the verso account and an individual on the Karanis tax rolls, which they use to support their dating of the recto to the middle of the second century C.E.³⁷ This name, Valerius son of Valeria, is recorded in the tax rolls for the years 171 to 175 C.E.; however, the reading of this name on the verso is not at all secure, since the verso account is both badly damaged and written in a small and highly cursive hand.³⁸ It might be tempting to see a further connection between this Valerius son of Valeria and

³⁶ If they were excavated during subsequent seasons, it appears to be nearly impossible to accurately determine a correspondence between the numbering systems, given the lack of precise details on Plan 3. Moreover, subsequent seasons at Karanis focused on the eastern side of the crater, rather than the western side, where Area A, including structure 5006, was located.

³⁷ Pearl and Winnington-Ingram 1965: 179. Cf. P. Mich. VI, Pt. 2, p. 195.

³⁸ See discussion in Chapter Two, Paleographical Description, footnote 5 on page 44.

the Valeria Diodora discussed above in connection with the ownership of the house and courtyard later owned by Iulius Niger's family. In addition to P. Mich. inv. 2958, the 24-5006E²-A cache also included a papyrus containing Homer's *Iliad* Book 2.1-42 (P. Mich. inv. 2931³⁹) with a tax receipt written in the title column. Although the name of the recipient is Horion, it is clearly not the Horion of the Niger family, since his father is listed as Simourk, which is not a known alias for Gemellus Horion's father, Gaius Apol(l)inarius Niger, thus ruling out a direct link between this copy of the *Iliad* and that family. In a more extensive survey of literary texts found with documentary archives, W. Clarysse has concluded that

I found not a single instance where the writing on the recto could be linked with any probability to the persons known from other texts, so that for the time being the link between recto and verso must remain a purely material one.⁴⁰

Moreover, given that texts, especially used literary papyri, moved around Egypt a surprising amount,⁴¹ without specific evidence to the contrary, there is no way to directly link a literary text to the archive with which it was found.⁴² These rather pessimistic conclusions rule out any conclusive association of P. Mich. inv. 2958 to the Gemellus Horion family; however, it is worth mentioning in passing that Iulius Niger, at least, was capable of signing his name on P. Mich. inv. 2848+3000 (lines 33-4),⁴³ but Gemellus Horion himself was illiterate,⁴⁴ possibly

³⁹ Published as P. Mich. VI 390. Cf. APIS: "michigan.apis.1696" and "michigan.apis.1697," and TM 12197 and 60850.

⁴⁰ Clarysse 1983: 46, cf. 47, "But of course we have no guarantee that the persons had ever read the [literary] works they so barbarously mutilated;" also cf. van Minnen 1998: 132 "It seems hardly credible that veterans owned these literary texts."

⁴¹ Clarysse 1983: 45-46; and van Minnen 1998: 106.

⁴² Clarysse 1983: 51.

⁴³ Published as SB XXIV 16252. Cf. APIS: "michigan.apis.1660," TM 41626, and "Gemellus Horion:" 4.

due to his poor eyesight and eventual blindness. There is no reason to think that any of the individuals related to structure 5006 were professional musicians or otherwise capable of reading the notation on P. Mich. inv. 2958; however, it is worth consideration of how this particular text may have arrived in this context, a topic I will address more completely in Chapter Four.⁴⁵

In conclusion, although P. Mich. inv. 2958 is one of a very few musical papyri whose context, even as a re-used document, can be firmly established, the problems associated with the first season of excavation at Karanis have obscured some of the conclusions that might have otherwise been made. Nevertheless, this papyrus provides a valuable insight into the musical sophistication of rural⁴⁶ Greco-Roman Egypt, and specifically to the possibility that the festivals or other social occasions in a relatively small village, like Karanis, could produce or host high-quality musical events. Whether this papyrus and its musical contents originated in Karanis, or were imported from a cultural center such as Alexandria, Oxyrhynchus or even Antinoopolis, the vocal technique required of the performers and the general knowledge of Greek musical theory displayed by the composer or scribe⁴⁷ imply that at least a sub-section of the population of Karanis was acquainted with Greek music at a high level, what in modern parlance would be termed “art” music. While these individuals may have formed a local upper-class (consisting of, e.g., Roman veterans and their families,⁴⁸ priests, administrators, and Greek gymnasiasts⁴⁹), in the broader

⁴⁴ “Gemellus Horion:” 2.

⁴⁵ See discussion in Chapter Four, The Question of Authorship, page 142 and following.

⁴⁶ I.e., outside of Alexandria, Oxyrhynchus, or perhaps Antinoopolis.

⁴⁷ See discussion below, especially in Musical Notation, starting on page 54, and throughout Chapter Three.

⁴⁸ On the presence of a high percentage of Roman veterans in the Fayum, cf., e.g., van Minnen 1998: 111.

context of the Roman Empire to which they belonged, and, more importantly, were deeply aware of belonging, they can hardly be termed members of the hyper-elite (i.e., the Emperor and his family, Senators and their families, Prefects, etc.). This provincial context contrasts greatly, for example, with the near-contemporary music of Mesomedes, Hadrian's court composer, some of whose (archaizing) hymns survive in the manuscript tradition.⁵⁰

Music at Karanis and the Fayum

Archaeological Evidence

Reconstruction of the immediate cultural context of P. Mich. inv. 2958 necessarily involves at least a brief discussion of the archaeological evidence for musicians and music-making in Karanis. As it happens, there are 245 identified (fragments of) musical instruments found during the University of Michigan's excavations at Karanis, demonstrating that active music-making was, in fact, an integral part of the community experience. The types of instruments found unsurprisingly display a mix of Egyptian and Greek influences,⁵¹ although the relatively high degree of overlap (i.e., instruments or instrument types common

⁴⁹ Cf., e.g., van Minnen 1998: 110: "I suspect that the larger villages had a critical mass of wealthy inhabitants to warrant the presence of at least one grammarian to serve local needs."

⁵⁰ E.g., Landels 1999: 254–260; Mathiesen 1999: 56–58; West 1992: 383–384; and *DAGM* 24–31.

⁵¹ I do not mention Roman musical practices here for the simple reason that they would be in most cases archaeologically identical to Greek instruments. With the exception of what would now be termed brass instruments (e.g., the *tuba*, *cornu*, and *lituus*, which were used primarily in a military context), the Romans appear to have been content to appreciate Greek music, or, in earlier periods, Etruscan music, which also uses instruments very similar to their Greek counterparts in construction. Thus, it seems unlikely that the presence of Roman veterans in Karanis would have impacted the cultural picture in terms of musical practices, especially since Roman soldiers in Egypt during the second-century were drawn from the province, and so most likely not of Roman ethnicity.

to both cultures) in many cases limits assigning specific instruments or fragments to a specific cultural context. For example, a find such as two bronze *sistra* handles (30-C123CI2-D and -E) are most likely from a native Egyptian context,⁵² but could also represent the Greek adaptation or adoption of local cult practices, or even importation of such syncretism from a larger cultural center, like Alexandria. Other finds are even more ambiguous: bronze bells (e.g., 28-B172-G⁵³) and bronze cymbals (e.g., 24-106E-D⁵⁴) are common to the religious and musical practices of both cultures, although not as well attested in literary sources as the more complicated instruments of these cultures' 'art' music.⁵⁵ Their presence in substantial numbers at Karanis may simply derive from the two temple structures and other religious activities, and therefore have no specific relevance to the type of musical activity represented by P. Mich. inv. 2958. The most frequently found instruments are wooden castanets (e.g., 25-5095B-D⁵⁶), also common to both cultures, and which could have been used on a wide variety of occasions, most of which were probably either religious or informal.⁵⁷ Two other instrument types are often cross-listed in the Kelsey Museum Artifact Database as toys: buzzers (e.g., 25-316A-C⁵⁸) and rattles (e.g., 27-CA71-H^{1 59}). The so-called buzzers, usually made of clay or pottery, are

⁵² On the connection of *sistra* to the cult of Isis, cf., e.g., Mathiesen 1999: 172.

⁵³ University of Michigan, Kelsey Museum of Archaeology, accession number 0000.00.8492. Hereafter cited as Kelsey number.

⁵⁴ Kelsey number 0000.02.1432.

⁵⁵ For Egyptian cultures, the triangular lap harp and flute probably best represent such high-status instruments; for the Greeks, the several instruments in the lyre/kithara family and the aulos in its various forms.

⁵⁶ Kelsey number 0000.00.3530.

⁵⁷ E.g., Anderson 1994: 185–186; Landels 1999: 83; Mathiesen 1999: 163–166; and West 1992: 122–123.

⁵⁸ Kelsey number 0000.00.3539.

⁵⁹ Kelsey number 0000.02.6373a.

probably the disc-shaped component of a *rhombus*, which would have been attached to the end of a piece of string and whirled around the head like a sling.⁶⁰ In a Greek context, these instruments were used as noisemakers for festivals, especially those related to mystery cults,⁶¹ but their application as toys is relatively obvious. It is unclear whether or not any of the rattles mentioned in the artifact database are related to *sistra*, the most commonly attested rattle-type instrument from Egyptian, Greek, or Roman contexts, or are, in fact, simply toys with no real musical purpose. While some are also identified as castanets, others are made from basketry (e.g., 24-113E-A⁶²), and clearly can be differentiated from either the castanet type or *sistra*. More interesting is a miniature bronze bell (27-C61A-R⁶³), which could be a toy, a child's training or practice instrument, or even perhaps an indication that bells were made in a variety of sizes to produce different pitches.⁶⁴ A final instrument type, the panpipe (*syrinx*), does have a notable presence in Greek literature, especially in bucolic poetry as, e.g., the *Idylls* of Theocritus, but was distinctly *not* associated with the performance of tragedy. Only one example of the *syrinx* was excavated in Karanis (30-C141*-CI⁶⁵), although the individual reeds of the instrument, if not bound together, would be indistinguishable from other uses of single reeds. Although none of the instrument types described in this paragraph are directly relevant to P. Mich.

⁶⁰ E.g., Landels 1999: 138; Mathiesen 1999: 172–173; and West 1992: 122.

⁶¹ E.g., Landels 1999: 138; Mathiesen 1999: 173; and West 1992: 122.

⁶² Kelsey number 0000.00.3362.

⁶³ Kelsey number 0000.01.0892.

⁶⁴ There is no indication in any source that Greeks or Egyptians used tuned bells to produce melodies (like modern hand-bells). A smaller-sized bell would produce a higher pitch, and it is a well-known acoustical phenomenon that lower pitches carry further over distance.

⁶⁵ There is no other information on this instrument. A nearly intact 6-reed panpipe was excavated at Dime (31-II 201B-F), but again, no further information is available.

inv. 2958, I regard their presence in Karanis as an indication that this village was musically aware and active during all periods of its occupation.

Conversely, the instruments of Greek art music, the lyre or kithara and the aulos,⁶⁶ are directly relevant to understanding the cultural context of P. Mich. inv. 2958, which, as a tragedy, would most likely have been accompanied by one of those instrument families. In classical Athenian tragedies, this accompaniment would have been supplied by an aulete, a professional performer on the aulos, hired for the occasion by the choregos.⁶⁷ There is no reason to assume that, even six or seven centuries later, the practice of an auletic accompaniment would have changed for a full staging of a tragedy, especially for a re-production of one of the classics or for a modern tragedy that aimed at that style of performance. More intimate concerts that included excerpts of tragedies (often choral odes performed by a solo vocalist rather than a chorus) may instead have been accompanied by a kithara,⁶⁸ the professional form of the lyre. Both the concert kithara and the aulos had reached a high degree of technical refinement in the Roman period, and had been transformed from the leisure instruments of the Greek aristocracy into purely professional models requiring years of specialized study.⁶⁹ These two instruments together represent the highest degree of formalization and sophistication in Greek music, remarkably equivalent to the modern violin and oboe in the cultural connotations they embodied. To the Greeks living in Egypt during the Roman period, they simultaneously

⁶⁶ For general discussions of the aulos, cf., e.g., Anderson 1994: 179–185; Landels 1999: 24–46; Mathiesen 1999: 177–222; and West 1992: 81–107.

⁶⁷ On the function of the choregos, cf., e.g., Anderson 1994: 113; Mathiesen 1999: 79, 95–96; and West 1992: 36–37.

⁶⁸ Cf., e.g., Chaniotis 2009: 82–87; Prauscello 2006: 105ff.; and West 1992: 376.

⁶⁹ E.g., Anderson 1994: 161 fn. 21, 177, and 183; Landels 1999: 36, 61, and cf. 199; and West 1992: 379. Cf. Mathiesen 1999: e.g., 59, 75–76, and 81; and Chaniotis 2009: 77–80 on Hellenistic appreciation for the virtuoso instrumentalists.

represented the antiquity of “classical” music (as far back as Homer) and the cutting-edge of *avant garde* performance and composition.

Archaeological evidence of the lyre and kithara are, to my knowledge, limited to painting and sculpture: the reason for this lies in the construction of the instruments, from a combination of wood, horn, sinew or gut, possibly bronze fittings, and, in the case of the lyre, tortoise-shell. In most climates, these materials do not preserve well, and even in the case of an archaeological context, like Karanis, that does preserve organic material, it is unclear whether instrument fragments or components would have been recognized as such by the excavators. Both instrument types are extremely fragile in appearance (and likely in reality), and in addition would have been quite expensive to make, requiring a skilled, professional craftsman, and therefore it seems unlikely that they would have been discarded intact. For these reasons, I would not expect to find an archaeological record of the presence of either lyres or kitharas. Regardless, the ubiquity of these instruments (or, at least, the lyre) in Greek culture as part of a traditional gymnasiastic education⁷⁰ strongly suggests that they were present in Karanis among the Greek-speaking population.

The aulos presents a completely different archaeological picture. The difficulty here is distinguishing between the Greek aulos and native Egyptian flutes made from similar components: reed, bone, wood, and bronze. The characteristic structural element of the aulos are the two bulbs, or *holmoi*,⁷¹ located at the upper (mouthpiece) end of the instrument, and when these are present, I am relatively confident in identifying a particular fragment as an aulos, rather than an Egyptian instrument. Professional instruments from the late

⁷⁰ Cf. footnote 49 on page 16.

⁷¹ E.g., Anderson 1994: 180; Landels 1999: 32–33; Mathiesen 1999: 184–187; and West 1992: 85.

Classical period onward would also have had a number of key mechanisms (vertical sliders and rotating collars) to increase the effective speaking range of the instrument,⁷² and the presence of these, or of more than six holes on a single pipe,⁷³ may also identify an aulos. There are twelve artifacts from Karanis identified in the Kelsey Museum Artifact Database as “flutes,”⁷⁴ and which could indicate the presence of auloi among the residents of the village.⁷⁵ Figure 1.7 displays the basic information about each of these items, including material, accession number, and current location (if known), listed in the chronological order of their excavation. Due to the difficulty in dating the stratigraphy of Karanis, I have not assayed dating the fragments, and no dates are given in the Kelsey Museum Artifact Database; however, the fragments do appear relatively evenly distributed throughout all levels of occupation. There would be no reliable method of dating the instruments based on their typology, since any differences in form (e.g., bone vs. bronze/wood) are more likely to result from either the different cultural traditions (Egyptian vs. Greek⁷⁶) or else from

⁷² E.g., Anderson 1994: 183; Hagel 2009: 229; Landels 1999: 36–37; Mathiesen 1999: 190–191; and West 1992: 87.

⁷³ This criterion is more problematic: while a single member of a pair of pipes can be expected to have no more than six holes without a key mechanism, transverse flutes and flutes or reed instruments played singly could have up to ten or eleven holes.

⁷⁴ The translation of aulos as “flute,” while the normal practice among Hellenists, is, strictly speaking, inaccurate, and therefore I have avoided using a translation. In sound, the instrument probably resembled an oboe, English horn, or Middle-eastern shawm more closely than a modern flute, which does not employ a reed. Cf., e.g., Landels 1999: 24 and West 1992: 85.

⁷⁵ See Textual Evidence, page 26 and following, for my discussion of the possibility of traveling performers, who would have brought their own instruments with them.

⁷⁶ Greek auloi were made from hollow reeds, wood, bronze-covered wood, or bone. One would assume that the different materials might have affected the tone of the instrument, as, for example, the different materials used in the construction of modern organ pipes (wood for a more mellow sound, metal for brightness), but there is no clear evidence of this type of differentiation in the sources I have consulted. This contrasts with the typology of the lyre/kithara, where the construction of the instrument was, in fact, directly related to its use context.

different use contexts (professional vs. religious vs. amateur), than from any temporal distinctions. The instruments of both cultures had reached their highest level of development long before the second century C.E.; however, simpler instruments remained in use for non-professional contexts long after the development of professional forms.

	Accession Number	Materials and Description	Location
1	25-4010C-T ⁷⁷	“part of a reed flute?” found in a “deep chamber supposed to be under staircase” ⁷⁸	Kelsey Museum (0000.00.3569)
2	25-5095A-D	wooden or reed flute with three holes	Kelsey Museum (0000.00.3568)
3	27-C59A-NI	≤10-holed bronze flute with wooden core “found on sill in niche;” 0.435 m long, found in 4 main pieces	Kelsey Museum (0000.00.7100)
4	29-D6B*-D	“Frag. of cylindrical piece of bone. Has holes as if intended for flute.”	unknown
5	29-T7C*-J (temple)	0.15 m piece of bone with lengthwise bore and 3 holes, “perhaps a flute”	Kelsey Museum (0000.00.8504)
6	30-B224B-V	“Piece of bone, perhaps part of a flute.”	unknown
7	30-B227*-F	fragment of a bronze flute	unknown
8	30-C123CG4-E	5-holed bronze flute with wooden core 0.21 m long	Cairo Coptic Museum (65696)
9	33-158*-WIV	“Mouthpiece of flute (?)—bone and bronze.”	Cairo Museum (65697)
10	33-BS120-F	“Small piece of wood, perhaps flute mouthpiece.”	unknown
11	33-C74K-D	“Small cylindrical piece of bronze, perhaps frag. of flute.”	unknown
12	33-C86L-E	“Frag. bronze flute?”	unknown

Figure 1.7: “Flutes” from Karanis

The instrument of greatest interest from this list is accession number 27-C59A-NI, a nearly complete wood-lined bronze instrument found in the same stratigraphic level⁷⁹ as the papyrus cache containing P. Mich. inv. 2958. Thus, this

⁷⁷ All structures are houses unless otherwise indicated.

⁷⁸ All quotations in this table are from the Kelsey Museum Artifact Database.

⁷⁹ The C layer corresponds roughly to the middle layer from the first season, and is usually datable to the second or third century C.E.: e.g., Schwendner 2007: 993.

is the best extant piece of evidence for the kind of wind instrument available in Karanis in the approximate time-period that P. Mich. inv. 2958 would have been written and performed. Based on autoptic examination of the instrument, as well as the photograph available through the on-line version of the “Kelsey Museum Artifacts Database” (see Image 1.1),⁸⁰ I believe this instrument could have been a



Image 1.1: The Karanis Aulos (27-C59A-NI)

professional or semi-professional Greek aulos or *monaulos*.⁸¹ Unfortunately, the fragile condition of the instrument, including encrustation and flaking of the bronze plating, prevents a hands-on examination and obscures details of the instrument’s construction and decoration. The *holmos* and *hupholmion* are clearly visible on the left, the mouthpiece end of the instrument, with what appear to be segmentation line between them (see Image 1.2), and, more remarkably, a hole

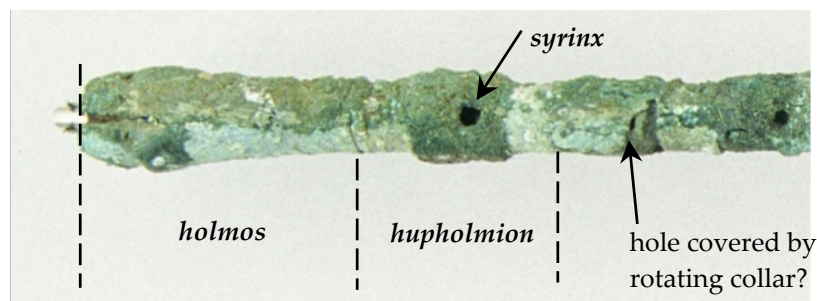


Image 1.2: Close-up of Mouthpiece End of 27-C59A-NI

⁸⁰ This database can be accessed at <http://www.lsa.umich.edu/kelsey/collections/searchcollections>.

⁸¹ For descriptions of the *monaulos* and its association with Egypt, see, e.g., Anderson 1994: 183–184; Landels 1999: 167–168; Mathiesen 1999: 195–196; and West 1992: 92–93.

on the top of the *hupholmion* in the exact position expected for a mechanism which may have been called the *syrix*. The function of this device, probably a hole covered by a rotating collar, was possibly similar to the octave or register keys on modern wind instruments in that it may have permitted the player to access the instrument's harmonics more easily, effectively doubling the range of notes available for performance.⁸² Unfortunately, the mechanism for closing this hole during performance has been lost, and purely on conjecture,⁸³ I suggest that the mechanism may have been salvaged for re-use, if this instrument was discarded. Vertical splitting along the wood grain remains one of the greatest dangers facing modern wooden wind instruments in a dry climate, and this problem was likely also true of ancient Karanis.⁸⁴ If such a split had occurred between two of the *trupēmata*, it would have rendered the instrument unplayable, thus leading to its abandonment. This might account for the presence of a relatively intact instrument, and also for the undeniable fact that we have preserved here only one of the expected pair.⁸⁵ In such a scenario, it seems possible, if not probable, that the delicate and complicated key mechanism could have been salvaged and re-used on a replacement, especially if it was

⁸² The debate about the *syrix* and its function is ongoing: cf., e.g., Landels 1999: 38–40; Mathiesen 1999: 214–217; and West 1992: 85–86.

⁸³ This, and the following conjectures, are based on my brief autopsy of the Meroë auloi at the Boston Museum of Fine Arts in the fall of 2000, which do preserve, albeit with extensive crushing damage, the delicate silver key mechanisms of an unquestionably professional set of instruments.

⁸⁴ E.g., Kelsey number 0000.00.3568, number 2 in Figure 1.7.

⁸⁵ It is, of course, possible that this instrument was a *monaulos*, and therefore not originally part of a pair; however, the *monaulos* appears to have been a relatively rare instrument. The Greek musical aesthetic apparently preferred the sound of a pair of auloi played by a single performer, despite the significant increase in the difficulty of the technique involved in playing two double-reed instruments simultaneously. Interpretation of 27-C59A-NI as a *monaulos* might not obviate the necessity for a (now missing) key mechanism, since there are at least nine *trupēmata* along the top of the instrument, and the human hand could only cover eight, and even though it is possible that the hole farthest from the mouthpiece was not fingered, a collar would still have been needed to operate the *syrix*.

made from a precious metal, such as the silver used on the Meroë auloi, whose key-ends are shaped like dolphins holding shells in their mouths.

It is remotely possible that evidence of a key-mechanism is found directly below the two *holmoi* (see Image 1.2), where the photograph appears to show the edge of a round hole covered by a thin layer of bronze. While this could represent a rotating collar designed to cover a hole not needed for the chosen scale, the encrustation makes it nearly impossible to determine with any certainty if this was a separate piece of bronze. There are also several highly encrusted projections near the bottom of the instrument on the back which might possibly have been part of a key mechanism; however, the poor preservation of the bronze makes it impossible to identify them with any certainty. The location and spacing of the *trupēmata* is more problematic for interpretation of this instrument as an aulos, especially since the spacing between the holes is relatively uneven and diminishes significantly at the bottom of the instrument.⁸⁶ This suggests that the intervals between the pitches produced by the *trupēmata* also decreased at the bottom end of the instrument.⁸⁷ Moreover, there are no *trupēmata* currently visible on the back of the instrument, where at least one for the thumb should be present; however, the damage to the bronze is more significant on the back, and it is possible that one was covered by encrustation or flaking. While it is impossible to determine with any certainty, the uneven spacing of the *trupēmata* may reflect the practice of partially covering holes that could be reached by the fingers to permit subtle pitch-modifications, while the lower holes, operated by key-mechanism, could not be manipulated in this

⁸⁶ On the placement of the *trupēmata* on surviving auloi, cf., e.g., Anderson 1994: 180; Landels 1999: 34–35; Mathiesen 1999: 186, 192–193; and West 1992: 86.

⁸⁷ On wind instruments, the hole closest to the mouthpiece (the upper end) gives the second highest natural pitch available (the highest being given when no finger-holes are covered), and the pitch decreases as each successive hole is covered.

manner as easily. It is next to impossible to assess this instrument's range, or the precise intervals represented by the *trupēmata*, without specific information about the length of the reed used,⁸⁸ and I will not attempt such speculation here; however, the overall length does appear to be consistent with other known auloi.⁸⁹ In conclusion, 27-C59A-NI provides tantalizing evidence for the presence of professional musicians and their instruments in the population of Karanis. I would like to emphasize that further study of this instrument, including a comparison to other auloi, such as the famous Pompeii, Reading, and Meroë auloi, is warranted, and until that research has been adequately performed, any conclusions or hypotheses presented above are unambiguously provisional.

Textual Evidence

In addition to the presence of musical instruments in the archaeological record at Karanis, several ostraka and papyrus documents found in Karanis or in nearby contexts also suggest the representation of an active musical community in the Fayum. The following discussion presents several of these documents and attempts to tease out some of the cultural conventions surrounding their references to musician. For practical purposes, I have focused on documents that refer directly to auletes, since the aulos was the instrument primarily associated with tragic performances. This restricted focus in no way implies that the kithara and lyre were somehow less important to Greek-speaking Egyptians, although it does appear that the use contexts for these chordophones in Roman Egypt may

⁸⁸ For discussions concerning this topic as well as various suggested reconstructions, cf., e.g., Anderson 1994: 182; Hagel 2009: passim; Landels 1999: 271–275; Mathiesen 1999: 204–218; and West 1992: 94–95, 97–101.

⁸⁹ Cf., e.g., Anderson 1994: 180; Landels 1999: 273; Mathiesen 1999: 188–190; and West 1992: 100.

have been different from the aulos. Whereas the aulos is associated with (religious) festivals and public entertainment, the lyre was primarily linked to elementary education and symposiastic settings, and the kithara to elite concert events in urban settings, such as Alexandria.

There are two ostraka from Karanis, or from its close environs, that make brief references to aulete as an acknowledged professional occupation, and consequently as a significant identifying feature of the individuals who had such skill. O. Mich. inv. 9134,⁹⁰ a third-century C.E. list of liturgical workers, provides the name of three auletes: Stephanos son of Dios, Niranis son of Dios,⁹¹ and Dios. It is tempting to conclude that they represent a family of musicians, and there is ample evidence from literary sources that music was a family trade in antiquity.⁹² The other names on the ostrakon suggest a mix of Greek and Egyptian ethnicities, and since the temple or festival for which these individuals were required is not named, it is unclear what the precise context of this ostrakon would have been. Nevertheless, it does seem significant to me that the only individuals on this list whose profession is mentioned are the three auletes, which might indicate either that their inclusion represents an extraordinary occurrence, or that the other individuals' occupations are understood from the context or otherwise irrelevant to their participation.

O. Mich. inv. 9485 + 9486,⁹³ a late third- or early fourth-century C.E. list of donkey drivers, identifies an individual by the name of Iniranis as an aulete.⁹⁴

⁹⁰ Published as O. Mich. I 83. Cf. APIS: "michigan.apis.583" and TM 42495.

⁹¹ This is the name given in all English transcriptions and translations; Papyri.info, gives the name as Πινᾶρις (Pinaris).

⁹² Cf., e.g., Chaniotis 2009: 86–87; Landels 1999: 222; and West 1992: 338 fn. 40.

⁹³ Published as O. Mich. III 1050. Cf. APIS: "michigan.apis.882" and "michigan.apis.883" and TM 30538.

⁹⁴ The reading ἀῦλ(ητοῦ) in the text published on Papyri.info suggests that identification of Iniranis as an aulete is relatively insecure.

The APIS record for this ostrakon suggests a connection to the Niranis of O. Mich. inv. 9134, which seems possible given the obscurity of the name;⁹⁵ however, if the reading of the name on inv. 9134 as Pinaris is correct, the connection becomes extremely doubtful. The other names listed on this ostrakon, as with O. Mich. inv. 9134, are a mix of Greek and Egyptian ethnicities, and they are similarly recorded without reference to their professions. Taken together, these two ostraka suggest that the occupation of aulete was significant enough to include in documents otherwise bare of information about the individuals mentioned in them, and that moreover, since the profession of aulete was recognized as such, these ostraka provide evidence for the presence of professional musicians in the Fayum, if not specifically in Karanis itself, during the second and third centuries C.E.

P. Corn. inv. I 14,⁹⁶ a census roll from Philadelphia from the early first-century C.E., provides further indication of the recognition of the professional status of auletes. Philadelphia, one of the largest villages in the Fayum, was located closer to the Nile and the trade routes than Karanis, but the two towns were close enough to permit uncomplicated travel between them. This document, which lists men who live in villages other than Philadelphia, but who may have owned property or otherwise had a connection to the town, identifies two individuals as auletes: one whose name begins with S and one named Heras. Unfortunately, the name of the village which was their primary home is not preserved in the papyrus and no other identifying characteristics are mentioned. However, Philadelphia is the town from which the third-century B.C.E. Zenon archive was recovered, including, perhaps significantly, the oldest extant Greek

⁹⁵ A search of the Trismegistos database for the names Niranis or Iniranis turns up only this ostrakon.

⁹⁶ Published as P. Corn. 22. Cf. APIS: "michigan.apis.1207" and TM 25709.

musical papyrus,⁹⁷ and Zenon, through his involvement in the local gymnasium, also was responsible at one point for overseeing the education of a would-be musician.⁹⁸ While these observations do not have specific bearing on P. Mich. inv. 2958, it does seem that there was a long-standing tradition of musical notation and performance in the communities of the Fayum that persisted throughout the Ptolemaic period and into the Roman period.

A more puzzling reference to music and musicians in the Fayum comes from P. Mich. inv. 1285,⁹⁹ a 42 C.E. division of property from Tebtunis. In this document, Orseus alias Herodes, son of Nestnephis, divides his property among his four sons prior to his death and further makes contractual agreements with his eldest son, Nestnephis alias Ischyron, to provide for his upkeep for the remainder of his life. These requirements include paying taxes on the property Nestnephis inherits, and further paying taxes somehow related to music and aulos-playing specifically:

καὶ {ῶν} διαγράψι τὰ ὑπέ[ρ] ἐμοῦ δημόσια ἅπαντα αὐλητικῆς τε
καὶ πρὸς μουσικάν¹⁰⁰

While this tax is otherwise unattested in the documentary papyri from Egypt, there are other parallels for taxes on specific professions, and that appears to be the case here. However, unlike the documents discussed above, if Orseus was an aulete, he does not mention his profession elsewhere in the papyrus. He appears to have been comfortably well-off – he leaves two *arourai* of land to his eldest son and an unspecified number of houses in the village of Talei to be divided

⁹⁷ Published as P. Cair. Zen. IV 59533. Cf. *DAGM* 8, APIS: “oxford-ipap.apis.1006,” and TM 65678.

⁹⁸ Published as P. Cair. Zen. III 59440. Cf. APIS: “oxford-ipap.apis.919” and TM 1080. Cf. Clarysse 1983: 53 for a discussion of this text.

⁹⁹ Published as P. Mich. V 321. Cf. APIS: “michigan.apis.1370” and TM 15167.

¹⁰⁰ P. Mich. inv. 1285 lines 20-21: “and of these let him pay on my behalf all the public taxes related to playing the aulos and for music.” Unless otherwise indicated, all translations are my own.

between them, as well as 60 *drachmai* each to his two middle sons – which could support identification of his occupation as a professional aulete. However, this tax could also have no relation at all to his profession, but instead represent a tax on the hiring of an aulete and musicians, possibly in anticipation of his funeral or some other festival occasion or in the performance of an otherwise unspecified liturgy. The phrasing of the reference to the aulos also raises some questions. The word used, ἀὐλητικῆς, is the genitive feminine singular form of the adjective pertaining to the aulos. One can probably supply the feminine noun, τέχνης (“skill” or “craft”) as, e.g., at Aristotle *Poetics* 1447a line 15,¹⁰¹ with a meaning similar to “the skill or craft involved in (performing on) the aulos,” and which I have translated as “related to playing the aulos.” This implies a tax not on flute-players, as the APIS, Trismegistos, and Papyri.info translations suggest, but rather on flute-playing. I contend that this probably indicates that Orseus’ musical involvement was restricted to hiring one or more auletes for some type of performance related to his life or impending death, rather than indicating his profession. Nevertheless, this papyrus intriguingly suggests the significance of musical affairs in the life of at least one Greek/Egyptian, important enough to receive specific mention in what amounts to his will.

¹⁰¹ This is the famous quote concerning *mimesis* (“imitation”) in poetry and music: ἐποποιία δὴ καὶ ἡ τῆς τραγωδίας ποιήσις ἔτι δὲ κωμωδία καὶ ἡ διθυραμβοποιητικὴ καὶ τῆς ἀὐλητικῆς ἢ πλείστη καὶ κιθαριστικῆς πᾶσαι τυγχάνουσιν οὔσαι μιμήσεις τὸ σύνολον, “the composition of epic poetry and the composition of tragedy and also comedy and dithyrambic composition and especially (the composition) of aulos-playing and kithara-playing all happen to be on the whole imitation.” What is interesting about this passage, as a brief digression, is that instrumental music *qua* imitation (i.e., so-called program music) is held to be a relatively recent invention, while it appears that the Greeks were well aware of, and made frequent use of, the imitative capacities of the aulos in particular, as e.g., the famous Pythian *nomos* which imitated the dying hisses of the Python as one of its sections (see footnote 109 on page 32).

P. Mich. inv. 4682a(+4773)¹⁰² provides a different perspective on the musical culture of Roman Egypt. This is a second- or third-century C.E. text, found in Karanis (26-B8D-D¹), which records the rules for a musical contest involving both auletes and kitharists. The APIS Database suggests that this papyrus originated in Alexandria, presumably because the editors found it hard to believe that a formal competition such as this would have taken place in the village environment where it was found; however, there is no evidence to suggest that the point of origin must have been Alexandria, and not, e.g., Philadelphia, Antinoopolis, or Oxyrhynchus. The absence of any information about re-use of the papyrus does seem to me to obviate the necessity of an origin outside of Karanis; however, we must withhold conclusions until the republication of this text with its newly associated fragments.

The titles given for the contests described in P. Mich. inv. 4682a, “ν(όμος) αὐλητῶν κυκλίων” (Fr. 1, Col. 2, line 5) and “ν(όμος) κιθαριστ(ῶν) κυκλίω[v]” (Fr. 1, Col. 2, line 24),¹⁰³ link this competition to more famous musical *agones*, such as those at the Pythian Games at Delphi. In fact, in addition to the “Cyclic nome” of the title,¹⁰⁴ rules for both sections refer to “Pythian” auletes (Fr. 1, Col. 2, lines 13-14) and kitharists (Fr. 2, Col. 2, line 28-29);¹⁰⁵ however, the exact nature of these references is unclear, and a connection to the famous Pythian nome

¹⁰² Published as P. Mich. inv. 4682 in Pearl 1978, but now assigned the inventory number 4682a. Cf. SB XIV 11931, APIS: “michigan.apis.2257,” and TM 26556.

¹⁰³ “Nome of the Cyclic Auletes” and “Nome of the Cyclic Kitharists.”

¹⁰⁴ This nome might be associated with dithyrambic performances, where the chorus was arranged in a circle, and which are connected especially to the semi-legendary kitharode, Arion. Cf., e.g., Anderson 1994: 71–72; Landels 1999: 4; Mathiesen 1999: 74; and West 1992: 216, 339–340.

¹⁰⁵ West 1992: 59–60 discusses a so-called Pythian kithara as a more complex, i.e., professional, variation to the normal instrument, and refers to the presence of a Pythian kitharist among the 97 B.C.E. delegation of Athenian musicians to Delphi and a third-century C.E. inscription from Mt. Helikon recording the competition victory of a Pythian kitharist.

should not necessarily be inferred.¹⁰⁶ In general, the nome appears to have been a multi-part composition designed to demonstrate a performer's extremes of technique, frequently as part of a competition setting.¹⁰⁷ The types of compositions favored for these performances also appear to have involved what would now be called program music: music designed to evocatively imitate a scene or action,¹⁰⁸ such as Apollo's slaying of the Python which resulted in the founding of the oracle at Delphi.¹⁰⁹ The nome, therefore, appears to have had some of the significance now accorded to a concerto or other multi-movement technical showpiece.

The rules for the competition recorded in P. Mich. inv. 4682 reflect this type of context. Although the text is extremely fragmented,¹¹⁰ it is clear the rules surrounding this competition were both complex and specifically geared towards technical display. It is clear that the nomes involved were relatively circumscribed, since the rules appear to forbid subtracting (and also possibly adding) sections (Fr. 1, Col. 2, line 6-7), which accords well with what little is known about nomes from literary sources – i.e., that these involved the specific outline of a multi-part composition (sections, *tonoi*, general techniques to be included, etc.) within which a given performer could improvise to the limits of his (or possibly her) technical ability. The general idea appears to have been to

¹⁰⁶ I very much doubt any direct connection because of the reference to the Pythian aulete functioning as *μεσόχορος* (Fr. 1, Col. 2, line 14: =*κορυφαῖος*, chorus leader), since descriptions of the Pythian nome clearly call for a solo aulete. The reference to the chorus does raise the possibility that the Cyclic nome referenced in this papyrus was, in fact, related to a dithyramb, since these were also compositions involving a chorus, and possibly actors. On dithyrambs more generally, cf., e.g., Landels 1999: 4; Mathiesen 1999: 71–81; and West 1992: 16–17.

¹⁰⁷ E.g., Anderson 1994: 54, 72, 76, and 96; Landels 1999: 5, 154–155; Mathiesen 1999: 58–71; and West 1992: 213–217.

¹⁰⁸ Cf., e.g., the Aristotle quote in footnote 101 on page 30.

¹⁰⁹ On this, the most famous of all the nomes, cf. e.g., Landels 1999: 5, 40, and 158; Mathiesen 1999: 24–25, 43, 60, and 157; and West 1992: 212–214.

¹¹⁰ Only Fr. 1, Col. 1 and Fr. 2, Col. 2 are summarized and translated on APIS.

permit comparison of the different contestants as directly as possible. Unfortunately, the surviving portions of this document are not concerned with establishing such an outline for the “cyclic nome,”¹¹¹ so one can only assume that this composition was part of the general repertoire of the contestants. This implies, therefore, that P. Mich. inv. 4682 was written by and for musical professionals, for whom the details of the performance were already understood, as indicated by the insistence on complete performance.¹¹²

Instead, this document provides rules concerning what might be termed performance practices: how and where to enter and exit (Fr. 1, Col. 2, line 8 and Fr. 2, Col. 2, line 26), what equipment could be used (Fr. 2, Col., 2, line 25), how many and what type of supporting performers or actors could be employed (Fr. 1, Col. 2, lines 10-12 and Fr. 2, Col. 2, lines 30-32). It is also clear from this document that the rules for auletic and kitharistic performances were similar, since the rules for the kitharists, given second on the papyrus, refer back to the previous section which provides rules for the auletes (Fr. 2, Col. 2, lines 26-27). Although the fragmentary nature of the text prohibits the confident reconstruction of the specifics of this contest, several provisional conclusions can be drawn from what survives. First, musical competitions as late as the date of this text were strictly controlled along the same terms applied to the contests some six or seven centuries prior, indicating either a genuine continuity of practice, or the desire to create the appearance of a continuous tradition, as seen clearly in the references to “Pythian” auletes and kitharists. Second, the

¹¹¹ The reference to not omitting a part of the nome suggests that an elaboration was never included in the contest rules, since the parts were clearly not enumerated there.

¹¹² A relatively informal writing context is also supported by the poor quality of the papyrus and the “crabbed and irregular” paleography, which could indicate either that this was a discarded draft, or that it was intended for use by a limited number of individuals (i.e., judges and contestants): APIS s.v. “michigan.apis.2257.”

references to supporting kitharists or actors (at least three for the auletic competition and two for the kitharist), some of whom must be “comic,” possibly used “in the final part” (Fr. 2, Col. 2, 31-32), as well as the cryptic reference to a chorus (Fr. 1, Col. 2, line 14), suggest that this competition may have had some relation to theatrical performances. Possibilities include either semi-staged performances of excerpts from the ‘classics’ (e.g., the ever-popular Euripides) or of dramatizations of the (mythological) narrative from which the program of the nome was drawn. While this contradicts what is known about most musical competitions involving nomes, i.e., that they were primarily solo affairs,¹¹³ adaptation of the traditions to an Egyptian or Roman context or an admixture with the famous tragic contests in Athens cannot be ruled out. While the role of actors (comic or otherwise) seems relatively clear, the possible function of these δύο τοὺς ὑ[πο]κιθαρισταῖς¹¹⁴ is confusing and might challenge the long-standing assumption that all ancient Greek music was completely monophonic. One can easily imagine these accompanists performing the unornamented melodic line beneath the improvisation of the soloist/competitor. In conclusion, P. Mich. inv. 4682 provides a unique glimpse into the competitive life of musicians in ancient Egypt that suggests that traditional Greek music still flourished in Egypt during approximately the same time period when P. Mich. inv. 2958 was written.

The final document that provides context for the musical community in rural Egypt in the (late) second-century C.E. is P. Col. inv. 441,¹¹⁵ a contract for

¹¹³ Cf., e.g., Landels 1999: 4–6; Mathiesen 1999: 59; and West 1992: 19, 337, and 373.

¹¹⁴ Fr. 2, Col. 2, line 30: “two under-kitharists.” The prefix ὑπο- clearly has the sense of supporting or accompanying, since the preposition ὑπό is used to denote instrumental accompaniments: e.g., νέοι κώμαζον ὑπ’ αὐλοῦ, “the young men were partying accompanied by an aulos,” Hesiod *Scuda* 281.

¹¹⁵ Published as P. Col. VIII 226. Cf. APIS: “columbia.apis.p261,” SB V 7557, and TM 27234.

musical entertainment from Alabastrine.¹¹⁶ The papyrological databases identify this document as a contract between a business manager and two auletes; however, the contracting parties are actually a business manager, who is also an aulete, and two citizens of Alabastrine. The text of the document is as follows:

Σιλωνὸς Ἀμμονίου Ἑρμοπ(ολίτης) πραγμα(τευτής)
Πλουτίωνι Ταπουτος καὶ Διοσκόρω Ἀδριανοῦ ἀμφοτέροις ἀπὸ
Ἀλαβαστρίνης χάρειν· συνεφώνησα πρὸς ὑμᾶς ὥστε ἀύλησαί με
ἄμα τῇ συντάξ(ε)ι μου πάση ἐν τῇ προκειμένη κώμῃ ἐφ' ἡμέρας ἡ
ἀπὸ κδ τοῦ ἐξῆς μηνὸς Ἐπειφ, μισθοῦ ἐκάστης ἡμέρας ἀργυρίου
δραχμῶν [...]¹¹⁷

This document is significant for several distinct features, as well as for the musical culture that it suggests. First, the name of the contracting aulete, Silvanus, is a Latin name that might be a stage name because of the association of the Italic god Silvanus with the Greek god Pan, who, through his invention of the *syrinx*, had decided connections with music, especially in a rural setting (e.g., the *Idylls* of Theocritus). If Silvanus is a stage name, then it is possible that he was a member of οἱ Διονυσιακοὶ τεχνῖται, the Artists of Dionysus, a guild of musicians who were active throughout the eastern Mediterranean starting in the fourth-century B.C.E.¹¹⁸ This guild specialized in the performance of tragedies – the original members appear to have been a group of tragic actors and auletes – but

¹¹⁶ Alabastrine was a village in the Hermopolite nome, but in the fourth and fifth centuries C.E. was incorporated into the Arsinoite nome, which included the Fayum, and, of course, Karanis. This proximity is suggestive: see discussion in Chapter Four, The Question of Use on page 151 and following.

¹¹⁷ “Silvanus son of Ammonios, a Hermopolite, business manager, to Ploution son of Tapous and Dioskoros son of Hadrianos both from Alabastrine, greetings: I have agreed with you that I play the aulos together with my whole company in the aforementioned village for 8 days, from the 24th of the next month Epeiph, for a wage for each day of ... silver drachmai:” the text printed here is from *SB V 7557* via Papyri.info.

¹¹⁸ Cf., e.g., Anderson 1994: 167–169; Landels 1999: 164–165, 220–222; Mathiesen 1999: 43–45, 55–56; and West 1992: 374–376.

they are also connected with the two Delphic hymns.¹¹⁹ There was a chapter of the guild in Alexandria,¹²⁰ and it is not inconceivable that there were other chapters or sub-chapters located elsewhere in Egypt in important cultural centers such as Antinoopolis or Oxyrhynchus.

In terms of contextualizing P. Mich. inv. 2958, there is some interesting inscriptional evidence likely connected with the *τεχνῖται* in Asia Minor. Two second-century B.C.E. inscriptions from Teos and Magnesia record school prizes awarded for, among other subjects, *μελογραφία* and *ὄυθμογραφία*.¹²¹ The interpretation of these two terms has been the subject of much controversy regarding whether or not *-γραφία* implies that these prizes were awarded for knowledge of the musical notation systems. While some scholars interpret the term more generally as rhythmic and musical composition (i.e., metrics and melodic construction),¹²² I agree with Landels and West that *-γραφία* refers specifically to the act of writing (i.e., the study of the two notation systems).¹²³ Since Greek has specific words for poetic (i.e., rhythmic) and melodic composition – e.g., *ποιεῖν* and *μελοποιεῖν*; cf. *ὄυθμίζειν* – it seems likely that if composition more generally was all that was intended in these inscriptions, this is the vocabulary that would have been used. Instead, I think these inscriptions strongly argue for the hypothesis that knowledge and transmission of the *semeia* was an integral part of the education of professional musicians, and may suggest

¹¹⁹ Landels 1999: 222–247; Mathiesen 1999: 39–58; West 1992: 288–301, 375–376; and *DAGM* 20–21.

¹²⁰ Landels 1999: 164–165 and West 1992: 374.

¹²¹ CIG 3088 (Teos) and SIG³ 960 (Magnesia). Teos was also a major center for the Artists of Dionysus: cf. references in footnote 120 on page 36. It seems probable that the curricula at Teos, at least, reflect their presence.

¹²² Mathiesen 1999: 44; more generally, cf. Anderson 1994: 168 and Prauscello 2006: 46 fn. 141.

¹²³ Landels 1999: 220 and West 1992: 271–272.

that it was included in elementary education in exceptional circumstances, such as that surrounding the presence of the Artists of Dionysus in Teos.

Returning to P. Col. inv. 441, Silvanus' function as *πραγματευτής*, business manager, for his group of musicians may also relate to a guild-type organization. In any case, he is clearly the individual responsible for the day-to-day management of this group, and this argues for the high status of auletes in practical matters.¹²⁴ Moreover, Silvanus' troop clearly traveled within their home region, the Hermopolite nome, and could easily have traveled outside it into the Fayum in the neighboring Antinoopolite nome, during the course of their professional duties. Travel between the nomes of Greco-Roman Egypt is hardly unparalleled: there are many documentary papyri, particularly letters, that refer to relatively routine travel between Karanis and Alexandria. In fact, most of the evidence of professional musicianship, especially the musical papyri, has been assumed to originate in Alexandria.¹²⁵ For this reason, it is significant that Silvanus and his group of professionals appear to be local to the Hermopolite nome. P. Col. inv. 441 therefore gives strong evidence of professional musicians living and working outside of Alexandria.

However, it is unfortunate that the text breaks off just before giving the specific figure of the monetary payment agreed on by the contractees and the subscriptions: first, because a specific figure for their earnings would be extremely valuable evidence for the status of professional musicians in Roman Egypt; second, because it would be even more interesting to learn if Silvanus wrote in his own hand, or employed a scribe. The hand is practiced, competent, and eminently legible, and any evidence for the literacy of musicians would

¹²⁴ E.g., Hagel 2009: 240. Cf. Hagel 2010: 11–12 on the probable significance of aulos technique in the development of the instrumental notation system.

¹²⁵ See, e.g., discussion of P. Mich. inv. 4682a(+4773) above, page 31.

bolster the common assumption that they themselves were the guardians and scribes of the notation systems and the musical papyri. Perhaps Silvanus, as the group's aulete, would have been the individual responsible for contracts *because* he was (musically) literate, and also, perhaps primarily, accountable for maintaining the group's musical library. There is evidence that instrumentalists had special responsibilities vis-à-vis musical composition and training of the chorus,¹²⁶ and moreover, that auletes in particular functioned almost like the conductor of a tragedy, keeping time and directing the movements of the chorus.¹²⁷ Finally, what seems most significant to me, is that Silvanus, or more likely his father Ammonios, or even his grandfather, may have personally known the composer of P. Mich. inv. 2958. I will return to this thought in Chapter 4:¹²⁸ for now, P. Col. inv. 441 provides strikingly explicit evidence for musical professionalism in Roman Egypt, significantly, from a time-period and location very close to the provenance of P. Mich. inv. 2958.

Conclusions

I contend that the musical community of Karanis might well have had the technical capability to perform the level of music represented by P. Mich. inv. 2958 without the importation of professionals from one of the larger metropoleis, and, even if the staging of a tragedy was beyond the competence of Karanis'

¹²⁶ E.g., Limnaeus, the composer of one of the Delphic Paians, was a kitharist and used the instrumental notation: cf. Landels 1999: 225; on the role of instrumentalists in training the chorus, cf. Anderson 1994: 113–114.

¹²⁷ Anderson 1994: 114–116; Mathiesen 1999: 167–169; and West 1992: 123–124. Cf. Mathiesen 1999: 92.

¹²⁸ See discussion in *The Question of Use* on page 157.

musicians, the community would certainly have had sufficient cultural appreciation for such performances to justify the expense of hiring outside professionals. Moreover, I further suggest that the presence of a musical papyrus in Karanis could derive from the specific needs of that community, just as the presence of fragments of Callimachus' *Aitia* or Homer's *Iliad* may well attest to the presence of educated and literarily-cultured individuals,¹²⁹ rather than assuming that P. Mich. inv. 2958 must necessarily represent the trade in used papyri and their consequent distribution from the metropoleis to the smaller villages.

¹²⁹ E.g., the reference to Callimachus' *Aitia* in the Karanis tax-rolls: van Minnen 1998: 132–133.

Chapter Two:

Text and Music

Edition

Editio princeps:

O.M. Pearl and R.P. Winnington-Ingram, *Journal of Egyptian Archaeology* (1965): 179-195.

Subsequent editions:

E. Pöhlmann, *Denkmäler Altgriechischer Musik* (Nürnberg, 1970): 130-139

R. Kannicht and B. Snell, *Tragicorum Graecorum Fragmenta*. Vol. 2. (Göttingen, 1981): 272-275 (fr. 682a and b). [*text only*]

E. Pöhlmann and M.L. West, *Documents of Ancient Greek Music* (Oxford, 2001): 138-147. [=DAGM 42 and 43]

Concordance: Pack [2] 2442; APIS: "michigan.apis.1711" (recto) and "michigan.apis.1712" (verso); TM 63552

Physical Description and Preservation

P. Mich. inv. 2958 preserves part of one column of a musical papyrus which was later re-used for documentary purposes. The recto (written along the fibers) contains fragments of two tragedies, or two sections of a single tragedy,¹ written with musical notation, as well as various rhythmic and performance

¹ For reasons discussed in the Description of Contents on page 48 and in Chapter Three, Rhythmic Notation and Metrical Analysis on page 103 and Modulation and the Relationship between Part I and Part II, I prefer the latter interpretation. I refer throughout to the two sections as Part I and Part II.

signs (see Image 2.1²). The verso preserves part of an account along the badly damaged left edge (upper right of the recto), containing a list of names and drachma amounts in a very small hand (see Image 2.2 and Image 2.3).

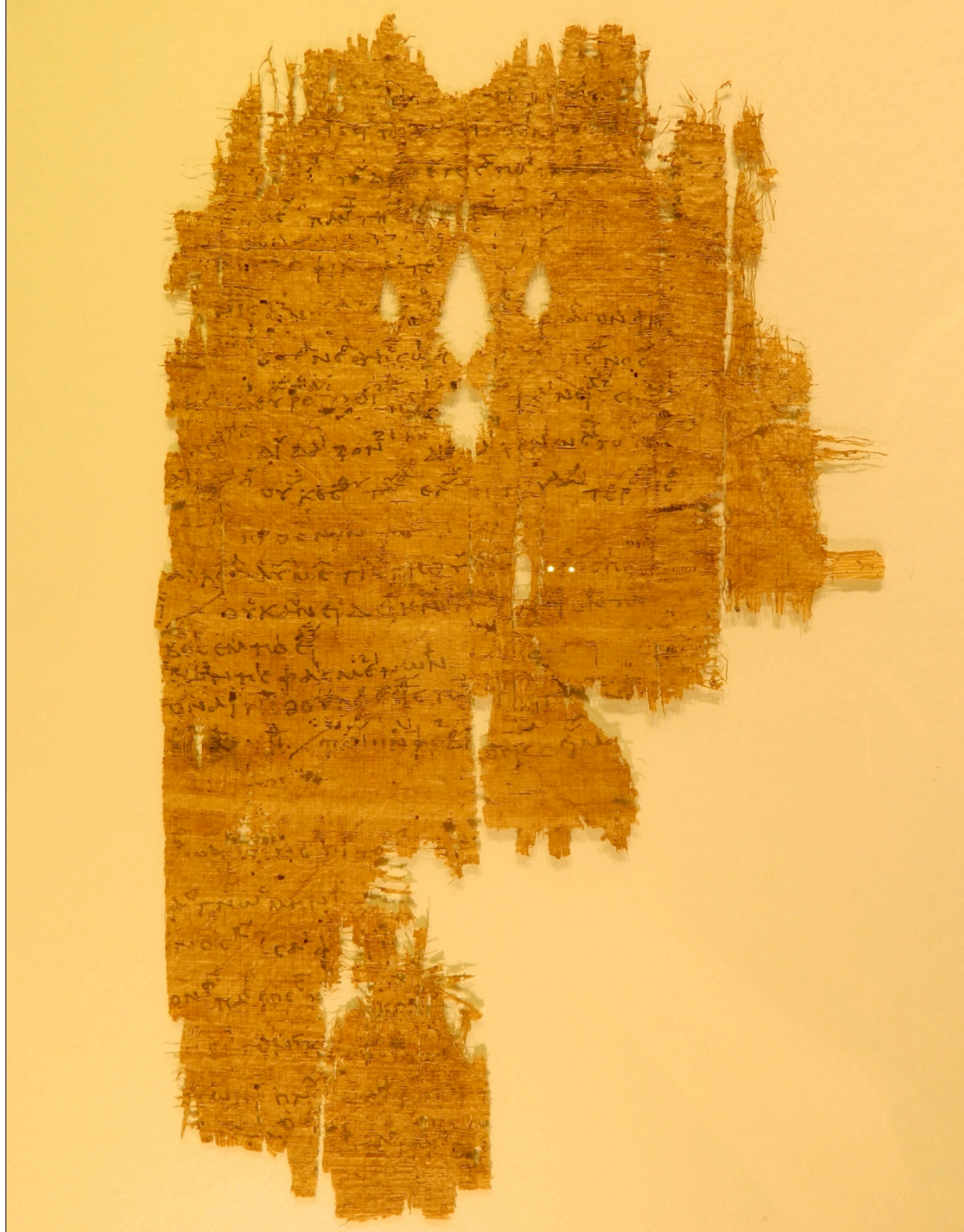


Image 2.1: P. Mich. inv. 2958 recto

² Unless otherwise indicated, all images are my own.

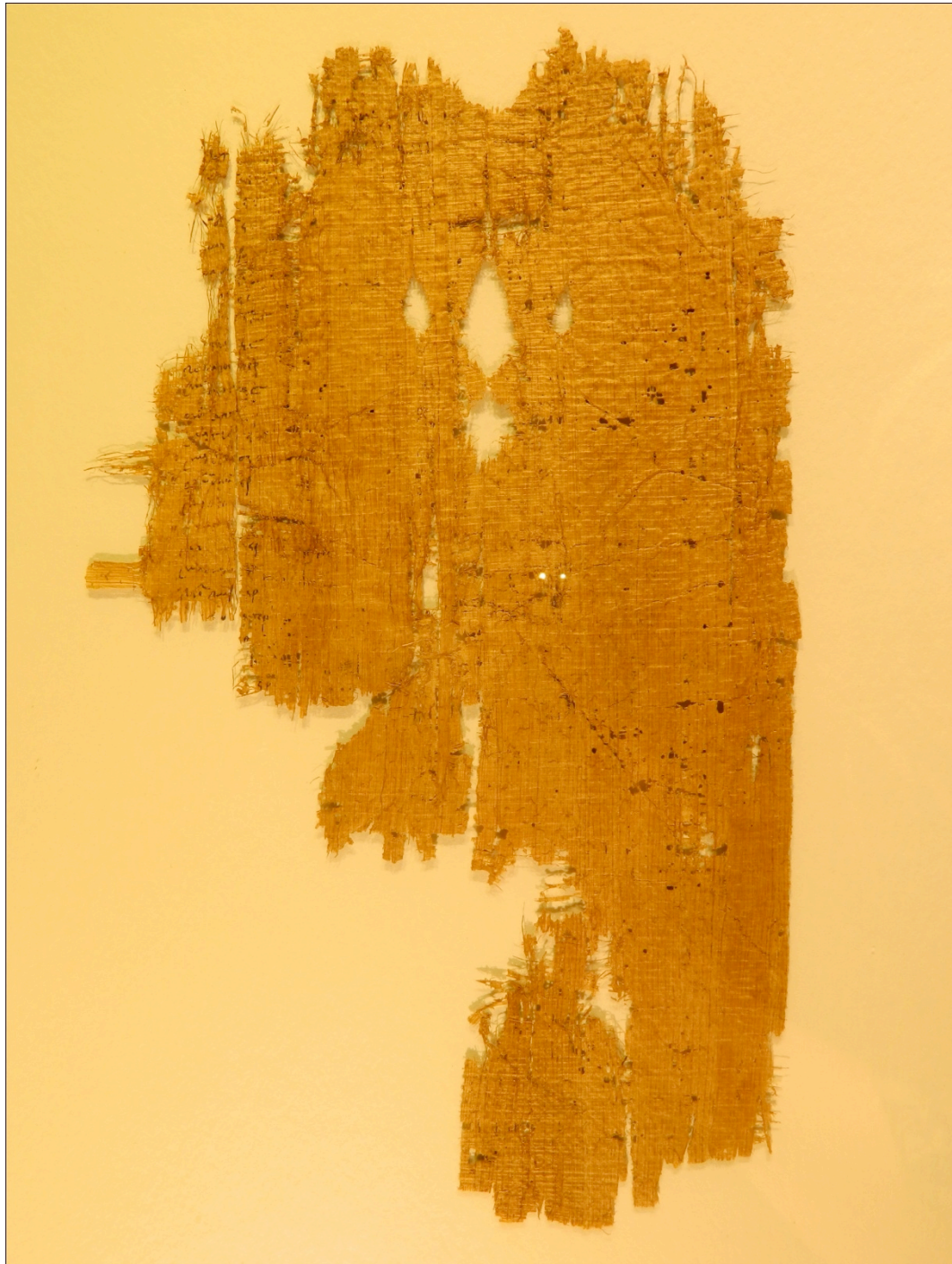


Image 2.2: P. Mich. inv. 2958 verso



Image 2.3: P. Mich. inv. 2958 verso close-up

This papyrus displays significant damage to both sides, consisting of abrasion, fading, creasing, separation of the fibers along all margins, and numerous lacunae. On the recto, the left edge is broken along a relatively straight

line removing approximately the first 3-5 centimeters of the column.³ The upper half of the papyrus preserves the right edge of the column with a margin of at least 3.5 cm, while the lower half is missing 5-6 centimeters of text and notation. Both the placement of the document on the verso and a few traces of ink on the badly damaged fibers of the upper right edge indicate the likely presence of a following column. These traces, which occur only on frayed fibers, are too minimal to determine with any certainty the distance between the preserved column and any subsequent columns. However, the presence of further columns is supported by a 1.5 cm *kollesis*, the overlap between papyrus sheets joined to make a roll, that is preserved on the upper right of the verso, which establishes a reason for the location of some of the vertical breaks. The maximum distance between the left margin and the *kollesis* is 12.5 cm. The left margin also appears to have broken along a fold, which would have been placed at approximately the center of the sheet.⁴ Since the distance between these folds decreases slightly moving from left to right, it is highly probable that this folding occurred after the reuse of the papyrus for the account on the verso, which might also account for some of the abrasion damage and fading on the recto.

A small amount of very badly damaged papyrus extends beyond the *kollesis* for approximately 1-4 cm, occupied by the document on the verso and accounting for its near-illegibility.⁵ At some point in its history, the papyrus was

³ On the tendency for musical papyri to have broader columns than normal literary papyri, see Pearl and Winnington-Ingram 1965: 185; Johnson 2000: 66–68; and Pernigotti 2009: 304. Concerning the specific amount lost on this papyrus, see my discussion in Chapter Three, Rhythmic Notation and Metrical Analysis on page 97 and following, and Pöhlmann and West 2001: 142. For the normal widths of poetic columns (8-11 cm for iambic trimeter, the probable meter of the first section of P. Mich. inv. 2958), see Johnson 2004: 116.

⁴ This assumes a normal width between *kollesis* of 23-25 cm.

⁵ O.M. Pearl appears to be the only editor of this papyrus to have attempted a transcription of the verso account, although he did not publish it in the *editio princeps*, except to refer briefly to the

folded approximately at its center, 7.5-8 cm from the left edge of the papyrus, resulting in several large, vertically oriented, oval lacunae along the crease. This fold also accounts for the right margin of the bottom section. Portions of both upper (1.5 cm at maximum) and lower (1.6 cm at maximum) margins are visible, indicating that the entire height of the column (27 cm) is preserved.⁶ The interlinear spacing is irregular, ranging between extremes of 0.4 cm and 0.8 cm, with most lines spaced close to 0.7 cm.⁷ While these measurements are significantly wider than a typical literary papyrus, they are comparable to other musical papyri, which typically have wider interlinear spacing to accommodate the notation.⁸ The variation in the interlinear space in this papyrus appears to result from the scribe's informal ductus and lack of concern for a formal *mise en page* rather than from an initial decision to omit notation from certain lines, as has recently been suggested by Pernigotti.⁹ I see no appreciable difference in how the *semeia* were written in lines 14-16, which have the narrowest spacing, and even if they were added as an afterthought, they are clearly in the same hand

name "Valerius son of Valeria" in his discussion of the relationship of P. Mich. inv. 2958 to the other papyri found in house 5006: Pearl and Winnington-Ingram 1965: 179.

⁶ Johnson 2004: 137-139 gives a range of column heights for literary papyri of 14-27.5 cm. The column height for P. Mich. inv. 2958 is at the top end of this range, a clear sign that, even apart from the lack of any ink traces in the top and bottom margins, the entire column height has been preserved.

⁷ Prauscello 2006: 163 observes that the interlinear space for the Euripides *Iphigenia at Aulis* papyrus (DAGM 4 = P. Leiden inv. P. 510) ranges from 4 to 6.5 mm. Cf. Pernigotti 2009: 304-305 and 312 on the general tendency for large interlinear spaces in musical papyri; For a more general discussion of this significant and controversial papyrus, see, e.g., Anderson 1994: 210-214; Hagel 2010: 257-258; Mathiesen 1999: 110-116; and Prauscello 2006: 160-181.

⁸ Cf. Pernigotti 2009: 304 in reference to DAGM lines 15-17, which equate to my lines 14-16. The procedure for lineation of the musical papyri is not consistent. Although some editors assign separate line numbers to text and notation, I have followed DAGM in treating the text and associated notation as a single line. The difference between that edition and my own concerns the treatment of the extra line of notation, which West calls line 5 and I have numbered as 5a, to indicate its relationship to the following line.

⁹ Pernigotti 2009: 308.

and ink as the rest of the papyrus. In musical papyri which have passages that deliberately omit notation, the spacing appears even narrower than the 0.4 cm found in lines 14-16 of P. Mich. inv. 2958, as, e.g., in Pap. Ashm. inv. 89B/29-32 Fr. 4,¹⁰ suggesting that the scribe's original intention was to include the notation for these lines, but for whatever reason, allowed the lines to bunch closer together towards the end of the first section.

Paleographical Description

P. Mich. inv. 2958 contains twenty-five lines of text with accompanying musical and rhythmic notation, as well as an extra line of notation placed in the interlinear space between lines 4 and 5.¹¹ The musical notation was written in the same hand as the text,¹² evidenced by the common forms of α/A , ι/I , ξ/Z , o/O , c/C , ϕ/Φ . In addition, the text tends to rise toward the register of the musical notation even within words (e.g. $\gamma\nu\acute{\omega}\mu\eta\nu$, line 20) indicating that the text and music were written simultaneously.¹³ Breaks in the text to accommodate melismata (multiple notes assigned to a single syllable) further support a single scribal hand.¹⁴ The text and musical notation of this papyrus were written in Turner's informal round hand,¹⁵ and in general the musical notation was written with greater

¹⁰ West 1999: Plate XII. Cf. *DAGM* 6 Fr. 4.

¹¹ See discussion in the Commentary on page 74 and in Chapter Three, Melismata, Melodic Development, and Repetition on page 118.

¹² First noted by Pearl and Winnington-Ingram 1965: 179 and confirmed by all subsequent editors and commentators.

¹³ See discussion in Chapter Four, The Question of Authorship on page 145.

¹⁴ For this reason, the irregular spacing of the letters in the text makes it nearly impossible to judge how many letters are missing in a lacuna. It is usually more accurate to assess missing syllables, especially when traces of the musical notation remain.

¹⁵ Turner 1987: 20–21.

precision and care than the text. The forms of specific letters and the musical symbols display a fairly wide degree of variation, e.g., α (in both text and music), η , ω , ξ (in the notation). The comparative informality of the ductus is shown primarily through use of certain cursive letter forms: e.g., α , η primarily in h form, υ mostly v-shaped, chancery κ , miniscule ξ , and the irregular form of the *semeion* ϑ .¹⁶ The frequent use of ligatures in the text suggests a relatively fast ductus, as well as supporting the aforementioned informality: e.g. $\tau\alpha$, $\tau\varepsilon$, $\tau\iota$, $\varepsilon\iota$, and once for $\tau\eta$. Similar practices occur in the musical notation, especially in the scribe's tendency to write the *hyphen* as the finishing stroke of the final *semeion* in a grouping (e.g., $\overline{\text{A}\overline{\text{Z}}}$ in line 10) or occasionally to incorporate the *stigmē* into a diseme or triseme (e.g., $\overline{\overline{\overline{\vartheta}}}$ in line 16). The hand is approximately bilinear (broken by β , ι , ρ , ϕ , υ , ψ);¹⁷ however, the lines are uneven as a result of the simultaneous writing of the musical text. Likely for the same reason, the hand shows a tendency to rise from left to right within the wider letters (e.g. μ , ν , ω). This results in occasional confusion of the musical and textual registers by some editors, especially where there are gaps in the text to accommodate melismata of four or more *semeia*.¹⁸

In the first section, which is probably an iambic dialogue,¹⁹ change of speaker is likely indicated by either a short line (5, 11, 14, and possibly 18) or by a slash crossing the registers of both the text and musical notation.²⁰ If the

¹⁶ This *semeion* usually has a rounded bowl with long horizontal strokes on both sides—e.g., the Berlin Paean (Pap. Berlin 6870+14097 = *DAGM* 50) of approximately the same period. The scribe of this papyrus writes the sign as a flattened v.

¹⁷ Cf., e.g., Turner 1987: 3.

¹⁸ E.g., the beginning of line 11, discussed in the Commentary below on page 70.

¹⁹ See discussion in Chapter Three, Rhythmic Notation and Metrical Analysis on page 97 and following.

²⁰ On the short lines: cf. Martinelli 2009a, who implausibly suggests they may indicate the placement of instrumental interludes. On the diagonal slash: cf. Gammacurta 2006: 200; Martinelli

identities of the speaking characters were indicated in this papyrus, as in other tragic dialogues, the names (or abbreviations) would have been placed to the left of the column, and therefore all traces have been lost. No other lexical signs are present in the text, with the possible exception of an odd symbol at the bottom of the column.²¹ In conclusion, P. Mich. inv. 2958 is a complicated and multifaceted text. The contrast between the extreme sophistication of the musical notation, which displays a high degree of professionalism and specialization, and the informality of the ductus and *mise en page* presents something of a paradox. There is every indication that the individual who wrote this papyrus was capable of writing more formally or elegantly, and perhaps his decision not to do so in this text can reveal something about its intended use.

Description of Contents

The tragic text(s) contained in P. Mich. inv. 2958 are otherwise unknown, and it seems decidedly unlikely that a secure identification of this text as the work of a known tragic poet is, or ever will be, possible. In my opinion, the fact that a Greek composer operating in Egypt during the Roman period chose to set a non-canonical work is extremely interesting and significant.²² Moreover, even though the author and precise title cannot be confirmed, it is possible to ascertain a fair amount about the nature of the tragedy, at least in Part I, from the surviving text. I will first briefly discuss the division of P. Mich. inv. 2958 into two parts and then examine the contents of each section in more detail. A

2009b: 322; Martinelli 2009a: 365; and West 1992: 269. See further discussion in Chapter Three, Rhythmic Notation and Metrical Analysis.

²¹ See discussion in the Commentary on page 72.

²² See discussion in Chapter Four, Thought Experiments in Reconstruction.

complete discussion of the possible musical relationship between Parts I and II can be found in Chapter Three, Modulation and the Relationship between Part I and Part II.

The surviving column of P. Mich. inv. 2958 is divided at line 18, which contains no visible text or notation. A band of a lighter-colored fiber extends across the surface in the blank space, and it is possible that the scribe may have chosen not to write in this space because of the discoloration. However, since the scribe writes across similar bands of discoloration in lines 10 and 20, the gap between lines 17 and 19 was most probably deliberate.²³ West plausibly suggests, on the basis of his metrical analysis, that the text on line 17 extended into the beginning of line 18, and that the missing text and music were lost because of the damage to the papyrus.²⁴ The change in *tonos* at line 19 from Hyperionian to Hypolydian has typically been interpreted as an indication that this papyrus contained an anthology rather than two sections of the same larger text.²⁵ However, since modulation between these two *tonoi* is unequivocally possible within the parameters for modulation described by the theorists,²⁶ a connection between the two sections cannot be dismissed. The tendency to automatically interpret all musical papyri with discrete sections as anthologies, I believe, stems from the prominence of several clearly anthological papyri: the famous Berlin

²³ Cf. Pearl and Winnington-Ingram 1965: 179 and Pöhlmann 1970: 136.

²⁴ Pöhlmann and West 2001: 183. Cf. Martinelli 2009a: 359; Pöhlmann 1970: 136. Lines 5, 11, and 15 also do not extend the full width of the column. Cf. my metrical analysis of the text in Chapter Three, which appears to confirm West's suggestion that at least an iambic metron is missing.

²⁵ Pearl and Winnington-Ingram 1965: 184–185 do not argue either for or against a connection. Contrast the views of Hagel 2010: 303; Gammacurta 2006: 199; Martinelli 2009a: 359; Pernigotti 2009: 308; Pöhlmann 1970: 136; Pöhlmann and West 2001: 142; and West 1992: 376, who regard P. Mich. inv. 2958 unequivocally as an anthology.

²⁶ See discussion in Chapter Three, Modulation and the Relationship between Part I and Part II on page 134.

musical papyrus and the Euripides *Iphigenia at Aulis* papyrus.²⁷ However, I argue that it is imperative to consider each musical papyrus on its own terms,²⁸ since the range of possible uses for a musical papyrus were quite broad and are, for the most part, relatively poorly understood. While there is no way to definitively prove that this papyrus contained a complete larger work rather than an anthology for concert performance, in the absence of direct evidence, I think that both options should be considered.

Part I contains a highly dramatic dialogue between two actors. While the specific identity of the two speakers cannot be ascertained, several inferences about them can be drawn from the surviving text. First, based on the masculine vocative ὦ φίλτατε (lines 1, 3, and 5) and the masculine participle φοβηθείς (line 17), at least one, and probably both of the characters are male.²⁹ The range of the melody (g-a') suggests that the singers were probably men with a tenor or high-tenor range,³⁰ although this does not confirm the gender of the characters, since male actors frequently sang female roles. Speaker change is probably indicated by two different techniques: first, by a diagonal slash across both text and notation found in lines 3, 13, and 17;³¹ and second, by the abnormally short lines 5, 11, 14, and 15. Since the text is not organized colometrically,³² it seems hard to understand why else these lines would not extend to the full column width. The use of two different methods can be explained, I think, through the use of the

²⁷ See footnote 7 on page 45.

²⁸ On the impossibility of constructing a coherent unified typology for the musical papyri, cf. Pernigotti 2009: passim.

²⁹ Cf. Pöhlmann 1970: 136.

³⁰ See discussion of the pitch-equivalencies between the *semeia* and modern notation below on page 81, especially footnote 76, which may have been as much as a fourth lower than the pitches given in the transcriptions below.

³¹ See footnote 20 on page 47.

³² See discussion in Chapter Three, Rhythmic Notation and Metrical Analysis, footnote 6 on page **Error! Bookmark not defined.**

diagonal slashes to clarify speaker change that was typically indicated by the *mise en page*. In line 3, the slash occurs at the extreme right edge of the column where line end would have coincided with the column margin (probably due to the correction earlier in the line); however, in lines 13 and 17, the slash appears near the left edge of the surviving papyrus, i.e., approximately $\frac{1}{4}$ to $\frac{1}{3}$ of the way into the original column, and the scribe may have used the slash to indicate speaker change so as not to waste an excessive amount of papyrus. Without the original left margin of the column, there is no way to know if *paragraphoi* or abbreviations of the characters' names were also employed. These two methods combined indicate seven speaker changes, but it seems probable that other indicators are missing, as, for example, at the end of line 1, or in the beginning of other lines.

The identity of the characters depends on identification of the plot of this tragedy, and there are several clues in the text that, while not allowing definitive identification, can narrow down the range of possibilities. Most significant is the secure occurrence of the name of the mythological figure Aigisthus (Αἰγίσθου in line 16), who was the lover of Clytemnestra, wife of Agamemnon. In combination with the reference to a homecoming (τίς νόστος in line 7), this tragedy was most probably an adaptation of some part of the Orestes/Electra cycle,³³ most famously dramatized by Aeschylus in the *Oresteia*, but treated also by both Sophocles and Euripides. It is also possible that these references indicate a tragedy based on the story of Erigone, the illegitimate daughter of Aigisthus and Clytemnestra; however, this myth seems to have been significantly less

³³ This is the consensus of previous editors and commentators: cf., e.g., Gammacurta 2006: 199; Pearl and Winnington-Ingram 1965: 185; and Pöhlmann and West 2001: 142.

popular,³⁴ which may explain why previous editors have discounted it as a possible plot source. The close relationship between the two characters in the dialogue in Part I is suggested by the vocative ὦ φίλτατε (lines 1, 3, and 5), which has induced several hypotheses concerning the specific identities of the speakers: M. L. West has suggested that one of the speakers was Orestes himself and that the other was a retainer welcoming him upon his return from exile,³⁵ while A. Bélis has proposed that the speakers were Orestes and the ghost of his father Agamemnon,³⁶ which has the advantage of creating a highly-charged emotional scene for the musical drama. If the conjectured reading of [σ'] ἱκετεύω in line 1 is correct,³⁷ the act of supplication may provide further clues to the identity of the characters, or at least to their relationship. The combination of φίλτατος and ἱκετεύω occurs in tragedy only once: Sophocles' *Oedipus Coloneus* 1414-1415, where the two words are spoken by different characters (Antigone and Polyneices).³⁸ While this parallel does not entirely eliminate West's suggestion, which may imply a dialogue between Orestes and a representative from the chorus, I think it does render a conversation between two important characters as a more likely interpretation. Possibilities, in my opinion, include any of the individuals involved in the Orestes, Electra, or Erigone myths;

³⁴ The only example I can find reference to is a non-extant work of Sophocles titled *Erigone*, which, however, might have treated another mythological figure of the same name (the daughter of Icarius of Athens, whose suicide was viewed as the origin of a particular cult practice). Given the connection between this Erigone, Athens, and Dionysus, this second plot is perhaps slightly more likely, since Sophocles enjoyed exploring cultic origins in his tragedies (e.g., *Oedipus Coloneus*).

³⁵ Pöhlmann and West 2001: 142. Cf. Gammacurta 2006: 199.

³⁶ In conversations with the author, February 23 to March 1, 2008.

³⁷ πρὸς νῦν in line 11 may also suggest supplication; see the Commentary on page 70.

³⁸ {An.} Πολύνειακες, ἱκετεύω σε πεισθῆναί τί μοι. / {Po.} ὦ φίλτατη, τὸ ποῖον, Ἀντιγόνη; λέγε. “{An.} Polyneices, I beg you to obey me in one thing. / {Po.} O dearest Antigone, what is it? Speak!” For other poetic occurrences of this word pairing, cf. Aristophanes *Ecclesiazusae* 970 and *Comica Adespota* Fr. 257.26-27.

however, I do not find sufficient evidence in the text to advance one theory over another.

In contrast, Part II contains no indication of a continuation of the dialogue in Part I; however, the damage to the lower third of the column is more substantial. Consequentially, the surviving text and music from Part II are significantly less extensive than in Part I, which impedes analysis, both of content and style. It is nevertheless clear that both the *tonos* and meter differ from Part I, suggesting that this division represents either two entries in an anthology or an internal division of a larger work. As discussed earlier in this section, I do not find any reason to assume that P. Mich. inv. 2958 must be an anthology of independent compositions. The interlinear space between Parts I and II is sufficient to accommodate a single line of text and notation (i.e., the missing iambic metron at the start of line 18), but is not adequate for writing any additional information about a new composition. While not conclusive evidence, it appears to me that the two parts were not divided by extra interlinear space, so the only indication of the transition that would have appeared in the *mise en page* would have been the abnormally short line 18. Since short lines likely indicated speaker changes within Part I, the brevity of line 18 could represent this in addition to the shift in meter and *tonos*. Therefore, I suggest that, instead of a new entry in an anthology, Part II represents a sectional division within the same notated tragic text, and thus could contain a monologue, perhaps by one of the speakers of Part I or a third character, or else a choral response to the intense emotion of that recognition/supplication scene. While the meter is not directly identifiable, it does appear to be lyric,³⁹ which would fit either of those two

³⁹ It is not, in any case, spoken iambic trimeter or trochaic tetrameter. The sequence of four or five short syllables in line 19 can be scanned only as highly-resolved (Euripidean) lyric iambs or

hypotheses. However, the moralizing ethos of several of the surviving words (γνώμην,⁴⁰ line 20; σαφῶς, line 21; κάκιστον, line 23), the third-person verb ἦλθε (line 24), the lower melodic range (f-e'), and the general simplification of the melody, when taken as a whole, may support the interpretation of this passage as a response to the dialogue in Part I. Moreover, two of these words (κάκιστον, line 23 and ἦλθε, line 24) could respond directly to Αἰγίσθου (line 16) and νόστος (line 7) in Part I, further strengthening the link between the two sections of P. Mich. inv. 2958. I prefer a choral interpretation of Part II primarily on the basis of the shift in range and the less ornate melody, since I would suspect that an aria sung by a major character would be at least as complex as the dialogue in Part I. However, a response to the emotional scene in Part I would provide an opportunity both for the actors to catch their breath and for the audience to reflect on the preceding action.

Musical Notation

Before discussing the specific notation employed in P. Mich. inv. 2958, I will provide a brief and highly selective overview of the principles of Greek musical theory that apply to this text. This is in no way intended as a comprehensive guide to the ancient science of harmonics,⁴¹ but rather as the background necessary for understanding the specific application of that theory in

dochmiacs; see discussion in Chapter Three, Rhythmic Notation and Metrical Analysis on page 103 and following.

⁴⁰ Richard Janko has suggested that the absence of the Doric dialect (i.e., γνώμαν) rules out a choral interpretation; however, the possibility of a scribal error cannot be eliminated.

⁴¹ For more complete discussions of the topic, see, e.g., Chailley 1979; Hagel 2010; Landels 1999; Mathiesen 1999; and West 1992. Barker 1984 provides translations and commentary on the significant extant sources. Jan 1995a and 1995b collect the Greek texts, in addition to editions of specific authors.

my analysis of this particular papyrus. Essentially, the ancient Greek *tonoi*, or keys, evolved in the pre-Classical and Classical periods out of a complex set of unrelated regional modal systems into a unified and coherent scale system designed to permit transposition and modulation between the different *tonoi*, which retained some of the ancient regional names.⁴² These scales were composed of four-note groupings, called tetrachords, whose outer notes were fixed at the interval of a perfect fourth, and whose inner notes could vary in placement depending on the type of tetrachord in use for a given composition. In practice, there were three standard species of tetrachord – enharmonic, chromatic, and diatonic⁴³ – but the relative popularity of these species varied across the different periods of Greek antiquity.⁴⁴ The scales in P. Mich. inv. 2958 employ the diatonic species, which places the moveable, notes in the intervallic relationships shown in Figure 2.1.

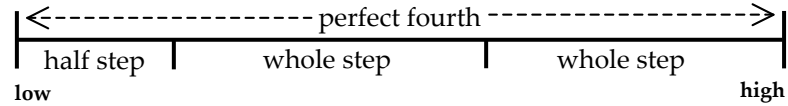


Figure 2.1: Diagram of the Diatonic Tetrachord

Tetrachords could be combined in one of two ways to create larger scale units: conjunct tetrachords shared one of their fixed outer notes, while disjunct tetrachords were spaced a whole step apart. While there were three recognized

⁴² The fifteen *tonoi* of the fully developed system, which would have been in use in the second century C.E., are, in order from lowest to highest, the Hypodorian, Hypoionian, Hypophrygian, Hypoaeolian, Hypolydian, Dorian, Ionian, Phrygian, Aeolian, Lydian, Hyperdorian, Hyperionian, Hyperphrygian, Hyperaeolian, and Hyperlydian.

⁴³ While these are the three principle types, there were apparently many other possible colorings discussed principally by Aristoxenus: cf., e.g. Hagel 2010: 152–153; Landels 1999: 90–92; Mathiesen 1999: 312–313; and West 1992: 160–172 and 236–240.

⁴⁴ While the diatonic may be the oldest of the species, the enharmonic flourished in the late fifth century B.C.E., the chromatic in the early fifth and fourth through second centuries B.C.E., and the diatonic in the Roman period: West 1992: 164–166.

methods for combining tetrachords to create scales, called *systemata*, for the purpose of analyzing P. Mich. inv. 2958, the significant arrangement is that known as the unmodulating system. This arrangement consisted of a bifurcated scale of five tetrachords with an extra note attached to the bottom of the scale to complete a full two-octave compass. Figure 2.2 includes the names of the tetrachords, since these are helpful in the musical analysis presented in Chapter Three, and of the three most important individual notes in the scale system: *mesē*, *paramesē*, and *proslambanomenos*. Each note in the scale had a specific name based on its function in the scale; however, since the note names were derived originally from seven adjectives modifying the Greek word for string (χορδή),⁴⁵

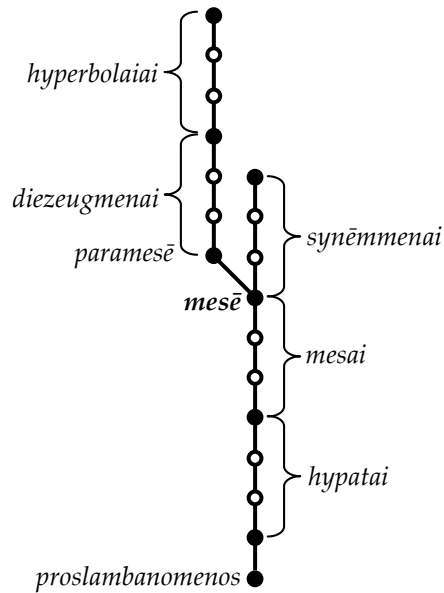


Figure 2.2: The Unmodulating System

some names were repeated over several tetrachords, resulting in a complicated system that required using the note name in combination with the name of the tetrachord to which it belonged. Since P. Mich. inv. 2958 does not employ *proslambanomenos*, the only individual notes significant for my analyses are *mesē*,

⁴⁵ As this implies, the names for the notes were likely derived from lyre/kithara technique: e.g., West 1992: 219–223.

the tonal center of a the *systema*,⁴⁶ and *paramesē*, the lowest note of the *diezeugmenai* tetrachord, located a whole step above *mesē*. Any given composition using the ancient Greek theoretical system employed as much or as little of the *systema* of one or more *tonoi*, depending on the desire of the composer, the period and style or genre of composition, and the skill of the intended performers. P. Mich. inv. 2958 uses partial *systemata* of two distinct *tonoi*: the Hyperionian in Part I and the Hypolydian in Part II. Both scales employ the disjunct tetrachord above *mesē*, known as *diezeugmenai*, although in Part I, line 13, the composer suggests the outline of the conjunct tetrachord *synēmmenai*.⁴⁷

The ancient Greeks employed two distinct notation systems, both of which were in use during the second century C.E.: the instrumental and vocal systems.⁴⁸ Scholars are in general agreement that the instrumental system is older;⁴⁹ however, the origin and development of the notation systems remains highly debated.⁵⁰ Tables of the *semeia* for specific scales are preserved in the writings of the fourth-century C.E. theorist Alypius, but it is clear from the surviving musical papyri that the system he describes was fully developed by the third century B.C.E.⁵¹ P. Mich. inv. 2958 uses ten different *semeia* from the

⁴⁶ West 1992: 219 citing the pseudo-Aristotelian *Problems* 19.20 and 19.36. Cf., e.g., Barker 2007: 214; Hagel 2010: 117–122; and Landels 1999: 96.

⁴⁷ See discussion in the commentary on page 79 and in Chapter Three, Modulation and the Relationship between Part I and Part II on page 135.

⁴⁸ The two sets of *semeia* were not exclusive to instrumental or vocal music respectively, as, e.g., the Limenios Paeon, which uses the instrumental system for a sung text, perhaps because Limenios was a kitharist. Cf. footnote 126 on page 38 in Chapter One and Chapter Four, The Question of Use on page 153.

⁴⁹ Cf., e.g., Hagel 2010: 2; Landels 1999: 207; and West 1992: 259.

⁵⁰ On this complex and highly contested topic, see, e.g., Barker 2007: 61–64; Hagel 2010: 17–25 and 30; Landels 1999: 207–215; Levin 2009: 181–182; Prauscello 2006: 40 fn. 120; and West 1992: 259–265.

⁵¹ Chailley 1979: 184–188 and West 1992: 256–257 reproduce charts of the notation systems based on the Alypian tables.

vocal system: $\Phi \ \underline{\zeta} \ \iota \ \underline{\zeta} \ A \ \upsilon \ \Theta$ ⁵² in Part I, and $R \ \Phi \ \underline{C} \ O \ \underline{\zeta} \ \iota \ Z$ in Part II. Figure 2.3 relates these two sets of *semeia* to partial diagrams from the unmodulating system outlined in Figure 2.2, in addition to providing the traditional Western equivalents for each *semeion*.⁵³ *Semeia* contained in square brackets are part of their respective *systema*, but are not found on the papyrus. These omissions could result either from the damage to the papyrus, which may have destroyed infrequently-used *semeia*, or from the composer's decision to employ only a limited portion of the available scales.⁵⁴ In Part I, I think the omissions have a

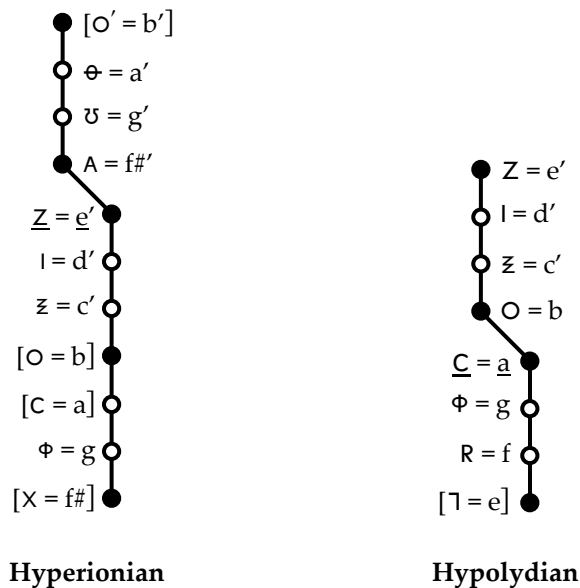


Figure 2.3: Diagram of the Scale Systems of P. Mich. inv. 2948

higher probability of resulting from deliberate choice than in Part II, where the damage to the papyrus is more significant. Similar selectivity can be found in all the surviving musical papyri. Figure 2.4 illustrates the transcription of these two scales into Western notation. For each *tonos*, the scale on the top represents a complete scale based on inclusion of all the pitches, while the scale on the bottom

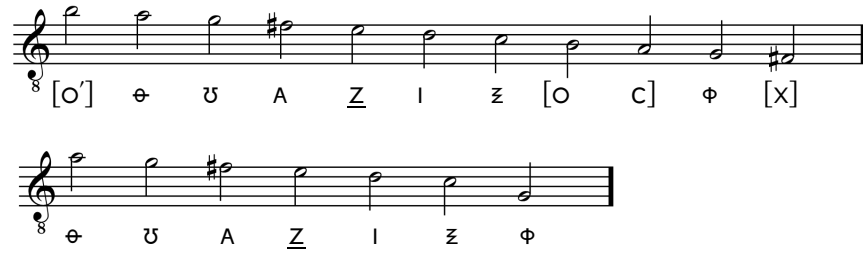
⁵² The underlined *semeia* indicate *mesē*.

⁵³ See discussion below on page 81.

⁵⁴ West 1992: 191 citing Aristides Quintilianus. Cf. Anderson 1994: 155–156.

includes only those *semeia* found on the papyrus. The scales are notated in descending order, since the ancient Greeks conceived of a scale as a descending series of notes:⁵⁵ descending motion was viewed as euphonic because it was conceptualized as a relaxation of tension.⁵⁶

Hyperionian



Hypolydian

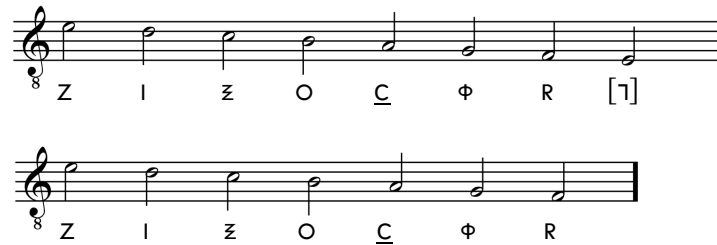


Figure 2.4: Scales of P. Mich. inv. 2958 in Western Notation

A WAV file of the scales depicted in Figure 2.4, created through the Finale notation software, can be found at this URL in the University of Michigan's DeepBlue storage system:⁵⁷

<http://deepblue.lib.umich.edu/bitstream/2027.42/90511/1/scales.wav>.

⁵⁵ West 1992: 192 citing Aristides Quintilianus, whose authority was most likely Aristoxenus.

⁵⁶ West 1992: 192 citing the pseudo-Aristotelian *Problems* 19.33. Cf. Hindemith 1941: 188.

⁵⁷ The long-term stable URL, which accesses all WAV files associated with this dissertation, is: <http://hdl.handle.net/2027.42/90511>. The appropriate file is titled "scales.wav." A CD containing these files is associated with the print versions of this dissertation submitted to the University of Michigan.

In addition to the *semeia*, the scribe of P. Mich. inv. 2958 used a variety of rhythmical symbols, including the *stigmē*, diseme, triseme, tetraseme, *hyphen*, dicolon, and *leimma*. While a more complete discussion of these symbols is presented in Chapter Three,⁵⁸ I will offer brief explanations here to aid in reading the diplomatic transcription. The *stigmē*, which usually marks the arsis (i.e. unaccented portion) of a metrical foot, appears inconsistently and infrequently; however, the extensive damage to the surface of the papyrus may have obscured many instances of this symbol. The diseme (-), triseme (-), and tetraseme (-) are symbols used to increase the length of a musical note to the equivalent of two, three, and four *chronoi* respectively. The two uses of the tetraseme in lines 8 and 9 represent the only surviving examples of this sign in the musical papyri.⁵⁹ The *hyphen* (-) joins groups of *semeia* and typically indicates a rhythmic subdivision or subgrouping. In this papyrus, the *hyphen* joins groups of two, three, or even four *semeia* sung to the same syllable; however, it is unclear whether the composer/scribe intended any rhythmic difference between groups of *semeia* written with or without a *hyphen*. There are also three possible uses of the dicolon (:) in this papyrus, a symbol which A. Bélis has plausibly suggested possesses the function of an appoggiatura in the Berlin paean.⁶⁰ The final rhythmical symbol used in P. Mich. inv. 2958 is the *leimma*, a stylized λ (Ϸ) typically used to indicate a rest, a lengthening of the preceding note, or possibly both.⁶¹ In this papyrus, the *leimma* typically appears at the end of a metrical line or after a melisma.

⁵⁸ Rhythmic Notation and Metrical Analysis on page 104 and following.

⁵⁹ The tetraseme is attested in the Greek musical theorists, and there is no reason to assume that this particular symbol is a different diacritical mark. The two instances in this papyrus are clearly different from the triseme, both in form and manner of writing: West 1992: 155–156, 266.

⁶⁰ Bélis 2003: 552.

⁶¹ See full discussion in Chapter Three, Cadences and the Function of the Leimma on page 110 and following.

6.]Α υᾶι ζ υAZA[]ζ ζι[]Ᾱ .[] A ζ ᾶ
]. . ι ς α νω [].πα[]α φρα cov φρα
7.] . ζ ι ζ [] A A ζ ι []ζ ζ ζ̄ ḡ ὄ ὄ ὄ
]α . ων εγε νεθη ωτ η ρι α τις νος τος
8.] Α ᾶ ᾶζ ζ̄ ῥ ἰ ζ [] . ι ᾶζ ᾶι
 8b.]γης δευρο μοι εκ[] φ α νει της
].ο.[
9.] ζ̄ ῥ ὄ ι ζι.ζ ὄ [] ῥ ι ζ̄ι .. ζ̄Α
]λης δι δα ξον δι[[.]δ α ξον ως τω ν[]
10.] ᾶι ὄ ὄ ὄ ὄ υA ὄZ ᾶζ ᾶ A ζ
]. .. ου κες τα ελ πτου τερ ψις
11.]AZὄ. ᾶ ζ
] προς νυν

Notation

6. υᾶι υᾶι I&II υᾶι III]ζ ὄ I,II&III]Ᾱ .[]Ᾱ .[I&II]..[III]ζ ῥ I&II
 7.]. pap.; I,II&III omittunt ζ̄ ι ζ̄ [] ζ̄ι ζ̄ I&II ζ̄ι ζ̄ III: I,II&III attribuunt ζ̄ ad εγ̄ et lacunam
 omittunt ζ̄ ζ̄ I,II&III]ζ̄]. I,II&III ζ̄ ῥ I,II&III ὄ ῥ I,II&III
 8. ᾶ ᾶ I,II&II ζ̄ ῥ ζ̄ ῥ I&II ζ̄ ῥ III ἰ ζ̄ [] ἰ ζ̄ .[I,II&III ι . I&II ᾶζ ᾶζ I,II&III
 ᾶι ᾶι I,II&III
 9. ζ̄ ζ̄ I&II ζ̄ I III ζι.ζ ζις ῥ III ὄ I,II&III omittunt ζ̄ι ζ̄ι I,II&III .. .ζ I&II ζ ζ
 III ζ̄Α ζ̄Α I,II&III
 10. ὄ ὄ I&II ὄ III ὄZ ὄZ I&II ᾶζ ᾶζ I&II ᾶζ III ᾶ ᾶζ ᾶ [] A. I ᾶ I A. II
 ᾶ I A III
 11. ᾶZὄ. ... I&II ζ. III ᾶ ὄ I,II&III ζ ὄ I ὄ II .[III

Text

6.].ι]τωι I,II&III].οι IV ω ει III [].πα[]α []ρθα[....]ς I ..[]ρθα[....]ς II []πα[....]ς III []ρθ[....]ς IV
 7.]α . ων]ων I,II,III&IV τος τ. I&II τῳ III τ(.) IV
 8.]γης]γη. IV εκ[] εκ.[] I&II εμ [] III εκ.[...] IV
 8b.].ο.[pap.; I,II&III omittunt
 9. [] εὑ I,II&III εὑ. IV
 10.]. ..]. ετ II
 11. pap. vacat post προς νυν:].[...] προς νυν I&II].ου[.]προς ευν[]τας[III
].[...] προς νυν[IV

12.] . ζΑ ῥ υζ Α ζ ι υ [] . [] ζ ι .
]αλλο δαυ με τι ες πευ []δ . []προση . . ς

13.] $\bar{\alpha}$ / ζ ϑ ζ ϑ υα ϑ . [] υ ϑ υ
] . ι / ου κα νει δει ην ταδ [ε]πα ρ ο ν τα

14.] ι ι $\bar{\alpha} \zeta$
] . βοσεμποι

15.] ζ ι ζ ι ι : ζ ι φ
] . των πε φ ας μεν ων

16.] Α ι [υ] Α υ ϑ $\bar{\theta}$ ϑ ζ Α υ . Α
] τον αι γις του λεγεις τω ν τα [] να [

17.] Α ϑ ϑ / $\bar{\upsilon}$ Α ι ζ Α υ Α $\bar{\upsilon}$ [.
] . κ ρ α τη / ποι ον φο βηθεις δει μα [

18.]
]

19.] $\bar{\theta}$ $\bar{\xi}$. ζ ζ ο ι $\bar{\xi}$ ρ . []
] ε ι ω τι τι νε πι το . [] ο ι [] . []

Notation

- 12. ζΑ ῥ υζ Α . Α ῥ υ Α I&II . Α ῥ υ ζ III ζ ι ζ ι . I&II ζ ι [] . III: I,II&III dant i ad τι et coniciunt semeion absens ad ες π υ [] . [] υ . I&II υ [] . ζ III . . υ I υ II ι ζ III
- 13. υ Α υ Α I&II ϑ . [] ϑ υ I ϑ υ II ϑ III υ . I&II
- 14.] in pap. lacuna est super . βοc:] . [] I&III] υ [] II $\bar{\alpha} \zeta$ $\bar{\alpha} \zeta$ I $\bar{\alpha} \zeta$ II $\bar{\alpha} \zeta$ III
- 15.] ζ] . I&II] ς III ι ζ ι ζ II
- 16. ι [υ] Α ι I,II&III $\bar{\theta}$ $\bar{\theta}$ II ϑ ζ ϑ υ I ϑ υ II ϑ υ III Α υ . . ζ υ I .. ζ υ II ... υ III
- 17.] Α] . [I,II&III ϑ Α I,II&III Α υ Α . [] . Α I&II . [] Α III] . I,II&III omittunt
- 18. versus vacuus
- 19.] $\bar{\theta}$] $\bar{\theta}$ I&II] $\bar{\theta}$ III $\bar{\xi}$. ζ ζ [] . I&II ζ [] φ [] III ι $\bar{\xi}$ ζ ι ζ . II ο ζ III

Text

- 12. υ [] δ . [] π υ δε π I&II υ [] δ ε [] τ III υ δε . [..] . IV η . ς η μα . [I,II&IV η με γ] III
- 13. ταδ [ε] πα ταδ [επ] α I,II&IV ταδ [] α III
- 14.] . βοc IV conicit θα] μ βοc
- 16. λεγεις λ . εις I&II των τα [] να [] τω . [] τα [] να I&II τω [] τα [] να [] III τω [..] . τα [..] να (..) IV
- 17.] . κ ρ α τ] κ . α τ I&II] κ . α τ III] κ . α τ IV
- 18. versus vacuus
- 19.] ε ι] ε ι I,II&IV] ε ι III το . [] ο ι [] το . [..] ο ι [I&II το . [] ο ν [III το . [..] ο ι [IV] . [I,II,III&IV omittunt

20.] c o φ .[
]α γνω μην τ. . τεε .[
21.]ç Ὶΐ i [] ζι[
. voc κά φ ω ς ο .[
22.] φ̄ ḥ ḥ̄ . . . oc[
]ον πα ροc ι[] .κον . .[
23.].ο ḥ̄ c .ι .ῑο[[.] .[
. η τον κα κic τον .[
24.]. ḫ̄ ὀϕ φ̄ ζ̄ .[
.ων ηλ θε ποι γη[
25.]φ ς̄ . ὀξ̄ .φ ο φ̄ . .[
.α ταυ .[.] .τα γαρ . .α[
- 25a.
26.

Notation

20. .[ζ̄ [I,II&III
21. Ὶΐ Ὶ̄ . I Ὶ̄ ΐ II Ὶ̄ ΐ III] ζ̄ ι . [] ζ̄ ι [I,II&III
22. φ̄ ḥ̄ φ̄ I φ̄ II&III ḥ̄ ḥ̄ I&II [] I . . [] II [] . . III oc[ὀc [I&II
23.]. οξ̄] . φ̄ . I . οξ̄ II] . φ̄ ζ̄ III c . φ̄ III . ῑ . ῑ I . ῑ . II . III . ῑ . φ̄ I&II . III
24.]. ḫ̄] φ̄ Ὶ̄ I&II] . Ὶ̄ III φ̄ φ̄ I,II&III ζ̄ ς̄ . I ς̄ ζ̄ II ς̄ ζ̄ III, sicut ποι est bisyllabus
. [I,II&III omittunt
25.] φ ς̄ .] φ̄ ḥ̄ I&II] φ̄ ḥ̄ III ὀξ̄ . φ̄ οφ̄ [] φ̄ I οφ̄ [.] φ̄ II ὀφ̄ . φ̄ III φ̄ φ̄ I,II&III
.. [φ̄ [I,II&III
26. pap. vacat:] ζ̄ ι ζ̄ . [I,II&III

Text

20. τ̄ . τ̄ ε̄ . [π̄ . . [I&IV πατ̄ . [II πατ̄ [III
21. φ̄ . [τ̄ φ̄ . [I,II,III&IV
22. ῑ [] . κ̄ ον̄ . . [κ̄ [.] . κ̄ ον̄ α [I,II&IV κ̄ [.] . κ̄ ον̄ α [III
24.] . ων̄] ρ̄ ων̄ I,II,III&IV
25.] . α [cα I,II&IV] . . III .. α [φ̄ ρ̄ α [I,II&IV .. δ̄ [III
25a. I,II,III&IV omittunt
26. pap. vacat:] . . . [I&II] [III [] . [] . . [IV

Text and Translation

1.]ῶ φίλτατε [c']ίκετεύ[ω]
o dearest (friend/relative?), I supplicate [you]
2.]τ[]. τίς εἶ ποτ' ἢ τίνοσ ν[ε]οσ[.] .[. .].
... who ever are you or of what? the new/young ...
3. ῶ φίλ[τ[α]τε τάδε λέγεισ ποτ[[....]] [. .]τε/
o dearest, these things you say ...
4. ο]ν πέλασ πάντη σο[. .]τα . . οσ ίκετεύω[
near [noun in genitive] | on all sides ... I supplicate ...
5. ῶ] φίλτατε
o dearest
6.] ..ίκαν ῶ .πα[. . .]α φράσων φρά[σον
[aorist verb] o [name? in vocative] ... *tell! tell!*⁶²
7.]αων ἐγένεθ' ἢ σωτ[η]ρία· τίς νόστος
... the safety has come about; what/some homecoming
8.]γῆσ δεῦρό μοι ἐκ ` .ο.` [. . .] φανείσῃσ
of the land⁶³ here for/to me from ... of the appearing ...
9.]λησ· δίδαξων δί[[.]]δαξων ὡσ τῶν[. .]
... teach! teach! how of the ...
10.] . . οὐκ ἔστ' ἀέλπτου τέρψισ
... it is not a delight of unexpected ...
11.] πρὸσ νῦν
toward/before now⁶⁴
12.]ἄλλο δ' αὖ μ' ἔτι ἔσπευδε[ν] πρὸσ η..σ
another and again he/she still hastens me towards ...

⁶² or *show! show!*

⁶³ or a genitive of another feminine noun ending in -γη.

⁶⁴ This line is problematic: see discussion in Commentary on page 70 and Chapter Three, Rhythmic Notation and Metrical Analysis on page 100.

13.]ει / οὐκ ἂν εἰδείην τάδ[ε] παρόντα
... / *would I had not known these things that are present*
14. θά]μβος ἐμποεῖ
*astonishment causes...*⁶⁵
15.].cῶν πεφασμένων
... of your⁶⁶ things that have been revealed
16.]τὸν Αἰγίθου λέγει· τῶν τα [. .] να[
you say this of Aegisthus; of these ...
17.]. κρᾶτη / ποῖον φοβηθεῖς δεῖμα[
strength / having been seized with fear by what sort of terror
18.]
19.]εἰωτι τίν' ἔπι το. [.]οι [.. ..].[
...
20.]α γνώμην τ. . τε .[
... judgement⁶⁷ ...
21.]. voc καθαῶς ο.[
... clearly ...
22.]ον πάρος ἰ[] .κον ..[
... formerly ...
23.]. ἢ τὸν κάκιστον[
*or the worst*⁶⁸
24.].cων ἦλθε ποῖ γη[ε
... he has come to what piece of land
25.].α ταῦ[τα] τὰ γὰρ . . α[
... for these things ...

⁶⁵ or you are made astonished in.

⁶⁶ or the genitive plural of a different noun or adjective.

⁶⁷ or thought or opinion.

⁶⁸ or most evil.

Commentary

Text

1. The traces of letters read by other editors at the beginning of the line are likely part of the musical notation. It is perhaps possible that this line began with $\tilde{\omega}$, especially if it started a new section of the papyrus and was indented, or else there may have been some text carried over from the previous column.

$\text{]}\omega$: Only a few small traces of ink remain, but this is the only probable letter before the vocative $\phi\acute{\iota}\lambda\tau\alpha\tau\epsilon$. See discussion in Chapter Three on page 117 and following.

$[\text{c}]\iota\kappa\epsilon\tau\epsilon[\text{v}\omega$: The traces remaining on the edge of the papyrus support A. Bélis' conjecture, and it makes sense to expect a first- or second-person verb following the vocative $\tilde{\omega}\ \phi\acute{\iota}\lambda\tau\alpha\tau\epsilon$. See discussion in Chapter Three on page 124.

2. τ : most likely not θ .

$[\] . []$: The first lacuna has space for one or two letters after the space for the notation for $\rho\zeta$, and the second has space for about two letters, with space between for a single *semeion*.

$].$: probably the end of the line.

3. $\phi\iota\lambda\tau\alpha\tau\epsilon$: L. Capron's conjecture is almost certain, since the spacing of the letters matches $\phi\acute{\iota}\lambda\tau\alpha\tau\epsilon$ in lines 1 and 5 almost exactly. The λ is written with the base at an upwards angle (e.g., the λ in $\phi\iota\lambda\tau\alpha\tau\epsilon$ in line 1 and $\pi\epsilon\lambda\alpha\sigma$ in line 4) and the α is confirmed since the traces of α on the edges of the lacuna conform to the $\tau\alpha$ ligature (e.g., $\tau\alpha\delta\epsilon$ in line 3 and $\epsilon\tau\alpha-$ in line 10). See discussion in Chapter Three on page 117 and following.

[[...]] [] : A. Belis has plausibly suggested that the author wrote ταδε a second time and then deleted the repetition. There may be letters missing between the deletion and the lacuna, which has space for one broad letter or two narrow letters.

4.]υ: A genitive is expected before πέλας.

πελας : Since this word is often found at the end of a metrical line (e.g., Aeschylus, *Supplices* 257; Sophocles, *Ajax* 774; Euripides, *Alcestis* 24), it supports the conjecture that *leimma* marks the end of metrical lines in this papyrus.

[]: There is probably space for one syllable (two to three letters) in the lacuna

τα . . . : The first two letters are probably τα because the traces match other occurrences of that ligature. The two dotted letters could also be a single broad letter like μ.

ικ [: A. Bélis hypothesizes a repetition of ἰκετεύω (line 1), which fits the space available and conforms to the observable traces of both text and music. There is no way to confirm this reading due to the significant damage to this part of the papyrus; however, given the tendency of this text to repeat significant words, it is a very plausible suggestion. See discussion in Chapter Three on page 124.

5. The extended melisma on ὦ has caused confusion between the musical *semeia* and letters of the text, and the letters proposed by other editors are either suppositions based on the number of *semeia* (since melismata of this length are unusual) or interpretations of some of the *semeia* as letters. See discussion in Chapter Three on page 115 and following.
6.]. ιϙαν: If the first two letters are τω, as read by other editors, this creates a problem with the following ι, since ι is not written adscript elsewhere in this papyrus, nor indeed expected in the Roman period. Moreover, the letter

read as ω does not really match the other instances of this letter in this hand: the closest in form is the first ω in $\omega\tau\omega\nu$ (line 9). The ζ could also be κ . L. Capron conjectures $\alpha\tilde{\iota}\sigma\alpha\nu$, although the first letter resembles α even less than ω . The aorist of a verb in $-\acute{\iota}\zeta\omega$ is more probable: R. Janko has suggested $\nu\omicron\mu\acute{\iota}\zeta\omega$. Regardless, this must be a heavy syllable because the notation securely has a three-*semeia* melisma with diseme.

ω : Although only the left half of the letter is visible, the melisma requires a long vowel. The notation pattern, which plays off the phrase sung to $\tilde{\omega}$ in line 1, supports reading this as $\tilde{\omega}$ before a vocative. Alternatively, this letter might be an o , although this reading is significantly less likely because of the extended melisma (at least six *semeia*). See discussion in Chapter Three on page 115 and following.

[$\cdot\pi\alpha$] α : Probably the vocative of a nominative ending in $-\eta\varsigma$. There is no space in the first lacuna for a letter beneath the end of the melisma on $\tilde{\omega}$. The π looks like a correction or insertion, and the ink is darker than the surrounding text. There is space in the second lacuna for one syllable followed by its notation, and a second syllable ending with α .

$\phi\rho\alpha$: The second syllable ($-\text{cov}$) of this repeated imperative, along with its *semeion* (ξ), probably started line 7. See discussion in Chapter Three on page 126 and following.

8. τ or γ , but τ is more likely.

[]: There is probably space in the lacuna for two syllables (four to six letters), but the correction beneath the line (8b) and in the musical notation makes it difficult to judge just what is missing here.

8b. $\cdot\phi\cdot$: Traces of three letters written below the line. These probably form a correction to the text of line 8, written abnormally below the line in order to avoid confusion with the musical notation. The second letter could also be ϵ or c .

9. []: There is space in the lacuna for one syllable (two to three letters), which is probably heavy because of the notation ($\zeta\bar{\alpha}$).
10.]: could be c.
11. Confusion between the registers of music and text at the beginning of this line has resulted in several *semeia* being read as letters by previous editors.

$\pi\rho\omicron\varsigma \nu\nu$: In 5th century tragedy, this phrase always begins a line (Sophocles, *Electra* 428 and 889, *Philoctetes* 468, and *Oedipus Coloneus* 49; Euripides, *Helen* 1237) and introduces a supplication formula. The positions of *leimmai* in the surrounding lines (9, 10, and 12) indicate that a metrical-line-beginning might be expected before $\pi\rho\omicron\varsigma \nu\nu$, and the apparent three- or four-*semeion* melisma for the preceding (missing) text might support this reading, especially if the final *semeion* could be read as a *leimma*. However, there is no trace of either the expected text or notation on the papyrus after $\nu\nu$. Although there is some damage to the papyrus, it does not seem extensive enough to account for the complete lack of ink traces, especially since significant portions of lines 10 and 12 are still visible. It is possible that the break after $\nu\nu$ indicates speaker change, as with the other shorter lines (e.g., lines 5, 14, and 15), although the phrase is not followed by speaker change in the examples from Sophocles and Euripides. See discussion in Chapter Three on page 110 and following.

12. []: There is probably no letter missing in this lacuna.

δ . : the second letter could be o, ε, η, ω, or similar.

[]: There is space for one or two letters in the lacuna.

..ç: traces of two letters before c; the first broad (e.g., μ, ν) and probably a consonant, the second could be α, which might account for the fact that c is written almost in the register of the notation, since this scribe has the tendency to write α almost as a superscript letter.

13.]ι : The ι is definitely in ligature, probably either with ε or τ: ει seems more probable because of the diseme on the associated *semeion*, since the following syllable starts with a vowel.
14. This line is clearly a short line, which might indicate speaker change or some other textual division. There is no trace of either text or notation after $\tilde{\alpha}\tilde{\zeta}$ / ει. See footnote 20 on page 47 above, and discussion in Chapter Three, Rhythmic Notation and Metrical Analysis.
16. τᾱ[]: There is space for two or three letters, probably one heavy syllable because of the two *semeia* linked by a *hyphen* (Ϝ.).
- vᾱ[: probably only missing one more syllable with notation.
17.]κ : The placement of the *semeion* (A) slightly after κ indicates that missing letter was probably a vowel. The beginning of this line has apparently suffered water damage, as the ink is blurred and smudged up to the /.
- μᾱ[: probably missing the notation for this syllable and one more syllable with notation.
18. This line is bare of text or notation (see discussion above). The blank space is the correct height for a line (2 cm) and probably contained an iambic metron carried over from line 17, resulting in an estimation of at least 3-4 cm. (the length of the metron $\pi\omicron\tilde{\iota}\omicron\nu\ \phi\omicron\beta\eta$) missing from the left edge of the column.
19. τῶ. []: There is space for no more than one letter in the lacuna, because there is no trace of notation above the lacuna.
- []: There is space for at least two syllables with accompanying notation in this lacuna.
-].]: A small trace of either a letter in the text or a *semeia*.

20. **τ.** : The second letter is probably ε or α, ι is not likely.

. : There is space for one or two letters between the notation.

τι: or π or η.

22. **ι[]**: The ι could be part of κ (or another letter with an initial vertical stroke); however, under microscope, there are no traces of a second stroke on the edge of the lacuna. There is space in the lacuna for two syllables (three to five letters).

25. **].α** : probably τα or αα.

ταυ.[]τα : There are faint traces of ink on either side of the lacuna consistent with two letters, perhaps ταυ[τα] τὰ, although not particularly poetic. The traces of the first letter are consistent with τ and the second, although even more badly damaged, could be α. Alternatively, the syllable ταυ- supported a four-*semeion* melisma. See discussion of music below on page 80 and in Chapter Three on page 100.

25a. **∪** : This symbol could be part of a letter written as a correction (as in line 8b), or it could be the decorative bottom of a letter like φ or ψ. Alternatively, it could represent an extra-textual symbol, like a line count for the page, although unusually placed near the center of the column.

26. This line does not exist on the papyrus. There are discolorations on the surface of the papyrus which look like ink in photographs, but which are clearly either stains or ink transferred by contact. The column height without this final line is already at the high end of the range for literary papyri in Roman Egypt. See discussion above on page 45.

Notation

1.] . ϣ . : traces of the first three or four *semeia* of the six- or seven-note melisma on $\bar{\omega}$. The second is mostly likely ϣ as read, but it could be parts of two notes, of which the first would probably be A. See discussion in Chapter Three on page 115 and following.

ϣ̣: The dot is for the *stigmē*, which is lost in a lacuna; it can safely be restored from lines 3 and 5.

[Ẓ]: This *semeion* can be safely restored from lines 3 and 5. See discussion in Chapter Three on page 117.

ϣ̣̣: The *stigmē* is definite, and supports the reading of *leimma* since this composer/scribe always writes *leimma* with a *stigmē*.⁶⁹ A *stigmē* would be unwarranted over any other symbol following $\bar{\zeta}$ and assigned to the same syllable since there is no *stigmē* over the $\bar{\zeta}$. The placement of this symbol close to $\bar{\zeta}$ supports this reading, since *semeia* follow, never precede, the associated syllable, and there is no trace of a letter in the text below the ϣ̣̣. Finally, when this word and musical phrase recurs in line 3, $\bar{\zeta}$ is clearly followed by a *leimma*. It is impossible to determine if a *leimma* occurred in the parallel location in line 5 because of a lacuna; however, it is probable there as well. See discussion in Chapter Three on page 117.

ξ̣: or Z; badly damaged by a tear in the papyrus along the *kollesis*.

[. : if $\acute{\iota}\kappa\epsilon\tau\epsilon\acute{\upsilon}\omega$ is repeated in line 4, then $\bar{\zeta}$ is possible for this *semeion* as well. See discussion in Chapter Three on page 124.

2. ϣ̣̣̣: not a secure reading.

⁶⁹ See Johnson 2000: 81 for a discussion of the conventional practice of writing *leimma* with a *stigmē*.

. / $\tau\iota\epsilon$: This *semeion* could be \dot{A} or \ddot{A} , possibly with ι or ϵ before it, although either of those notes would involve a large (but not impossible) jump down from the preceding θ , if that is, indeed, the correct reading of that *semeion*.

\ddot{Z} : or ξ ; Z is musically preferable, both because it places the triseme on *mesē*, and because the sequence $\upsilon Z \xi$ plays on the musical motif of $\phi\iota\lambda\tau\alpha\tau\epsilon$.

[] $\alpha\iota$ [] : The first lacuna contained the notation for $\omicron\zeta$, and the second probably contained one *semeion*. See Commentary on page 67 above.

3. \ddot{Z} : There is no visible reason why this *semeion* was not deleted along with the text beneath it; the scribe/composer may have preserved this note because the error was only in the text and this *semeion* was intended for the correction, now lost in the following lacuna. Alternatively, the scribe felt no need to delete notation for already deleted text.
4. [] : There is space for one or two *semeia* in the lacuna (notation for one syllable).

ξ : or Z

. \ddot{Z} [: The trace before \ddot{Z} could be part of a *hyphen*, a *semeion* with a long 'tail' (e.g., A or ξ), or part of a letter from the text below.

- 5a. Line 5a is an additional line of musical notation added, apparently at a later time, between lines 4 and 5 of the text and the *semeia* in this line display considerable variation and distortion due to the apparent haste of the writer. The interpretation of this extra line of notation has been much debated by previous editors; however, close inspection reveals that the composer of this line wrote $\phi\iota\lambda$ beneath the final *semeion* (υ), confirming that this line represents an expansion of the melisma sung to ω in line 5. The *semeia* in this line are numbered to aid in identification across the various editions. See discussion in Chapter Three on page 118 and following.

no. 2 ϙ: could be ζΖ or ΙΖ, but the high note (ϙ) makes musical sense in a *cadenza*-type context.

no. 4: The ink traces read by previous editors as the fourth *semeion* in line 5a are actually part of the preceding and following *semeia*.

no. 12 Ι: the form of this *semeion* most resembles Γ (part of the Hyperionian scale, but at the bottom of the range and highly improbable in this context). The unusual form probably results from the composer's fast handwriting and failure to completely lift the stylus between *semeia*.

no. 13 Α: or Ϝ, but the form is closer to Α with a ligature to the next *semeion*.

5.]ζ . : The second note is probably not Ϝ as in the melisma in line 1 because of the uneven melodic contour that it would create. Ζ is more likely because it would create a repeated melodic pattern in the original melisma, involving motion up by a third, down a step, up a third, etc.

ι̇ Ḃ̄ : Since this papyrus does not use rhythmic markings in the melismata elsewhere, and since line 5a, the melodic revision of this phrase, begins directly over these notes, it is perhaps reasonable to assume that instead of the typical rhythmic indications of *stigmē* and *diseme*, these symbols indicate where to transition to the alternate version. See discussion in Chapter Three on page 118.

[] : There was most likely a *leimma* in this lacuna, since this symbol follows both other instances of φίλτατε.

6. Ϝ̄Ᾱ: The *hyphen* is an extension of the vertical stroke of Ι. See discussion of the hyphen in Chapter Three on page 104 and following.

[]ζ̇ : There is space in the lacuna for one narrow *semeion* (Ι or less likely ζ) to complete the melisma. The bottom of this Ζ curves up (cf. the form of ζ̄/μοι in line 8).

] $\overline{\text{A}}$ ·[: The first dot is for the *semeion*, not the triseme. The second *semeion* was most likely a *leimma* because of its distance from the A, the presence of a triseme on A, the *stigmē*, and the possibility that this is the notation for the last syllable of a vocative, which is treated with a triseme and *leimma* combination in lines 1 and 3. O is also possible, although not otherwise attested in Part I. See discussion in Chapter Three, Cadences and the Function of the Leimma on page 110 and following.

$\dot{\text{A}}$: Difficult to read because of the tear along the *kollesis*, but this *semeion* can be safely restored because of the repetition.

7. $\dot{\text{z}}$ · $\dot{\text{i}}$ · $\dot{\text{z}}$: The first *semeion* could be Z.

[] : Space only for a narrow *semeion* like $\dot{\text{z}}$ or $\dot{\text{i}}$. $\dot{\text{i}}$ is probably preferable both musically and paleographically.

$\dot{\text{z}}$ · : The *dicolon* here and in line 22 ($\overline{\Phi}$) appears different from its function in line 15. While its use here could be to indicate the large upward jump to the next note, the interval in line 22 is only a whole step. The only other logical explanation appears to be something like a breath-mark or phrase mark, the musical equivalent of a punctuation mark in the text. While the textual context in line 22 is unclear, here there must certainly have been some punctuation in the text to separate the two nominatives (η $\omega\tau\eta\rho\acute{\iota}\alpha$ and $\tau\acute{\iota}\varsigma$ $\nu\acute{o}\tau\tau\omicron\varsigma$), especially if $\omega\tau\eta\rho\acute{\iota}\alpha$ marks the end of a metrical line, which is Euripides' preferential placement for this word. See discussion in Chapter Three on page 109.

8.] A : could be AI with or without *hyphen*. Since this is set to a long syllable ($\gamma\eta\epsilon$), a second note or diseme should probably be expected here.

$\overline{\text{z}}$ · $\dot{\text{a}}$: The dot is for the tetraseme, which could be a poorly written triseme, except that this scribe writes the triseme elsewhere with a single stroke and this symbol was clearly made in two strokes. See discussion in Chapter Three on page 110.

Α̇Ι̇ : The dot is for the *stigmē*. There is no *hyphen* joining these notes; the top of the *sigma* below touches the bottoms of the *semeia*, approximating the appearance of a *hyphen*.

9. Ζ̇Ι̇ : The dot is for the *semeion*, which could also be ζ. For the tetraseme, see discussion in Chapter Three on page 110.

ΖΙ.Ζ : The third and fourth *semeia* of this group are very badly damaged. The third *semeion* might be ϑ, Α, or Ο: musically Α makes the most sense, The remaining traces and spacing are not really consistent with how ϑ is usually written and Ο is otherwise not attested, even though it is part of the Hyperionian *tonos*. The final *semeion* is probably Ζ, although written abnormally. See discussion in Chapter Three on page 135.

Ι̇ could be read with a triseme.

Ζ̇Ι̇ : The hyphen read by previous editors is part of the ζ, which this scribe frequently writes with a tail extending to the right. The lower portion of the *semeion* is obscured by the top of *sigma* in the text.

. : Traces of one or two *semeia*.

10. ΑΖ̇Ι̇ : An example of a revision of the musical notation: the composer first wrote ΑΖ̇ and then added the Ι̇ and extended the hyphen with the same stroke. See discussion in Chapter Three on page 105 and following.

Α̇ : The dot is for the diacritic, which could also be a triseme. The *stigmē* is probable but not clear.

Α ζ̇ : or ΑΙ. ΑΖ̇ outlines a descending tritone, perhaps as an unusual a melodic interval for the ancient Greeks as it is in Western music.⁷⁰ It is also

⁷⁰ West 1992: 206–207, citing the late theorist Gaudentius. The interval may also appear in the instrumental signs in the Euripides' *Orestes* papyrus (*DAGM* 3 = P. Vienna G 2315), where it might have been intended to sound concurrently; see further discussion of this papyrus at the end of this chapter and in Chapter Three.

possible that the trace of a second *semeion* is actually an extension of A or part of a letter in the text. See discussion of the same interval in φράσσον (line 6) in Chapter Three on page 126 and following.

11.]Α Ζ Ψ .: traces of three or four *semeia* in a melisma at the beginning of the line. These readings are quite tentative. The final *semeion* might be a *leimma*, especially since *leimmai* appear in this approximate location in the surrounding lines (9, 10, and 12). See discussion in the commentary above on page 70.

Α̇: this *semeion* is formed abnormally, and actually looks more like the typical form of Ψ.

12. Ζ Α ᾠ Ψ Ζ: Because the scribe wrote the beginning of this line without the usual spaces between the syllables, the distribution of *semeia* over the syllables -λο and δ'αῦ̄ is unusually difficult. The division should occur after the *leimma*; however, this symbol is written directly over the *alpha* in δ'αῦ̄. Since the attested function of *leimma* as a rest within a group of *semeia*⁷¹ is unlikely to apply here, the musical division must occur where expected (i.e. Ζ Α ᾠ / -λο, Ψ Α / δ' αῦ̄). It appears that this line was written with some haste, and the scribe neglected to leave sufficient space for the notation. Previous editors have articulated the group as follows: I .Α / -λο, ᾠ Ψ Α / δ' αῦ̄; II . Α ᾠ / -λο, Ψ Α / δ' αῦ̄; III. ./ -λο, Α ᾠ Ψ Ζ / δ' αῦ̄. In this papyrus, *leimma* usually marks a line-end; however, since a trimeter cannot begin with δ'αῦ̄, a different interpretation is required, most likely a pause between the two words.⁷² The second Z in the group could also be Ι. See discussion in Chapter Three on page 100.

. / δ̇ .: the *semeion* is illegible, but there could be a trace of a diseme.

. / ς : traces of one or perhaps two *semeia*, possibly even a *hyphen*.

⁷¹ Mathiesen 1999: 605; and West 1992: 266. See full discussion of this symbol in Chapter Three, Cadences and the Function of the *Leimma*.

⁷² On the double function of *leimma* even within the same papyrus, cf. Johnson 2000: 81.

13. **Z ⊕ Z ⊕** : The composer is playing with the alternate version of the Hyperionian *tonos*, which has a conjunct tetrachord above *mesē* [Z E υ ⊕], as a tonal contrast to the disjunct tetrachord [A υ ⊕ O'] that is used elsewhere. Although he uses the outline of the conjunct tetrachord, he descends through the disjunct tetrachord a few notes later (⊕υA), rather than confirming a modulation (*metabolē*) with the *semeion* E. See discussion in Chapter Three on page 136.

υA ⊕. : There might be a trace of either a narrow *semeion* or a *dicolon* between A and ⊕. The final *semeion* could be υ, although the papyrus is damaged too badly to be certain.

14. **ÄZ'** : There is a strange diacritic mark (') after the Z. This could be a second *stigmē* written as a slash because the scribe did not fully lift the stylus. The scribe does sometimes write a *stigmē* for each note in a group (e.g., **ξī** line 9). Alternatively, this symbol represents an attempt to emend the diseme to a triseme (**ÄZ**).

15. **:Z|** : This *dicolon* apparently indicates an appoggiatura. See discussion in Chapter Three on page 114.

16. **l. [υ] AJ** : The first two notes fall in two small lacunae: the spacing of the first lacuna makes l a strong reading, traces on the bottom edge of the second lacuna are consistent with υ. The readings for the first two *semeia* proposed by all three previous editions (A l.) violated the accentuation of *Aἰγίεθου*, the only place in the papyrus where an accented note was set to a lower pitch.⁷³ Winnington-Ingram suggested articulating the text as *Aἰγίεθ' οὐ* (or *οὔ*) to avoid the conflict;⁷⁴ however, as West observes,⁷⁵ the notion of a vocative addressed to Aegisthus does not fit the apparent dramatic

⁷³ Cf., e.g., Cosgrove and Meyer 2006: 72 and 77; Pearl and Winnington-Ingram 1965: 187; Pöhlmann and West 2001: 143; and West 1992: 315.

⁷⁴ Pearl and Winnington-Ingram 1965: 187 fn. 2.

⁷⁵ Pöhlmann and West 2001: 143, which also discusses the breach of Porson's Law which this reading would entail.

context. The readings suggested here would alleviate this difficulty. See discussion in Chapter Three on page 132.

Ϝ . : The second *semeion* was destroyed by abrasion. There is space for a narrow *semeion* (l, z) or even a small A.

17. Α / βη : or υ.

19. z̄ : The *stigmē* read by other editors over this *semeion* is part of the diseme. The scribe always writes the *stigmē* over the diseme, not on a line with it.

l. z̄ : The *hyphen* might be part of the missing letter beneath the *semeia*.

21. ċ : The dot is for the *stigmē*, the *semeion* is certain.

22. . . . : Traces of two or three *semeia*, probably with diacritics.

23.] . o : The first *semeion* might be C, or possibly a diseme over an unknown *semeion*.

24. z̄ or Z.

25. o z̄ . ϕ : Damage to the papyrus makes elucidation of this group of *semeia* more difficult, especially since the edges of the lacuna do not appear to line up correctly. There is about a half-centimeter difference between the base of z̄ and the base of ϕ. The O might be a correction, probably from z̄ or Z. The dotted *semeion* is completely lost in a lacuna and its presence can only be inferred from the *hyphen*. There is no trace of an extension of the *hyphen* below O z̄, perhaps indicating that this group of *semeia* provides notation for two separate syllables: o z̄ / ταυ and ϕ / [τα].

o : There could be a *stigmē* or diseme over O.

26. See note in commentary on the text on page 72.

Transcriptions

Transcription into Western Notation

In the following transcription into modern Western notation, I have observed the diplomatic transcription presented above on pages 61-64 as far as is possible, within the limits of the software available. I have used the conventional musical compositional software, Finale, to create all the transcriptions and musical examples in this dissertation, and despite not being designed to transcribe ancient or non-Western music, the program is sufficiently adaptable that, with a fair amount of tweaking and utilization of customizable features, one can create a reasonable facsimile of the papyrus. Necessarily, transcription into modern notation requires making a fair number of choices and I will attempt to explain my decision-making process as clearly as possible in what follows.

The first major decision involved in transcribing ancient Greek *semeia* into Western notation involves setting the pitch equivalencies between the two notation systems. Although it is generally recognized that the traditional pitch-values assigned to the *semeia* are too high by as much as a fourth,⁷⁶ I have chosen to preserve them here for three main reasons. First, since these are the pitch-values used in *DAGM*, and indeed in all the published transcriptions of which I am aware, I thought it would be unnecessarily confusing to use different values for analytical purposes in this project. Preserving these traditional pitch-values allows for easier comparison of this papyrus to the surviving musical fragments, and the idea of using one set of pitch-correspondences for the musical *exempla* and another for the complete transcriptions seemed to me to be unnecessarily convoluted. Second, the reasoning behind the pitch-values traditionally assigned

⁷⁶ Cf., e.g., Hagel 2010: 452–453; Landels 1999: 214 and 217; Pöhlmann and West 2001: 7; and West 1992: 255 and 273–276.

to the *semeia*, consummately explained by Hagel,⁷⁷ is, I believe, based on sound musical principles: namely, the attempt to conserve the relationship between the *tonoi* through the relationship between the modern keys in which they are transcribed. This system takes the Lydian *tonos* in which all the fixed notes of the tetrachords are written with first-level (i.e., unsharped) *semeia*, and transcribes it in C Major, the corresponding natural modern key. Finally, the *tonos* used for the first section of P. Mich. inv. 2958, the Hyperionian, does represent, I believe, a deliberate decision on the part of the composer to choose a higher *tessitura*⁷⁸ within the male vocal range.⁷⁹ Given the possibility that modern professional singers likely have developed higher ranges than singers in antiquity, the higher *tessitura* of the traditional pitch-values may more accurately convey the difficulty of the composition.

The second major decision in transcribing ancient Greek notation involves setting the rhythmic equivalents and choosing a tempo. It has become standard practice to transcribe a single *chronos* (i.e., a short syllable) as an eighth-note;⁸⁰ however, in my transcriptions of P. Mich. inv. 2958, I have chosen to represent the *chronos* with a quarter-note. My justification lies in the acknowledgement among ancient sources that tragedies should have a slower and more solemn tempo,⁸¹ and I find that using eighth-notes as the basic time unit conveys a sense of quicker movement than is perhaps warranted. In any case, the tempo chosen to perform the transcription is more significant than the specific rhythmic

⁷⁷ Hagel 2010: 452–453.

⁷⁸ On compositional decisions, cf. West 1992: 190–191 citing Aristides Quintilianus. Cf. Mathiesen 1999: 324 (on Aristoxenus) and 537 on the passage discussed by West.

⁷⁹ The Hyperionian is the second lowest of the five hyper- *tonoi*, which are, in ascending order: Hyperdorian (*mesē* on d[#]), Hyperionian (e'), Hyperphrygian (f'), Hyperaeolian (f[#]), and Hyperlydian (g').

⁸⁰ Landels 1999: 261 and West 1992: 131.

⁸¹ Cf. West 1992: 153.

notation, a fact that would not have been lost on Aristoxenus.⁸² A final reason for preferring a quarter-note rather than an eighth-note duration for the *chronos* lies in the complications created by beaming eighth-notes in modern notation. Ancient Greek music does not use regular measures in the modern sense, but is constructed more fluidly from a combination of the natural quantities of the syllables and the composer's rhythmic preferences (usually the elongation of a syllable by one or two *chronoi*⁸³). This results in an iambic metron (× – ∪ –), theoretically the basic rhythmic unit of Part I, having a widely-varying musical duration (e.g., six *chronoi* for σωτηρία in line 7 and ten for -γῆς δεῦρό μοι in line 8). The nature of the Finale software is such that it is easier to have a greater flexibility in mensuration when the quarter-note is the basic time unit, especially when modifying note-heads and stems in the melismata. Therefore, instead of using bar-lines to indicate regular rhythmic groupings, as in most Western music,⁸⁴ I have employed a variety of types of bar-lines to convey paleographical information about the text. For the melismata, I have preferred to omit the stems entirely, rather than modifying the shape of the note-head, in order to transcribe the absence of rhythmic symbols on the papyrus.

The final difficulty in transcribing P. Mich. inv. 2958 into modern notation arises from the nature of papyri, rather than from anything having to do with ancient Greek musical notation. This concerns how to represent *semeia* which are dotted or missing in the diplomatic transcription. Finale requires that every note must have definite pitch, which creates more of a problem in the audio realization of the transcription than it does in the visual formatting, and this

⁸² Mathiesen 1999: 340–344.

⁸³ See discussion in Chapter Three, Rhythmic Notation and Metrical Analysis on page 104 and following.

⁸⁴ Cf. Landels 1999: 123.

necessitated at times making somewhat arbitrary decisions about assigning pitch-values to non-existent or dubious *semeia*. I have attempted to preserve a rough sense of which pitches are secure or insecure through the use of alternative note-heads in the transcription; however, there is literally no means for indicating these variations through sound, other than the use of disruptive accents or dynamic markings. Therefore, the audio file might best be enjoyed in conjunction with the diplomatic transcription of the papyrus as well as the transcription into Western notation. In terms of the text, I have not attempted to preserve all the nuances of the diplomatic transcription, but instead have limited the paleographical symbols to an absolute minimum to convey a distinction only between letters which can (or might) be read on the papyrus and those that are missing.

The following list presents the conventions that I have used in transcribing P. Mich. inv. 2958 into Western notation.

Text

- [] square brackets indicate *lacunae*
- ... ellipses indicate missing or illegible text

Note-heads and Stems

- x an x-shaped note-head indicates a quarter-note of uncertain pitch
- a square note-head indicates a half-note of uncertain pitch
- a missing note-head (i.e. a blank stem) indicates a missing note
- note-heads with missing stems indicate arhythmic melismata

Bar-lines

- | a tic on the uppermost line of the staff follows a *leimma*
- | a narrow solid bar-line indicates the edge of the column
- | a dashed bar-line indicates a *lacuna*
- ▮ a thick solid bar-line transcribes the diagonal slash

Line 1

8]ω φιλ τα τε [c]ι κε τε[υ ω

Line 2

8]... τις ει ποτ η τι νοc ν[ε]οc []...

Line 3

8 φιλ] τα τε τα δε λε γειc πο τ[...] τε

Line 4

8 ο]υ πε λαc παν τη cο []τα... ...οc ι κ[ε] τευ ω

Line 5

8]ω φιλ τα τε


Line 5 with 5a melisma

8]ω φιλ τα τε

Line 6

8]... ..ic αν ω ...πα[]α φρα cον φρα [cον


Line 7



Line 7 musical notation: Treble clef, key signature of one sharp (F#), 8/8 time signature. The melody consists of quarter and eighth notes. A triplet of eighth notes is marked with a '3' and a bracket. There are two 'x' marks above the notes on the 4th and 6th beats.

]α...ων ε γε νε θη εω τη ρι α τικ νοσ τοσ

Line 8



Line 8 musical notation: Treble clef, key signature of one sharp (F#), 8/8 time signature. The melody consists of quarter and eighth notes with various phrasing slurs.

]γησ δευ ρο μοι εκ[]φα νει εησ

Line 9



Line 9 musical notation: Treble clef, key signature of one sharp (F#), 8/8 time signature. The melody consists of quarter and eighth notes. There is an 'x' mark above the note on the 5th beat.

]γησ δι δα ξον δι δα ξον ωσ των[


Line 10



Line 10 musical notation: Treble clef, key signature of one sharp (F#), 8/8 time signature. The melody consists of quarter and eighth notes with various phrasing slurs.

]... .. ουκ εσ τα ελπ του τερ ψισ

Line 11



Line 11 musical notation: Treble clef, key signature of one sharp (F#), 8/8 time signature. The melody consists of quarter and eighth notes.

]... προς νυν


Line 12



Line 12 musical notation: Treble clef, key signature of one sharp (F#), 8/8 time signature. The melody consists of quarter and eighth notes.

]αλ λο δαυ με τι εσ πευ δ[εν]προς η... ..σ

Line 13



Line 13 musical notation: Treble clef, key signature of one sharp (F#), 8/8 time signature. The melody consists of quarter and eighth notes. There are two 'x' marks above the notes on the 7th and 8th beats.

]ει ουκ αν ει δει ην τα δε πα ρον τα

Line 14



Musical notation for Line 14, featuring a treble clef, a key signature of one sharp (F#), and a common time signature. The melody consists of five notes: G4, A4, B4, C5, and B4, with a slur over the last two notes. An 8va symbol is positioned below the staff.

]βοϋ εμ πο ει

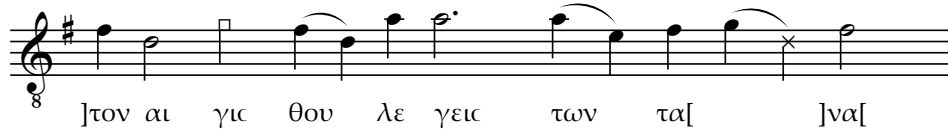
Line 15



Musical notation for Line 15, featuring a treble clef, a key signature of one sharp (F#), and a common time signature. The melody consists of seven notes: G4, A4, B4, C5, B4, A4, and G4, with a slur over the first four notes. An 8va symbol is positioned below the staff.

]... ρων πε φαρ με νων

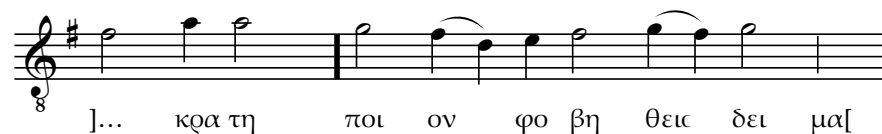
Line 16



Musical notation for Line 16, featuring a treble clef, a key signature of one sharp (F#), and a common time signature. The melody consists of ten notes: G4, A4, B4, C5, B4, A4, G4, F#4, E4, and D4, with slurs over the first four and last four notes. An 8va symbol is positioned below the staff.

]τον αι γι ρου λε γει ρων τα[]να[

Line 17



Musical notation for Line 17, featuring a treble clef, a key signature of one sharp (F#), and a common time signature. The melody consists of ten notes: G4, A4, B4, C5, B4, A4, G4, F#4, E4, and D4, with slurs over the first three and last four notes. An 8va symbol is positioned below the staff.

]... κρ ρτη ποι ον φο βη ρει ρει μα[

Line 18: blank

Line 19



Musical notation for Line 19, featuring a treble clef, a key signature of one sharp (F#), and a common time signature. The melody consists of seven notes: G4, A4, B4, C5, B4, A4, and G4, with slurs over the first two and last two notes. An 8va symbol is positioned below the staff.

]ει ω τι τι νε πι το...[]οι[

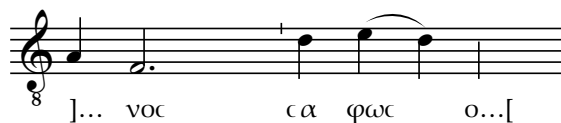
Line 20



Musical notation for Line 20, featuring a treble clef, a key signature of one sharp (F#), and a common time signature. The melody consists of four notes: G4, A4, B4, and C5. An 8va symbol is positioned below the staff.

]α γνω μην τ... τε...[

Line 21



Musical notation for Line 21, featuring a treble clef, a key signature of one sharp (F#), and a common time signature. The melody consists of five notes: G4, A4, B4, C5, and B4, with a slur over the last three notes. An 8va symbol is positioned below the staff.

]... νο ρ ρα φω ρ ο...[


Line 22



8]ον πα ρος ι[]...κον...[

Musical notation for Line 22: A single staff in treble clef with a common time signature. The melody consists of quarter notes: G4, A4, B4, C5, B4, A4, G4. The lyrics are:]ον πα ρος ι[]...κον...[

Line 23



8]... η τον κα κιε 3 τον ...[

Musical notation for Line 23: A single staff in treble clef with a common time signature. The melody consists of quarter notes: G4, A4, B4, C5, B4, A4, G4. There is a triplet of eighth notes (G4, A4, B4) under the word 'κιε'. The lyrics are:]... η τον κα κιε 3 τον ...[


Line 24



8]... cων ηλ θε ποι γη[

Musical notation for Line 24: A single staff in treble clef with a common time signature. The melody consists of quarter notes: G4, A4, B4, C5, B4, A4, G4. The lyrics are:]... cων ηλ θε ποι γη[

Line 25



8]... α ταυ [τα] τα γαρ ... α[

Musical notation for Line 25: A single staff in treble clef with a common time signature. The melody consists of quarter notes: G4, A4, B4, C5, B4, A4, G4. There are 'x' marks above the notes for 'α' and 'τα'. The lyrics are:]... α ταυ [τα] τα γαρ ... α[

The following URLs, stored in the University of Michigan’s DeepBlue system,⁸⁵ link directly to two audio files that are realizations of this transcription created through Finale’s built-in audio player extracted into WAV format. The first represents a purely vocal realization, using the “choral ah” instrument, while the second combines that first WAV file with the same transcription played using an oboe sound, to loosely imitate the effect of a unison aulos accompaniment. The object of these two recordings is not to create a unique interpretation of the composition partially preserved in P. Mich. inv. 2958, but to

⁸⁵ The stable URL is <http://hdl.handle.net/2027.42/90511>: these are the second and third WAV files listed, “musical_transcription.wav” and “transcription_with_oboe.wav.”

render the papyrus in sound as faithfully as possible within the limits of modern technology:

1. http://deepblue.lib.umich.edu/bitstream/2027.42/90511/6/musical_transcription.wav
2. http://deepblue.lib.umich.edu/bitstream/2027.42/90511/7/transcription_with_oboe.wav.

Performance

On March 1, 2012, I had the fortunate opportunity to present my preliminary arrangement of Part I of P. Mich. inv. 2958 to the amateur choir of the Milford Congregational Church in Milford, NH for the purposes of evaluating the performability of this papyrus in a modern context.⁸⁶ Given the limitations of minimal rehearsal time and the difficulty in performing a fragmentary text, the music proved, for the most part, remarkably comfortable to sing and musically powerful. I present here a brief description of my process in creating this arrangement, a copy of that arrangement, and a description and audio file of the performance.

In order to create a performable arrangement of P. Mich. inv. 2958, I selected only the most coherent section, Part I, and did not transcribe the fragmentary edges of the column. Instead, I attempted to conserve, where possible, entire words and phrases with their associated notation, which frequently necessitated making hypothetical guesses concerning either the *semeia* or text. As such, this version does not attempt to present a paleographically accurate transcription, but instead to convey something of the over-all musical texture of the composition. Therefore, since Part I is most likely an iambic

⁸⁶ Although an amateur group, this choir is comprised of experienced singers who are skilled and practiced sight-singers.

dialogue, I divided the lines between two parts, changing speakers based on the diagonal slashes in the papyrus, the short lines, and, in a few places, for textual or musical reasons (e.g., keeping the $\bar{\omega}$ melismata in the same part while alternating with a second speaker). The score of this arrangement does not indicate any paleographical information and presents the musical and textual supplements without comment for the purely practical reasons that such information would have only confused the performers for whom it was written. Instead, I presented the Greek text in a phonetic transcription, used slurs to indicate words, and an articulation symbol (^) to indicate the accented syllable, so that the choir could understand how to phrase the Greek even though they could not have read the Greek alphabet. I supplemented the basic notation, which was drawn from the transcription presented above, by using a *fermata* and breath-marks to transcribe *leimma* and further indicate articulations of the text, and using eighth-notes to transcribe the melismata in order to indicate that they should be sung more freely and quickly than the surrounding quarter-notes and half-notes. This method worked adequately, although my attempt at phonetic representation of ancient Greek did result in some pronunciation errors and oddities which extended rehearsal time could have resolved. Alternatively, it might have been easier for the performers to have used a translation of the text for performance, even if the fragmentary nature of the text precludes such a translation from making grammatical sense.

On the night in question, the choir was composed of three sopranos and three basses, who performed the first and second parts, respectively. This resulted in a necessary *ad hoc* transposition of the second part down an octave, since the range was far too high for the basses to sing without using *falsetto*. In actual fact, such a transposition might not have been entirely out of character for an ancient Greek performance since we know that transposition to suit vocal and

instrumental ranges lies at the heart of the Greek *tonoi* as we have them,⁸⁷ as well as since the Greeks viewed an octave as essentially the same as a unison.⁸⁸ In order to facilitate singing the unfamiliar music, the organist and choir director, Benjamin Mague, doubled the vocal parts, using, on my suggestion, a combination of the 8' oboe and 8' celeste stops to imitate the sound of an aulos. In ancient Greek theater, it is quite possible that the aulete would not have remained in unison with the singers;⁸⁹ however, since very few examples of this type of heterophony survive,⁹⁰ and the principles that guided it are poorly understood, I did not attempt to introduce παραφονία into this particular performance. In the future, I do hope to experiment with various possible arrangements of a minimally heterophonic aulos accompaniment; however, time and space do not permit a full exploration of this topic here. The overall impression created by this performance comes closest to Gregorian chant, which is perhaps not surprising given both the melismatic nature of this composition and also that the performers were church musicians familiar with that mode of performance and tonal quality. It is therefore difficult to assess from this performance the degree to which this composition conveys the emotion of the text. The following URL, also stored through DeepBlue at the University of Michigan,⁹¹ connects to a recording of this performance created using a cassette

⁸⁷ E.g., West 1992: 185.

⁸⁸ Landels 1999: 106.

⁸⁹ On the prospects for heterophony in ancient Greek music, cf., e.g., Hagel 2009: passim; Mathiesen 1999: 361–362 and West 1992: 205–207 citing the pseudo-Aristotelian *Problems* 19.39.

⁹⁰ The only possible examples occur in the Euripides' *Orestes* papyrus: Pöhlmann and West 2001: 15–16 and West 1992: 206–207; cf. Prauscello 2006: 140–141. Contrast Landels 1999: 250–251.

⁹¹ The stable URL is <http://hdl.handle.net/2027.42/90511>: this is the fourth, and final, WAV file, titled "papyrus choir.wav."

tape recording device and later digitized into a WAV file using the free software Audacity.

http://deepblue.lib.umich.edu/bitstream/2027.42/90511/8/papyrus_c_hoir.wav.

P. Mich. inv. 2958 Section A

Orestes' Homecoming?

unknown
Rebecca A. Sears

Women
OH _____ PHIL - TA TE! SI - KE - TOO - OH

Men

Organ

3
OH _____ PHIL - TA - TE!

TIS AY PO - TAY - TI NOS

3

5
TA DE LEGACE

5
PE - LAS PAN - TACE OR-RES - TA MOS HI KE-TOO - OH

2/27/12

P. Mich. inv. 2958 Section A

8

OH PHIL - TA - TE

8

9

IS AN OH PA PHRA - SAWN PHRA - SAWN OWN

12

12

EH-GE-NE - THAY SOH - TAY - RI - A TIS NOS - TOS GACE DOO - ROH - MOY

12

P. Mich. inv. 2958 Section A

15 PHA - NAY - SACE

DI - DA - XON — DI - DA - XON HOHS —

17 AH - LAW —

OOK EST AH - ELP - TOO — TERP - SIS —

19 DOW ME TI ES PEW DE

OOK AN AY - DAY - AYN — TA DE PA-RON - TAH

P. Mich. inv. 2958 Section A

22

SOWN PE - PHAS - MEN - OWN

EM - POY - AY

22

24

POY - OWN PHOH BAY - THACE DAY - MA

TON EYE-GIS - THOO LE-GACE

24

Chapter Three:

The Practice of Ancient Musical Theory

This chapter presents a musicological analysis of P. Mich. inv. 2958, focusing primarily on Part I, since it presents the most fertile material for such an investigation. This unequal emphasis results, in part, from the longer surviving lines in the top two-thirds of the papyrus, but also, perhaps more importantly, from the complexity and variety of the musical material in comparison to Part II. In the following discussion, I will present the most interesting features of the music of P. Mich. inv. 2958 arranged in rough conceptual groupings. The nature of the material lends itself to a high degree of overlap in the specifics of the discussions; however, I have attempted to discuss important concepts where they are most directly relevant. The analyses presented here are necessarily quite technical: an exposition of the essentials of Greek musical theory relating to this papyrus can be found in Chapter Two, Musical Notation on page 54 and following, and definitions of most important or unfamiliar terms are presented in the Glossary on page xiv and following. I start this chapter with an examination of the rhythm and meter and the related analysis of cadential patterns, then turn to specifically melodic analysis, focusing on the melismata, melodic development, and text setting, and finally conclude by discussing the relationship between Parts I and II through the lens of modulation.

Rhythm

Rhythmic Notation and Metrical Analysis

The rhythm of ancient Greek vocal music was heavily influenced by, but not exclusively limited to, the underlying metrical analysis of the text. In brief, the extremely broad variety of ancient Greek (quantitative) meters depended on the intentional combination and manipulation of the language's intrinsic long and short syllables. In terms of tragedies, specifically, the metrical composition generally can be divided into two broad types: the trochaic and iambic meters employed for speeches and dialogue,¹ and the lyric meters employed by the actors² for sung monologues, somewhat similar to arias, and by the chorus. As discussed briefly in Chapter Two,³ Part I appears to have been written in an iambic meter (possibly a combination of iambic trimeter and lyric iambs⁴) and to contain dialogue between two actors, while Part II, which I have hypothesized contains a choral song, should theoretically contain rhythms from the wide repertoire of lyric metra.

The metrical analysis of this text⁵ is complicated first by the condition of the papyrus, since no entire lines are preserved and the placement of line-beginnings and endings is unclear,⁶ and additionally by the presence of rhythmic

¹ Gammacurta 2006: 202; Prauscello 2006: 105–110; and West 1992: 277–278.

² The actors in Greek tragedy were expected to sing as well, similarly to the actor/singers in, e.g., fully-staged productions of Gilbert and Sullivan operettas.

³ Description of Contents on page 48 and following.

⁴ First suggested by R. Scodel: cf. West 1982: 102–103 and 136–138.

⁵ I am indebted to the assistance of both R. Janko and R. Scodel for their assistance in analyzing the meter of this papyrus. The discussion that follows is still tentative and further work is still required.

⁶ On the non-colometric arrangement of the musical papyri, see Prauscello 2006: 78–83, 117–138, and 166–173; cf. Pöhlmann and West 2001: 7.

signs modifying the *semeia*, which do not always agree with the natural length of the syllable with which they are associated, and by the melismata and textual repetitions.⁷ The following analysis presents the syllabic quantities of the text, and indicates, with a \diamond symbol, the instances where the rhythmic notation or melismata conflict directly with these natural syllable lengths. Since some syllables are quantitatively ambiguous, I have indicated this through the use of the symbols \sphericalangle and \sphericalcap : the first, with the sign for a short syllable on top, indicates that a short syllable is more likely, while the second signifies the opposite. I have specifically not relied on the rhythmic signs (diseme, triseme, tetraseme) to disambiguate otherwise unknown quantities, since, for example, the *semeion* for the short syllable which ends the vocative φίλτατε (lines 1, 3, and 5) is always modified by a triseme, having the duration of three *chronoi*, and therefore conflicts with the metrical analysis. In some instances in Part I, where the notation is preserved but the text is missing, I have hypothesized syllable length based on a combination of any rhythmic indicator in the notation (mainly the presence or absence of a diseme) and the known pattern of quantities in iambic trimeter. Finally, I have indicated the presence of possible line-ends with the symbol | where the pattern of syllable lengths suggests the end of a metrical colon, especially when this coincides with the use of a *leimma* in the notation.⁸

1. $\diamond \bar{\omega}$ φίλτατε [c']ίκετεύ[ω]
2.]τ[]̄. τίς εἶ ποτ' ἦ τίνοϛ v[ε]οϛ[.]̄. [.]̄.
3. $\diamond \bar{\omega}$ φίλτ[α]τε τὰδε λέγειϛ ποτ[....] [.]̄]τξ/

⁷ See Melismata, Melodic Development, and Repetition on page 115.

⁸ See further discussion in Cadences and the Function of the Leimma on page 110.

4. ο]υ πέλας πάντη σο[. .]τα . . ος ίκετεύω[
5. ὦ] φίλτατε
6.] ..ισαν ὦ .πα[. . .]α φράσον φρά[σον
7.]α.ων ἐγένεθ' ἢ σωτ[η]ρία· τίς νόστοϛ
8.]γῆς δευρό μοι ἐκ `·φ·' [. . .] φανείης
9.]λης· δίδαξον δί[.]δαξον ὡς τῶν[. .]
10.] . . οὐκ ἔστ' ἀέλπτου τέρωψις
11.] | πρὸς νῦν
12.]ἄλλο δ' αὖ μ' ἔτι ἔσπευδε[ν] πρὸς ἡ..ς
13.]ει / οὐκ ἂν εἰδείην τάδ[ε] παρόντα
14. θά]μβος ἐμποεῖ |
15.] .σῶν πεφασμένων
16.]τὸν Αἰγίθου λέγεις· τῶν τα[. .] νᾶ[
17.] . κράτη / ποῖον φοβηθεῖς δεῖμα[
18.]

19.]εἰωτι τίν' ἔπι το. [.]οἰ [.. ..].[
20.]ᾶ γνῶμην τ. . τῆ.[
21.] . voc | καφῶς ο̅.[
22.]οῦν παρὸς ἦ [] . κὸν ..[
23.] . ἦ τὸν κάκιετον[
24.] . cων ἦλθε ποῖ γη[c
25.] . ᾶ ταῦ[τᾶ] τᾶ γὰρ . . ᾶ[

Although the majority of Part I does fall naturally into iambic metra and can be analyzed accordingly as iambic trimeters (schematized as: × – ∪ – / × – ∪ – / ∅ – ∪ – //), lines 1-6, 8-9, and 11-13 do not scan comfortably. In lines 1-6 and 8-9, the repetitions of ᾶ φίλτατε, φράσον, and δίδαξον do not fit comfortably within the framework of iambic trimeters. The placement of *leimma* after ᾶ φίλτατε may result from the extended melismata rather than functioning normally as a colometric indicator, even though the phrase could function as a line-end in an iambic trimeter if the final short -ε was scanned as *brevis in longo*. Lines 11 and 12 are even more difficult to understand metrically. In line 11, πρὸς νῦν, which probably started a metrical colon, is followed by blank papyrus for the remainder of the line.⁹ In the following line, the text ἄλλο δ' αὖ μ' ἔτι is written without syllabification or clear assignment of the *semeia*, which makes analysis extremely problematic. A *leimma* is present in the sequence of *semeia*, roughly

⁹ See discussion in the Commentary in Chapter Two on page 70: the phrase should not normally be followed by speaker change.

centered over the α in $\delta' \alpha\bar{\upsilon}$, but it is smaller than normal and lacks a visible *stigmē*,¹⁰ and so it might indicate a pause or lengthening of the preceding *semeion* instead of a line end.¹¹ The sequence of three long syllables followed by three short syllables (εἰδείην τάδ[ε] πα-) simply does not make sense in an iambic metrical pattern. These passages (and possibly others) might fall into the looser iambic patterns used in lyric, rather than spoken, forms. In moments of high emotional impact, Euripides sometimes employs the alternation of iambic trimeter and lyric iambs, and this combination of speaker and meter change might provide an explanation for the metrical difficulties in Part I. I suggest the following tentative colometric analysis:¹² square brackets around metrical symbols indicate passages that do not scan easily into iambic trimeters and may therefore represent lyric iambs. Commentary follows the scansion where applicable.

x - ∪ - / x - ∪ - / - - ∪ - //

]ῶ φίλτατε

brevis in longo

[∪ ∪ - -]
[c']ικετεψ[ω]

if this starts a line, the quantity of -ω is problematic

x - ∪ - / x - ∪ - / ∪ - ∪ - //

]τ[]. τίς εἶ ποτ' ἦ τίνοσ

although there is no *leimma* after τίνοσ, -ος does receive a triseme in the notation, which might indicate line-end

¹⁰ The *stigmē* appears to have been conventionally used over the *leimma* (see footnote 69 on page 73 in Chapter Two). Generally, the *stigmē* was used to indicate the arsis, or metrically weak, half of a metron, and should therefore be found over the first two metrical positions in the iambic trimeter (i.e., $\acute{x} \acute{\cup} -$); however, in P. Mich. inv. 2958, the use of the *stigmē* is irregular and difficult to interpret. Since this may result as much from damage to the papyrus as from the original use of the symbol, I have chosen not to discuss the *stigmē* at length in this dissertation. It is possible that the *stigmē* was used in P. Mich. inv. 2958 to mark the first metrical unit in a single iamb (i.e., $\acute{\cup} -$), rather than the iambic metron. Cf. Johnson 2000: 81-82.

¹¹ See discussion in the Commentary in Chapter Two on page 78.

¹² This analysis generally supports West's conclusion in *DAGM* that an iambic metron and \leq two additional syllables are missing from the left margin of the papyrus; see discussion in Commentary on page 71.

υ - υ - / x - υ - / - υ - //
 υ[ε]οϛ[.]. .[. .]. ω̄ φί]λτ[α]τε

[υ υ υ - υ - / x - υ - / x - υ - //]
 τάδε λέγεις ποτ[....] [. .]τεξ/ ο]υ πέλας

τάδε λέγεις should resolve - υ, not x -, since resolution over word boundaries is usually prohibited; the missing metron seems short for the available space¹³

[- - υ - / x υ υ υ - -]
 πάντη σο[. .]τα . . ος ίκετεύω[

possibly two iambic metra; unclear how this line relates to ω̄ φίλτατε

[x - υ - / x - υ - / - - υ - //]
 ω̄] φίλτατε

[υ υ - - υ - //]
] . . ιαυ ω̄ . πα[. .]α

possibly a line-end after]α because of the triseme and possible *leimma*

[υ - υ - /]
 φράσον φρά[σον

iambic metron, possibly lyric iambs, see below on page 126

x - υ - / - υ υ υ - / - - υ - //
]α.ων έγένεθ' ή σωτ[η]ρία·

resolution in έγε-; no *leimma* after -ρία, but colon-end likely anyway

- - υ - / x - υ - / - - υ - //
 τίς νότος]γής δευρό μοι

[x - υ - υ - -]
 εκ ` . ο . ' [. . .] φανείης

the correction and lacuna obscure the meter, but probably parts of two metra

[x - υ - //]
]λης·

leimma indicates line-end, possibly lyric iambs, but the exact scansion is unclear

[υ - - υ - υ - / - - υ - / x - υ -]
 δίδαξον δί[. .]δαξον ώς τών[. .] . .

¹³ Perhaps the missing masculine genitive noun ending in -ου was a place-name that received extended musical treatment; see discussion of the typically ornate setting of mythological names in Text Setting and the Pitch Height Rule on page 132.

- - υ - / - - υ - / x - υ -
 οὐκ ἔστ' ἀέλιπτου τέρψις]

[- - -]
 πρὸς νῦν

[- / υ - - υ υ - / - - υ -]
] ἄλλο δ' αὖ μ' ἔτι ἔσπευδε[ν] πρὸς η..ς

discussed above, should begin a colon

discussed above, perhaps resolution of a short position in ἔτι due to loss of elision in the musical treatment of the text, originally δ' αὖ μ' ἔτ' ἔσ-

[- - υ - / - - υ υ - / υ]
] εἰ / οὐκ ἄν εἰδείην τάδ[ε] παρόντα

this scans only with resolution across word boundaries in τάδε πα-

x - υ - / x - υ - - / υ - υ - //
 θά]μβος ἐμποεῖ

lines 14 and 15 may be arranged colometrically due to stichomythia

x - υ - / x - υ - - / υ - υ - //
]. cōν πεφασμένων

x - υ - / x - υ - - / - - υ - //
] τὸν Αἰγίθου λέγεις·

no *leimma* after λέγεις but line-end probable

- - υ - / x - υ - - / x - υ - //
 τῶν τὰ [. .] να[] κράτη /

- - υ - / - - υ - / x - υ - //
 ποῖον φροβηθεῖς δεῖμα[

the final metron of this line probably began line 18

A similar colometric analysis of Part II is unfortunately not practical given the constraints of the damage to the text. There is only one possible line end, in line 21 after -voς, and since only three of the syllables in that line have certain quantities, analysis is virtually impossible. The sequences of syllables that are preserved do suggest a lyric meter, rather than the iambic trimeters of Part I or a similar trochaic pattern. Lines 23 and 24 might each contain two bacchiac metra (υ - - / υ - -); however, the quantitative patterns in lines 19-22 and 25 appear to suggest lyric iambs or dochmiacs (x - - υ -), the meter *par excellence* for emotionally-wrought passages in Greek tragedy. Since dochmiacs are

traditionally difficult to scan due to the tendency for extensive resolution of both the long syllables and the *anceps* (× resolved as ∪, −, or even ∪ ∪), in the absence of a substantial passage associated with a colometric boundary, identification of the meter in Part II must remain a matter of hypothesis. Nevertheless, I contend that the lyric meters suggested by the quantitative patterns in Part II support the interpretation of these lines as part of a choral response to Part I.

A comparison of the metrical analysis on pages 98-100 with the Diplomatic Transcription in Chapter Two¹⁴ reveals that the rhythmic notation of P. Mich. inv. 2958, by which I refer here to the use of disemes, trisemes, and tetrasemes, generally matches the quantitative analysis of the syllables. Instances of discontinuity primarily appear in one of three contexts: line ends, melismata, and (two) instances of elaborate text setting.¹⁵ There is no apparent pattern to the use of disemes with unambiguously long syllables set with one or two *semeia*, and in the absence of such a pattern, I am forced to conclude only that in those cases the composer (or scribe) felt that further clarification of the rhythm was warranted.¹⁶ Trisemes and tetrasemes, however, appear to have a primarily cadential function,¹⁷ and so I will discuss their use as such in Cadences and the Function of the Leimma on page 110.

In some instances in P. Mich. inv. 2958, two or three *semeia* set to the same syllable are joined using the *hyphen*, whose function appears to have been to organize small units of *semeia* into rhythmic groupings. In many musical papyri, the *hyphen* is used to subdivide a larger grouping of *semeia*: for example, in Pap.

¹⁴ Pages 61-64.

¹⁵ See discussions in Cadences and the Function of the Leimma on page 110, Melismata, Melodic Development, and Repetition on page 115, and Text Setting and the Pitch Height Rule on page 128.

¹⁶ Cf. Johnson 2000: 77–78 on the same ambiguity in the Yale papyrus.

¹⁷ Cf. Gammacurta 2006: 202.

Oslo 1413a line 2a,¹⁸ M. L. West interprets the grouping $\overline{\Phi\Omega\zeta}$ as an eighth-note followed by two sixteenths (*chronos* = an eighth-note). However, in P. Mich. inv. 2958, the *hyphen* inevitably joins all the *semeia* set to a single syllable, so its function cannot be to clarify rhythmic groupings within a larger unit. Moreover, the composer (or scribe) does not use the *hyphen* consistently, except in that he limits its use to groups of two or three *semeia*. Consequently, I am unclear whether or not the *hyphen* had an actual rhythmic significance – i.e., whether or not it affected the duration of the *semeia* associated with it – or was used similarly to a slur in Western notation, to mark a group of closely associated *semeia*. The prospect of a comparison to a modern slur does raise the question of articulation: were groups of *semeia* with or without the *hyphen* articulated differently? If yes, was this articulation only relevant to the aulos accompaniment or also matched in the vocal part? Unfortunately, to my knowledge, articulation and other subtleties of performance practice (dynamics, phrasing, breath placement, etc.) are generally discussed only in relation to exceptional features of instrumental virtuosity,¹⁹ and not in relation to vocal performance and the relationship between music and text. My suspicion is that in P. Mich. inv. 2958 the *hyphen* was used irregularly, as with the *diseme*, when the composer felt further clarification was necessary to aid interpretation of the *semeia*, and that his use of these symbols might be idiosyncratic.

I will now discuss, by way of *exempla*, two specific uses of the *hyphen* in combination with the (non-cadential) triseme as illustrative of the challenges inherent in the interpretation of the more complex uses of the rhythmic symbols in P. Mich. inv. 2958. The first example concerns the notation for the syllable -του

¹⁸ =DAGM 39.

¹⁹ As, e.g., the use of the *syrinx* by professional auletes, discussed in Chapter One, footnote 82 on page 24.

in line 10: $\overline{\text{AZI}}$. The notation here is particularly significant, since it appears that the scribe originally wrote $\overline{\text{AZ}}$ (or $\overline{\text{AZ}}$) and then added the I and enlarged the *hyphen* in a single stroke. Since there is no difference in handwriting or ink, I suspect that the correction was made immediately, and does not indicate a later revision, as in the case of line 5a.²⁰ Regardless, it is clear that the *hyphen* at both stages was intended to include the entire group of *semeia* and the durational sign; however, the triseme over Z may have been augmented from an original diseme. The interpretation of this group of *semeia*, then, focuses primarily on whether or not to interpret the triseme as indicative of the duration of the entire group of *semeia*, or as affecting only the Z, over which it was written. In this instance, in the transcription in Chapter Two, I decided to apply the triseme to the entire unit, assigning a single *chronos* duration to each of the three *semeia*; however, there are several alternative interpretations, which may, in fact, be equally probable realizations of the rhythmic notation. Figure 3.1 illustrates these different alternatives: Option A, the realization I used in the transcription; then Option B, an alternative, applying the triseme only to Z; and finally Option C, an even more hypothetical reconstruction, assigning a triseme duration to the entire group with an unequal distribution over the three *semeia*.

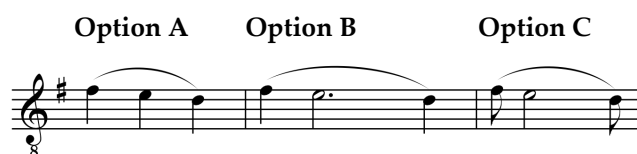


Figure 3.1: Rhythmic Realization of the Notation for -του in Line 10

The lack of clarity in interpreting $\overline{\text{AZI}}$ does not, in my opinion, result from any imprecision in the use of the *hyphen* and triseme, but rather from our limited understanding of how these symbols were applied in practical circumstances. I

²⁰ See discussion in the Commentary in Chapter Two on page 74 and in *Melismata, Melodic Development, and Repetition* on page 74.

have no doubt that the composer, scribe, and performers would have known precisely how to realize the rhythm in this circumstance. It is possible that the composer/scribe felt that the original notation of \overline{AZ} , realized as either two quarter-notes or a quarter-note followed by a half-note, created too strong a cadential feeling mid-colon, since Z is *mesē* in the Hyperionian *tonos*, especially after the notation of the preceding syllable, which also ends on *mesē* ($\overline{\overline{Z}}$), and therefore changed the notation accordingly; however, this must remain pure speculation. Nevertheless, my preference for Option A was partially influenced by avoiding the appearance of a cadence in this location. I do think that it is probable that one important function of the *hyphen* was to distribute a rhythmic value equally across a group of *semeia*, especially when the durational indicator (diseme, triseme, or tetraseme) was centered over a grouping of two or three *semeia*.²¹

In the second example that I would like to discuss, the notation for the syllable - $\nu\epsilon\iota$ - in line 8, I have made a completely different interpretive decision regarding the rhythm. This particular notation is paralleled in lines 10 and 14, and inverted in line 19, and my reasoning for this example should be extended to cover those passages as well, since I have chosen to transcribe them all with the same uneven rhythm. The notation given by the papyrus in line 8 is this: $\overline{\overline{AZ}}$, where the triseme is clearly centered *only* over the first *semeion*. This raises the interpretive question of whether to assign a value of three *chronoi* only to the A or to total duration of both *semeia*, and if the former, what value should then be assigned to Z. Essentially, does the *hyphen* have the function of linking the two *semeia* so closely that a modification of the duration of one *semeion* applies to both? In other instances of the combination of a *hyphen* and diseme or triseme,

²¹ E.g., $\overline{\overline{AZ}}/\text{-}\rho\omicron$ in line 8, interpreted as two eighth-notes, since the syllable is short.

the durational indicator is centered over the entire group of *semeia* and therefore most likely provides the duration for the group as a whole.²² However, in line 8 and its parallels, the durational indicator was clearly drawn over only one of the *semeia*. Therefore, in the transcription in Chapter Two, I have chosen to interpret the triseme in $\overline{\text{Z}}$ as applying only to the first *semeion*, and assigned a value of one *chronos* to Z since it lacks any other rhythmic indicators. Figure 3. illustrates



Figure 3.2: Rhythmic Realization of the Notation for -vel- in Line 8

three different rhythms transcribed into Western notation: Option A reproduces the interpretation of the rhythm of $\overline{\text{Z}}$ which I preferred in the transcription; Option B interprets the triseme as applicable to both *semeia* and assigns them the same duration; and finally, Option C interprets the triseme as the total duration of the two *semeia*, but suggests an unequal division of the three *chronoi*.

The final rhythmic symbol employed by the composer/scribe of P. Mich. inv. 2958 is the dicolon (or colon), a symbol apparently borrowed by the musical notation systems from metrical notation, where it typically indicates colon boundaries. The function of the dicolon in the musical papyri is generally assumed to be similar;²³ however, A. Bélis has advanced the theory that it might have rhythmic function as well, indicating an ornament similar to a grace-note appoggiatura.²⁴ There are three examples of the dicolon in P. Mich. inv. 2958, and in all of them, the placement of the symbol in relation to the surrounding *semeia*

²² See the preceding footnote for an example; however, many groupings of two *semeia* in P. Mich. inv. 2958 lack a durational indicator entirely.

²³ Cf., e.g., Anderson 1994: 207; Johnson 2000: 80; and West 1992: 267–268.

²⁴ Bélis 2003: 552.

is slightly different. The first occurrence appears in line 7 over the final syllable of σωτηρία, where the dicolon appears to mark both a large upward jump of a major sixth ($\xi' \Phi = c'-a'$), as well as a colon boundary.²⁵ The dicolon is positioned above and to the immediate right of the *semeion*, in the same level as the other rhythmic indicators. I think that, perhaps, the absence of the *leimma* at this colon end may result from the use of the dicolon, which could have been preferred because of the large interval between the two *semeia*. Since the dicolon probably lacked the pause and elongation implied by a *leimma*,²⁶ its use here may indicate that the composer desired as brief a pause as possible between the two notes in order to exaggerate the large upward jump.

The second example occurs in line 15, where the dicolon appears over the third syllable of πεφασμένων, and is written at the same level as the other *semeia*: :ZI. In this instance, the dicolon probably does not indicate a colometric boundary, since it precedes the two *semeia*. Another function of the dicolon was to clarify the division of *semeia* among syllables;²⁷ however, this function is also unlikely, since there should be no confusion about the distribution of *semeia* over πεφασμένων, which is set with the relatively simple, but musically pleasing, phrase | | :ZI Φ [= d'-d'-e'-d'-g]. It is possible that this dicolon is actually a damaged |, which would have set the short syllable -μεν- with a group of three *semeia* (probably an eighth-note triplet); however, close inspection of the papyrus under a microscope does not reveal any damaged or missing fibers. The final alternative, which is what I have represented in my transcription in Chapter Two, is to interpret the dicolon as modifying the rhythm of the following *semeia*.²⁸

²⁵ See Commentary in Chapter Two on page 76, and discussion above on page 102.

²⁶ See discussion in Cadences and the Function of the Leimma on page 110.

²⁷ Anderson 1994: 207; and West 1992: 267–268.

²⁸ See footnote 24 on page 108 above, and also the Commentary in Chapter Two on page 79.

This interpretation presents the dicolon as marking a type of ornamentation of the melodic line, similar to an appoggiatura or grace note. The final use of the dicolon in P. Mich. inv. 2958 occurs in Part II in line 22 for the syllable -ov. The notation here is similar to the occurrence in line 7: $\overline{\Phi}$. In this instance, the dicolon surrounds the right end of the diseme, and probably has a colometric function. However, line 22 contrasts with line 7, since the following interval, which rises by only a whole-step, is unlikely to have motivated the use of a dicolon instead of a *leimma* at line end. Therefore, I think it is probable that the dicolon here marks a colometric boundary within a larger metrical period (i.e., not a line end). Such a function supports the interpretation of Part II as a choral ode in an unidentified lyric meter (or meters), where the use of a dicolon to clarify the metrical analysis, and hence the rhythm, would likely be warranted.

Cadences and the Function of the Leimma

In the preceding discussion, and also in Chapter Two, I have frequently alluded to the *leimma*, a symbol which apparently marks the ends of metrical lines in P. Mich. inv. 2958; however, I have hitherto avoided a full discussion of this symbol since it is closely associated with the musical cadences that also coincide with line ends, and may affect interpretation of how these cadences were treated both rhythmically and musically. In all but three instances, the *leimma* is preceded by a *semeion* with an indicated triseme, regardless of the natural quantity of the associated syllable in the text, which is a strong indicator of metrical line end. In the two of the three remaining instances (lines 8 and 9), the *leimma* is preceded instead by a tetraseme, the only secure examples of this

symbol in the musical papyri.²⁹ In the two instances where *leimma* is preceded by a tetraseme, the *leimma* itself receives a diseme, which likely indicates that the usual pause between lines should be exaggerated. The final example of the *leimma* occurs in line 12, where it probably does not have cadential function.³⁰

The *leimma* originated as a way to mark a rest or pause, especially in the absence of textual cues;³¹ however, in P. Mich. inv. 2958, the *leimma* appears to have the additional purpose of indicating metrical line-ends when they occur in the middle of the column.³² In lines 15 and 16, where colon end and line end probably coincide, the *leimma* is not used, nor does it appear before the three instances where a diagonal slash marks a change in speaker. It seems improbable that the *leimma* must be used to indicate the end of a metrical colon, since the number of appearances of this symbol (confirmed or suspected) is fewer than the expected number of line-ends in a passage of this length. This suggests to me that in addition to signaling a colon boundary, the *leimma* provides an indication of how the two cola relate to each other. This relationship is probably rhythmic, in that the *leimma* indicates a pause; however, the length of this pause, and whether or not colon boundaries without a *leimma* also lacked a pause, cannot be determined from the papyri, and was probably a matter of performance practice. Unfortunately, the Greek writers on music theory were generally silent in matters of performance practice, which may well have varied greatly depending on the time-period and location of performance. It does seem clear that in P.

²⁹ See discussion in footnote 59 in Chapter Two on page 60.

³⁰ See discussion in the Commentary on page 78 and in Rhythmic Notation and Metrical Analysis on page 100.

³¹ Cf., e.g., Anderson 1994: 207–208; Gammacurta 2006: 202; Johnson 2000: 81; Prauscello 2006: 12–13; and West 1992: 266–267.

³² Although not always consistently: in lines 2 and 16 the *leimma* appears to be missing or simply not used after a triseme at the end of a metrical colon.

Mich. inv. 2958 the *leimma* was associated with a cadential use of the triseme and tetraseme, probably as part of a rhythmic formula to mark the ends of certain metrical cola.

The musical phrases that precede the *leimma* often seem to have a similar cadential impression, even if the final note is not *mesē* or the fourth below.³³ In P. Mich. inv. 2958, I have identified sixteen possible cadences (i.e., the ends of metrical cola identified through the metrical analysis on pages 98-100) where the *semeia* are present. A relatively wide variety of *semeia* appear as the final note in a cadential situation in Part I:³⁴ ζ four times,³⁵ Z and υ three times,³⁶ ϑ and A twice,³⁷ and Ι and ϕ once.³⁸ This list shows that the preferential cadences appear to fall on the note a third below *mesē* (ζ), *mesē* itself (Z), and the third above *mesē* (υ), with secondary emphasis on *paramesē* (A) and the fourth above *mesē* (ϑ). Moreover, out of these seven pitches, only two (*mesē* and *paramesē*) are the fixed notes of a tetrachord. If there are any conclusions to be drawn from these numbers, I suggest that they imply that cadences within a section (i.e., non-final cadences) could employ a wide variety of scale degrees. It is possible that, in fact, the fixed notes of tetrachords were actually avoided at most line-ends within a larger stichometric passage in order to postpone a sense of final cadence until the end of a larger grouping of lines. Without a complete text, it is impossible to assess whether or not the five instances where the final note of the cadence falls on a tetrachordal boundary occurred at more significant articulations of the text

³³ These two notes appear to have had primary cadential function in Greek music: West 1992: 193–194, 209–211 and 215.

³⁴ Since there is only one identifiable cadence in Part II, I have restricted my discussion of cadences to Part I.

³⁵ Lines 1, 3, and 5 for the same text and line 7.

³⁶ Z in lines 2, 8, and 14; υ in lines 4, 10, and 11.

³⁷ A in lines 6 and 13; ϑ in lines 16 and 17.

³⁸ Ι in line 9; ϕ in line 15.

(e.g., ends of sentences or sentence groups), but it is tempting to hypothesize that this type of differentiation did occur.

In eleven of these cadential phrases,³⁹ enough of the preceding *semeia* survive to examine how such cadences were approached, at least in P. Mich. inv. 2958, in somewhat greater detail; however, the variety in cadential patterns and the relatively small number of cadences hinders drawing firm conclusions about the nature of cadential gestures in a broader sense. The intervals between the penultimate and final *semeia* range from a unison to a perfect fifth, and if any conclusions can be drawn, it is that unison or step-wise motion into the cadence is the least frequent type: only two out of the eleven instances. Seven of the eleven involve motion by a major or minor third (although three of these are the identical phrases, in lines 1, 3, and 5), with the larger intervals (a fourth and two fifths) making up the final three examples. These cadences approach the final *semeion* from either direction, usually depending on the location of that note within the available scale: i.e., lower notes are approached from above and vice versa. The cadences ending on the two highest pitches (Ϝ and ϑ) are approached from below by a fourth and fifth, respectively; however, this may be a coincidence. In line 11, the group of three *semeia* that probably set the final syllable in a trimeter are AZϜ, which would give the interval of a rising major third into the final *semeion*; however, since all three of those *semeia* are dotted, any conclusions from line 11 alone would be premature.

Figure 3.3 presents examples of three different cadence patterns from P. Mich. inv. 2958, drawn from lines 7, 8, and 15. The cadence on φίλτατε in lines 1, 3, and 5 is discussed below in Melismata, Melodic Development, and Repetition

³⁹ Lines 1, 2, 3, 5, 7, 8, 10, 14, 15, 16, and 17.

on page 117, and the cadence in line 16 is closely related to the setting of the name Aigisthus, discussed in Text Setting and the Pitch Height Rule on page 132.



Figure 3.3: Cadential Patterns in Lines 7, 8, and 15⁴⁰

The cadence in line 7 is significant because it plays with *mesē*, but then settles on the third below, *z*, which is prominent in both Part I and Part II. The cadence in line 8 is possibly the closest example in the surviving portions of P. Mich. inv. 2958 to a final cadence, with the strong emphasis on *mesē* introduced by step-wise motion. Although the perceived strength of the cadence might be a product of applying a modern sense of Western harmony, which shares similar cadential patterns, I think that the rare use of the tetraseme does support interpreting this cadence as more intensely closural than some of the other cadences in P. Mich. inv. 2958. The third example, from line 15, demonstrates a cadence with a significant intervallic difference between the penultimate and final notes. I am unclear whether or not this drop to the lowest pitch of the scale would have drawn attention to a specific emotion associated with the text; however, in ancient Greek musical theory descending intervals were generally viewed as a relaxation of tension.⁴¹ It is nevertheless tempting to conclude that the musical setting relates in some fashion to the text, *πεφασμένων*, of *the things that have been revealed*; however, the text is too fragmentary to draw any confident inferences about the relationship, since the antecedent of *πεφασμένων* is unknown, and therefore I have not discussed this particular word in the section

⁴⁰ For all musical examples, the Greek *semeia* are given directly below the modern notation, aligned as closely as possible. Conjectures are indicated by an x-shaped note-head.

⁴¹ See footnote 56 on page 59 above.

on Text Setting and the Pitch Height Rule on page 128 and following. In conclusion, P. Mich. inv. 2958 displays a wide variety of cadential patterns which resist generalization. While this is not, perhaps, surprising, it does reinforce the impression that ancient Greek music was not, at least in the Roman period, entirely formulaic, and could demonstrate a great variety in melodic phrases even within a relatively limited scale of seven pitches.

Melody

Melismata, Melodic Development, and Repetition

Possibly the single most significant and unusual musical features of P. Mich. inv. 2958 are the three melismata composed for the vocative article ω in the phrase ω φίλτατε in lines 1, 5, and 5a, see Figure 3.4.⁴² A fourth melisma for this syllable must be missing in the broken-off left margin of line 3 before the

Figure 3.4 consists of three musical staves, each with a treble clef and a key signature of one sharp (F#). Above each staff is a line of Greek text with a long note (omega) under the first syllable. Line 1:] . ω . A Z A. Line 5:] ζ . i . à z̄ υ Z A. Line 5a: ϑ υ Α υ Α Ι Ζ ζ Ζ Ι . Α ζ ω ζ Α. The melismata are represented by a long note on the staff, with a horizontal line above it indicating the melisma's extent.

Figure 3.4: The ω Melismata

⁴² “o dearest friend”; however, if the addressees were related, ω φίλτατε would be best translated contextually as, e.g., “o dearest brother” or “o dearest son”: without knowing the specific identities of the characters, it is nearly impossible to translate such an idiomatic phrase.

vocative φίλτατε.⁴³ Assuming that this fourth melisma was at least as long as those in lines 1 and 5 (six and eight notes/*semeia* respectively), it seems reasonable to conjecture that it took up most, if not all, the missing papyrus on line 3. There are two logical possibilities for restorations of the missing melisma in line 3: first, it could have exactly duplicated the line 1 melisma, as in the responsion for φράσον discussed below (see page 126); or second, it could have introduced one or two *semeia* to the line 1 pattern, possibly a slightly different ordering of the *semeia* in line 5. I think it is highly unlikely that this melisma exceeded the eight *semeia* of line 5 on the basis that this is already a long melisma by ancient Greek musical standards.⁴⁴

The three $\tilde{\omega}$ melismata that do survive each lead directly (up a half step: A to $\upsilon = f\#'$ to g) into the two descending (major) thirds of the precisely repeated notation for φίλτατε [$\tilde{\omega} \dot{z} \bar{z} = g'-e'-c'$].⁴⁵ This sequence is followed by a *leimma* (securely read in lines 1 and 3, falling in a lacuna in line 5), which, in this context, seems more likely to function similarly to a fermata in modern notation than instead of marking a line end, which appears to be the normal function of this symbol in this papyrus.⁴⁶ The *leimma*, therefore, appears to emphasize the artificial lengthening of the final short syllable of the vocative, φίλτατε, to three *chronoi*, signaled by the *triseme*. Alternatively, the *leimma* could indicate the end of the extrametrical passages resulting from the melismata and the return to the

⁴³ There is a fifth melisma, partially preserved in line 6, that also probably sets $\tilde{\omega}$; however, it lies on the edge of a significant lacuna, so, in the interests of space and clarity, I will not address it here. The four *semeia* that can be read (υ AZA) do suggest that this melisma interacted with the other $\tilde{\omega}$ melismata on some level.

⁴⁴ Johnson 2000: 75.

⁴⁵ In fact, one of the primary arguments in favor of restoring φίλτατε at the beginning of line 3 is the recurrence of that specific set of *semeia*: in line 1, the \dot{z} falls mostly into the lacuna but the traces that remain support the reading.

⁴⁶ See my full discussion in Cadences and the Function of the Leimma on page 110.

normal correspondence of rhythmic and metrical patterns. In either case, the *leimma* might have the further function of indicating a short pause, similar to a breath mark in modern notation, after φίλτατε.

In and of themselves even without the melismata, the setting of φίλτατε on two descending major thirds is remarkable. While to a classically-trained Western musician, the sequence A-Ϝ-Z-ξ [f#'-g'-e'-c'] sounds strongly cadential, since it outlines a familiar type of cadence (V⁷/V-V-I); however, the function in terms of ancient Greek tonality is more ambiguous and complex. The two major thirds bracket Z [e'], which has the function of *mesē* in the Hyperionian scale; however, the degree to which *mesē* should be interpreted as having the same force as the tonic of a modern scale is open to debate.⁴⁷ In terms of a tetrachordal analysis, in which the more significant notes are the fixed boundaries of the tetrachords, the two important pitches should be A [f#'] the lowest note in the *diezeugmenai* tetrachord, and Z [e'], the highest note in *mesai*.⁴⁸ The two pitches that bound the perfect fifth g'-c', Ϝ and ξ, are both moveable notes from within their respective tetrachords (*diezeugmenai* and *mesai*), and should, therefore, according to what we know about Greek melodic practice, be relatively insignificant. Yet conversely, the surviving examples of Greek music do show that the moveable notes within tetrachords receive just as much melodic attention as do the fixed outer notes. Perhaps a Greek ear would have heard these pitches as framing, and therefore emphasizing, *mesē*,⁴⁹ where a modern ear automatically de-emphasizes the third of the triad. The use of two stacked thirds is significant also because it is unusual in ancient Greek music, as far as we can

⁴⁷ See Chapter Two, Musical Notation on page 57.

⁴⁸ For a diagram of the Hyperionian scale, see Figure 2.3 in Chapter 2 on page 58.

⁴⁹ Aristoxenus, for example, talks about the importance of recognizing a note's function (δύναμις) as well as its pitch: Barker 2007: 175–192. Cf. Landels 1999: 96; and Levin 2009: 53 and 112.

tell, to have two consecutive jumps (i.e., motion larger than a whole-step) in the same direction. Descending motion, in general, signifies a relaxation of tension,⁵⁰ but it is, unfortunately, impossible to securely hypothesize the emotional impact of this particular phrasing in this particular context without knowing the identities of the two characters.

Returning to a discussion of the $\bar{\omega}$ melismata, the relationship between the line 5 and the line 5a melismata is extremely significant due to the melodic development expressed through this revision. As discussed briefly in the Commentary in Chapter 2,⁵¹ line 5a was added in the normal interlinear space between lines 4 and 5. While the pen and ductus are dramatically different from the rest of P. Mich. inv. 2958, it is quite possible, if not probable, that this addition was also written by the same hand, although at a later date.⁵² Even though they are distorted somewhat by the haste of writing, the forms and manner of writing of some of the *semeia* (particularly ϑ , ζ , and A) are similar. Interpretations of this line have ranged broadly and include the following: an instrumental interlude,⁵³ or an instrumental accompaniment (*παράφρονία*) to line 4.⁵⁴ However, line 5a actually represents a revision to the $\bar{\omega}$ melisma in line 5. Laurent Capron has suggested and I have confirmed, both on autopsy, that the final symbols, previously interpreted as two or three *semeia*,⁵⁵ are in fact the *semeion* ϑ written over the letters $\phi\lambda$, which clearly indicate a return to the original text and notation of line 5. The point at which the singer was supposed

⁵⁰ See footnote 56 on page 59 above.

⁵¹ See page 74.

⁵² Cf. Pearl's conclusion that this is the same hand: Pearl and Winnington-Ingram 1965: 188.

⁵³ Pearl and Winnington-Ingram 1965: 188, mistakenly reading some of the *semeia* as symbols from the instrumental notation system; Pöhlmann 1970: 139; Pöhlmann and West 2001: 143, placing the interlude after $\bar{\omega}$ $\phi\lambda\tau\alpha\tau\epsilon$. Cf. Gammacurta 2006: 201.

⁵⁴ Bélis 1996: x–xi. Cf. Gammacurta 2006: 201.

⁵⁵ See the Apparatus Criticus in the Diplomatic Transcription in Chapter Two on page 61.

to transition to the alternate melisma in line 5a is less clear. I have interpreted the anomalous *stigmai* and *diseme* over the third, fourth, and fifth *semeia* in the melisma in line 5 as indicating that the alternative version began after the fifth *semeia*.⁵⁶ This has the advantage of defining the jump up to the highest and first note of line 5a ($\oplus = a'$) as a perfect fourth, an easy interval to sing,⁵⁷ which nevertheless would give the impression of a dramatic jump compared to the surrounding predominantly stepwise motion.⁵⁸ More significantly, inserting line 5a after the fifth *semeion* on line 5 matches the layout of the papyrus, which would have made observing this transition while singing (or memorizing) from the score extremely straightforward. Given the tendency of this scribe, and also of the scribes of most musical papyri, to observe reasonable care in his placement of the notation vis-à-vis the text, I think it is probable that the location of the first *semeion* in line 5a was deliberate, and corresponded to its intended performance.

While there is no direct method for ascertaining the thought process behind this musical revision, it may be helpful to hypothesize several scenarios that might have motivated such a substantial change to the melody. Such theories include, but may not be limited to, the following. First, if line 5a was written in the same hand as the rest of P. Mich. inv. 2958, perhaps, at some point after the initial composition, the composer gained access to a performer capable of singing a longer and more complex melisma and modified his score accordingly in order to take advantage of, or show off, the capabilities of his

⁵⁶ There are no other rhythmic symbols used on this papyrus within a melisma, so interpreting these symbols here as indicating a difference in duration or articulation for these notes in particular strikes me as being unlikely, especially since the *stigmē* does not have a rhythmic function; see discussion above in footnote 10 on page 101.

⁵⁷ Perhaps even more natural for a trained Greek musician, since the Greek harmonic system is based on tetrachords, whose outer notes always were spaced a perfect fourth apart; see discussion in Chapter Two, Musical Notation on page 54 and following.

⁵⁸ I can attest that these suppositions are confirmed by performance.

performers. Second, perhaps the vocalist singing this part improvised a more complex melisma, during either rehearsal or performance, which the end-user of the papyrus (composer or performance director?) found agreeable, and recorded via dictation.⁵⁹ Third, perhaps a user of the papyrus other than the initial scribe/composer decided that the emotion of the moment called for a cadenza-like setting and wrote an alternative melisma for purely artistic reasons not otherwise connected directly to the requirements of a specific performance. Finally, perhaps line 5a results from the use of this composition in a competitive context, where demonstrating a singer's vocal range and flexibility would be desirable, and was therefore either composed in advance or later recorded by the performer(s) for use in future performance, either by themselves or by other performers. The fact that the original melisma in line 5 was not crossed out or overwritten suggests that the option of choosing either melisma was left open to the individual performer. In my opinion, this implies that P. Mich. inv. 2958 might have been envisioned as a score for multiple performance contexts, rather than written for use in a single performance.

Regardless of the reason for its existence, line 5a represents the single longest melisma known from Greek antiquity by a wide margin. This melisma contained either fifteen or twenty *semeia*, depending on whether or not one counts the first five *semeia* of line 5. The next-longest melisma known from the papyri is a sequence of nine *semeia* in PCtYBR inv. 4510,⁶⁰ an early second-century C.E. papyrus of unknown provenance.⁶¹ The melisma in the Yale papyrus is significant in its own right for the use of rhythmic signs (the hyphen,

⁵⁹ Writing this line from dictation might explain the extreme haste and near illegibility of the *semeia*.

⁶⁰ =DAGM 41. Cf. Johnson 2000.

⁶¹ This papyrus was acquired by the Beinecke Rare Books and Manuscript Library at Yale in 1996 from a dealer: Pöhlmann and West 2001: 136.

diseme, and dicolon) to indicate the relative duration of the *semeia* in the melisma, a feature which P. Mich. inv. 2958 does not share. Nevertheless, this absence does not indicate that the melismata in P. Mich. inv. 2958 were performed with no variation in the lengths of the individual *semeia*, as, for example, the melismata in Gregorian chant, but simply that if there was variation, the composer/scribe did not feel the need to provide specific rhythmic indicators. However, given the specificity of rhythmic notation elsewhere in the papyrus, I am inclined to interpret the lack of rhythmic symbols in the melismata as an indicator that the pitches were all sung for approximately the same length of time, perhaps with some emphasis placed on important notes in the longer melismata (such as the high note Φ in line 5a).

It is quite clear that the melisma in line 5a represents a direct melodic development of the line 5 melisma, and, in fact, preserves its opening and closing sequences exactly. Both melismata play with alternating thirds and step-wise motion in contrary directions: e.g., $\mid A Z \upsilon [d'-f\#'-e'-g']$ ⁶² in line 5 mirrored and expanded by $A \mid Z \zeta Z \mid A Z \upsilon [f\#'-d'-e'-c'-e'-d'-f\#'-e'-g']$ ⁶³ in line 5a. The relationship of the latter melismata to line 1 is slightly less obvious, at least in part because of the two *semeia* in line 1 that fall in lacunae. In my transcription into modern notation,⁶⁴ I have restored the first *semeion* as A [f#'] and the third as Z [e'], which would give the following sequence of intervals: rising half step, descending third, rising whole step, etc.; however, while both of these restorations are consistent with the tiny traces of ink that remain, neither is

⁶² Rising thirds and descending whole-step. I have restored the second *semeion* in this melisma as a Z [e'] to start the sequence two *semeia* earlier: the scant traces of this note on the papyrus are not inconsistent with Z, but could also be A (see discussion in the Commentary in Chapter 2, on page 75).

⁶³ First descending thirds and rising whole-step, changing to rising thirds and descending whole-steps.

⁶⁴ See page 85.

secure enough to use for interpretive purposes. It is possible that the first *semeion* was ζ [c'], as in line 5, which would give an opening interval of a rising fifth.⁶⁵ While this is not impossible, it is, perhaps, unlikely, unless this phrase started a line.⁶⁶ If this is the case, then that opening interval would have given the boundaries for the following melismata, with the exception of the ϑ in line 5a; however, this may not be particularly significant, since most of Part I also falls within this range [c'-g'].⁶⁷ Since, in this papyrus, intervals greater than a fourth are followed by motion in the opposite direction (usually step-wise), either A [f#'] or Z [e'] are possible; however, since this papyrus does not repeat notes in melismata, A [f#'], which is the fourth *semeion* in the group, is much less likely. Moreover, since the small trace of the third *semeion* that does survive, on the lower right of the lacuna, appears to be horizontal, ι [d'] can be eliminated, as can an immediate drop back down the fifth to ζ [c']. Therefore, it seems probable to me that the sequence υ Z A [g'-e'-f#'], descending third followed by rising whole-step, originates in this first melisma and is developed in the subsequent settings of the same word, and, in fact, becomes the pattern by which both the line 5 and line 5a melismata approach the first note of φίλτατε (υ = g'). I would argue that these relationships are consciously exploited and developed by the composer of P. Mich. inv. 2958 since, despite the relatively limited compass, the melody throughout Part I is quite varied, and repetitions of a similar pattern (e.g., the

⁶⁵ There is another rising fifth in line 16, placed between words directly after the emotionally-charged name, Aigisthus, and a rising sixth in line 7 (see discussion below on pages 132 and 102, respectively).

⁶⁶ West 1992: 200. Cf. Cosgrove and Meyer 2006: 70.

⁶⁷ The low note ϕ [g'] appears at the end of line 15 (see discussion above on page 114), which gives a range of an octave and a whole tone for section one. It is possible that other notes in the Hyperionian scale were used but not preserved. I am not certain whether we should accord any significance to the fact that this compass of a fifth centers exactly on *mesē* and is outlined by the descending thirds of φίλτατε discussed above (on page 117).

remainder of line 3 after φίλτατε) may also represent development or reminiscences of these melismata.

Some have concluded from this melisma that P. Mich. inv. 2958 represents a baroque decline from the so-called ‘purity’ of earlier, more restrained, Greek music.⁶⁸ Prior to the “New Music” of the late fifth century B.C.E.,⁶⁹ Greek music purportedly set each syllable to a single note,⁷⁰ and even after this supposedly revolutionary change, the earliest surviving examples (from the third century B.C.E.) use at most two or three *semeia* per syllable. However, I think a negative assessment of the melismata in P. Mich. inv. 2958 is unwarranted on multiple levels, not the least since such an evaluation openly endorses an interpretation of ancient Greek culture that establishes early-to-mid-fifth-century B.C.E. Athens as the model of perfection, and all subsequent developments as indicative of decline. In addition to this methodological objection, there are other valid reasons for not dismissing the melismatic passages of P. Mich. inv. 2958. First, the absence of other substantial melismata from the extant musical papyri does not mean that such passages did not exist, especially in competitive or improvisatory contexts, but merely indicates that this papyrus is exceptional in preserving such a cadenza. Second, references to the “New Music” of the late fifth-century B.C.E., championed most famously by Euripides and Timotheus, suggest a similar melismatic style,⁷¹ even if the only possible example of such music (a tiny fragment of Euripides’ *Orestes*⁷²) appears to have employed a

⁶⁸ West 1992: 202 and 315, characterizing this papyrus as “florid,” a word which has negative connotations applied to style.

⁶⁹ Cf., e.g., Anderson 1973: 194; Anderson 1994: 126–134; and West 1992: 201, 356–372.

⁷⁰ Cf., e.g., Anderson 1994: 123; and West 1992: 245.

⁷¹ Cf., e.g., Landels 1999: 17 and West 1992: 201.

⁷² For discussions of this problematic and controversial papyrus, cf., e.g., Anderson 1994: 214–222; Hagel 2010: 19 and 256–259; Landels 1999: 247–252; Mathiesen 1999: 116–222; Prauscello 2006: 125–160; and West 1992: 284–285.

simpler style. Third, since it is impossible to tell what, if any, influence native Egyptian music would have had on a composer or performer in the Fayum, and it is possible, if not probable, that this exceptional melisma arose from its multicultural context. Unfortunately, we do not know much about the melodic style of native Egyptian music, either since the Egyptians did not develop a notation system and write treatises about music theory, or since such documents did not survive. Finally, given that the date of composition of this papyrus lies a century closer to the codification of Gregorian chant in the eighth-century C.E.⁷³ than to the fifth-century B.C.E. Greek tragedies extolled as the pinnacle of Greek musical output, perhaps a chant-like melismatic style should be expected rather than deemed extraordinary.

The three melismata discussed in the preceding paragraphs are not the only examples of melodic respension that occur in P. Mich. inv. 2958: in fact, repetition, both of words and melody, might be viewed as a stylistic feature of either poet or composer. In addition to the repetition of ὦ φίλτατε, a second word from line 1, ἱκετεύω,⁷⁴ might be repeated in line 4, if A. Bélis' conjecture for the papyrus' ι κ [] is correct. Unfortunately, the papyrus is significantly damaged for both occurrences, so the respension is largely hypothetical; nevertheless, the remaining traces in line 4 do conform to a repetition of ἱκετεύω, which makes good sense as anything in the textual context, as well as fulfilling the need for a verb somewhere in that line. Musically, the *semeia* are damaged even more than the text. In line 1, the *semeion* for the first syllable of ἱκετεύω clearly appears as ζ [c'], followed by ι [d'], a rising whole step. *Semeia* for the final

⁷³ And presumably much, much closer to the early development of Christian chant styles (both Western and Byzantine). The earliest Christian hymns date to the third century C.E.: cf. *DAGM* 59 (=P. Oxy. 1786).

⁷⁴ [*I supplicate* XX], possibly σ' ἱκετεύω [*I supplicate you*] in line 1, but the sigma is completely gone in a lacuna that has removed the top (horizontal) layer of the fibers.

two syllables are essentially gone; however, since this papyrus does appear to follow the pitch-height/accent rule,⁷⁵ the *semeia* for the third (accented) syllable must represent the highest pitch in the word. In line 4, the first *semeion* also is probably a ζ [c'], followed by two (or more) missing *semeia*, and then Ḳ [e']. The distance between these two surviving *semeia* is approximately equivalent to the distance that would be taken up by ἰκετεύω, so perhaps we can take this as the notation for the final long syllable, and, in fact, the *diseme* on Z supports this reading. This would mean that the notation for the third syllable must be Z [e'] or higher,⁷⁶ probably either Z [e'] or A [f#'], but υ [g'] is slightly less likely,⁷⁷ and in the first 6 2/3 lines ϑ [a'] is used only in the cadenza in line 5a, and after that only sparingly, so it seems unlikely here. By combining lines 1 and 4, I have proposed ζ | A Z [c'-d'-f#'-e'] as the setting for ἰκετεύω; however, this is a hypothesis that depends on the repetition of ἰκετεύω, itself a far from secure conjecture.

Sequential repetitions also appear in lines 6 (φράσον, “tell” or “show”) and 9 (δίδαξον, “teach”). Both verbs are aorist imperatives, which might well have held emotional significance in a dialogue between long-parted friends or relatives.⁷⁸ In the first of these, the second syllable of the repetition is missing, and would likely have started line 7, since line 6 appears to have reached the right edge of the column. This is important by itself, since it strongly argues against an exclusively colometric arrangement of the text, which would not have separated syllables belonging to the same word, unless they started a new

⁷⁵ See discussion in Text Setting and the Pitch Height Rule on page 128 and following.

⁷⁶ Repetition appears to satisfy the pitch height rule; see footnote 87 on page 129.

⁷⁷ This would give the following possible, but unlikely, contour: up a whole-step, up a fourth, down a third.

⁷⁸ Of the examples cited by Breitenbach 1934: 195–196, only one involves imperatives, and they are neither an exact repetition nor in the aorist aspect.

metrical unit.⁷⁹ The notation for the first φράσον is unproblematic: A ζ [f#'-c'], a descending augmented fourth.⁸⁰ The first syllable of the repetition is also clearly A, and therefore the notation might have been repeated as well as the text; however, a melisma on the missing second syllable of the repetition cannot be completely ruled out.⁸¹ The metrical analysis presented in Rhythmic Notation and Metrical Analysis on page 102 suggests that, if this line was iambic trimeter and not lyric iambs, either the first or the second φράσον must have been extrametrical, since scanning both creates an apparent discontinuity in the metrical colon that overlaps lines 6 and 7. A four- to six-*semeion* melisma on the missing syllable -σον would utilize the unfilled space in the papyrus implied by the metrical analysis and also suit the emotional quality of the lyric passages.

The second example of a repeated imperative is more problematic for several reasons, mostly relating to the damage to the papyrus along the central fold. The text of the first δίδαξον is clear, as are the first four of the six *semeia*: υ ι ζ ι [g'-d'-e'-d']; however, the final syllable appears to have a 4-*semeion* melisma, of which the last two *semeia* are obscured by damage to the fibers. While I have discussed the possible readings in the Commentary in Chapter 2,⁸² by way of conclusion, here I suggest that, on paleographic grounds, the final two *semeia* are most likely either A Z [f#'-e'] or O Z [b-e']. Figure 3.5 presents these two options for the first repetition, alongside the paleographically secure notation for the second δίδαξον. I think the first option should be preferred partly on the basis of the melodic contour and partly since the *semeion* O is not

⁷⁹ See footnote 6 on page **Error! Bookmark not defined.**

⁸⁰ For discussion of the possible significance of this tritone interval, see footnote 70 in Chapter Two on page 77.

⁸¹ Such a melisma would probably not have had more than 4, maybe 5, *semeia*, since it cannot have taken up the entirety of the lost left edge of line 7.

⁸² See page 77.



Figure 3.5: Notation for δίδαξον

attested elsewhere in Part I. What is significant about this melisma is that, like the longer $\bar{\omega}$ melismata, no rhythmic indication, such as a hyphen or dicolon, is given. This implies that the duration of the melisma might exceed the two *chronoi* expected for the syllable -ξον when followed by a consonant (i.e., when long by position). I have therefore transcribed these four *semeia* without stems, to indicate a greater freedom in tempo/rhythm, but I doubt that the syllable was held for more than 3 or 4 *chronoi*. Unlike the textual repetitions of φίλτατε, ἰκετεύω, or even φράσον, however, the musical notation for the second repetition of δίδαξον is clearly differentiated (see Figure 3.5). First, the scribe appears to have made a mistake and written an incorrect letter after δι, possibly an α, which was (immediately) crossed out. This might be an indication that the repetitions of the imperatives were added by the scribe/composer of P. Mich. inv. 2958, but is hardly conclusive evidence. Second, the second syllable of δίδαξον, which is naturally long due to the following double-consonant ξ, does not receive a diseme in the first repetition (and there is no sign that damage has obscured one that was originally written), but is clearly written with a diseme in the repetition. This may appear troubling, but likely just results from the general inconsistency in writing the diseme in this papyrus.⁸³ Finally, the four-note melisma on the final syllable has been reduced to a single short syllable.⁸⁴ The two settings of

⁸³ See discussion in Rhythmic Notation and Metrical Analysis on page 104.

⁸⁴ The following letter is clearly a vowel (ω), which indicates that the last syllable should be short, metrically speaking, and the composer gives no contrary indication. This contrast between the

δίδαξον suggest almost a development in reverse, where the repetition functions to emphasize the outline of the first.⁸⁵ As with the repetition of φράσον, δίδαξον also complicates the metrical analysis of Part I, and line 9 might also be best analyzed as lyric iambs, rather than as an iambic trimeter, which would require an extrametrical interpretation of the first δίδαξον.

Text Setting and the Pitch Height Rule

Earlier in this Chapter, in Rhythmic Notation and Metrical Analysis, I discussed the relationship between the natural rhythm of the Greek language and its realization in poetic and musical form. This section addresses a different aspect of the interdependency of text and melody: the relationship between the tonal accents of the Greek language and the structure of the melody of P. Mich. inv. 2958. I will also examine two specific instances where the musical decisions of the composer respond to, or interact with, the text. Observations concerning text setting are naturally subjective, and therefore I have restricted my discussion to the two instances where the most concrete and objective arguments can be made; however, it is my opinion that the composer of P. Mich. inv. 2958 was, in fact, quite sensitive to the emotional content of the text and attempted to emphasize these emotions through his musical language.⁸⁶

repeated | [d'] with its contrasting rhythms might be the reason that the *diseme* appears only in the second repetition, where a mistake in the timing would have been more likely.

⁸⁵ See discussion in Modulation and the Relationship between Part I and Part II on page 135.

⁸⁶ After the reading of the performance transcription discussed in Chapter Two, Dr. David F. Sears, a practicing composer in the Western musical tradition, commented on his surprise at the emotive potential of the music, which he had expected to parallel the remoteness of Gregorian chant. Dr. Sears, while extremely knowledgeable about Western music from both a historical and a performative perspective, does not know the ancient Greek language, and therefore formed his opinion based entirely on the musical score: Sears 2012.

The nature of the relationship between the pitch accents of the Greek language (acute, grave, and circumflex) and the melodic structure of ancient Greek music has been the subject of a fair amount of scholarly debate,⁸⁷ augmented by the apparent contradictions found in the extant fragments. While some texts, like P. Mich. inv. 2958, do appear to follow an identifiable set of rules for setting accented syllables, others display minimal or no regard for the accented syllables, and still others observe the pitch accents only in part.⁸⁸ The observable variety in the treatment of accented syllables in the surviving examples of ancient Greek music suggest that the degree to which pitch accents governed a composer's melodic decisions depended on both the type of text being set and the time period of the composition. Certain types of Greek poetry made use of strophic forms with the exact responsion of meter, but no parallel responsion in the placement and nature of the accents. Since these strophes probably also employed the same melodic setting, presumably pitch accent was not a factor in the creation of the melody. In fact, several of the musical papyri do preserve strophic compositions,⁸⁹ and these melodies do not appear to observe the pitch accents in any coherent fashion.⁹⁰ However, other texts such as Part I of P. Mich. inv. 2958 or the Delphic Paeans, which do not employ strophic composition, do show a tendency to observe the pitch accents.⁹¹ The observation of this so-called pitch height rule also appears to have been more frequent from

⁸⁷ Cf., e.g., Allen 1968: 106–114; Anderson 1973; Anderson 1994: 44–46; Cosgrove and Meyer 2006; Devine and Stephens 1994: 160, 171, 220–223; Horrocks 2010: xx; Landels 1999: 111–113; Pöhlmann and West 2001; and West 1992: 197–200.

⁸⁸ Cosgrove and Meyer 2006; Pöhlmann and West 2001; and West 1992: 198–199.

⁸⁹ E.g., *DAGM* 2, 3, 8, 9, and 58; however, in most of these cases, non-agreement has been used to diagnose a strophic composition.

⁹⁰ Cf., e.g., Anderson 1973: 193–194; Devine and Stephens 1994: 166–167; Landels 1999: 124–129; and West 1992: 198–199.

⁹¹ Cf., e.g., Anderson 1973: 193; Cosgrove and Meyer 2006: 72ff.; Devine and Stephens 1994: 167; Landels 1999: 112–235; and Pöhlmann and West 2001.

the second century B.C.E. to the second century C.E.; however, there is a paucity of direct evidence for the early period to support whether or not references to, e.g., Euripides' violation of pitch accent in the opening chorus of the *Orestes* are accurate representations of actual musical practices.⁹² The debate concerning the pitch height rule is complicated by the known decline in the use of pitch accents in normal Greek speech during the late Hellenistic and Roman periods, such that it may well be possible to speak of the observance of accent in a second-century C.E. musical papyrus as a deliberately archaizing feature.⁹³ If so, this archaism apparently conflicts with other modernizing features of P. Mich. inv. 2958, such as the melismata discussed in the preceding section.

The pitch accent system for the ancient Greek language involved differentiating three types of accents: the acute, which was a rising accent; the grave, a falling accent; and the circumflex, which combined the acute and grave and was limited to long syllables. Musical compositions which preserve the accents follow a set of three relatively simple procedures that can be summarized as follows: 1) the accented syllable must be the same as or higher than all other pitches used in setting that specific word; 2) the circumflex, if set with two or more *semeia*, must be set to a falling melodic contour; and 3) after a word-final accent which is not a circumflex, the melody does not fall again until after the next accented syllable.⁹⁴ P. Mich. inv. 2958 appears to uniformly observe these

⁹² On this statement by Dionysius of Halicarnassus in *De Compositione Verborum* 63-64, cf., e.g., DAGM 2; Allen 1968: 108-110; Anderson 1973: 193; Anderson 1994: 123-124; Landels 1999: 248; Mathiesen 1999: 121-122; Prauscello 2006: 18-25; and West 1992: 199.

⁹³ Cf., e.g., Anderson 1973: 197; Anderson 1994: 220; and West 1992: 199. On the shift from a tonal to a stress accent in spoken Greek during the Roman period, cf., e.g., Allen 1968: 119-120; Devine and Stephens 1994: 223; and Horrocks 2010: 162-170.

⁹⁴ West 1992: 199. Cf., e.g., Allen 1968: 108-110; Anderson 1973: 192; Cosgrove and Meyer 2006: 66; and Devine and Stephens 1994: 166.

three rules,⁹⁵ and therefore it can be safely conjectured that the composer of this work was educated in the pitch accent system and was guided by that knowledge in his (or her) melodic composition similarly to how a composer trained in traditional Western four-part harmony has internalized the rules of voice-leading.⁹⁶ However, the observance of the pitch height rule in P. Mich. inv. 2958 does not appear to have restricted its composer's ability to create a persuasive and emotionally rich setting of his (or her) text, as far as we can now understand the expressive qualities of ancient Greek music.

The melodic setting of two particular words/phrases, πάντη in line 4 and Αἰγίσθου λέγεις in line 16, demonstrates the composer's sensitivity to the text; however, these are not the only instances where music reflects some aspect of the text. Other examples of such text setting in Part I are frequent: ὦ φίλτατε in lines 1, 3, and 5; the repetitions of φράσον (line 6) and δίδαξον (line 9), especially if one of the repetitions results from the composer's manipulation of the received text; the large jump between σωτηρία and τίς νόστος in line 7; the rhythmically complex and graceful melody for the text οὐκ ἔστ' ἀέλπτου τέρψις, "it is not a delight of unexpected..." in line 10; πεφασμένων in line 15; and finally, the high tessitura of the setting of ποῖον φοβηθεῖς δεῖμα, "having been seized with fear by what sort of terror," in line 17. Examples in Part II are harder to identify since the text is so fragmentary and the melodic line less ornate; however, the lower range and simpler setting might have conveyed its own emotional impact, especially after the vocal fireworks of Part I.

⁹⁵ The only possible exception occurs in the notation for Αἰγίσθου in line 16: see discussion in the Commentary in Chapter Two on page 79.

⁹⁶ Although the comparison here is not exact, I hope it illustrates an analogous type of problem: a complex set of rules which a non-specialist might regard as an impediment to free artistic impulse, but which the trained composer has internalized to such a degree that observation of those rules has become instinctual: cf. Hindemith 1941: 12 and 163.

In line 4, the composer manipulates the rhythm of the melody to highlight the meaning of the word *πάντη*, “on all sides,” set as: $\bar{\epsilon} \bar{\upsilon}$. Both syllables are naturally long, and would receive two *chronoi* each without any augmentation; however, the duration of the first syllable is reinforced by a diseme, and the second syllable receives a triseme, which, as I have noted above,⁹⁷ are rarely used outside of cadential formulae. The preceding *leimma* indicates that *πάντη* starts a metrical line, and so the triseme here cannot have cadential function. One effect of the use of the triseme here is to suggest the iambic rhythm ($\sim -$) at a slower pace: since *πάντη* begins with a naturally long syllable in the *anceps*, the only way to preserve the 1:2 relationship would be to use a tetraseme. Instead, since the tetraseme does appear to be reserved solely for the final note of a cadence, the composer uses a triseme, which creates a single *chronos* difference between the two syllables: 1:2 becomes 2:3. The pitches used for *πάντη* are the two highest notes in the scale, *a'* and *g'*, and even transposed down,⁹⁸ fall near the upper limits of the tenor range. It is tempting to suggest that this word provided the opportunity for a bit of stage drama, the five-*chronos* duration of the word permitting the actor time to gesture, or even turn towards, the stage entrances and exits; however, the damage to the remainder of line 4 limits this type of interpretation since what, precisely, is “on all sides” is unknown.

Line 16 is significant primarily because the name it includes, *Aigisthus*, provides the only solid evidence for the plot of this tragedy.⁹⁹ In contrast to the ornate musical lines found in elsewhere in Part I, the setting of this mythological name appears to be relatively simple,¹⁰⁰ with only four *semeia* for the three long

⁹⁷ In Cadences and the Function of the Leimma on page 110.

⁹⁸ See discussion on pitch equivalencies in Chapter Two on page 81.

⁹⁹ See discussion in Chapter Two, Description of Contents on page 48 and following.

¹⁰⁰ Cf., e.g., Devine and Stephens 1994: 479–480; Pöhlmann and West 2001; and West 1992: 203.

syllables (i.e. for six *chronoi*): ι [υ] ΑΙ.¹⁰¹ The impact of the setting of Αἰγίσθου is augmented by the following word, λέγεις (*you speak*), which is set on the highest available pitch in the version of the Hyperionian mode used in Part I. Since λέγεις probably concluded a metrical line,¹⁰² the use of Φ in this position probably had the effect of creating or increasing dramatic tension, since this is the usual significance accorded to upward leaps in the musical theorists.¹⁰³

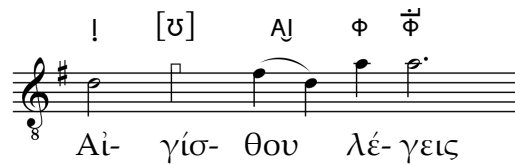


Figure 3.6: Notation for Αἰγίσθου λέγεις

Figure 3.6 illustrates the realization of this phrase in Western notation, and demonstrates the relationship of the words to the musical notation. While the *semeia* appear simple, with none of the melismatic ornamentation of, e.g., οὐκ ἔστ ἀέλπτου τέρψις in line 10, the phrase covers the range of a perfect fifth, rising inexorably from the d' to the a' in an wave-like motion, first up a fourth, then receding more gradually through a minor second and major third, then suddenly surging back up a fifth. The avoidance of *mesē* (Z = e') also appears to have been deliberate, perhaps because the composer wished to avoid any sense of resolution or stability on the potentially contentious name. The meter, which places all but the first syllable of Αἰγίσθου within a single metron, argues for the type of phrasal analysis of the *semeia* for these two words which I have presented here, since substantial textual breaks were, of course, avoided in the final metron.

¹⁰¹ See discussion in the Commentary on page 79 for an explanation of the first two *semeia*. For the purposes of the following analysis, I will use these *semeia*, and I am relatively confident that this reconstruction of the music is correct.

¹⁰² Euripides prefers this word in this position; see Rhythmic Notation and Metrical Analysis above on page 103.

¹⁰³ Cf., e.g., West 1992: 192.

Harmony

Modulation and the Relationship between Part I and Part II

The final aspect of the musical analysis of P. Mich. inv. 2958 that I wish to address in this dissertation is the concept and practice of modulation. As presented by several of the Greek harmonic theorists, modulation, μεταβολή in Greek, can refer to several different types of harmonic change within a musical composition. In fact, the entire history of the development of the fifteen *tonoi* presented in Chapter Two can be understood in terms of the desire among Greek musicians to create a comprehensive scale system in which modulation between the different archaic modes was possible.¹⁰⁴ The Greeks appear to have recognized five different types of *metabolē*: 1) modulation between different species of the tetrachord (e.g., a transition from enharmonic to chromatic); 2) modulation between the conjunct and disjunct tetrachords above *mesē*; 3) modulation between different *tonoi*, usually by the use of a common tetrachord (e.g., Hyperionian to Hypolydian); 4) modulation in range, what we now call transposition; and 5) modulation between rhythmic patterns.¹⁰⁵ The practice of modulation during a composition is credited to the innovators of the “New Music;”¹⁰⁶ however, I suspect that some of the phenomena later grouped under the heading of *metabolē*, especially transposition and rhythmic modulation, were practiced much earlier.

¹⁰⁴ Cf., e.g., Hagel 2010: 5; Landels 1999: 97–100; and West 1992: 223–224.

¹⁰⁵ Cf., e.g., Hagel 2010: 5; Levin 2009: 288–291, especially 288 fn. 98; Mathiesen 1999: 317, 337, 387–389, 533–535, and 540; and West 1992: 194–196.

¹⁰⁶ Cf., e.g., Anderson 1994: 127–132; Mathiesen 1999: 70–71 and 80; and West 1992: 357–358.

Although examples of each of these types of modulation can be found in the extant musical documents,¹⁰⁷ modulation has not previously been discussed in analyses of P. Mich. inv. 2958, predominantly since previous editors and commentators on this papyrus have viewed Part II as a completely independent composition. I would like to suggest that there are three possible instances of *metabolē* in P. Mich. inv. 2958: two instances in Part I, where the composer suggests the outline of a tetrachord that is not part of the normal scale, and finally, at the transition between Parts I and II. I have previously suggested that the two sections of P. Mich. inv. 2958 may have been part of a larger work,¹⁰⁸ and here I would like to provide more evidence in support of this interpretation. The types of modulation applicable to these examples are the second, third, and possibly fifth in the list given in the previous paragraph. There is no indication of *metabolē* in terms of the species of tetrachord, which seems to have primarily applied to works of the Classical and Hellenistic periods,¹⁰⁹ and the fourth type, transposition, relates more to performance than to a written document.¹¹⁰ In the following discussion, I will concentrate on the second and third types, since rhythmic modulation, insofar as it can be identified in P. Mich. inv. 2958, was included in Rhythmic Notation and Metrical Analysis on page 103.

In the musical notation for δίδαξον in line 9 and for οὐκ ἄν εἰδείην in line 13, the composer outlines two different intervals of a perfect fourth that do not form tetrachordal boundaries in the Hyperionian scale used elsewhere in Part I.

¹⁰⁷ Cf., e.g., the discussions of specific examples at Johnson 2000: 72–73; Mathiesen 1999: 42, 55, and 115–116; and West 1992: 195–196.

¹⁰⁸ See discussion in Chapter Two, Description of Contents on page 48 and following, and in Rhythmic Notation and Metrical Analysis on page 103.

¹⁰⁹ Since the use of the enharmonic and chromatic species declined in the Roman period, this type of modulation is likely to have declined as well; see footnote 44 in Chapter Two on page 55.

¹¹⁰ Although, cf., the Berlin *Ajax* papyrus (DAGM 17 = P. Berl. 6870 lines 16–19), which may have been transposed for a female singer.

While I have previously discussed the setting of δίδραξον in terms of melodic respension and extrametricality,¹¹¹ I would here like to focus on the tonality of the interval $\vartheta - \iota$ [g'-d'], a descending perfect fourth. Within the Hyperionian scale of Part I, these two pitches are the lower movable note in the *diezeugmenai* tetrachord and the upper movable note in the *mesai* tetrachord, and therefore do not outline a tetrachord within the primary tonality of the section. However, I suggest that the emphasis placed on this fourth in the repetition of δίδραξον, which clarifies and accentuates the interval, may imply a brief maneuver into an alternative tonality, something like the use of a V^7/V chord in a strong cadence in Western music. The *semeia* ϑ and ι outline the *synēmmenai* (conjunct) tetrachord in the Lydian *tonos*, the *hyperbolaiai* tetrachord in the Hypophrygian *tonos*, and the *diezeugmenai* (disjunct) tetrachord in the Phrygian *tonos*. Of these possibilities, I think the Lydian, with its obvious connection to the Hypolydian *tonos* used in Part II, is the most likely option, if it is even possible to speak of identifying a *tonos* from the outline of a single tetrachord. Additionally, the repetition of δίδραξον occurs at the beginning of a metrical line: the preceding line cadenced unusually on $\bar{\zeta} \bar{\eta}$. Although the melisma on the second syllable of the first δίδραξον is securely in the Hyperionian *tonos*, with *mesē* (Z) as the first and last *semeia*, it is tempting to suggest that the composer was preparing harmonically for the Hypolydian *tonos* used in Part II.

The phrase οὐκ ἄν εἰδείην (*would I had not known*) in line 13 provides a relatively secure example of the second type of *metabolē*: the alternation of the conjunct (*synēmmenai*) and disjunct (*diezeugmenai*) tetrachords above *mesē*. As I have discussed in Chapter Two,¹¹² Part I of P. Mich. inv. 2958 exclusively uses the

¹¹¹ See Melismata, Melodic Development, and Repetition on page 135.

¹¹² See Chapter Two, Musical Notation on page 56 and following.

semeia of the *diezeugmenai* tetrachord, Α Ψ ϑ (Ο') [= f#' g' a' (b')], and not those of the *synēmmenai* tetrachord, which would be notated as Ζ Ε Ψ ϑ [= e' f' g' a']. The notation for οὐκ ἄν εἰδείην is as follows: Ζ ϑ Ζ ϑ ΨΑ [= e' a' e' a' g'f#']. It seems probable to me that, in this instance, the composer was outlining the *synēmmenai* tetrachord at the beginning of the phrase, which probably also begins a metrical line after a change in speaker.¹¹³ While the modulation is not confirmed, since the melody subsequently descends through the *diezeugmenai* tetrachord, as indicated by the final *semeion* for the syllable -ην, the repetition of Ζ ϑ appears emphatic.¹¹⁴ It might seem difficult for us to view this as a true modulation; however, Aristoxenus and others write about the necessity for musicians and musical aficionados to cultivate a proper musical αἴσθησις (*perception*), and one of the examples frequently used to illustrate this phenomenon is the ability to perceive subtle tonal manipulations.¹¹⁵ This gesture towards the conjunct tetrachord may be echoed briefly in line 16, also at the beginning of a metrical line, in the notation for the syllable τῶν (ϑΖ). I am not certain that a modulation from the *diezeugmenai* to the *synēmmenai* tetrachords would have had any specific emotive function, as, for example, a modulation into the relative minor does in Western music (i.e., a brief passage in a-minor in a composition otherwise in C Major), and therefore the function of the modulation might simply have been to provide a greater tonal variety in Part I.

In my previous discussion of the relationship between Part I and Part II of P. Mich. inv. 2958, I have alluded to a possible connection between the *tonoi*,

¹¹³ See discussion of the function of the diagonal slash which directly precedes this phrase in footnote 20 in Chapter Two on page 47.

¹¹⁴ And possibly also ironic, since the phrase appears to be a contrafactual wish.

¹¹⁵ Aristoxenus, *Elementa Harmonica* 39.5-15: da Rios 1954: 48–49 and Macran 1902: 129–130. Cf. Barker 2007: 174 and Levin 2009: 112, 171–172, 242–253, 260–266, 270–272, and 278–95. Compare Hindemith 1941: 156 “A true musician believes only in what he hears.”

namely Hyperionian and Hypolydian. Genuine modulation between discreet *tonoi* appears to have required a tetrachord common to both keys,¹¹⁶ a phenomenon perhaps similar to modulation in Western music within the circle of fifths. Since the change in *tonos* from Hyperionian to Hypolydian has often been adduced as evidence that these two sections formed discrete and independent compositions,¹¹⁷ any interpretation that suggests that these were actually part of a single, larger work, must account for the change in *tonos*. In fact, the two keys not only share a common tetrachord – *mesai* in Hyperionian and *diezeugmenai* in Hypolydian – which is notated in both *tonoi* as $\text{O } \zeta \text{ | } \text{Z } [= \text{b } \text{c}' \text{ d}' \text{ e}']$, but also share the *semeia* C , Φ , and Г [= a, g, and e]. Moreover, the apparently unmotivated absence from Part I of certain scale degrees that might be expected in the Hyperionian *tonos*, particularly the *semeia* O' , O , and C [= b', b, and a],¹¹⁸ might result from a desire on the part of the composer to avoid confusion between the closely-related scales of the two successive passages, especially since O and C are *paramesē* and *mesē* in the Hypolydian *tonos*, and their presence in Part I might de-emphasize the modulation. It is unfortunate that the beginning of line 18 has been lost, since those *semeia* should logically have established the modulation, and might well have introduced the *semeia* not used elsewhere in Part I. Therefore, I propose that, rather than indicating that P. Mich. inv. 2958 was an anthology, these two particular *tonoi*, Hyperionian and Hypolydian, suggest a close harmonic link between the two sections.

¹¹⁶ Cf., e.g., West 1992: 195–196 and 229–230.

¹¹⁷ Cf., e.g., Hagel 2010: 203; Martinelli 2009: 359; and West 1992: 376.

¹¹⁸ Cf. Hagel 2010: 302.

Conclusions

In this chapter, I have presented a somewhat selective analysis of the significant melodic features of P. Mich. inv. 2958, in which I hope to have demonstrated that ancient Greek music of the second century C.E. was both complex and original. Through my discussion of the relationship between the poetic meter of the text and the musical rhythm, I have suggested not only that the previous identification of iambic trimeter as the sole meter of Part I may be unsatisfactory, but also that the metrical relationship, and, as I discuss in the final section of the chapter, also the tonal affiliation between Parts I and II may contraindicate an interpretation of this papyrus as an anthology. Moreover, I assert that the sophisticated use of the various rhythmical symbols implies that the composer of P. Mich. inv. 2958 was conscious of the potential for interplay between meter and rhythm and exploited the rhythmic capability of the Greek notation system to its fullest potential. Additionally, the use of a wide variety of cadential formulae, the intricate elegance of the melismata, including the longest surviving melisma from Greek antiquity, and the employment of sympathetic text setting imply that this composer, although guided by the pitch accents, nevertheless achieved a truly artistic level of freedom in his/her melodic expression. Furthermore, some aspects of this composition, especially the presence of both text setting and motivic development, challenge long-held assumptions about the primitive nature of ancient Greek music. In conclusion, I assert that the close melodic analysis of the surviving Greek musical documents, while confronted with the manifold challenges inherent in dealing with any type of fragmentary text, can nevertheless yield significant and worthwhile results.

Chapter Four:

Composition and Performance

In the previous chapters, I have presented and discussed some interesting features of P. Mich. inv. 2958 in an attempt to contextualize this papyrus in relation to the archaeological environment of the Fayum and in terms of the known characteristics of ancient Greek musical theory. I hope to have shown that, even though our evidence for understanding the day-to-day lives of ancient musicians is relatively scarce, a careful analysis of one of the surviving musical documents can offer the means to approach this difficult topic. The musical papyri remain our closest link to ancient Greek musicians, and even though they do not provide direct evidence through, e.g., the identification of authors, composers, performers, or performances, they can nevertheless indicate the types of concerns shared by music professionals in a Greco-Egyptian context. Prior analyses of the Greek musical papyri have generally attempted to relate them to the few descriptions of music and musicians found in the literary sources, and especially to the “Golden Age” of fifth-century-B.C.E. Athenian culture, rather than localizing the papyri in the Greco-Egyptian context in which they were discovered. This tendency can be seen principally in the frequent insistences that the musical papyri, regardless of their provenance, all originated in Alexandria,¹ a proposition based on the assumption that musical literacy was principally the

¹ See discussion throughout Chapter One, but principally on pages 1 and 37.

domain of a small circle of hyper-elite professionals. I would like to challenge this assumption, and argue instead that knowledge of the musical notation systems was part of a broader professional class, more evenly distributed throughout the Greek sphere of influence in the Mediterranean basin. I strongly believe that the particulars of the notation systems and the manner in which they are applied in the papyri argue convincingly for a more widespread use of Greek musical notation as a tool for the training of musicians² and the dissemination and preservation of musical compositions.

Accordingly, in this final chapter, I would like to propose speculative answers to three fundamental questions regarding P. Mich. inv. 2958: who wrote this document, who used this document, and what the context was for its use. My suggestions are necessarily hypothetical; however, I have endeavored to apply comparative techniques as a means for evaluating these theories, inasmuch as it is possible to find similarities both to other ancient sources and to the more familiar practices of modern classical musicians, where such comparisons seemed illustrative. Above all, I have been guided by the results of my analysis of the papyrus itself and my research into the musical communities present in the Fayum in the second century C.E., which were discussed in the second half of Chapter One. Moreover, I propose that a more extensive investigation of the presence of music and musicians in the documentary papyri and in the corresponding archaeological record should be undertaken in order to further relate the Greek musical papyri to an Egyptian context. Additionally, such a study should endeavor to evaluate to what degree the practice of Greek music in Egypt was influenced by native Egyptian musical practices, especially in

² E.g., P. Mich. inv. 1205 (=DAGM 61), which probably represents a technical exercise for an instrumentalist. Cf. DAGM 7 and 32-37, the musical illustrations from the treatise of Bellerophon's Anonymous.

communities, such as Karanis, where ethnicities and cultural identities commingled in unique and significant ways. I hope that such an inquiry will demonstrate that music remained a vibrant part of the Greek cultural identity, and continued to evolve throughout the Hellenistic and Roman periods. In the current methodological atmosphere wherein literary scholars are increasingly resistant to (artificial) narratives of historical and cultural decline, I assert that we should approach the ancient Greek musical theorists' descriptions of musical degeneration with a similar skepticism.

Thought Experiments in Reconstruction

The Question of Authorship

Throughout this dissertation, I have frequently referred to the creator of P. Mich. inv. 2958 as the "composer/scribe," and I intend, finally, to address this equivocation. In some instances, I have attributed a specific aspect of the papyrus to either the composer or the scribe as if they were strictly independent entities. This type of reference occurs only in contexts where a potentially unified identification is not a matter of concern, since the discussion implicates only one of the two functions: i.e., scribal handwriting tendencies that have no bearing upon the origin of the musical notation, or musical gestures which are the result of the composer, regardless of whoever physically wrote the text. This division is somewhat artificial, reflecting only that the process of creating a vocal musical papyrus involved at least three separate functions: authorship of the poetic text, composition of the music, and the physical, scribal, act of writing. It is quite

probable, in fact, that in at least some of our surviving musical papyri, two or more of these roles were filled by the same individual.³

Since this dissertation focuses on the musical notation of P. Mich. inv. 2958, I have basically ignored the question of the authorship of the poetic text, except to state in Chapter Two that this text cannot be securely identified as the work of a known tragic poet.⁴ A survey of the more notable verbal phrases reveals that the style of this text finds its closest named parallels in the works of Euripides and the comic poet Aristophanes.⁵ I am not certain that the parallels to comic texts are especially significant, unless they indicate a general trend, following Euripides' intertextual relationship with comedy, for tragedies to preserve a more conversational diction. It is tempting to conclude from these comic parallels that the author of the poetic text of P. Mich. inv. 2958 was not a member of the highest, or even mid-level, tier of Greek tragic poets; however, perhaps this author had an audience and/or performative circumstance in mind that was (radically) different from the fifth- and fourth-century-B.C.E. tragic contests in Athens. There remains another possibility, which I have hitherto not discussed, that P. Mich. inv. 2958 preserves a fragment not of a tragedy, but of a satyr play or tragic parody, that presented the Orestes or Erigone myths in a more light-hearted context.⁶ I do not think this is the most probable interpretation of this papyrus, but given the general paucity of evidence about the satyr plays, this possibility deserves at least tangential consideration.

There is no direct indication in the text of a probable time-period for its composition, and since we know that musical re-setting of popular tragic texts

³ Cf., e.g., Landels 1999: 218; Prauscello 2006: 124; and West 1992: 370–371.

⁴ See discussion in Description of Contents on page 48 and following.

⁵ I performed a search for parallels using the *Thesaurus Linguae Graecae*: <http://www.tlg.uci.edu/>.

⁶ Cf. DAGM 10 (=P. Vienna G 29 825 a/b verso), from the third century C.E., which may be a fragment of a Satyr play.

occurred,⁷ it is quite possible that the poetic text predates the musical composition or the physical act of writing of this papyrus by a wide margin. However, I also submit that there is an equal paucity of evidence forbidding the attribution of this text to an unknown Greek poet/playwright from the Hadrianic era,⁸ perhaps even operating in an Egyptian context. A first- or second-century-C.E. date for the text of this tragedy is certainly the more controversial but also, perhaps, the more intriguing option. There is only one observation that can be made with any certainty regarding the relationship of the role of textual author to the other two proposed roles: it is extremely unlikely that the author of the text and the composer of the music were the self-same individual.⁹ Instead, it is most likely that the composer of P. Mich. inv. 2958 selected this text analogously to an opera composer's choice of libretto or librettist: i.e., he¹⁰ selected a previously-written tragedy which appealed somehow to his artistic impulse or some practical requirement, or else requested a newly-created text from a poet who was known to him. Nevertheless, given what little is understood about the creation and production of tragedies after the fifth century B.C.E., this nameless poet was unlikely to have been directly involved in the creation of the musical score, even if he was associated with the group which performed it.¹¹

⁷ Cf., e.g., Johnson 2000: 59; Landels 1999: 219–220; Prauscello 2006: 111–116 and 123–124; and West 1992: 376–378.

⁸ I suggest the reign of this particular emperor because of his well-known philhellenism.

⁹ Cf., e.g., Anderson 1994: 51 and 118 and Landels 1999: 186–187.

¹⁰ For practical purposes, I will employ the masculine pronouns for the unnamed individuals involved in the creation of P. Mich. inv. 2958; however, while the vast majority of authors, composers, and scribes were men, we do know of women who filled these roles, e.g., Sappho.

¹¹ The relationship between lyricist and composer in ancient Greek culture is difficult to assess: for example, we do not know the name(s) of the poet(s) who wrote the texts of the Delphic Paeans, while the composers' names were preserved in the inscriptions that recorded their notation. Conversely, while some of the comedies of Terence preserve the name of their musical collaborator and even the names of the performers, those of Plautus do not. The lack of

The roles of composer and scribe were more likely to have been filled by the same individual, since knowledge of musical notation appears to have been a highly specialized field.¹² Therefore, it is possible that the composer of the music was the same individual who wrote the physical document, P. Mich. inv. 2958. The probability of this identification is increased since, as noted in Chapter Two,¹³ the same hand is responsible for both the text and the musical notation. It appears that in almost every line the writing progressed syllable by syllable,¹⁴ with the spacing between syllables exactly the length required for the corresponding notation. This contrasts with, for example, *DAGM* 57,¹⁵ where there appears to have been insufficient space left between syllables to write the melisma in line 2. The syllable-by-syllable method employed in writing this musical papyrus, furthermore, suggests to me that the composer/scribe had access to a written copy of the text, strongly implying that individuals with functional knowledge of the musical notation system were also traditionally literate.¹⁶ It is, of course, remotely possible that the composer had memorized the text and created his melodic setting separately, but I suggest that this is a less

independent attribution of either role should not, I assert, necessarily be taken to indicate that the same individual composed both text and music, but equally does not exclude this possibility.

¹² E.g., Johnson 2000: 67–68, who asserts that professional musicians were responsible for the notation in all the musical papyri, including, or perhaps especially, those where the hand of the text differs from the hand of the *semeia*. Cf. Pernigotti 2009: 310–311.

¹³ Paleographical Description on page 46 and following.

¹⁴ The sole exception to this rule is the first half of line 12, discussed in the Commentary Chapter Two on page 78, and in Chapter Three, Rhythmic Notation and Metrical Analysis on page 100.

¹⁵ P. Oxy. 4466; since West prepared the editio princeps, I am fairly confident in accepting his description of the spatial orientation of text and *semeia*. Interestingly, Pernigotti categorizes this papyrus as a use copy: Pernigotti 2009: 307.

¹⁶ Recall, for example, the two inscriptions discussed in Chapter One on page 36 and following, which may imply that training in musical literacy was linked to other types of “elementary” education.

plausible scenario, requiring a significantly more difficult interface between the acts of composition and writing.

In a recent contribution to the anthology *La Musa dimenticata*, C. Pernigotti has proposed a tripartite division of the musical papyri into the following categories: *copie da biblioteca*, *copie d'uso*, and *copie miste*.¹⁷ He categorizes P. Mich. inv. 2958 as a use copy,¹⁸ a typology he associates strongly with the practice of musical composition.¹⁹ While I fully endorse the categorization of this papyrus as a practical score, based on a combination of factors including the *mise en page*, informality of the handwriting, and apparently idiosyncratic use of rhythmic and performative symbols, I am slightly more hesitant concerning the implication of his argument that all (or nearly all) use copies are composer's autographs. Nevertheless, Pernigotti's article represents the only attempt of which I am aware to establish a systematic categorization of the musical papyri based primarily on paleographic considerations, and provides many valuable observations about the apparent stylistic and temporal differentiation among the surviving documents. Moreover, his sensitivity to the requirements and strictures of performance demonstrates a keen awareness of the musical papyri as evolving functional documents, rather than static repositories of (obscure) knowledge.

This type of approach to the musical papyri emphasizes the evaluation of each separate papyrus, especially in regards to its authorship and function, as an individual document, rather than attempting to disregard the observable wide variety of *mises en page* in the surviving papyri. Based on this aspect of Pernigotti's survey, I would like to propose two distinct scenarios for the

¹⁷ Pernigotti 2009: 306–307.

¹⁸ Pernigotti 2009: 308.

¹⁹ Pernigotti 2009: 311–312.

authorship of P. Mich. inv. 2958: first, a situation in which the papyrus is, in fact, an autograph score, and second, one in which the composer and scribe were separate individuals. In the absence of external evidence, I do not think that it is possible to choose between them with any degree of confidence; however, I would like to emphasize that both of these options permit, or even assert, that this papyrus was in functional circulation outside of Alexandria. For reasons based entirely on my own purely instinctive reaction to autoptic examination of P. Mich. inv. 2958, I am inclined to think that the first scenario is more plausible, and in either case, it presents more fruitful ground for speculative inquiry. In the following discussion, I consider the implications of these two prospective interpretations in an effort to provide a clearer image of the alternatives for both composition and use contexts for the musical papyri.

The first scenario presupposes that the composer and scribe were the same individual, and that P. Mich. inv. 2958 therefore represents a phase of his compositional process, rather than a “published” document. It should be clear, therefore, that this interpretation favors an identification of the first hand with the secondary hand of the revision in line 5a, which would accordingly represent a reconsideration of the line 5 melisma by the original composer. This first alternative also implies that the corrections to the text and/or *semeia* in lines 3, 8, 9, and 23 stem from the compositional process, rather than exclusively from scribal copying errors. Thus, by this reading, P. Mich. inv. 2958 would represent a substantial draft of the musical setting of a tragedy, perhaps in a nearly-finalized form ready for rehearsal and performance. If this is the case, then this papyrus might provide insight into both the compositional process—i.e., what was written down and when—as well the types of information deemed necessary for the director and/or performers. By this reading, the evidence of P. Mich. inv. 2958 suggests that even substantial changes to the musical notation, such as that

recorded in line 5a, were not sufficient to warrant a complete recopying of the score, as long as the notation remained legible; however, the general clarity of the *semeia* and their alignment with the text also may imply that a complete written copy of the score was produced relatively late in the compositional process, after the majority of the musical phrases or motifs were clearly established. If this is, in fact, the case, then perhaps a composer's initial creative impulses were recorded on cheaper materials, such as ostraka, or on reusable wax tablets.

We have very little direct evidence for the compositional process employed by Greek musicians for any period. Aristoxenus states in the introduction to his *Elementa Harmonica* that he will discuss the topic later in the treatise;²⁰ however, his treatment of the principles of melodic composition does not survive. M. L. West has undertaken a brief reconstruction, based on the known aspects of Greek musical theory, of the various decisions that an ancient composer would have been required to make, such as deciding on a *tonos*, the location of *mesē* (which equates to range), the selection of pitches, etc.²¹ However, the identification of these compositional decisions does not equate to an understanding of actual compositional practice: for example, was the choice of *tonos* assigned the highest or lowest priority in the creative method? Moreover, these questions do not indicate how much variation was injected into the compositional process based on a composer's individual preferences or on the precise performative context of the intended work. Was, for instance, the process of writing a purely instrumental *nomos* substantively different from creating the score for a complete tragedy? I have been assured by a practicing composer in the Western classical tradition that the creative process is fundamentally unique,

²⁰ Aristoxenus, *Elementa Harmonica* 38.15-39.1: da Rios 1954: 48 and Macran 1902: 129. Cf. Levin 2009: 244-245. Cf. Hindemith 1941: 49 on the primarily melodic nature of the Greek scale system.

²¹ See discussion in Chapter Two on page 57.

not only to each composer, but even for each individual work by the same composer.²² Nevertheless, transferring such observations to the ancient world, where the expectations of, e.g., originality, were drastically different from our own, may engage a false sense of familiarity,²³ and therefore should be approached with some degree of caution.

The second authorship scenario for P. Mich. inv. 2958 involves the separation of the roles of composer and scribe into two separate individuals. Since the *semeia* are in the same hand as the text, I use the term scribe rather loosely, to identify the individual who physically wrote this papyrus, rather than to implicate a specific profession. While there were many professional scribes distributed throughout Roman Egypt, it is highly unlikely that the majority of these individuals were even remotely familiar with the musical notation systems. This person, therefore, was most likely to have been another professional musician who prepared a copy of this tragedy for one of two reasons: 1) either he was hired by the composer to produce a near-final version of the work, copied, perhaps, from the composer's initial drafts, or reproduced via some type of dictation; or 2) he copied the score for his own use from an existing manuscript, either found in a guild library or owned by another musician with whom he came into contact. This scenario, while it would provide considerably less insight into the compositional process, would instead suggest the means for the dissemination of a papyrus score within a musical community.

²² Sears 2012.

²³ One must also bear in mind that the history of ancient Greek music is nearly as long as that of Western classical music, and therefore, that compositional methods likely changed drastically over that history: the approach of a second-century-C.E. member of the Artists of Dionysus was likely as remote from the process of a Homeric bard as, for example, the practices of W.A. Mozart were from those of a Medieval troubador.

If P. Mich. inv. 2958 does represent a copy prepared from either an autograph score or a pre-existing manuscript, this interpretation raises the related issues of the existence of “library” copies and the function of non-library copies of musical papyri. Although Pernigotti discusses his category of library copies in terms of the preservation and publication of a musical score,²⁴ the degree to which musical scores were copied with non-practical (i.e., preservational) intent remains controversial.²⁵ While I am inclined to suspect that some musical scores, particularly those of famous or popular compositions, may well have been preserved, the exact context of this conservation remains unknown, although the existence of guild libraries within the Artists of Dionysus has been hypothesized.²⁶ Regardless of the format of the document from which it may have been copied, the informality of the handwriting of P. Mich. inv. 2958 suggests that this papyrus was copied for a professional musician’s personal use, rather than for inclusion in a library or formal musical archive. The form that this utilization of the papyrus may have taken will be discussed in the following section; however, the prospect of the dissemination of a musical composition via the medium of a written papyrus score certainly suggests that knowledge of the musical notation systems was a matter for practical as well as theoretical considerations.

²⁴ Pernigotti 2009: 303, 307, and 311.

²⁵ Prauscello 2006: *passim*, but especially 1–121 and 182–183. Cf. Chaniotis 2009: 85–86; Landels 1999: 219–220; and Pöhlmann and West 2001: 10–21.

²⁶ Cf., e.g., Landels 1999: 220; and Prauscello 2006: *passim*, but especially 51–58 and 68–78.

The Question of Use

The second of the two authorship scenarios discussed in the preceding section raises the related issue of the intended audience of P. Mich. inv. 2958: for whom was it written and why? Regardless of whether or not the composer and scribe were the same individual, this papyrus must have been copied with a specific audience and function in mind. Since the informality of the *ductus* and *mise en page* suggest that this was not a library copy, the implication is that this text was directed at the practical requirements of a professional musician. The obvious interpretation is that this papyrus was a score used to facilitate the production of one or more performances of this tragedy.²⁷ However, we do not have direct evidence for how such a score would have been specifically employed. It is a general observation that the discussion of the notation systems in the writings of those few of the Greek harmonic theorists who address them is restricted to explaining the relationship between the *semeia* and the *tonoi*, not to elaboration on performance practices related to their practical use.²⁸ This omission reflects the perception of harmonics as a science closely related to mathematics by the Greek philosophers who wrote most of the surviving harmonic treatises. Even though these authors were conscious of music as a skilled profession, and in some cases were clearly trained musicians

²⁷ Assuming the unified interpretation of Parts I and II proposed in Chapters Two and Three. If this actually was an anthology, then the general overview would still remain consistent, while the specific scenarios might change; however, instead of imagining a performance of a complete tragedy, one would instead hypothesize a concert performance of selected excerpts from larger works.

²⁸ On Alypius as the primary source for the notation systems, cf., e.g., Anderson 1994: 203–204; Mathiesen 1999: 596–605; and West 1992: 254 and 368–406.

themselves,²⁹ the focus of their discussions of harmonics emphasizes the measurement of intervals and formation of scales in theoretical, rather than practical terms.

It would be a dangerous assumption indeed to presuppose that the ancient Greeks employed a musical score in preparation and performance identically to our own customary usage—i.e., for individual practice, as an aide to memorization, or by the performers and/or director³⁰ during the performance. However, it is not unlikely that their uses were somewhat similar. Since it is well-known that the ancient Greeks and Romans placed a high value on memorization, be it the recitation of timely quotes from the famous poets or the demands of political and forensic oratory, it therefore seems most probable to me that a musical papyrus destined for practical use (rather than, e.g., transmission or preservation of a composition) was employed as a reference for learning both the text and melody in advance of a performance. Since there is no direct discussion of the use of the musical papyri in a practical context, I wish to present two possible comparanda: the use of the instrumental notation system in the inscription of Limenios' Paeon, and a wall-painting from Herculaneum depicting a musical scene. These two pieces of evidence may suggest parallel use contexts for P. Mich. inv. 2958 and provide the basis for expanding upon the hypothetical scenarios presented above.

The use of the instrumental notation system in the inscription of the Paeon of Limenios³¹ suggests that the notation, at least in the second century B.C.E., was, in fact, primarily intended as an *aide de memoire* for the composer, who

²⁹ Principally Aristoxenus: cf. e.g., Anderson 1994: 142; Barker 2007: 113–115; Levin 2009: 50 and 82–83; and West 1992: 4–5 and 226.

³⁰ E.g., the role of the aulete as a quasi-conductor in a tragic performance; see discussion in Chapter One, Textual Evidence on page 38.

³¹ See footnote 126 in Chapter One, Textual Evidence on page 38.

apparently taught his composition to the chorus orally.³² J.G. Landels has suggested that the orientation of the *semeia* in the Limenios inscription over the first letter of a syllable, which contrasts with the placement of the *semeia* in Athenaios' Paeon over the vowels, may also reflect the use of this score by the instrumental accompanist, presumably the kitharist Limenios himself.³³ This is certainly a logical interpretation of the apparently anomalous orientation of *semeia* and text in Limenios' work. It could be argued that this inconsistency results from some aspect of inscribing the scores onto marble plaques; however, it seems most likely that the inscriptions were based on a previously written version of the score, which they reproduced as accurately as possible,³⁴ and therefore that the differing orientation of text and *semeia* in the two Paeans resulted from deliberate choice on the part of the two composers. The incorporation of the musical notation for these two compositions on the public commemorative inscriptions, incidentally, does suggest that at least some visitors to Delphi must have been capable of reading them, perhaps the musicians who competed at the quadrennial Pythian games.³⁵ Regardless, the evidence of Limenios' Paeon may indicate, however tenuously, that P. Mich. inv. 2958 was intended primarily for the use of the vocalists, not the accompanying aulete, since it employs the vocal notation system. Such an analysis might invoke tantalizing mental images of a separate instrumental score; however, this hardly

³² Presumably the members of the chorus, if they were musically literate, and the chorus trainer, who is more likely to have been, would have been more familiar with the vocal system, implying that Limenios' choice of notation systems reflected his own preferences. Contrast Athenaios' Paeon, written for the same festival and chorus, which employs the vocal notation system: *DAGM* 20 and 21.

³³ Landels 1999: 225–226. Cf. West 1992: 254 fn. 3.

³⁴ Landels 1999: 224.

³⁵ These are not the only musical scores preserved in stone: cf. *DAGM* 19, 22, and 23. The first two are hymns, the third is the Seikilos epitaph. Cf. West 1992: 272.

seems certain, since our understanding of the preferences guiding the choice of notation system is not even remotely secure. Nevertheless, the evidence of the Delphic Paeans strongly suggests that musical scores were an integral part of performance preparation, significant enough that recording their existence in stone was deemed imperative on at least one momentous occasion.

Another, equally ambiguous, piece of evidence is provided by a fragment of a wall-painting from Herculaneum (see Image 4.1³⁶) preserved in the Museo Archeologico Nazionale di Napoli,³⁷ which appears to show a woman³⁸ reading



Image 4.1: “Concerto Musicale Herculano”

³⁶ I took this photograph on a visit to the Naples museum on July 11, 2010 during my attendance at the Classical Summer School of the American Academy in Rome.

³⁷ The fragment, titled “Concerto Musicale Herculano,” is assigned museum number 9021. Cf. the brief discussion at Landels 1999: 198–199.

³⁸ Close inspection of the image indicates that the gender is relatively ambiguous: I have based my determination primarily on the delicate jewelry worn by the figure.

from a papyrus while two male musicians play a rather long pair of auloi and an Italiote kithara,³⁹ and two other figures observe from the background. The setting depicted in the image appears to be a peristyle courtyard similar to those found in nearly every upper-class house in Pompeii or Herculaneum; however, since the aulete wears a *phorbeia*,⁴⁰ depicted almost exclusively in professional contexts, and this Italiote kithara appears to be a complex eleven-stringed instrument, I suggest that the performers in this image were, in fact, professional musicians. This increases the possibility that the papyrus held by the seated female figure is actually a musical score of some type, and that the reader might be preparing to sing after an instrumental introduction.⁴¹ Her stance, leaning forward towards the instrumentalists, certainly suggests her inclusion with them as part of the performance group. If this wall-painting depicts a professional concert (or perhaps a rehearsal) in a private setting,⁴² as seems likely, then it suggests that notated papyri might have been used, at least on occasion, as musical scores in the modern sense. However, since there is no indication that this ‘concert’ depicts a dramatic performance of any type, evidenced by the lack of masks or a stage background, the specific musical context depicted here may have little direct relevance to P. Mich. inv. 2958. Nevertheless, the possibility that musical papyri were used in Italy, not just as part of the compositional process, but also as functional scores for rehearsal or performance, suggests that an identical type of document in Roman Egypt may have had a similar function.

Since there is no realistic method for ascertaining the original utilization of P. Mich. inv. 2958, I would like to suggest a possible reconstruction of its context

³⁹ Landels 1999: 168–169 and West 1992: 56.

⁴⁰ Cf., e.g., Anderson 1994: 181; Landels 1999: 31–32; Mathiesen 1999: 218–222; and West 1992: 89.

⁴¹ On such instrumental introductions, cf. e.g., Landels 1999: 56; and West 1992: 205 and 357–358.

⁴² This painting may depict something analogous to hiring a professional string quartet or jazz group to perform at a sophisticated cocktail party.

based on the evidence discussed above and in my prior chapters. The nature of this discussion is intensely speculative; however, I submit that this type of thought-exercise may recommend avenues for future research, especially in terms of a multidisciplinary and comparative approach to the musical papyri, and moreover, might assist in understanding these documents as part of a vibrant professional musical community. Accordingly, I would like to suggest that P. Mich. inv. 2958 was created for the use of the precise category of professional musicians hired in P. Col. inv. 441, the second-century C.E. contract discussed in Chapter One.⁴³ This group of musicians (συντάξις) was employed through their business manager (πραγματευτής), Silvanus, an aulete, to perform in the small village of Alabastrine for eight days. The wording of their contract implies that hiring a smaller part of the group was a possibility, since it specifies the entire company, and further that Silvanus, as the business manager, had a significant leadership role within the organization. These musicians were clearly paid well for their efforts, despite being based outside of Egypt's primary cultural center at Alexandria, and were in demand for lengthy visits to the even smaller communities that surrounded their base of operations, possibly in Hermopolis. This type of performing group, as I suggested in Chapter One, might have been associated with the Artists of Dionysus, the musicians' guild which had a chapter in Alexandria. Nevertheless, I propose that the membership of such a company would have included several instrumentalists, including auletes and kitharists, singers and actors, possibly of both genders, and probably other types of entertainers. I would expect that the exact size and composition of such a group would have varied, as perhaps the individual holding the leadership role, and moreover, that organization around a family unit is not

⁴³ See discussion in Textual Evidence on page 34 and following.

improbable. I also suggest that this type of traveling performance group would have maintained a wide variety of repertoire for their performances – one can hardly imagine a small community employing musicians to perform an identical concert for each of eight days! – and that this variety may have included both the reperformance of famous “classical music” (e.g., the Euripides musical papyri) and new works composed for the occasion by a talented member of the group or imported from contemporary composers throughout the Greek world.⁴⁴ Such a repertoire would have inevitably included a wide mix of musical genres appropriate for performances at all types of public and private festivals, including weddings and funerals, religious processions, and other community gatherings.

In such a context, a musical papyrus such as P. Mich. inv. 2958 could have been used in support of multiple performances over a period of many years and in a large number of communities throughout Egypt. This papyrus may have entered the trade in used papyrus after it reached the end of its functional lifespan, upon the dissolution of the musical group by which it was used, or after demand for that particular tragedy diminished. I think it is unlikely that, given the effort and expense of creating a musical papyrus, it would have been created for a single performance and then discarded. Regardless of how the papyrus specifically came to be reused for an account book by a family in Karanis, I argue that it did not necessarily originate in Alexandria, but rather derived from the broader community in which it was discovered. It seems more likely that, given the connection between the veteran Iulius Niger and the nome capital Antinoopolis,⁴⁵ this musical papyrus was acquired for reuse there. It is even

⁴⁴ Cf. West 1992: 377 concerning P. Oxy. inv. 31.4B131H(4-5)a, a papyrus listing an aulete’s performance repertoire.

⁴⁵ “Gemellus Horion” 2.

possible that, for some reason, the score of this particular tragedy was abandoned after a performance in Karanis itself, which certainly had the necessary cultural and financial resources as a community to employ a troupe of traveling musicians. Reasons for its abandonment or sale as scrap could include damage, carelessness, or even a negative reception from the audience. Such a scenario posits that musical papyri were part of the standard equipment of traveling performance groups, and were employed by them in the process of building and expanding their repertoire. While these documents may have been stored in the company's functional headquarters, it is equally possible that they were carried on performance tours, along with their instruments, masks, costumes, and other paraphernalia.

In the preceding sections, I have attempted to create several differing thought-pictures concerning the composition and use contexts of P. Mich. inv. 2958. I have specifically avoided the discussion of the more traditional types of scenarios, involving hyper-elite musicians in Alexandria operating in the cultural milieu of the Library and imperial Prefects. Instead, I hope to have demonstrated that high-quality music-making in the ancient Greek tradition could, and probably did, occur in the smaller communities like Karanis, that contained a significant Greek-speaking population. It is only logical that these transplanted Greeks brought the important aspects of their culture with them, and music, which pervaded traditional Greek education, religion, and social practices,⁴⁶ certainly qualifies for inclusion in such a category. Nevertheless, for a variety of reasons including the general paucity of clear evidence and the challenges posed by the fragmentary state of the papyri, scholars have frequently discounted the musical aspects of the Greek cultural presence in Egypt. I have attempted to

⁴⁶ Cf., e.g., Landels 1999: 1–23; Mathiesen 1999: 23–157; and West 1992: 13–38.

demonstrate, through the close examination of P. Mich. inv. 2958, that music had as central an importance in that province as it did in mainland Greece at the height of the Athenian hegemony.

I do not propose that familiarity with the Greek notation systems was an absolute requirement for musical proficiency in second-century-C.E. Egypt, but instead hope to demonstrate that such knowledge may have been more widespread than previously acknowledged. The extant musical papyri, while comparatively few in number evaluated against the surviving literary papyri, themselves only a fraction of the documentary papyri, nevertheless exist in higher numbers than might be expected if knowledge of the two musical notation systems was restricted to a limited number of harmonic theorists and hyper-elite musicians. Therefore, P. Mich. inv. 2958 provides a rare glimpse inside the working requirements of mid-level musical professionals in Greco-Roman Egypt, perhaps even allowing us to witness the compositional process of revision and refinement first hand.

Conclusions

In the first chapter of this dissertation, I presented the archaeological context of P. Mich. inv. 2958, examining in as much detail as possible the evidence concerning its discovery in the 1924-1925 excavation season in structure 5006. I propose that this structure might be identified as the same house and courtyard described in several documentary papyri and associated during the mid- to late-second century C.E. with the family of the legionary veteran Gaius Iulius Niger. I conclude, however, that it is unlikely that this family was directly associated with the composition of this musical papyrus, and may instead be

responsible for the document on the verso. In the second half of this chapter, I investigate the existence of musicians and their instruments in the archaeological and papyrological evidence for the Fayum and its surrounding communities in rural Egypt. I propose that this evidence implies that Greek musical traditions were an essential part of the culture of these regions, and further suggest that the multicultural environment may have led to the development of the melismatic melodic style found in some of the Greek musical papyri, including P. Mich. inv. 2958. Most significantly, in this first chapter, I conclude that a village such as Karanis would have had the necessary financial and social capital to appreciate the performance of such a tragedy, and could have imported professional musicians for such a purpose from one of the larger neighboring towns, if, indeed, there were not sufficient musical resources within the local community.

My second chapter presents a new edition of P. Mich. inv. 2958, including a commentary discussing the more difficult readings in this particularly problematic text. I suggest a number of new readings, based on autoptic examination, including a different interpretation of the enigmatic line 5a, now clearly to be understood as a revision of the melisma on ω in line 5. Additionally, this chapter includes two different transcriptions, or translations, of the musical notation of P. Mich. inv. 2958 into modern Western notation. The first offers as exact a representation of the papyrus as is possible, indicating questionable notes through the use of different note-head symbols and including all the fragmentary notation near the broken-off edges of the papyrus. The second represents a “cleaned-up” version of the text and notation, designed for performance rather than paleographical accuracy. Both transcriptions are accompanied by sound files, including a reading of the performance transcription by a small choir accompanied by an organ registered to imitate the sound of an aulos. From these transcriptions, I conclude that the melodic lines of P. Mich. inv. 2958 are

eminently performable, even for singers unfamiliar with the idiom of ancient Greek music, and could easily have been part of the performance repertoire of ancient professional musicians operating in the Fayum area.

In the third chapter, I present a musicological examination of selected interesting features of the musical notation of P. Mich. inv. 2958, including a metrical/rhythmic analysis, and discussions of the various melismata, cadential patterns, instances of text setting, and modulation. Through these investigations, I have demonstrated that ancient Greek music of the second century C.E., at least as represented in this papyrus, was both complex and original, and challenges the assumptions that have been made about the so-called decline of Greek music during the Roman period. Instead, I prefer to interpret the melismatic style as perhaps revealing a transitional stage between ancient Greek music and medieval liturgical chant. Additionally, I confront the assumption of previous editors, that P. Mich. inv. 2958 is an anthology of tragic songs rather than a fragment of a single tragedy, through a combination of metrical and harmonic analysis, suggesting that modulation between the two sections would have been not only possible, but also probable. Furthermore, I conclude that, despite adhering to the pitch height rule, the composer of P. Mich. inv. 2958 nevertheless produced genuinely artistic and expressive melodic lines, responsive to the emotions of the text, even if the specifics of that sensitivity have been obscured due to damage to the papyrus. This chapter attempts to convey an alternative perspective on ancient composition, emphasizing the application of the techniques discussed by the ancient Greek musical theorists to the creation of an attractive musical composition.

In my final chapter, I address the most speculative and controversial aspects of a papyrus document such as P. Mich. inv. 2958: the identity of its author and the context for its use. I hope that the conclusions which I have

drawn, namely that the musical papyri need not necessarily have originated from the cultural hyper-elite in Alexandria, generate future debate concerning the observance of Greek cultural practices in a rural environment, and further provoke a reexamination of assumptions about Greek music that have been held since study of the musical papyri became possible in the late nineteenth century. I contend that ancient Greek musical composition achieved the same level of sophistication and artistic quality as the Greek literary output, and should be considered as an important part of what it meant to hold Greek identity, even in the Roman period. I further suggest that an extrapolation from the evidence provided by the archaeological evidence found in rural Egypt may imply that other provinces in the Roman Empire similarly could boast a high level of artistic accomplishment, and that consideration of the interaction between the various ethnicities and cultures found in these provinces should also extend into discussions of their musical productivity. In conclusion, while this dissertation represents only a partial and necessarily limited investigation into the complex contexts surrounding the production and use of a musical papyrus such as P. Mich. inv. 2958, I strongly assert that the difficulties in such an investigation should not be permitted to outweigh the potential augmentation of our understanding of ancient Greek musical culture.

Appendix One:
Record of Objects, pages 211-216

The following pages contain scans from the unpublished *Record of Objects* for the 1924-1925 excavation season at Karanis. As discussed in Chapter One on pages 4-6, this version also contains handwritten notes about individual artifacts, including inventory numbers. The scans are reproduced with the permission of the Kelsey Museum.

211

5005F

-S-

- F - glass
- G - frags. of bronze handle
- ax2 - 54 carret shaped pot r.r. ribbed 1 T.H.
- bx(2) (48) N.T. 2 tall ribbed neck amphoras (1 kept) with handles at top, slim body XXIV.a
- cx2 - 2 similar but with bigger bellies N.YE.

From east half-low down:

- d - (92) xv.c.i.i globular pot on foot with short squat neck - rr. ²⁰²¹⁸ 9-2902 (2)
- e - (89), xxiii.c.i small 2 handled buff slip amphora on foot, st. up neck and paste. Photo 5-3578 At Michigan 8039
- f - 79, xi.c.i.i ^{N.T.H} deep buff paste bowl on foot steep sides and outturned.

5006A - 26 125

- A - frag. of wax tablet
- B - do. - smaller
- C - Frag. of wooden setoop
- D - Frag. of wooden box ? ~~Food pen (?) At Michigan (3359)~~
- E - ^{socket catch} Wooden handle At Michigan ~~3346~~ 5-1419
- F - 2 thin square pieces of wood, 4 holes on one side
- G - cylindrical wooden box (f)
- H - do do (smaller)
- I - Wooden pin
- J - Spindle whirl
- K - Circular wooden bass
- L - circular wooden box lid
- M - wooden comb (f)
- N - pottery lamp - I a - mark (1).
- O - small pottery lamp frag, VII.

212

-9-

- 5006A
- F - Reed sandla
 - G - Do
 - R - Do with strap 10843 no 847.2517
 - S - coarsely woven basket
 - T - head of terra cotta horse
 - U - G terracotta fraga
 - V - bead f.
 - W - 43943 1095 coin on level with top of circular brick mastaba ^{6th yr. Aurelianus 274 A.D.}
 - X - G sided piece of glass ~~5401~~ 8401 48 545
 - ax3 - 62 VII.d small deep bowl on flat base with outturned rim rough pink paste I.T.H.
 - b - frag. of firestand
 - c - N.T.H. r.f. jug, neck and handle missing - with wood stick as stopper XV.C.II
 - d - globular pot on foot-st. up neck, rim missing r.r.
 - ex3 - (12) XXIV.a Tall amphora tall ribbed neck U.T.R.R. N.T.H
 - f - (kept)(48) XXIV,a do N.T.H.
 - gx(3)(54) VIII.a,c carrot shaped ribbed r.r. 1 T.H. one only kept. 7-2379
 - h - 523 XV.C.II large jug on foot straight up neck r.r. 2 of 7-2389
- 24719 All above pots above level of papyri. The following pots at level of papyri.
- i(55) 55, XI.C.II ^{N.T.H} small deep bowl on foot upright-rim r.r.
 - j (62) VII.d do flat base outturned rim, r.r.
 - k(196) XXXVI,b small pot cover r.r.
- y².
- X - blue glaze
 - Z - textiles-mostly, from level of large group of papyri
 - AA - glass 5341 ^{At Michigano (3407, 3408, 3409, 3410, 3411, 3412, 3415) 3402, 3419} = Harden 243
 - AB - fine glass bowl on foot (1f) more frags. in AA7 5852 ^{5663 J.77.38}
- AA - Harden 550-23739 767-23743
 570-23740 772-23744
 682-23741 873-23745
 729-23742
- 12454-12653
10541-10542
Harden 305

- +10-
- 5006A
- AG - cord net 12654
 - AD x 5 *see other side this sheet* 5 ostraka above level of big papyrus found in sand. 4366-70
7-25/2 5.6027-39 AT U. of M.
 - AE - papyrus high in sand filling on level with ostraka *ca 300 AD*
III-IV cent A.D. 2039-3029 IN CAIRO
 - AF - * P167 (Huss 2877 Papyrus) Papyrus from filling (sebakh mixed with much shakl and textiles) 5.6055-56
 - AG - Reed pen from level of AD and AE At Michigan 73339 5.1381
 - AH- Level above papyri Lower part of male statuette in terracotta
See Butler Archive 14.1 photo - MIT 3-89
 - AI - Headless figure of Harpocrates
See Butler Archive 14.1 photo - MIT 3-89
 - AJ - Ostrakon-figure sketched on buff pot
 - AKx2 - 2 (pot) ostraca 4903 *Bot inscriptions 4717, 24628*
 - AL - 5 beads 76689 IC 6.d; 76934 I LC4bis; d; 77556, V.H. (19), A2.d
778813 *Ennes IV, A7; 78070 Ennes IV, A7.*
 - AM - Bronze figurine (winged male figure)
 - AN - Bronze buckle and pin of lead? 22990 5627-2520
 - AO - Head of terra cotta dog
 - AP - do horse
 - AQ - do horse
 - AR - Arm of terracotta figurine
 - AS - 27 Spindle whorls
 - AT - 4 frags of wax tablets
 - AU - circular box 3f.
 - AV - wooden belt from lock At Michigan (5345) of 5,1419
 - AW - frag. of model wooden door
 - AX - 5 wooden pins
 - AY - frag. of wooden scale pan
 - AZ - 2 wooden clappers
 - AAAA - iron ring
 - AAB - iron point
- * AF - Papyrus 2877. Youss
394. 163 A.D. Javalon
Receipt for dues on
Epitole P. Mich. VI

24-5006A-ADxs Ostraco

	Late III cent A.D.	4366	A333	4.683
		4367	A568	4.684
		4368	A569	4.685
		4369	A570	4.686
		4370	A571	4.687

24-5006A-Ad Pottered with drawing of human figure
AU-1192999

214

-11-

5006A

- AAQ - wooden knob (turned)
- AAD - 3 wooden combs (frags.)
- AAE - pottery disc
- AAF - circular box lid?
- AAG - blue glazed bowl (frag)
- AAH - blue glass
- AAI - glass
- AAJ - textiles 12655 - 12672
- AAK - Fishing net 12673
- AAZ - String for net making 12674, 12675
- AAH - 1 pr. platted blinkers (for cow or bull)

8006/B

- A - 5585 Small amphora shaped glass from N.W. corner foot from bottom - green pointed base amphoretta, class XII At Michigan
- B - head of horse - foot from floor - bones of skeleton
- C - Circular wooden box lid
- D - Pottery lamp - V.C. Cairo museum 52640
- E - small wooden bowl
- F - squat shaped wooden pot
- G - 2 spindle whorls wooden
- H - large wooden strainer with rope attached
- I - blue glass
- J - glass 5876 - Harden 758
- K - small bronze boss set in from slotted and drilled
- L - piece of wood 5-4138
- a - (60), XVI, Ci small hipped jug ribbed r.r. 2 fg. Photo 5-3565 of Melligan

24-5006 E²-A

Ca 114-115	2912	183A.D	2990 ✓
186A.D.	2913 ✓	180-192AD.	2991 ✓ 2983 IN CAIRO
81-96A.D.	2915-5.7525	190A.D.	2992
214A.D.	2916	150A.D.	3004
211A.D.	2920		
14-27A.D.	2921 ✓		2996 ✓
54-68A.D.	2921		2997 ✓ IN CAIRO
138,148,149A.D.	2922		3001 ✓
207A.D.	2923 ✓		2984 IN CAIRO
134A.D.	2927 ✓		2994 IN CAIRO
178A.D.	2928 ✓		2918-5.5932
194;199/200A.D.	2929 & 2997		2925-5.5933
175-177A.D.	2930-5.7526-27		2931-5.5935-36
188A.D.	2930		2938-5.5935-36
216A.D.	2931 ✓ IN CAIRO		2939-5.5935-36
200A.D.	2932 ✓		2942-5.5937
53A.D.	2933-5.7528		2944-5.5937-38
41-54A.D.	2935-5.5933		2946-5.5938
105/6A.D.	2936-5.7529		2947-5.5938
203A.D.	2941 ✓ IN CAIRO		2945-5.5939-40
204A.D?	2950 ✓		2948-5.5939-40
172A.D.	2451 ✓ 5.5942		2949-5.5941
155A.D.	2959		2955-5.5943-46
150 & 155A.D.	2964		2956-5.5947-52
158A.D.	2966 ✓		2957-5.5953-54
132A.D.	2970 ✓		2968-5.5953-54
189A.A	2977 ✓		2961-5.5956
197A.D.	2978 ✓		2962-5.5956
198A.D.	2979 ✓		2963-5.5956
197A.D.	2981 ✓		2965-5.5957-62
184/5A.D.	2983 & 2991		2967-5.5963-64
168/9A.D.	2985-5.7530-31		2969-5.5965-66
313-23A.D.	2986		2970a-5.5967-68

5006 B
156 V11d

-12-

- b - (88) small bowl outturned rim pink paste buff slip Photo
- c - (199) small p.r.r. pot cover

5006D

- A - 7 coins { 9th y. Marcus Aurelius 169 A.D. - 410 A.D. HA17
and Numerianus 283 A.D. 50856 1184
- B - wooden comb
- C - blue glaze
- D - glass 5874 - Harden 735
- E - base of circular wooden box? Cairo 55832 5-4157
5-3946
- a - 175, X, C. squat-shaped jug r.r. not kept 100
7. 2393 (20718)
- b - 175 globular jug on foot pink paste diam., 17 amp.

5006E¹ - storage chamber

- A - head of mallet (wood)
- B - one wooden clapper usual type
- C - small wooden lid to circular box
- D - whetstone
- E - glaze
- F - glass
- G - Textiles 12676-12678
- H - wooden lamp bracket

5006E² - storage chamber

A - See also back of page 214. Opposite this side. 165 papyrus in lower half of filling of chamber mixed with sand and broken mud bricks Range in date from Ziberius 14-37 A, D. through 323 A.D. See other side of this sheet

5006F¹ - storage bin

- A - small wooden mallet with light handle At Michigan 10073
- B - 23933 lower half of cross-shaped wooden bar with 3 divisions ATU. of M.
- C - lid of circular box
- D - do. of smaller NA (Michigan) (10073)

5006 E² A. Papyrus

2918	Youtis 386.	186 A.D.	Taxation Receipts for Garden taxes P. Mich. VI
2921	" 421	41-54 A.D.	Petitions Petition concerning theft and maltreatment P. Mich. VI
2923	" 398	207 A.D.	Taxation Receipt for Catocic Dues P. Mich. VI
2927	" 427	Aug. 27, 134 A.D.	Contracts Cession of land & House P. Mich. VI
2928	" 364	June 1, 179 A.D.	Official Document Official Letter P. Mich. VI
2929	"	"	"
2997 recto	" 426	199/200 (?) A.D.	Petitions Petition to the Epistrateges concerning a liturgy P. Mich. VI
2929	"	"	"
2997 verso	" 365	May 25, 194 A.D.	Official Document Excerpt from the Minutes of the Epistrateges P. Mich. VI
2931	IN CAIRO " 380	215 A.D.	Taxation Receipt for "Annona Oxos"
2932	" 422	Spring (?) 197 A.D.	Petitions Petition to the Prefect concerning trespass P. Mich. VI
2934	" 371	Late II/early III cent. A.D.	Official Document Receipt for Secretary's Salary and Expenses P. Mich. VI
2940 (?)	Census Documents. Pearl in CE 28 (1953) 335-55		
2950	" 397	June 9, 204 A.D.	Taxation Receipt for Catocic Dues P. Mich. VI
2951-55942	" 384	172 (?) A.D.	Taxation Receipt for Garden Taxes P. Mich. VI
2966	" 393	Aug. 9, 158 A.D.	Receipt for Rent of Domain Land P. Mich. VI
2970 a	IN CAIRO 392	153 A.D.	" " " " and Queen Epibole
2970 b	IN CAIRO 387	188 A.D.	Receipt for Crown Tax
2976 recto	" 375	II cent. A.D.	Summary of Payments in Kind P. Mich. VI
2976 verso	" 373	Middle/Late II cent. A.D.	List of Assessments and Receipts
2977	IN CAIRO 370	Aug. 9, 189 A.D.	Official Document Census Declaration
2978	" {423}	May 22, 197 A.D.	Petitions Petition to the Strateges concerning trespass P. Mich. VI
2981	" {424}	"	"
2979	IN CAIRO 425	Aug. 198 A.D.	" " " " Assault
2980	IN CAIRO 372	179/180 or 211/212 A.D.	Taxation Assessment List P. Mich. VI
2983 a	IN CAIRO 385	182-185 A.D.	Receipts for Garden Taxes P. Mich. VI
2996	"	"	"
2990 recto	" 374	Middle II cent. A.D.	Daybook of Payments in Kind P. Mich. VI
2990 verso	" 395	188 A.D.	Receipts for Catocic Dues P. Mich. VI
2996 a	" 396	Jan 17, 186 (?) A.D.	"
3001	" 428	Feb. 3, 154 A.D.	Contracts Sale of a House P. Mich. VI
2841-5.7520 f			
2880-5.7521			
2820-5.7522			
2908-5.7523			
2911-5.7524			

5006 F¹

-15-

- E - wooden comb
- F - grass 3912 *Hyperata cylindrica* (L.) Beauv.
(D. arundinacea Cz.)
- G - fine mesh sieve
- H - human bust in r.r. pottery frag. 2
- I - spindle whorl
- J - turned end of horn
- K - bovine horn
- L - blue glaze
- M - textiles 12679-12685
- N - papyri in filling half of chamber III cent A.D. *92952 B...* *100% N.T.H.*
5.7516
- O - small turned wooden lid

5006 F² - storage chamber

- A - 1 pr. wood strainers with rope attached
- B - side of large wooden box
- C - wooden bolt from lock *51419*
At Michigan (2245) 10231
- D - mud sealing (stamped) *3625*
- E - frag. of seated figurine terra cotta
- F - blue glaze
- G - glass
- a - 354 X VI *N.T.H.* large shallow basket pot r.r. blackened by fire
- b - (149) I, a large shallow bowl everted rim r.r. globular, with
spout *206 Photo 5-3605 at McClugan 7311*
- cx2(120) strainer necked globular buff slip 1 T.H. *XVIII, b, N.T.H.*
at VPM 1762
- d - 235 X XI, a *N.T.H.* small deep tow-handled bone straight ribbed rim flanged
edge r.r.

5007A (1) - 27

- A - wooden knife handle
- B - wooden pin

Appendix Two:
S. Yeivin's Unpublished Notes on Structure 5006

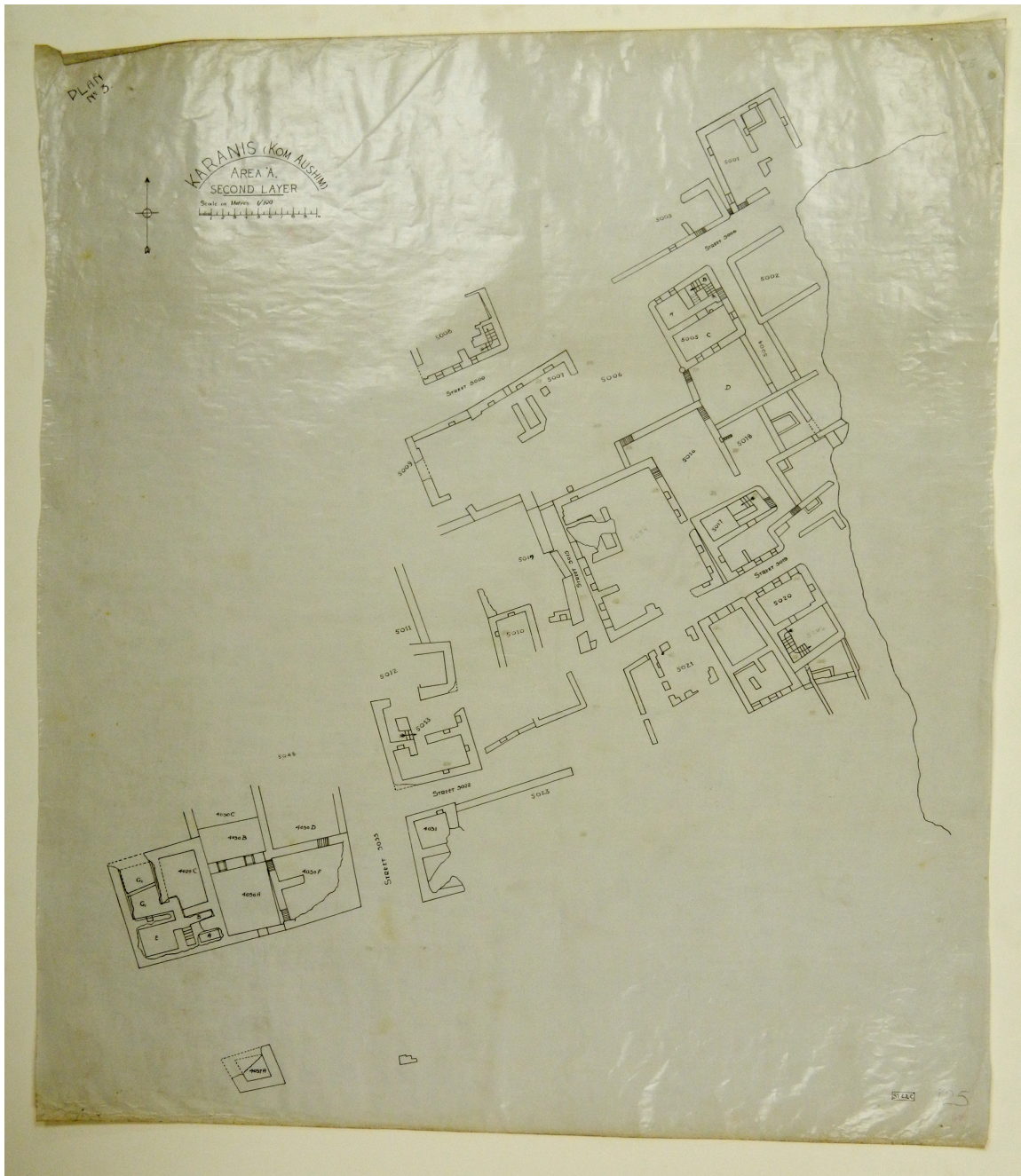
The following photographs present unpublished material stored in the Kelsey Museum Archives that is relevant to the study of the excavation of Karanis structure 5006, and discussed in Chapter 1, Archaeological Context on page 2 and following. In most cases, the date of composition of these notes and typewritten draft reports is unknown. Karanis *Plan 3* is stored with the other site plans associated with the University of Michigan excavations, and S. Yeivin's unpublished notes come from his collected papers, which are stored in several boxes with other archival material pertaining to the Karanis excavations.

All photographs were taken in the Kelsey Museum on March 21, 2012 by the author, with the assistance of Sebastian Encina, the Museum Collections Manager.

S. Yeivin, *Plan 3 (1925?)*

Overview of Karanis: Area A, Second-Layer

The border of the *sebbakhin* crater is indicated by the irregular line on the right (eastern) edge of the map.



S. Yeivin, *Karanis Houses* typescript pages 14-15, and 19

Typed descriptions of 5006A, referred to as a courtyard, including descriptions of wall construction, fill type, and doorways.

Page 14

5006 A
Courttyard W. of Wall D - G - H.
Wall ⁵⁰⁰⁰ Along street found. ~~(5000)~~ 160 below Pt. D, a wall running W. 2 courses deep, ^A higher as C - inside. On outside, courses are reversed. Outer face of wall 25cm. s. of corner below D. Width of ^{E. to}

Page 15

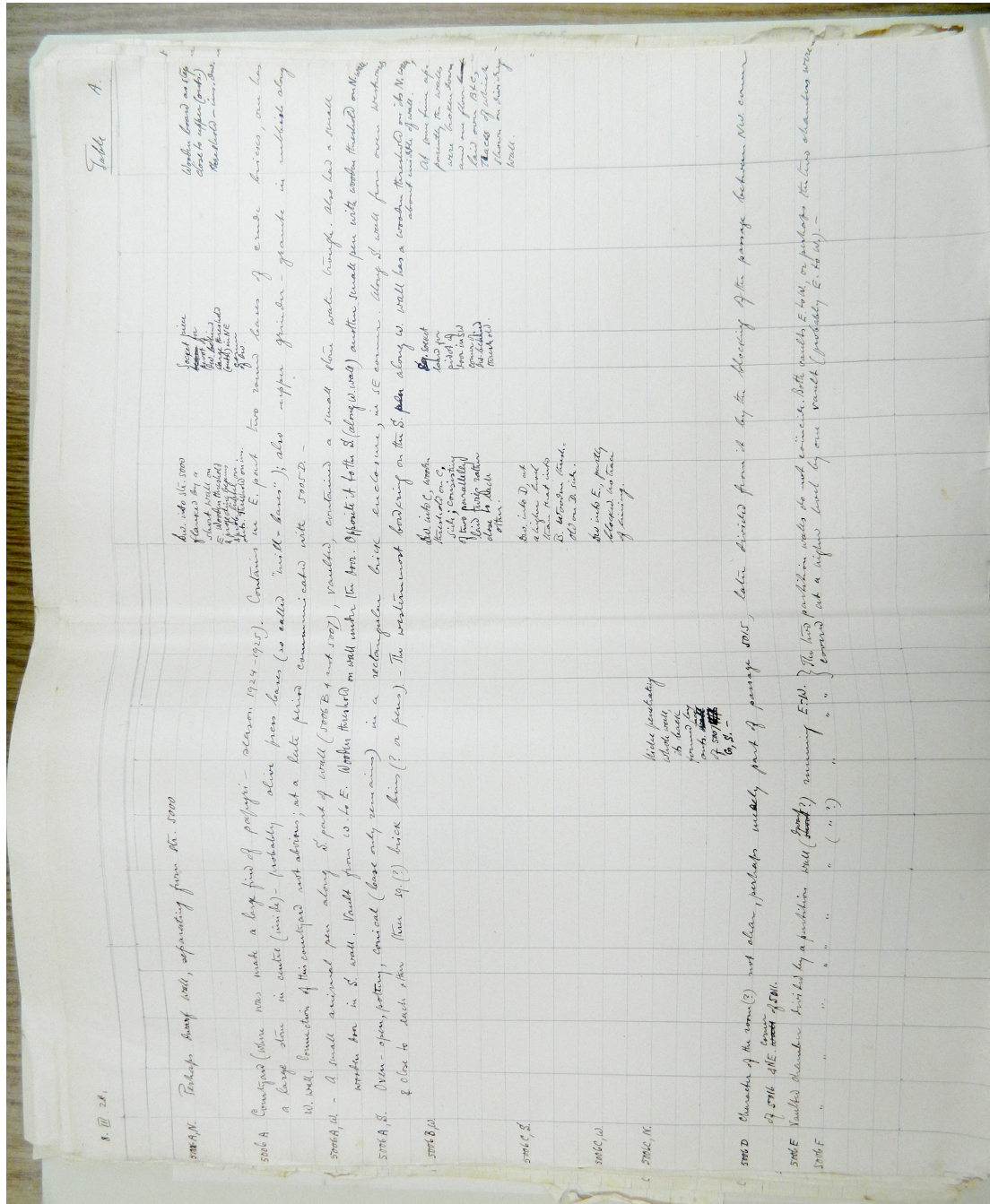
- 15 -
wall 39cm. length 350.
From cor. (below) to inner end of wall 650. Yellow brick.
A. 26x13.5x9
B. 25x12x9
C. 26.5x12.5x8
Rather sandy mixture of limestone clay, little straw, occasional dung patches inside. Salt crystals. Sometime small pebbles.

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5006 A
S. half of E. wall blocked doorway between 5006 A and 5005D.
Depth below point H. 1.20 cms. 1.35 wooden threshold. Depth of wall 2.70cms. yellow brick occasional grey. Below it stone wall apparently of a different level.
Piece of wall between points E, and F. Depth below point E. 1.83cms. Foundation course A and C mixed. Grey and yellow mixed. Built on rubbish. ^{5006 D, E upper}
S. wall Height below point H down to stone level, 1.60 cms. Grey and yellow bricks mixed. Foundation courses C. Apparently reconstructed in W. half. Particulars blocked doorway. See sketches. Deep wooden threshold. 22cms. deep.

S. Yeivin, Karanis Houses manuscript 8.III.28

Handwritten description of structure 5006 including all its various subdivisions, connections between rooms, room types and contents, and relationship to the surrounding buildings. This document was extremely helpful in establishing where the papyri of the 25-5006E²-A cache were excavated.



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