
The Musical Structure of Plato's Dialogues

– A Quick Guide to the Strongest Evidence –

J.B. Kennedy

But, friend, when you grasp the number and nature of the intervals of sound, from high to low, and the boundaries of those intervals, and how many scales arise from them, which those who came before handed down to us, their followers, to call 'harmonies,' and when you grasp the various qualities inhering in the motions of the body, which they said must be measured with numbers and named 'rhythm' and 'metre,' and when you apprehend that every One and Many should be so investigated, when you have grasped all of that, then you are wise ...

Plato, *Philebus*, 17c11-e1

Nothing is so characteristic of the Pythagorean philosophy as symbolism (to symbolikon), a kind of teaching which mixes speech and silence as in mystery rites ... what they signify is immediately lucid and clear for those who are accustomed to it, but dark and meaningless to the inexperienced... with the Pythagorean symbols what seems to be affirmed is really being concealed, and what seems to be concealed is discerned by the mind.

Plutarch in Stobaeus, iii.i.199 (Wachsmuth and Hense)

Our discussion will be adequate if it has as much clearness as the subject-matter admits of, for precision is not to be sought for in equal degree in all arguments ... it is the mark of an educated mind to look for precision in each kind just so far as the nature of the subject admits; it is evidently equally foolish to accept probable reasoning from a mathematician and to demand demonstrative proofs from a rhetorician.

Aristotle, *Nicomachean Ethics*, 1094b11 ff. (after Ross)

Preface

The results of a general analysis of Plato's dialogues, which found extensive evidence for an underlying musical structure, were reported in the journal *Apeiron* and in a lecture at Manchester University. The following in-depth case-study marshals comprehensive evidence for the same, regular pattern of musical symbols in two dialogues, and outlines the implications of this discovery for the history of Greek philosophy, music, and mathematics.

Strong claims require strong evidence. The conclusions reported earlier rest upon a broad base of novel evidence and novel methods. This guide aims first at accessibility and simplicity. By reducing historical background and interpretative analysis to a minimum, it exposes the heart of the case. At the same time, it aims at strength and depth. The same, subtly varied symbolic pattern is shown to occur repeatedly and at regular intervals throughout two dialogues. To achieve these aims, the evidence is presented here in a format which exhibits the musical symbols and structures alongside clarifying annotations. This eliminates the hard work of checking and verifying the evidence.

A strong, self-contained case for the central claims is already established in the opening sections of chapter one. The analysis that follows in chapters two and three shows that the methods introduced there lead to a comprehensive and consistent rereading of the entire text of the *Symposium*. Chapter four shows that the same structures and patterns exist in the *Euthyphro*. This preface briefly surveys some earlier scholarship which laid the foundations for this research.

Some time ago, Milman Parry transformed the way Homer is read. Though the poems had long been intensively studied, Parry's empirical studies of living traditions of oral poetry surprised scholars by showing that many puzzling features of Homer's style and narrative could be explained in a

new way. Here, recent advances in several fields not usually at the centre of Plato studies converge in revisionist readings of his dialogues. Although the evidence presented below is self-contained and will stand on its own, some acquaintance with these developments is essential to appreciating the real plausibility and even the naturalness of my arguments.

First, our knowledge of early Pythagoreanism has finally been placed on firm, critical foundations by Walter Burkert and the two monographs on Philolaus and Archytas by Carl Huffman. They have separated the accretions of late and suspect testimony from the genuine fragments, and in particular have worked to distinguish the doctrines of the early Pythagoreans from the innovations that lie behind Plato's own philosophy. This work makes it possible here to reassess the vexed question of the Pythagoreanism attributed to Plato by his followers.

Second, the renaissance in specialist studies of Greek music theory during the last generation, led by West, Barker, and others, and now culminating in Barker's *The Science of Harmonics in Classical Greece*, enables us to understand the debates over music in the central chapters and concluding myth of the *Republic*. The musical structures analysed here are firmly grounded in musicological history.

Third, stimulated perhaps by the discovery of the Derveni papyrus, which provides an unprecedented glimpse into the philosophical use of literary symbolism, there has been a wide-ranging reappraisal of the use of symbolism and allegory in ancient Greek literature, religion, and philosophy. Works like Ford's *On the Origins of Ancient Literary Criticism*, Struck's *The Birth of the Symbol*, and Sedley's *Plato's Cratylus*, which all re-evaluate Plato's views, have shown, in short, that the use of symbolism and allegory was far more common than previously thought and, in particular, was a topic of debate in the circles around Socrates. Those reading Plato in philosophy departments today may be unfamiliar with the strength of the consensus in classics departments that symbolism, allegory, and the kind of etymological analysis parodied in Plato's *Cratylus* were, from the classical period onwards, prominent and mainstream themes of ancient religious and intellectual culture.

Another work in progress devotes considerable space to examining these three literatures, as well as the historical context and interpretation of the musical patterns. During the last generation, controversy has continued about various approaches to interpreting Plato: analytical, dramatic, literary, 'third way,' developmental, unitarian, stylometric, and Tübinger. The

relation of the claims made below to these approaches will also be considered there.

The origins of the research presented below were in part fortuitous. I was teaching an advanced course in Manchester University's philosophy department on Plato's *Republic*, and therefore had to review the extensive literature on the structure of its narrative. I lectured on the debate between the so-called 'separtists' and 'unitarians' over whether the *Republic* was composed of disparate, shorter pieces written at different points in Plato's development. At the same time, I was teaching courses on the history of mathematics, and was therefore familiar with recent research on Pythagorean mathematics and music theory. I had not expected these two literatures to form such a combustible mixture, but a cascade of insights led, over several years, to the results reported here.

The direction this line of research took would not have been possible without my teachers. At Princeton, while specialising in mathematics and computers, my sometime advisor, Carlos Baker, made me take a course in literature nearly every term. For four years, I was at least exposed to the rigours of the art of close reading in the preceptorials of the English and Comparative Literature departments, and became acquainted with the various structures used by writers such as Dante, Spenser, Mann, and Ashbery to unify their compositions. Later, while working on a Ph.D. in philosophy at Stanford University with Nancy Cartwright, Peter Galison, and John Dupre, and specialising in the history and philosophy of science, I also studied Greek philosophy with Julius Moravcsik, Wilbur Knorr, and Jean Hampton. Although more of my time was spent with Aristotle's physical and cosmological treatises, Wilbur Knorr was kind enough to debate his research on structure in Plato's *Laws* with me.

I would like to thank two Plato scholars here in Manchester who encouraged this work in its early stages. The late David Melling was the first to say, in a scrawl across a draft, 'The patterns that you see exist.' Harry Lesser greeted me after reading another draft with a mischievous smile and said 'It's just the kind of thing Plato would do.'

This work has been supported in the first place by my friends and colleagues at Manchester University whose critical enthusiasm and encouragement survived a long series of draft papers, several formal and informal lectures, and many animated conversations. I would like to thank the Centre for the History of Science, Technology and Medicine, especially the director Michael Worboys and the former director John Pickstone, the administrator Gillian

Mawson, Vladimir Jankovic, Ian Burney, Jeff Hughes, Simone Turchetti, Elizabeth Toon, Carsten Timmermann, and James Sumner, for providing a welcoming home for this research; the philosophers who read my drafts, Harry Lesser, David Melling, John Shand, Michael Rush, and Thomas Uebel; and the Philosophy and Classics departments for their hospitality over the years. My former friends and colleagues in the philosophy department at Notre Dame encouraged me to teach courses on Aristotle, and I would especially like to thank Bill Ramsey, Marian David, Leopold Stubenberg, Patricia Blanchette, David O'Connor, Don Howard, Lynn Joy, Ken Sayre, Paul Weithman, Chris Hamlin, David Burrell, and Ernan McMullin.

The excellent John Rylands Library at Manchester University provided unstinting support, but thanks must also be given for essential online resources such as JSTOR, the Thesaurus Linguae Graecae, The Internet Archive, and the Perseus Digital Library. Several open-source software projects were key: the TeXShop Latex program from the University of Oregon, the Python programming language from the Python Software Foundation, and the Unicode Consortium.

For their conversations, support, and encouragement during these busy years I would also like to thank Melanie Horton, H.P. Tinker, Amanda Williamson, Andrew Read, Steve Gingell, Andrew Grose, Sylvia Berryman, Mim Kennedy, Scott Kennedy, Dan Kennedy, Jennifer Bush, Andrew Kaufman, Nathaniel Dahl, Michael Tippner, Chris Scarlata, Evelyn Donegan, Lilian Crascall-Kennedy, John Crascall-Kennedy, Carole Crascall, John Crascall, and Louise Crascall.

Contents

Preface	i
1 Musical Structure in the <i>Symposium</i>	1
1.1 Structuring a Dialogue	5
1.2 Ancient Greek Music: Three Key Ideas	6
1.3 Plato's Symbolic Scheme	8
1.4 Harmony and Consonance, Disharmony and Dissonance	10
1.5 Sevenths and Mixture	11
1.6 Quick Guide to the Strongest Evidence	14
1.7 Methodology and Responses to Possible Objections	19
2 An Emphatic Pattern in the Frame	27
2.1 A Theory of Music	28
2.2 Recurring Clusters of Features in the Frame	29
2.3 A New Kind of Commentary	31
3 Making the Musical Structure Explicit	47
3.1 Phaedrus	48
3.2 Pausanias	54
3.3 Eryximachus	66
3.4 Aristophanes	74
3.5 Agathon	86
3.6 Socrates and Diotima	96
3.7 Alcibiades	124
4 Parallel Structure in the <i>Euthyphro</i>	149
4.1 The Same Scale and the Same Symbolic Scheme	149
4.2 Quick Guide to the Strongest Evidence	151
4.3 The Sevenths	152

4.4	The Connection to Music	153
4.5	Another Kind of Evidence: Parallels Between Dialogues . . .	156
4.6	Marking the Notes	158
5	Extracting Doctrine from Structure	211
5.1	Aristotle on Virtues and Means	212
5.2	Stichometry and The Divided Line	213
5.3	Reading the Dialogues in Parallel	216
5.4	The Logic of the Argument and its Consequences	218
6	Some Implications	221
6.1	Interpreting the Dialogues	221
6.2	Problems with Anonymity and Intentionality	222
6.3	Interpreting Plato, Pythagoras, and Socrates	224
6.4	History of Music and Mathematics	226
6.5	History of Literature and Literary Theory	228
6.6	Ancient Book Production, Papyrology, Textual Studies	229
6.7	The Forward Path	229
A	Structure in Agathon and Socrates' Speeches	233
B	Markers Between the Major Notes	235
C	The Central Notes	243
D	Systematic Theory of the Marking Passages	247
E	OCT Line Numbers for the Musical Notes	263

Chapter 1

Musical Structure in the *Symposium*

This guide is aimed at two sorts of readers, or rather two phases of studying Plato's symbolism. The first want a quick introduction to the main claims and the key evidence that supports them, and begin with a very natural scepticism. They are aiming to make a preliminary judgement about whether the claims could be true. The second have passed through that phase and are ready to make their own thorough, critical assessment of the case – they want the substance of the claims and evidence laid out *in extenso*.

This chapter is designed for readers of the first sort. It introduces Plato's symbolic scheme, concisely surveys the strongest evidence, and briefly responds to a number of common questions and objections. At this stage, it may be helpful to refer to passages in the *Symposium* where the symbolic structure is most clear. To facilitate occasional forays into the text in chapters two and three, the annotations there have been kept as self-contained as possible (and so sometimes repeat material). For reasons explained below, preliminary evaluations of the evidence should begin with the more striking evidence highlighted in this chapter, rather than by proceeding at once through the dialogue from the beginning. After this chapter, these readers should turn directly to chapter four, which quickly shows that the same symbolic scheme recurs in the *Euthyphro*. These introductory chapters, one and four, make a strong *prima facie* case for musical structure in the two dialogues.

The next stage in assessing the case is to proceed through the two dia-

logues, traversing the embedded musical scale note by note and examining the range of symbols used to mark them in the text. The novel format in which the dialogues are presented here places the clusters of symbols at the centre of each left-hand page. Probably for the first time since antiquity, the dialogues are published with the uniform columns of text which throw the musical structure into relief. The annotations on the right-hand pages briefly characterise and interpret the symbols for each musical note in the scale.

Today most readers of Plato, Aristotle, Kant, and Russell are not also readers of Dante, Spenser, Joyce, and Mann. That is, symbolic and allegorical literature is out of fashion, and not only its methods and pleasures but its very motivation have become obscure. A generation ago, A. Kent Hieatt, a professor at Columbia University, discovered that Spenser, a prominent Renaissance Platonist, had built elaborate mathematical and astronomical structures into one of his best known poems, the *Epithalamion*. Although his poems may not quite have been studied as intensively as Shakespeare's, this mathematical structure should have been noticed earlier: the poem has 365 lines (one for each day) broken into 24 stanzas (one for each hour).¹ In the controversy that at first greeted Hieatt's claims, historians devoted much energy to recalling and explaining the motivation for an entire genre of literature. Richard Neuse, for example, said:

... Mr. Hieatt's discovery of a complex symbolism in the *Epithalamion's* stanzas and line numbers is of capital importance... this framework of an ideal time fits in exactly with a cardinal feature of the Pythagorean aesthetic, namely the hidden or implicit harmony which the artist was supposed to impose upon his work. Thus the numerical-symbolic structure of the *Epithalamion* serves, in Pythagorean fashion, to express its secret affinity with the mathematical order of the universe ...²

The existence of numerical and other symbolic patterns in Spenser's poetry has since been widely accepted and incorporated into undergraduate curricula.³ Some of the preliminary objections to the methods and theses

¹Fowler quipped 'but humanists can't count.'

²Neuse [?, p. 161].

³For the initial discovery and debate see Hieatt [?] and Fowler [?]. Two volumes by Heninger are of special note. In *Touches of Sweet Harmony: Pythagorean Cosmology and Renaissance Poetics* [?] he surveyed Renaissance Pythagoreanism and its impact on the arts of the day; in *Spenser and Sidney* [?] he gave a close reading of the Pythagorean structures of a range of poems. By the 1990's, authoritative review articles endorsing

advanced below simply register the relative obscurity of allegorical literature today.

The central claim of this chapter is that certain patterns of musical symbols are repeated at regular intervals through Plato's *Symposium* and mark out the notes of a known musical scale.

More specifically, the evidence below will show that passages containing subtle constellations of symbols are located at each twelfth of the way through the text of the *Symposium*. That is, clusters of terms with symbolic meanings are located at one-twelfth, at two-twelfths, and so forth.

The ancient Pythagoreans reportedly held that the cosmos had an underlying musical or mathematical structure. This was believed, at various times and for various reasons, to be extremely subtle and accessible only to those advanced in philosophy. Plato was thought by many of his contemporaries and followers to have been influenced by the Pythagoreans, and the commentary below will claim that Plato, adhering to a 'Pythagorean aesthetic,' built a similar, musical structure into his dialogues.

Plato used the underlying scale as an outline for his dialogues. Arguments and episodes fill out one or more of the intervals between notes. Major concepts or turns in the arguments tend to be located at the notes. Shifts in the narrative, such as the beginnings and ends of speeches, tend to occur near musical notes. Thus there are two major kinds of evidence for the underlying scale: the clusters of symbols at the locations of the musical notes and the correlations with important features of the narrative.

The first section below explains how it was possible for an ancient author to structure a long literary composition. The next section introduces a few ideas from ancient Greek music which are needed to understand the symbolism. The following sections survey several different kinds of evidence.

Many or most writers who use literary symbolism aim both to conceal and communicate: to use subtlety in a way that at first puzzles and then seduces readers into unearthing the deeper meanings of their works. Plato's idiosyncratic symbolism has been rendered doubly subtle over time. Not only was he writing in another language and culture, but the musical ideas he used are distant from our own.

the claims of Heatt, Fowler, and others appeared in the *Spenser Encyclopaedia*[?]. See the articles 'number symbolism, modern studies in,' 'number symbolism, tradition of,' 'pun,' etc. See also textbooks such as *The Yale Edition of the Shorter Poems of Edmund Spenser* [?].

There is a report in Vitruvius, in the first century BCE, that ‘Pythagoreans’ mathematically organised their writings.⁴ The following provides evidence that Plato was such a Pythagorean. The lengths and structures of Plato’s dialogues have already been examined by scholars in a range of small-scale studies, but these depended upon hand-counts and were riddled with errors.⁵

The so-called neo-Pythagoreans, also from about the first century BCE, claimed that Pythagorean doctrines were symbolically embedded in Plato’s dialogues. Tarrant summarises the fragmentary remains of these neo-Pythagoreans (*italics original*):

All this suggests [their] belief that Pythagorean doctrines are *hidden* in Plato, who for one reason or another is reluctant to reveal them, and *that true Pythagoreanism can be teased out of Platonic texts by in-depth interpretation*. Like Thrasyllus, [other Neo-Pythagoreans like] Moderatus, Numenius, and Numenius’ friend Cronius were all supposed to have written on the first principles of Plato and Pythagoras in such a way that they had somehow anticipated Plotinus... So it would seem safe to say that something quite esoteric is regularly being detected beneath Plato’s text, concealing details of the allegedly Pythagorean metaphysic that Pythagoreans, almost as a matter of faith, supposed to exist there.⁶

Thrasyllus, the editor of Plato’s works and court philosopher to Tiberius, is paraphrased at length in Theon’s *On the Mathematics Useful for Reading Plato*. This work has puzzled historians because it reviews topics which seem to have little connection to the dialogues. In particular, it discusses at length a musical scale of twelve, regularly spaced notes which is nowhere mentioned by Plato.⁷ The author of the pseudo-Plutarchian *De Musica*, parts of which may also date from the first century, also explicitly associates

⁴*De Arch*, V, *Prol.* 5.

⁵Manual stichometric studies of Plato’s dialogues have been carried out in various ways by Birt, Schanz, Harris, Dodds, Berti, and others, but were primarily aimed at inferring the lengths of the lines and columns on the papyrus sources of surviving manuscripts. See Birt [?, p. 440, etc.], Schanz [?], Harris [?], Dodds [?, p. 46], Berti [?]. This is apparently the first report of computer-based, stichometric investigations of Plato’s dialogues. This lacuna is surprising in an era when computerised, stylometric studies have been undertaken by a number of scholars (reviewed in Brandwood [?]).

⁶Tarrant [?, pp. 84 – 85].

⁷Hiller pp. 47.18 – 49.5 = Tarrant T13, Hiller 85.8 – 93.11 = Tarrant T14a.

a scale based on the number twelve with Plato.⁸

1.1 Structuring a Dialogue

To structure the *Symposium* by locating symbolic passages at regular intervals, Plato needed a way of counting or measuring the lengths of long speeches.

Classical Greeks counted the number of lines in their literary works in ways perhaps similar to the way we count the pages in a book or the words in an essay. The practice of counting lines, ‘stichometry,’ has been carefully studied by scholars of ancient book production and by papyrologists interested in piecing together works from their fragments. As Plato mentions in the *Laws*, the Homeric line (hexameter) was used as the conventional unit.⁹

There is evidence that classical literary papyri were typically produced with uniform columns each of which had a uniform number of lines.¹⁰ Thus, when it came time to pay a scribe or purchase finished papyrus rolls, the total number of lines was easy to count. Library catalogues recorded these line counts, and they were used to check that their copies, which could extend over several rolls, were complete. The evidence presented below indicates that Plato used this everyday practice of stichometry to structure his dialogues.

The uniform lines and columns of classical papyri would have made detecting Plato’s regular symbolism easier. Later copies, perhaps from the time of the library at Alexandria, generally did not have uniform lines and columns, and this would have made Plato’s subtle symbolism even more obscure. Our Stephanus pages and paragraphs have irregular lengths and occasional gaps (as, for example, between books in the longer dialogues). Thus, from sometime around the Hellenistic period until the invention of the word processor, it was effectively impossible to discover Plato’s stichometric structure.

⁸Ps.-Plutarch, *De Musica*, 1138 = 120,26 ff. and 120,33 ff. Laserre.

⁹The standard work on stichometry, Ohly’s *Stichometrische Untersuchungen*, finds evidence (too extensive to be reviewed here) that the practice was already common during Plato’s lifetime. Ohly finds the earliest reference to measuring texts in heroic lines in Plato’s *Laws*, and concludes from a variety of pieces of evidence that ‘... in Platos alter wurde also der Hexameter bereits als Maßeinheit verwandt ...’ *Laws* 958e9-59a1 is discussed at Ohly [?, p. 93].

¹⁰For pictures and an introduction for non-specialists, see, for example, Thompson [?].

The dialogue below is presented with uniform ‘columns’ and thus restores an approximation of the classical format.¹¹ Even without the commentary, careful readers might notice that passages with similar structures recur in the middle of every column.

1.2 Ancient Greek Music: Three Key Ideas

Plato used a simple, mathematically regular musical scale in his dialogues. It may therefore be introduced without reviewing much of the theory and terminology of ancient Greek music.¹²

The Scale. Plato’s Socrates distrusted mere appearances and knowledge based on the outer senses. In the *Republic*, Socrates criticises the scales used in the music of his time for being based upon mere sensation and custom.¹³

The Pythagoreans famously discovered that pairs of notes blended in a pleasing, harmonious way when they were produced by pairs of strings whose lengths had simple ratios such as 1·2, 2·3, and 3·4 (the octave, fifth, and fourth). These harmonies will be produced when a long string is sounded together with another string of half, or two-thirds, or three-quarters of its length. Since twelve has many factors, it is convenient to choose a long string with a length of twelve units so that the harmonies will correspond to ratios between integers (6·12, 8·12, and 9·12).

This leads naturally to the idea of a scale of twelve notes produced by strings with lengths corresponding to the integers from one to twelve. In the *Symposium*, symbolic passages are located at each twelfth of the dialogue, and these will be associated here with the integers 1 to 12. The midpoint of the dialogue is therefore note 6 in the musical scale. The beginning of the dialogue will be note 0.

¹¹Locations of passages within each dialogue were measured here by stripping out everything but Greek letters from files containing the Oxford Classical Text editions of the dialogues, counting the letters, and inserting markers in the original files. That is, ‘invisible characters,’ punctuation, indications of changes in speaker, and spaces were deleted. Plato’s autographs probably used little or no punctuation, but there is not universal agreement about this. It is sufficient, given the fundamental limitations on accuracy caused by the many minor corruptions in the text, just to count Greek letters.

¹²West [?], Barker [?], etc.

¹³e.g., 530d6 ff.

Quarternotes. There was a debate from the classical period onwards, mentioned in the *Republic*, Aristotle's *Metaphysics*, and Aristoxenus, about the smallest, audibly distinguishable intervals appropriate to musical scales.¹⁴ One view was that scales should include notes separated by a quarter of a whole interval (or 'tone'). The literature sometimes calls these intermediate notes 'quarternotes' and makes the interval between them a 'quartertone.' These terms will be adopted here.

In the *Symposium*, symbolic passages are also located at quarter-intervals between each of passages marking the notes from one to twelve. Thus, for example, in addition to the symbolic passage at wholenote 6, at the midpoint of the dialogue, there are similar symbolic passages at 6 and 1/4, at 6 and 2/4, at 6 and 3/4, and so on.

Relative Consonance. The theory of relative consonance plays a major role in Plato's symbolism.¹⁵ Each note in the scale has a property which depends upon its relation to the twelfth note. If a note blends well with the twelfth note, then it is more 'consonant'; if it blends less well then it is more 'dissonant.' There were several algorithms for calculating the precise relative consonance of notes in ancient times,¹⁶ but the different approaches agreed

¹⁴*Resp.* 531a4. Aristotle makes the quarternote (*diesis*) the principle of measurement in music (*Met.* 1053a12, 1087b33). Aristoxenus said in places that the ear and voice could distinguish no intervals smaller than the smallest *diesis* (*Harm.* 1.14, 20), and made it the smallest unit for music:

Let [a tone] be divided in three ways, and the melodious parts of it be the half, the third, and the fourth [*tetarton*, i.e. the quarternote]. Let the intervals less than these all be unmelodic. Let the smallest [the quarternote] be called the 'smallest enharmonic diesis' ... (*Harm.* I.21,22-28, cf. II.46,1-17)

Aristoxenus goes on to criticize some of his predecessors, the 'Harmonists,' who made 'close-packed diagrams' of scales with all the quarternotes marked, i.e., the *dieses* (I.28,1 ff., cf I.7,25 ff., II.38,4 ff., etc.). Barker reconstructs such scales using later evidence from Aristides Quintilianus: '[The Harmonists's] diagrams apparently took the form of a line divided into equal segments, each representing a quarter-tone' (Barker [?, p. 188]). West interprets Aristoxenus as criticizing those who would make an octave consist of twenty-four quarternotes [?, p. 79], which is consistent with representing an octave as the six intervals from 6 to 12. See Barker [?, pp. 188, 195].

¹⁵Theories of relative harmony are attested in the fragments of Archytas, Plato's contemporary, and were associated by later tradition with the Pythagorean preference for ratios between numbers in the *tetraktys*. See Huffman [?], etc. Relative consonance is not discussed in Barker [?].

¹⁶In one way of ranking the notes, the ratio with twelve was reduced to lowest terms, which were then added together. Then two was subtracted, and this produced a number which was regarded as the measure of relative consonance. For example, note 6 has a

that notes which formed small whole number ratios with note twelve were consonant:

More Consonant: 3, 4, 6, 8, 9

Similarly, notes which formed awkward ratios with note twelve were dissonant:

More Dissonant: 5, 7, 10, 11

Other notes, such as note 2, were relatively neutral.

There is some uncertainty about how Plato calculated the relative consonance of the quarternotes, but some general trends are apparent. For example, quarternotes between consonant wholenotes tend to be more consonant, and those between dissonant notes tend to be more dissonant.

1.3 Plato's Symbolic Scheme

At each point in the text of the *Symposium* corresponding to a musical note, Plato included a passage with a special structure. To maintain a balance between concealment and communication, he varied the content of these passages. If they were all the same or obviously similar, the underlying musical structure would be too apparent.

The scheme for varying the passages accords well with Platonism. Generally speaking, a Platonic form is recognised when a similarity between different particulars is recognised. A red hat and a red ball share a similarity, and this shared element is the 'form' of their colour. In the dialogues, the passages marking the notes have different contents but are also similar. Recognising the similarity of the disparate passages, and thus the regular pattern which forms the musical scale, requires grasping their common form. In short, the notes are marked by passages containing concepts that are many species of an over-arching genus.

All the genuine dialogues and some of the so-called spuria use the same musical scale and the same scheme for varying the marking passages, but the genus differs from dialogue to dialogue. To take a hypothetical example, it is as if a dialogue mentioned roses at one-twelfth, lilies at two-twelfths,

1:2 ratio with twelve. One plus two, minus two, is one. Thus note six has a relative consonance of 1 (lower numbers are more consonant). See West [?], Landels [?], etc.

violets at three-twelfths, and so on. Recognising the musical scale depends upon observing that the species of the genus 'flower' are mentioned at regular intervals. The pattern of repetitions is itself a form with the same structure as a musical scale with twelve regularly spaced notes. Another dialogue might, hypothetically, mention different species of colour (red, yellow, orange ...) at the twelfths.

In the *Symposium*, the notes are marked by various species of *harmonia*, i.e., by instances of the general notion of 'fitting together.' The Greek word may have a wider range of meanings than the English 'harmony.' Its musical use was only one specialised sense.¹⁷

A theory of harmony appears in the *Symposium* itself, in Eryximachus' speech, and is key to understanding the various marking passages (the dialogues typically discuss the genus of the concepts used to mark their notes). For Eryximachus, *harmonia* has already become a philosophical term of art and means the blending of two opposites. Eryximachus emphasises that two opposites cannot 'harmonise' while they differ or disagree. Thus 'harmony' means a thorough kind of blending in which different ingredients are so 'homogenised' that they somehow overcome their individual distinctiveness.

There are three important Greek words for blending ingredients. 'Harmony' is used when the emphasis is on the ingredients fitting together. 'Krasis' connotes a blending or fusion. 'Synthesis' just means 'putting together.' In Greek generally, as well as in the *Symposium*, the overlapping meanings of these words were recognised, as in the definition reported by Aristotle:

... a harmony is a krasis and synthesis of opposites.¹⁹

Eryximachus' speech explicitly associates harmony and krasis (188a4).

The following list surveys various species of harmony used to mark the musical notes in the *Symposium*:

- Verbal Agreement (*homologia*)
- Acceptance of an Invitation (a kind of agreement)
- Unanimity or Likeness of Mind (*homonoia*)

¹⁷The Greek word *harmonia* originally applied to a wide range of things 'fit together.' Its special musical sense slowly became more pronounced during and after the fifth century.¹⁸

¹⁹The whole sentence is 'Some say the soul is a harmony, for a harmony is a krasis and synthesis of opposites.' *De Anima* (407b30-32)

- Logical Agreement (*homologia*)
- Krasis or Blending
- Erotic Partnership
- Beauty (called a ‘harmony with the divine’)
- Participation (of particulars in forms)
- Musical Harmony (*harmonia*)

1.4 Harmony and Consonance, Disharmony and Dissonance

Things fit together to different degrees. A smooth and thorough blend is more harmonic; a rough, tense, or unstable blend may be termed ‘disharmonic.’ As the *Timeus* says,

... insofar as sounds are faster and slower, they appear higher and lower; sometimes their movements are disharmonic (*anar-mostoi*) on account of the dissimilarity of the motion they make in us, and sometimes their movements are harmonic (*ksumphōnoi*) on account of similarity (*Ti.* 80a3-6).

This spectrum, from more to less harmonic, was put to use in a remarkable way in Plato’s musical scheme.

The more consonant notes in the scale are marked with more harmonic combinations. For example, Hephaestus’s offer to weld together the two lovers, to fuse and so ‘harmonise’ the soulmates forever, marks a consonant note. Conceptual *krasis* marks musical consonance.

On the other hand, the more dissonant notes are marked by disharmonic combinations. The Socratic elenchus, for example, is an ‘agreement’ (and so a kind of harmony) that the interlocutor has been self-contradictory (a kind of disagreement with one’s self, or disharmony). Aristotle simply calls an elenchus a ‘combination of opposites’ (*sunagōgē*, *Rh.* 3.9.8). The conclusion of Socrates’ elenchus of Agathon, for example, is located at a dissonant note. Here, cognitive dissonance marks musical dissonance.

The structures of Plato’s dialogues have often been found puzzling. The literature on the *Phaedrus* and the *Republic*, for example, has criticised

their disjointed and sometimes meandering narratives. The *Republic* has even been thought, since the Nineteenth Century, to be a combination of separate tracts loosely stitched together.²⁰

If it is possible to generalise, literary, philosophical, and even musical compositions often build through a series of secondary climaxes or complications to a final climax and denouement. Though Plato's dialogues pioneered discussion of literary form, they themselves seem to fail to correspond to this or any other clear scheme. They often seem to reach major conclusions and then to move onto other, secondary subjects – or simply to peter out in dubious myths.

The underlying consonance and dissonance of the musical notes accounts for the peculiar structure of Plato's dialogues. Major advances, the conclusions of arguments, and dramatic highlights tend to occur at consonant notes. Refutations, discussions of Hades, and portraits of tyrants mark dissonant notes.

In the *Symposium*, the good-humoured whimsy and benevolence of Aristophanes' speech stretches across a range of consonant notes. The two dramatic highlights near the end of Diotima's speech, the begetting with beauty and the vision of the great ocean of beauty atop her 'ladder,' mark the two most consonant notes in the musical scale.

Agathon is a promiscuous poet whose speech is criticised by Socrates for failing to tell the truth. Alcibiades is a failed philosophy student who notoriously went on to betray his country. Their speeches occupy the two most dissonant ranges of notes in the musical scale.

In the following, 'consonance' and 'dissonance' are always terms from musical theory, and measure the relative consonance of a musical note (combination with the twelfth wholenote is always presumed). 'Harmony' and 'disharmony' have the broad range of meanings listed in the last section, and indicate a more or less successful 'fitting together.'

1.5 Sevenths and Mixture

In the *Symposium*, the major notes in the twelve-note scale, the wholenotes and the quarternotes, are marked with various degrees of harmony or dis-

²⁰See, for example, Rutherford [?] on 'separtists' vs. 'unitarians,' Lear [?], Lesser [?], and Krohn [?] on the *Republic*.

harmony. There are other locations in the text, however, which are marked by different symbols. The passages located after each seventh of the way through the text, that is, at one-seventh, two-sevenths, and up to sixth-sevenths, are very dissonant and are marked with the opposite of ‘harmony.’ To understand these passages, a few ideas from the Greek theory of mixture are needed.

Greek philosophers developed theories of how physical objects were combined, and tended to distinguish thorough blending from a mere ‘mechanical mixture’ in which the ingredients retained their original characteristics. Thus blending a bucket of yellow paint with a bucket of blue paint to produce green paint was distinguished from mixing a bag of yellow marbles with a bag of blue marbles to produce a bigger bag of yellow and blue marbles. Combination without blending will here simply be called ‘mixture’ or ‘mere mixture.’²¹

Aristotle analysed the process of blending in some detail, and his theory clarifies a point made in Eryximachus’ discussion of harmonisation. In particular, blending for Aristotle continued until the ingredients were all homogenised, i.e., until their contrasting qualities altered and converged on some common, intermediate quality (as the yellow and blue paints each became green paint). Thus, in blending, the initially different becomes the same.²² This is the point Eryximachus is making when he criticises Heraclitus for seemingly confusing harmony and mere mixture:

It is quite absurd to say that a harmony differs or consists of things still differing. [Rather, harmony arises] out of high and low sounds which at first differ, and then later are made to agree by the art of music. A harmony, [in contrast,] would indeed not consist of high and low sounds still differing. (2/7) A harmony is a *symphōnia* ... (187a6-b4).

This passage may seem common-sensical but, in the context of Greek phys-

²¹The distinction between a harmony, *krasis*, or synthesis of ingredients, on the one hand, and a mixture, on the other, is common but the Greek terms used to describe these kinds varied, as Aristotle’s shifting usage shows. In the *De Anima*, for example, he uses ‘synthesis’ and ‘mixture’ loosely, and sometimes slides from one to the other (e.g., 408a13-8). In *De Generatione et Corruptione*, in contrast, he uses ‘mixture’ to mean ‘a thorough blend,’ and ‘synthesis’ to mean a mere co-location of ingredients (327a30 ff., e.g., 328a8-9). For Aristotle’s loose terminology, see Joachim [?, pp. 175 ff., 185] and Polansky [?, pp. 105 ff.]. Here, ‘synthesis’ is always a synonym for ‘harmony,’ and ‘mixture’ implies combination without such blending.

²²See for example, *Gen. corr.* 328a28 ff.

ical speculation, it makes the theoretical distinction between harmony and mixture explicit in the *Symposium*.

In the *Symposium*, the major notes are marked by passages which contain harmonies and disharmonies, i.e., partially or wholly successful blends of opposites. The sevenths, on the other hand, are marked by examples of mere mixture, temporary combinations in which the differing components commingle without blending and can emerge unchanged.

The traditional Greek lyre had seven strings,²³ and it is probable that the notes at the sevenths correspond to a scale used by such lyres. The semi-legendary musician Orpheus, for example, was associated with a seven-stringed lyre.²⁴ Within the scale of twelve-notes used in the *Symposium*, notes at the sevenths would all be very dissonant, i.e., when played together with the twelfth wholenote,²⁵ and this is the likely justification for marking them by mixtures.

The passage from Eryximachus' speech quoted above, for example, is located two sevenths of the way through the text (the point is marked by the '2/7' in the above quotation). That is, an explicit reference to mechanical mixture and its distinction from harmony marks a seventh note.

Although the interpretation of a single passage cannot be confirmed without studying a range of similar examples, the passage at one-seventh of the way through the *Symposium* provides a concise example of the way Plato could use symbols to mark notes. Phaedrus says there:

Orpheus the son of Oeagrus was (1/7) sent out of Hades unfulfilled, receiving a mere phantasm of the woman he came to get – she herself was not given – because he seemed too cowardly (inasmuch as he was a lyre-player²⁶) and did not dare to die for

²³For a general discussion, see West [?].

²⁴For the traditional seven-string lyre, see the Homeric *Hymn to Hermes*, l. 20 – 67, the Aristotelian *Problemata*, 19.32, and Horace's *Ode* 3.11. For the association of the seven-string lyre with Orpheus, see, e.g., Nichomachus of Gerasa's *Harmonics* in Jan [?, p. 266, l. 1 ff.].

²⁵The ratio between a note at one-seventh and the twelfth note is just $1 \cdot 7$, and this is not a small whole number ratio (nor is seven in the Pythagorean tetraktys). The seven-seventh is the same as the twelfth note on the musical scale, and would therefore be in harmony or 'unison' with it. Thus, only the first through the sixth sevenths are marked by mixture.

²⁶*kitharōdes*. West [?, p. 51]: 'There is no doubt that by *kithara* they meant a box lyre, as used by citharodes ...'

the sake of his love ... but schemed to enter Hades while still alive. (179d2-6)

Here, at one-seventh, we have a reference to the musician Orpheus, who had Pythagorean associations,²⁷ and a reference to a musical instrument which often had seven strings. Comparison to the other passages at the sevenths shows that the key idea here is that Orpheus was among the dead in Hades while still alive and later emerged unscathed. This is an example of a mere, temporary mixture between opposites which, together with the negative tone of sneering derision, marks this dissonant note. Juxtaposing references to Orpheus' music with an example of mixture is a fairly heavy-handed way to draw the attention of anyone counting lines to this passage.

Since the distinction between mixture and harmony was well-known, recognising that the sevenths are marked by mixtures constitutes another kind of evidence that harmonies mark the wholenotes and quarternotes.

There are other locations between the wholenotes, quarternotes, and sevenths which are marked by symbolic passages. For example, each interval between quarternotes is broken into eighths, and the end of each of these is typically marked by a brief phrase. In the following, the note located at the end of each such eighth will be called an 'octad,' for want of a better term. The brevity of the marking passages at the octads and at other locations between the major notes makes them difficult to interpret rigourously and so their discussion, except in a few cases, is avoided here.

1.6 Quick Guide to the Strongest Evidence

An evaluation of the evidence for the musical structure in the *Symposium* should start with the strongest evidence listed here, and not proceed at the outset from the beginning of the dialogue. There are several reasons for this. First, the passages marking the first few notes are emphatically marked with a complicated structure which is not typical of the rest of the dialogue. Second, wholenote two is neither very consonant nor very dissonant and thus is marked in a neutral way. Thus it is best to begin with the highlights selected here.

The next section examines various objections to the following evidence and the conclusions drawn from it.

²⁷Burkert [?, p. 125 ff.].

A simple notation for the musical notes will be used. The wholenotes in the scale are numbered with the integers 0 through 12. For brevity, the quarternotes between the wholenotes are numbered 1 through 3. For example, note 6.3 is the third quarternote after wholenote 6, and 3.0 is just wholenote 3.

The cogency of the following evidence can be simply sampled by comparing a handful of key passages. This approach also uses a bare minimum of music theory: just the well-known fact that the Pythagoreans associated small whole number ratios like 2·3 and 3·4 with ‘harmonies.’ The first step is to examine passages at locations in the *Symposium* (in chapter three) that correspond to fractions composed of small whole numbers: say two-thirds and three-quarters (i.e., notes 8.0 and 9.0). These passages are strongly positive and treat of topics such as beauty, love, and the forms. The second step is to compare these with locations that do not correspond to such fractions, such as ten-twelfths and eleven-twelfths (i.e., notes 10.0 and 11.0). These passages are strongly negative and treat of pain and rejection in a disharmonious relationship. If these two correlations, positive passages at small whole number ratios and negative ones elsewhere, seem coincidental, the same notes in the text of the *Euthyphro* in chapter four may be sampled.

The following sections surveys some of the stronger evidence. The first is restricted to objective features of the *Symposium*’s narrative; the second shows how harmonic theory is intertwined with content.

Narrative Structure Reflects Musical Structure

Plato uses the underlying musical structure as an outline for the dialogue. Major shifts in the narrative, such as changes between speakers, tend to occur at or near musical notes. Episodes fill out the intervals between notes and, within speeches, major developments or new topics occur at the notes.

Here and below, a passage is *at* a note when it is within two or three lines of the calculated position of the note in the Oxford Classical Texts edition of the dialogues; it is *near* a note when it within five or six OCT lines. In the *Symposium*, there are typically about forty OCT lines between quarternotes.

Dramatic Climaxes at Notes. The rhetorical and philosophical peak of Socrates’ speech, the vision of the form of Beauty in the great ocean of beauty at the top of Diotima’s ladder, lies *at* three-quarters of the way through the *Symposium*. This single fact is sufficient to establish a *prima*

facie case for some underlying structure. It may, of course, be an accidental coincidence. The probability of this can be reduced by adducing more evidence. For example, the secondary peak of Socrates' speech, the begetting with beauty, lies *at* two-thirds of the way through the text. Together, these two passages, at notes 9.0 and 8.0, are strong, initial evidence for the underlying musical structure.

Lengths and Locations of the Speeches. Another kind of simple, objectively measurable evidence is the lengths of the speeches and their alignment with the musical scale. The *Symposium* provides a good introduction to these features because of the many changes in speakers. The locations of the notes themselves are marked with passages describing a harmony or disharmony, and the speeches tend to begin or end on either side of these marking passages.

Aristophanes' speech ends at note 5.0. Agathon's speech begins at the next quarternote 5.1. Thus the intervening banter between Socrates and Agathon fills a quarter interval. Agathon's speech ends near note 6.0, and thus lasts for the three quarter-intervals from 5.1 to 6.0.

The banter between Agathon and Socrates that follows Agathon's speech also lasts a quarter-interval. Socrates agrees to make a speech at 6.1 and begins his cross-examination of Agathon there. Socrates finishes his speech at note 9.1. Socrates' speech thus lasts for the three whole intervals from 6.1 to 9.1, or one fourth of the entire dialogue.

It may, again, be a coincidence that Socrates' speech has such a length, but that its beginning and end are also aligned with notes in the scale requires two such coincidences.

The Musical Scale as Outline. Aristophanes' speech clearly shows how the major sections and developments in the speeches are organised by the underlying musical scale. Each major step in his speech is lodged at a musical note:

- At 4.0, the three primitive wholes are introduced (male, female, androgyne)
- At 4.1, they are cut apart by Zeus to restore virtue.
- At 4.2, the halves are seeking re-unification through love.
- At 4.3, Hephaestus envisages the unity or 'harmonisation' of the lovers.

Episodes Fill Out Musical Intervals. Episodes or unified sections of the *Symposium* tend to occupy an integral number of quarter-intervals. For a further example, in the second line of the dialogue, the narrator begins to recollect an earlier request to recount the events at Agathon's party. This passage of recollections lasts from the opening of the dialogue to the first quarternote, and thus fills one quarter-interval.

Octads. The musical structure is closest to the surface of the dialogue at the climax of Diotima's speech. As mentioned above, the quarter-intervals between the major notes are broken into eight short sections whose ends are each marked with a brief phrase. Diotima's ladder is a particularly clear example of these 'octads.' Each step up the ladder is located at an octad. The ascent begins at a quarternote and the steps are equally spaced in the text:

- Step 1 at Quarternote: Love a single body (8.3)
- Step 2 at Quarternote: General form of beauty in bodies (8.3)
- Step 3 at Octad 1: Beauty in the soul
- Step 4 at Octad 2: Beauty in activities and customs
- Step 5 at Octad 3: Beauty in branches of knowledge
- Step 6 at Octad 4: Ocean of beauty: philosophy
- Step 7 at Octad 5: The vision of the final end or telos of erotics

The description of the form of beauty that follows stretches from the fifth octad until the peak at 9.0.

Similarly, when Agathon ticks off features of Eros, his beauty and virtues, each of these is located at an octad:

- Octad 2: Beauty
- Octad 3: Justice
- Octad 4: *Sōphrosunē*
- Octad 5: Courage
- Octad 6: *Sophia*

In both these examples, the equal spacing of the key phrases as well as their alignment with the musical structure militates against the possibility that these structures are accidental.

Sevenths. As mentioned above, Orpheus, who was known for his typically seven-stringed lyre, enters one-seventh of the way through the dialogue. Comparison with the passages at the other sevenths suggests they describe mere mixtures of opposites: live with dead, wise with foolish, etc. Just such a mixture, wherein things are combined ‘while still differing,’ is discussed at the second seventh.

Musical Symbols: the Correlation with Harmonic Theory

Not just the lengths and positions but the content of the speeches is carefully co-ordinated with the underlying musical scale. This correlation is surprisingly consistent.

Harmonies. The two climaxes of Diotima’s speech with their rarified praise of beauty are at two of the most consonant notes (8.0 and 9.0). Beauty is, she says, a kind of harmony with the divine, and this makes beauty an appropriate marker for these consonant notes.

Another form of harmony is a *krasis*, the thorough blending of once distinct elements. Hephaestus’ offer to weld together the two lovers permanently is the most vivid example of a *krasis* marking a consonant note (4.3).

Eryximachus’s explicit definition of ‘harmony’ in music, erotics, and medicine marks a consonant note (3.2), and is part of a series of consonant notes marked by passages describing kinds of harmony:

- Harmony at 3.0: Heavenly Eros leads to virtue (participating in goodness).
- Harmony at 3.1: Medicine harmonises bodily forces.
- Harmony at 3.2: Definition of musical harmony.
- Harmony at 3.3: Prophecy harmonises gods and humans.

Disharmonies. In contrast, disharmonies mark the dissonant notes. For example, the passage at note 7.1 describes the opposing virtues and vices Eros inherited from his parents, Resource and Poverty. The negative traits are lodged at the note and his discordant character marks this dissonant note. Here, the opposing elements are permanently harnessed together, but they remain an unhappy combination of positive and negative.

Socrates’ elenchus of Agathon marks note 6.3. This is, again, an agreement (harmony) that assertions have been contradictory (disharmony), and this

combination is a ‘fitting together’ in a negative or jarring way – which is disharmonious.

The interval between the tenth and eleventh notes contains many of the most negative and vivid passages in Plato’s dialogues. This is the location, for example, of the *Phaedo*’s tour of the underworld and the *Republic*’s account of the tyrant’s vices. In the *Symposium*, this quite dissonant range of notes is devoted to Alcibiades’ frank retelling of his scandalous, failed attempt to seduce Socrates:

- Disharmony at 10.0: Socrates is compared to an ugly, piping satyr (killed by Apollo)
- Disharmony at 10.1: Alcibiades runs away from Socrates (breaking agreements, relationships), and again compares him to the satyr.
- Disharmony at 10.2: Alcibiades’ first advances are rejected (disagreement), he feels distress and aporia (inner disharmony)
- Disharmony at 10.3: Alcibiades’ awful offer to exchange sex and his patronage for Socrates’ moral help
- Disharmony at 11.0: Alcibiades is again rejected by Socrates and feels extreme distress and dishonour.

This dissonant range of notes is a sharp contrast to the consonant ranges surveyed above.

These highlights make a powerful, *prima facie* case for existence of musical structure in the *Symposium*. In the following chapters, the annotations to all the notes in the musical scale show that the scheme introduced here is applied consistently throughout entire dialogues, and provides new evidence for the depth and richness of Plato’s creation.

1.7 Methodology and Responses to Possible Objections

This guide, as mentioned at the outset, takes a direct route to the key evidence. Another monograph, in preparation, devotes considerable space to historical context, methodology, and the interpretation of the musical patterns. The following briefly responds to a few points which commonly

come up in discussions, but these can only serve as starting points for debate.

Interpolations, corruptions, and omissions have so altered Plato's texts during their transmission from ancient times that no accurate measure of location is possible.

There is a consensus among textual critics that Plato's dialogues are in surprisingly good shape, although there are thousands of problematic passages. For this reason, the measures used here can only claim an approximate, statistical accuracy.

Several factors operate to improve the reliability of the measurements. First, the important musical relationships are all relative. This means that only relative measures and not absolute locations are important here. That is, it is essential in this study to locate the approximate midpoint of the dialogues, but whether or not the total number of lines on either side of that midpoint differs appreciably from Plato's autographs is not important. Second, a fairly uniform distribution of textual corruptions will compensate for each other (they will 'average out'), and not significantly affect relative measurements. If smaller omissions and interpolations are scattered evenly through the text, they will not shift, for example, the measured midpoint of a dialogue. Thirdly, chapter five shows, surprisingly, that the 'error' in the measured position of the locations of passages can itself be measured. It is possible to measure 'how corrupt' our texts are, and so to re-calibrate and correct the measurements of relative location.

Careful study shows that the measurements of relative location reported here are generally accurate to within a fraction of a percent.

Plato had no motivation for hiding things in his dialogues.

The question of motivation is complex and made more so by sceptical worries about the inaccessibility of 'authorial intention.'

The debate must start, however, with the historical research on the common practice of 'reserving knowledge' in ancient religions, cults, s, and fraternal societies. It was then normal, as Burkert says,²⁸ to conceal knowledge of doctrine, ritual, practical techniques, etc. This had, among other things, the sociological function of reinforcing the cohesion of groups by emphasising the distinction between insiders and outsiders. Secrets had a 'mystique.' Before

²⁸Burkert [?, pp. 7 ff., 45 ff., etc.].

modern institutions like copyright, patents, and tenure created a culture which rewarded sharing information, withholding it was the norm.

The so-called Pythagoreans in particular were regarded in later antiquity as a sect which reserved its knowledge and used secret or cryptic ‘symbols’ of various kinds. The tales of persecution associated with the sect may have been one motivation for such concealment.²⁹

The core of Platonism, as it is generally understood, is a distinction between appearance and reality, between sensible things and the underlying forms. To say that Plato gave his dialogues a hidden musical structure is merely to say that he gave them the kind of structure he regarded as common to all things. Platonism itself is sufficient motivation.

Aristotle was in the Academy together with Plato for some twenty years. If there were symbolic layers of meaning in the dialogues, there would be some evidence for it in his treatises. But Aristotle’s Politics, for example, which discusses Plato’s Republic at length, never treats it as a symbolic text.

Aristotle’s comments on the sect he styles the ‘so-called Pythagoreans,’ especially the fragments collected by Ross[?], show that Aristotle was a knowledgeable outsider. He can contemptuously mock their scientific theories (e.g., at *Met.* 989b29 ff.) and generally treats their lore as mere myth. There is no indication in Aristotle’s writings that he was especially favourable to Pythagoreanism or an initiate.

Although Aristotle expresses admiration for Plato, there is little or no evidence in his treatises of any close relationship with Plato (who was some forty years older). Most of Aristotle’s information about Plato comes from reading the dialogues or public lectures. Perhaps motivated by Aristotle’s failure to succeed to the headship of the Academy, there were ancient rumours of hostility or some rupture in the relationship between Aristotle and Plato.

Aristotle did emphasise, like other members of the early Academy, that Plato followed the Pythagoreans, but there is no reason to think he would have been privy to any reserved knowledge.

The claims made here are a version of the ‘unwritten doctrines’ school of interpretation, but that was refuted long ago by Cherniss and Vlastos.

The view that there were esoteric, orally transmitted ‘unwritten doctrines,’

²⁹Burkert [?].

which has been advocated by Gaiser, Krämer, and others associated with the Tübingen school, was widely rejected by anglophone philosophers. More recent writers, however, have found a middle position. Dillon, Kahn, and Sayre, for example, agree that there was much discussion in the Academy about Plato's mathematical or Pythagorean metaphysics, but disagree that there was any sustained effort to withhold these views or transmit them orally alongside the 'exoteric' dialogues.

The theses advanced here should be sharply distinguished from claims about any putative unwritten doctrines. In short, the claim made here is that there are structures hidden *within* the dialogues using various kinds of symbols.

However, the structures found here in the dialogues do tend to accord with and corroborate the ancient reports of Plato's Pythagorean metaphysics, which are accepted by Dillon, Kahn, and Sayre, and which form part of the motivation for Tübinger interpretations.

If there were a musical scale embedded in the text, it would have been discovered before.

If a census were taken, it would probably be found that, from first-century Neo-Pythagoreans to Renaissance Neo-Platonists, the dominant view was that Plato used symbols to conceal deeper meanings of his dialogues. For most of history, Plato was the arch-allegorist. Much of the Western tradition of allegorical literature was avowedly inspired by Plato (Dante, Spenser, etc.). The turn away from this view, at first by Eighteenth Century theologians trained to read scripture literally, needs more study. Many of the early allegorical interpreters asserted that they themselves would not reveal the dialogues' deeper secrets. This was doubtless often claptrap, but will now need to be carefully re-evaluated.

The fragments of the early Neo-Pythagoreans, in particular, seem to combine an insistence on the presence of symbolic meanings in the dialogues with an emphasis upon the twelve-note scale (not just the well-known 6-8-9-12 schema for the octave). This could be a coincidence, but it is a striking one.

The argument is circular. Evidence is taken from the dialogues, used to construct theories, and then used to 'confirm' these same theories.

Philosophers have clarified the way that evidence-based, empirical theories generally emerge from a virtuous circle: patterns are abstracted from data

and generalised into theories, these are tested on broader sets of data, more refined patterns are abstracted, then more detailed or more exact theories are constructed, and so on. Theories generally rest on patterns abstracted from the evidence. The critical point is that new or broader sets of evidence are used in ever more general tests of the the theory.

This is exactly what happened here. The patterns were first noticed in the *Republic*. In that longer dialogue, the passages marking the notes are longer and stand out in the somewhat meandering narrative. The question of whether the pattern was general was tested by examining all the genuine dialogues in turn. This is the reason that two dialogues are analysed here. The quite specific theory of the *Symposium*'s structure will be shown to fit the *Euthyphro* too.

A widely discussed criterion for the cogency of evidence-based theories is 'falsifiability.' Some theories, such as Marxism or Freudianism are elastic enough to accommodate any data: they cannot be proved wrong (or so their critics claim). A good theory should be stringent enough to fail. It should be incompatible with some data.

The present theory that there are musical patterns in Plato's dialogues is falsifiable in this sense. There are some ten dialogues, transmitted from antiquity, whose authenticity has been disputed. They are similar in content and style to the dialogues agreed to be genuine but are thought to be imitations or forgeries. As discussed in a separate essay [?], about half of these so-called spurious dialogues were found to have the twelve-note musical structure and about half not. This is important because it shows that the musical patterns are specific, stringent, and testable.

Thus the present theory is successful because it matched novel, more general sets of evidence and because, as might be expected, it failed to match some of the spurious dialogues.

The evidence consists of a series of coincidences.

All inductive theories are verified by matching theory to evidence, i.e., upon 'coincidences.' This is no fault in itself. Inductive theories are accepted when it is judged that the coincidences they rest on are not mere accidents. Although any single case may be an accidental coincidence, inductive theories generally proceed by accumulating so many 'coincidences' that the assertion that they are mere chance accidents becomes empty scepticism. The strategy here is therefore to provide an abundance of evidence, first

by collecting particularly striking instances and then by showing that entire dialogues accord with and thereby confirm the musical patterns.

Patterns are being imposed on rather than discovered in the text.

The claim here is that the patterns exist in the texts and are as objective as any observable pattern. Although it is sometimes fashionable to deride literary criticism as subjective, no sensible interpreter would deny that Dante, Spenser, or Joyce use symbols or allegories in their compositions (however much the detail may be debated). The argument here is that Plato should be considered a similar writer – or, indeed, a progenitor of that tradition.

The class of concepts supposedly marking the locations of the musical notes, the genus of ‘harmony,’ is so wide and loose that anything might count as a marker.

Two phases of inquiry should be distinguished: the first seeking to establish that the dialogues have a musical and stichometric structure, and the second seeking a comprehensive interpretation of the passages at every musical note.

In the first phase, the various kinds of strong evidence surveyed above are sufficient. Among these, there are clear instances in which species of harmony coincide with the locations of notes: such as Eryximachus’ discussion of musical harmony (3.2) and Hephaestus’ vision of the united lovers (4.3). In addition to these, there are other kinds of evidence for the underlying scale, such as the correlations with features of the narrative, which do not depend upon precisely delimiting the genus of ‘harmony.’

The problem of finding rigorous criteria for distinguishing among less clear cases of what counts as ‘harmony’ affects the second, ‘mopping up’ phase. The approach taken here has been to follow the explicit connections made in the dialogue. For example, beauty is said to be *harmostos* with the divine before note 8.0, and this is why beauty counts in this dialogue as a species of harmony. Similarly, rehearsing or practising speeches is said to foster the participation of mortal in the immortal after note 8.2, and so counts as a ‘harmonisation.’ It is true, however, that problematic cases remain – as might be expected in all literary interpretation.

Plato could not have inserted so many symbols without awkwardly disturbing the surface narrative.

It does require great ingenuity to write at several levels at once, but this is common in allegorical literature. In this regard, Plato’s writings are not

exceptional.

A musical scale of twelve, equally-spaced notes was not known to ancient Greek music.

It was not a common scale and may not have been used by musicians in performance. However, as the references above show, this scale and its near-variants were well-known to music theorists. Moreover, it is just the kind of scale the Socrates of Plato's *Republic* would embrace: its intervals are mathematically regular and are not determined by the limitations of our outer senses.

Chapter 2

An Emphatic Pattern in the Frame

There is much stopping and starting at the beginning of the *Symposium*. These motions seem incidental, but they are *equally spaced* through the frame: the same number of Greek lines occurs between each scene. In particular,

- Apollodorus is hailed on the road to Athens and stops walking.
- Apollodorus and his friend start walking towards Athens.
- Socrates departs for Agathon's party but stops in a neighbor's porch.
- Finally arriving, Socrates walks to and sits down on Agathon's couch.

Moreover, these passages occur at the locations in the text where, according to the theory outlined in the last chapter, the musical notes should fall. This chapter argues that these passages contain a repeated cluster of symbols which can only be understood by comparing them carefully to the theory of musical harmony expounded in Eriximachus' speech. Plato is marking the first four notes emphatically, and thereby firmly establishing the rhythm of the musical intervals within the dialogue – just as a musician begins a song by calling out 'ONE, two, three, four ...'

The frame of the *Symposium* is considered here in a separate chapter because its notes are marked with a series of symbols that does not continue unaltered into the rest of the dialogue. As suggested above, evaluation of the evidence

for the musical structure should start with the short guide in the previous chapter.

Here and below, Jowett's translation of the *Symposium* is used as a base, but the critical, symbolic passages are often modified to make them less literary and more literal.¹

The next section reviews Eryximachus' theory of music, and especially the roles of motion and harmony, and then uses his theory to elucidate the clusters of symbols at the opening quarternotes. The commentary which follows is a more expansive and detailed discussion of the passages at each note.

2.1 A Theory of Music

An important key to the dialogue's symbolism is found in Eryximachus' discursus on music theory (187a1 ff.). He there criticises Heraclitus' theory of harmony as it is presented in the elliptical fragment about the bow and the lyre, and offers in its place a theory which helps to elucidate the pattern in the frame.

Eryximachus' theory can be concisely presented as a series of theses:

- Music involves combinations of opposites, both of the fast and the slow (tempo) and of the high and the low (pitch) (187b1-3, b7-c1).
- The combination or steady balance between fast and slow is 'rhythm' (b7), that is, the rhythmic temporal progression of the music as determined by the tempo of the beat or the pattern of short and long syllables in verse or song.
- The combination or blending of high and low pitches is 'harmony' in its specialised musical sense, a 'sounding together' (*symphōnia*) (a8-b2).

¹Consistent translations are preferred for key words, and any word which may have musical connotations is translated in a way that makes them explicit (e.g., since an encomium is usually sung, *enkomiazein* may be translated as 'to sing the praises of' instead of just 'to praise.')

Neither the *Symposium* nor the *Euthyphro* has been translated afresh for this guide for two reasons. First, to render the symbolism more clear, the modified translation used below is allowed to become more literal and thus, at times, more awkward. This is not meant as a reader's translation, but rather as a quick index to the evidence for the musical structure. Second, my own more literary translation with commentary, already in draft, will be published as a separate work.

- Both rhythm and harmony are types of ‘agreement’ (*homologia*). Agreement cannot consist, Eryximachus emphasizes, of differing or disagreeing elements while they disagree (2/7), but only of formerly differing elements which are somehow made to agree (a8-b7).
- Music establishes agreement in all these cases by implanting *eros* and *homonoia*, or love and sameness of nous (c2-4). Eros is the third mediating force which reconciles two opposite and disagreeing elements.
- Thus music is the knowledge or science of ‘erotics,’ a *technē* for harmonising opposites and thereby creating rhythm and harmony (c4-8, 3.2).

Plato succinctly summarised this view of music in the *Laws*: ‘rhythm is the name for the order of the motion and harmony is the name for the order of the sound.’²

The very word for the kind of agreement involved in music, *homologia*, suggests that the music of ordinary, prosaic speech may also be harmonised. The connection between music theory and speech is later made explicit when Alcibiades compares Socrates to a mythical musician:

And aren’t you, [Socrates,] an *aulos* player! You are much more marvellous than [the satyr Marsyas]. He enchanted humans with [musical] instruments by the power of his mouth ... You differ from [Marsyas] only in so far as you do this ... without instruments, by language naked and bare, [that is, by speaking unmetrical prose] (215b8-d1, 10.0).³

Alcibiades here says that Socrates’ speech makes him a musician. This makes an important concept available for interpreting Plato’s symbols: Eryximachus’ theory of harmonisation in music may apply to ordinary speech.

2.2 Recurring Clusters of Features in the Frame

The following analyses similarities between four passages in the frame of the *Symposium*. These are similar enough to attract the attention of any reader attending to the possibility of Pythagorean symbols in the dialogue, and

²*tē dē tēs kinēseōs taksei rhuthmos onoma eiē, tē de au tēs phōnēs ... harmonia ...*, 664e8-a2

³See Bury’s notes to 215c [?, p. 145].

would introduce the musical structure to such readers. Careful study of the all the passages located at similar intervals from each other would gradually reveal the whole musical scheme.

Four elements are repeated at the initial whole note (0.0) and at the next three quarternotes (0.1, 0.2, and 0.3):

- **Activity/Motion:** walking or ‘doing.’
- **Opposition Between Wise and Unwise:** some association between the wise and unwise, or between philosophers and non-philosophers.
- **Agreement/Harmony:** an agreement or an assent to a call, request, or invitation.
- **Inactivity:** some cessation of activity.

As mentioned above, the three quarternotes stand out in a further way: cognates of the word *sophia* appear once at each note but not in between them.⁴

Eryximachus’s theory explains this recurrent pattern. The clusters of features are a kind of symbol for a musical sound or note. The motion or activity which occurs at the locations of the quarternotes but not between them is the ‘motion’ constitutive of musical rhythm. The resumption and cessation of the motion symbolises the beginning and end of a musical sound. Eryximachus’ ‘harmony of high and low’ is here the ‘agreement of wise and unwise.’ The invitation and its acceptance are a harmonisation produced in ordinary speech.

Eros or *philia* are arguably involved in each of these four agreements, and thus, as Eryximachus suggested, it is erotic forces which brings about each harmonisation.

In sum, there are two forms of interlocking evidence for musical structure in the opening frame. First, the emphatic recurrence of features in the four, equally separated passages suggest some sort of structure in the text. Second, the satisfying congruence with Eryximachus’ theory of harmony suggests they are indeed symbols for musical notes.

⁴‘Sophia’ does occur between 0.0 and 0.1. There is complicated, dense symbolism in this first quarter-interval. In general, arguments about symbols at the locations at notes do not imply that similar symbols do not occur between notes.

2.3 A New Kind of Commentary

To re-create the experience of reading Plato on a classical, literary scroll, a long, five or ten metre strip of smooth papyrus with its parade of neatly lettered, regular columns, the translated text of the *Symposium* is separated below into a succession of sections of equal length. Each ‘column’ on the left hand page contains approximately one quarter-interval of text, with the calculated location of the wholenote or quarternote placed approximately in the centre of the page (except for the first and last pages).

This is a new kind of commentary. Its ambition is to make the structure beneath the surface of the text apparent. It exposes the regular patterns of symbols by making their relations to the over-arching schema clear and distinct.

Several strategies are used:

- The locations of the musical notes and other mathematically significant locations in the text are marked. In classical literary papyri, the regularity of the columns and lines would have made these locations easy to track.
- The paragraph or so of text which marks each note is in boldface. The length of these marking passages varies. For example, the more consonant or dissonant notes may be marked more emphatically by longer passages.
- Plato’s musical symbols are glossed in the text with their connections to the various species of harmony and disharmony. These species are analysed systematically in an appendix, where arguments for the various identifications will be found, but the glosses should make immediately clear the musical significance of each passage.
- The correlation between the organisation of the surface narrative and the underlying scale is similarly glossed. The beginnings and ends of speeches that coincide with musical notes, for example, are so labelled.
- The more extended annotations on the right-hand pages collect together the various elements of the marking passages, and assess, for example, whether they are as a whole harmonious or disharmonious. In order to make each annotation as self-contained as possible, some information may be repeated.

Generally speaking, information which can be found in traditional commentaries is omitted.

After surveying the strongest evidence, collected in the previous chapter, a thorough page-by-page examination of the *Symposium's* symbolism might proceed in the following way. The boxed glosses on the left-hand page will give a preliminary idea of the interpretation of each marking passage and its location on the scale. The discussion on the right summarises the interpretation, and might be read before a close reading of each passage in boldface.

The glosses and commentary often depend upon passages elsewhere in the *Symposium*. An appendix constructs a typology of the dialogue's markers and discusses the connections between them, and is essential for clarifying the unity and rigour of Plato's symbolic system.

.

NOTE 0.0 I believe I have got the story you inquire of pretty well by heart (*ouk ameletētos*). **HARMONY: RECITING SPEECHES** The day before yesterday I chanced to be going up **MOTION** to town from my house in Phalerum, when one of my acquaintance **OPPOSITES** caught sight of me from behind, some way off, and called in a bantering tone ‘Hullo, Phalerian! I say, Apollodorus, wait a moment.’ So I stopped and waited **1/8** **HARMONY: AGREEMENT; STOP**

Then, ‘Apollodorus,’ he said, ‘do you know, I have just been looking for you, as I want to hear all about the banquet that brought together Agathon [172b] and Socrates and Alcibiades and the rest of that party, and what were the speeches they delivered upon love. For somebody else was reciting to me the account he had from **2/8** Phoenix, son of Philip, and he mentioned that you knew it too. But he could not tell it at all clearly so you must give me the whole story, for you are the most proper reporter of your dear friend’s discourses. But first tell me this,’ he went on, ‘were you at that party yourself, or not?’ To which my answer was: ‘You have had anything **3/8** but [172c] a clear recitation from your reciter, if you suppose the party you are asking about to have been such a recent affair that I could be included.’ ‘So I did suppose,’ he said. ‘How so, Glaucon?’ said I, ‘You must know it is many a year that Agathon has been away from home and country, and not yet three years that

Note 0.0 (172a1)

Plato is pioneering a new kind of symbolism. In the opening sentence of the *Symposium*, the narrator says he has practised reciting the story of Agathon's party: he is 'not unpracticed' (*ameletētos*). The symbolic import of this word is revealed by two facts. First, at the location of a later musical note, Diotima says just this kind of repeated practicing preserves intellectual creations and thereby gives them and their authors a kind of immortality. 'Through this device, a mortal thing participates in immortality ...' (note 8.1, 208b2-3). Second, such 'participation' is an example of the blending or *krasis* which marks the notes in the *Symposium*. In this dialogue, participation is a species of the genus of harmony. This places a brief allusion to a kind of harmonisation in the opening sentence, and this symbol serves to mark the initial wholenote in the musical scale.⁵

Since music is, for Plato, motion (through time) and harmony (of pitches), the initial notes are marked by references to motion and the agreement of opposites:

- **Activity/Motion:** Apollodorus was recently going up to the city (a2).
- **Opposition Between Wise and Unwise:** the narrator studies philosophy, the questioner, Glaucon, turns out to be ignorant (c3 ff., b8-9).
- **Agreement/Harmony:** Apollodorus assents to a 'call' from behind by stopping (a4, 1/8).
- **Inactivity:** Apollodorus stops and waits (a5).

Much of the activity in the dialogue's frame serves as a pretext for introducing and repeating this symbolic structure.

Octads, The Markers Between the Quarternotes: Brief phrases mark locations between the quarternotes. Here, the octads are marked by further references to harmony: 1/8 by agreement, and both 2/8 and 3/8 to 'recitation' or practising of speeches.

⁵Although the evidence is too extensive to collect here, Plato elsewhere uses words with the syllable *mel*, like *ameletētos*, to refer to music, perhaps because of its connection to 'melody' (*melos*).

I have been mixing (*sundiatribō*) with Socrates and making it my daily care (*epimeles*) [4/8] to know whatever he says or does. Before that time, [173a] what with running about at random and thinking I did things, I was the wretchedest man alive; just as you are at present, thinking philosophy is none of your business.’ ‘Instead of jeering at me,’ he said, ‘tell me when it was that this party (being together,’ *sunousia*) [5/8] took place.’ ‘When you and I were only children,’ I told him; ‘on the occasion of Agathon’s victory with his first tragedy: the day after that of the dedicatory feast which he and his players held for its celebration.’ ‘Ah, quite a long while ago, it would seem,’ said he; ‘but who gave you the account of it? Socrates himself?’ ‘Goodness, no!’ I answered. ‘It was the person who told Phoenix [173b] – Aristodemus [6/8] of Cydathenaum, a little man, who went always barefoot. He was of the company there, being one of the chief among Socrates’ lovers at that time, I believe. But all the same, I have since questioned Socrates on some details of the story I had from his friend, and he acknowledged them to be in accordance with his account.’ ‘Why,’ he said, ‘don’t you recite it to me?’ [7/8] **In fact the road up to town is well suited for telling and hearing as we go along.** So on we went [MOTION], discoursing the while of this affair; [173c] and hence, as I said at the beginning, I have it pretty well by heart. [REF. TO BEGINNING, EPISODE ENDS AT NOTE] So, if you too must hear the whole story, I had better tell it. [HARMONY: AGREEMENT] For my own part, indeed, I commonly find that, when I recite speeches [NOTE 0.1] about philosophy [WISE] or hear them from someone else – [HARMONY: RECITALS] apart from thinking them useful – I delight [PLEASURE] in them preternaturally. Whereas in the case of other sorts of talk – especially that of your wealthy, money-bag friends [UNWISE] – I am not only distressed [PAIN] myself but pity dear intimates like you, who think you are doing a great deal [DISHARMONY: DISAGREEMENT] [1/8] when you really do nothing at all. [STOP] [173d] From your point of view, I daresay, I seem a hapless creature, and I think your thought is true. I, however, do not think it of you: I know it for sure.’ [Companion:] ‘You are the same as ever, Apollodorus, – always defaming yourself and every one else! Your view, I take it, is that all men alike are miserable – except for Socrates – [2/8] starting with yourself. How you may have come by your title of “crazy,” I do not know: though, of course, you are always like that in your way of speech – raging against yourself and everybody except Socrates. [Apollodorus:] ‘My dear sir, obviously it must be a mere [3/8] manic aberration in me, to hold this opinion of myself and of you all!’ [Companion:] ‘It is waste of time, Apollodorus, to wrangle about such matters now. Come, without more ado, comply with our request and relate how the speeches went. [Apollodorus:] ‘Well then, they were somewhat as follows, – but instead, [173e]

Note 0.1 (173c3)

The text itself calls attention to the interval between the first and second notes. Apollodorus's comment here, 'as I said at the beginning, I am not unpracticed ... (173c1),' points directly back to the first sentence of the dialogue. This repeated assertion bookends the recollected episode, which fills out the first quarter-interval. Apollodorus now returns, at the note, to direct discourse. In general, Plato uses the musical scale as an outline and makes passages dealing with an episode or topic stretch out over one or more quarter-intervals. The narrative structure reflects the musical structure.

Like the first note, the passage at this note describes a roadside scene. The four features of the motion-harmony pattern are found again in the paragraph around the location of the note:

- **Activity/Motion:** the speakers are walking along the road to the city (b9).
- **Opposition Between Wise and Unwise:** philosophy contrasted with worldly pursuits (c5 ff.).
- **Agreement/Harmony:** Apollodorus agrees to recite the speeches (c2).
- **Inactivity:** Apollodorus knows that his interlocutor is really 'doing nothing' (d1).

Observe that positive terms cluster around the note, and negative ones afterwards: agreement, pleasure, and wisdom are followed by disagreement, pain, and ignorance.

Markers Between the Notes: At 4/8, the word *sundiatribein* means 'to spend time together,' but *tribein* can mean 'rub,' 'grind,' or 'knead' (as the *pharmakon* at *Phaedo* note 11.3 = 117a6-7), and so *sundiatribein* is etymologically 'to knead or mix together,' a symbol for *krasis* or harmony (its cognates will appear twice in the closing lines of the *Symposium* and twice in the opening lines of the *Euthyphro*). The midpoints of the quarter-intervals are generally marked more emphatically. Here, at 4/8, there is a reference to Socrates, a synonym for *krasis*, and another allusion to 'melody' (*epimeles*).

SPEECH BEGINS HALFWAY BETWEEN NOTES

I must try and tell you all in order from the beginning, [174a] just as my friend told it to me. $\frac{4}{8}$ **SOCRATES ENTERS** He said that he met with Socrates fresh from the bath and wearing his best pair of slippers – quite rare events with him – and asked him whither he was bound in such fine trim. ‘To dinner at Agathon’s,’ he answered. ‘I evaded him and his celebrations yesterday, fearing the crowd; but I agreed $\frac{5}{8}$ to be present today. So I got myself up in this handsome style in order to be a match for my handsome host. Now tell me,’ said he, ‘do you feel in the mood [174b] for going uninvited to dinner?’ ‘For anything,’ he said he replied, ‘that you may bid me do.’ ‘Follow along then,’ he said; ‘let us corrupt the proverb with a new version: What if they go of their own accord, the good men $\frac{6}{8}$ to our Goodman’s board? Though indeed Homer may be said to have not merely corrupted the adage, but debauched it: for after setting forth Agamemnon as a man eminently good at warfare, [174c] and Menelaus as only ‘a spearman spiritless,’ he makes $\frac{7}{8}$ Menelaus come uninvited to the banquet of the former, who was offering sacrifice and holding a feast; so the worse man was the guest of the better.’ **To this my friend’s answer, as he told me, was: ‘I am afraid mine, most likely, is a case that fits not your version, Socrates, but Homer’s – a dolt going uninvited to the banquet of a wise man. MOTION, OPPOSITES**

Be sure, then, to have **NOTE 0.2** a defence speech (*ti apologēsē*) ready when you bring me **HARMONY: RECITE SPEECH**; for I shall not agree to coming uninvited, [174d] but will come at your invitation.’ **HARMONY: AGREE** ‘When two are going together,” he remarked, ‘there’s one further along the road’ in devising what we are to say. So, let’s go.’ **MOTION** With some such conversation, he told me, they started off. Then Socrates, becoming absorbed in his own thoughts along the road, $\frac{1}{8}$ fell behind him as they went; **STOP** and when my friend began to wait for him he bade him go on ahead. [174e] So he came to Agathon’s house, and found the door open; where he found himself in a rather ridiculous position. For he was met immediately by a servant from within, who took him where the company was reclining, $\frac{2}{8}$ and he found them just about to dine. However, as soon as Agathon saw him, ‘Ha, Aristodemus,’ he cried, ‘right welcome to a place at table with us! If you came on some other errand, put it off to another time: only yesterday I went round to invite you, but failed to see you. But $\frac{3}{8}$ how is it you do not bring us Socrates?’ At that I turned back for Socrates, he said, but saw no sign of him coming after me: so I told them how I myself had come along with Socrates, since he had asked me to dine with them. ‘Very good of you to come,’ he said, ‘but where is the man?’ [175a] ‘He was coming in just now behind me: I am wondering myself where he can be.’

Note 0.2 (174c8)

Like the two previous marking passages, this describes a roadside scene. That is, three passages in a row which fall at the calculated positions of musical notes all describe conversations and motion along a road. The passages filling the intervals between these notes do not refer to roadside conversations. The four features emphasising the frame's quarternotes recur here:

- **Activity/Motion:** Aristodemus jokes about 'going,' and they depart (c7, d4).
- **Opposition Between Wise and Unwise:** Socrates and Aristodemus, who is a mediocrity, visiting a 'wise man' (c7).
- **Agreement/Harmony:** Aristodemus agrees to Socrates' invitation (*keklēmenos* or 'call') to dinner (d1-3); Socrates agrees to give a 'defense speech' (c8 ff.).
- **Inactivity:** in a 'fit of abstraction,' Socrates stops on the road (d5-6).

Socrates' quip, 'if two go along together ...' emphasizes the harmony in motion: two friends are coupled together and travel along the road.⁶

Narrative Structure Reflects Musical Structure: The narrator begins to recount the story of Agathon's party halfway between the quarternotes. This midpoint is also the place where Socrates first enters in the dialogue.⁷

⁶There is also an allusion to Homer, but material in the commentaries will not be repeated.

⁷This point in the dialogue is harmonically significant and therefore may be an appropriate place for Socrates to enter the dialogue. This midpoint at 4/8 is five 'octaves' from the end of the dialogue, and is therefore faintly consonant with the twelfth note of the musical scale. That is, if twelve is divided in half five times (each division produces a note an octave apart), the resulting location is just the midpoint here between the quarternotes. Similarly, Socrates enters the andron at four octaves (see the appendix on the octaves).

‘Go at once,’ [4/8] said Agathon to the servant, ‘and see if you can fetch in Socrates. You, Aristodemus, take a place by Eryximachus.’ So the attendant washed him and made him ready for reclining, when another of the servants came in with the news that our good Socrates had retreated into their neighbors’ porch; there he was standing, and when bidden to come in, [5/8] he refused. ‘How strange!’ said Agathon, ‘you must go on bidding him, and by no means let him go.’ [175b] But this Aristodemus forbade: ‘No,’ said he, ‘let him alone; it is a habit he has. Occasionally he turns aside, anywhere at random, and there he stands. He will be here presently, I expect. So do not disturb him; let him be.’ ‘Very well then,’ said [6/8] Agathon, ‘as you judge best. Come, boys,’ he called to the servants, ‘serve the feast for the rest of us. You are to set on just whatever you please, now that you have no one to direct you (a method I have never tried before). Today you are to imagine that I and all the company here have come on your invitation so look after us, and earn our compliments.’ [175c] Thereupon, he said, [7/8] they all began dinner, but Socrates did not arrive; and though Agathon ever and anon gave orders that they should go and fetch him, my friend would not allow it. **He did then come, [MOTION: SOCRATES ENTERS THE ANDRON] though he didn’t spend as much time (*diatripsanta*) as usual, and they were right in the middle of dinner. Then Agathon, who happened to be [NOTE 0.3] sitting alone in the lowest place, said: ‘Here, Socrates, come sit by me, so that by contact with you [175d] I may have some benefit from that piece of wisdom [WISE VS. UNWISE] that occurred to you there in the porch. Clearly you have made the discovery and got hold of it for you would not have come away before.’ Then Socrates sat down, [HARMONY: AGREE; STOP] and ‘How fine it would be, Agathon,’ he said, ‘if [1/8] wisdom were a sort of thing that could flow out of the one of us who is fuller into him who is emptier, by our mere contact with each other, as water will flow through wool from the fuller cup into the emptier. If such is indeed the case with wisdom, I set a great value on my sitting next to you: [175e] I look to be filled with [2/8] excellent wisdom drawn in abundance out of you. My own is but meagre, as disputable as a dream; but yours is bright and expansive, as the other day we saw it shining forth from your youth, strong and splendid, in the eyes of more than thirty thousand Greeks.’ [3/8] ‘You rude mocker (*hubristēs*), Socrates!’ said Agathon. ‘A little later on you and I shall go to law on this matter of our wisdom, and Dionysus shall be our judge. For the present, let the dinner be your first concern.’ [176a] After this, it seems, when Socrates had taken his place and had dined with the rest,**

Note 0.3 (175c7)

Once again, the narrative structure reflects the underlying musical structure. Socrates sets off for Agathon's at the last note but stops. At this note, he finally completes the journey, which thus fills out the interval between successive quarternotes.

This note, like the previous three, mentions motion along a road. Here, Socrates enters the andron and has his first exchange with Agathon.⁸ The four features recur here when Agathon invites Socrates to sit and share the wisdom he has discovered:

- **Activity/Motion:** Socrates starts again and arrives at Agathon's (c4).
- **Opposition Between Wise and Unwise:** Agathon, who is no philosopher (as later criticism shows), wishes to hear Socrates' 'wisdom' (c8).
- **Agreement/Harmony:** Socrates accepts Agathon's invitation by joining him on the couch (d3).
- **Inactivity:** Socrates sits, and motion ceases again (d3).

Thus the first four notes in the dialogue have been emphatically marked by passages which describe motion and harmony, which are for Plato the two components of music.

⁸This quarternote is harmonically significant and may therefore be an appropriate place both for Socrates' entrance and for his first exchange with Agathon. As mentioned in the last footnote, this passage is four 'octaves' from the twelfth note. Thus Socrates enters the dialogue at the 'fifth octave,' and enters the andron at this 'fourth octave' (see the appendix on the octaves).

SPEECH BEGINS HALFWAY BETWEEN NOTES

they made libation $\frac{4}{8}$ and sang a chant to the god and so forth, as custom bids, till they betook them to drinking. Then Pausanias began a speech (*logos*) after this manner: ‘Well, gentlemen, what mode of drinking will suit us best? For my part, to tell the truth, I am in very poor form as a result of yesterday’s bout, $\frac{5}{8}$ and I claim a little relief; it is so, I believe, with most of you, for you were at yesterday’s party: so consider what method [176b] of drinking would suit us best.’ On this Aristophanes observed: ‘Now that, Pausanias, is a good suggestion of yours, that we make a point of consulting our comfort in our cups: for I myself am one of those who got such a soaking yesterday.’ $\frac{6}{8}$ When Eryximachus, son of Acumenus, heard this; ‘You are quite right, sirs,’ he said; ‘and there is yet one other question on which I request your opinion, as to what sort of condition Agathon finds himself in for drinking.’ ‘No, no,’ said Agathon, ‘I am not in good condition for it either.’ [176c] ‘It would be a piece of luck for us, I take it,’ the other went on, ‘that is, for me, Aristodemus, Phaedrus, $\frac{7}{8}$ and our friends here, if you who are the stoutest drinkers are now feeling exhausted. We, of course, are known weaklings. Socrates I do not count in the matter: he is fit either way, and will be content with whichever choice we make. **Now as it appears that nobody here present is eager for copious draughts, perhaps it will be less a displeasure PLEASURE** if I speak of **NOTE 1.0** intoxication, and tell you truly what it is. The practice of medicine, I find, has made this clear to me – [176d] that drunkenness is painful (*chalepos*) **PAIN** to mankind; and neither would I myself agree, if I could help it, to an excess of drinking, **MODERATION, MEAN** nor would I recommend it to another, $\frac{1}{8}$ especially when his head is still heavy from a bout of the day before.’ Here Phaedrus of Myrrhinus interrupted him, saying: ‘Why, you know I always obey you, above all in medical matters; and so now will the rest of us, if they are well advised.’ Then all of them, on hearing this, [176e] consented **HARMONY: AGREEMENT** not to make their present meeting (*sunousia*) $\frac{2}{8}$ a tipsy affair, but to drink just as it might serve their pleasure. ‘Since it has been resolved, then,’ said Eryximachus, ‘that we are to drink only so much as each desires, with no constraint on any, I next propose that the flute-girl who came in just now be dismissed: let her pipe to herself or, if she likes, to the $\frac{3}{8}$ women-folk within, but let us seek our entertainment today in conversation. I am ready, if you so desire, to suggest what sort of discussion it should be.’ They all said they did so desire, and bade him make his proposal.

Note 1.0 (176c7)

This passage alludes to important Pythagorean themes. Finding the mean between the opposites of pleasure and pain was one goal of Pythagorean ethics.⁹ Here, words for ‘pleasure’ and ‘pain’ occur near the note, and Eryximachus is recommending a moderate course.¹⁰ Eryximachus will later assert that medicine, like music, produces agreement and harmony and especially moderates desire and pleasure (187c5 ff., esp. e2 ff.). In the *Phaedo*, notes are marked by what is explicitly called there a ‘krasis’ of pleasure and pain.¹¹ Thus, this passage is an example of medicine producing an intermediate *krasis* or harmony between the opposites of pleasure and pain.

This is the first whole note, one twelfth of the way through the text of the *Symposium*. From this point onwards, the notes are marked by species of ‘harmony between opposites’ and do not mention motion explicitly.¹² Of the four features which served to mark the previous notes emphatically, only ‘agreement,’ i.e., various species of harmony, continues.

This passage is marked by an important agreement, all the symposiasts consent to moderate their drinking, and begins to establish harmony among the symposiasts. In the rest of the dialogue, threats to and restorations of this harmony will mark a number of notes.

Generally, in Plato’s dialogues, the first whole note and the next quarter-note are where the topic and procedure (speeches or dialectical questioning, choosing an interlocutor, etc.) are established. Here, the speakers agree to drink moderately; at the next quarter-note they agree on the topic. Although it remains implicit, the symposiasts are here agreeing on the way their wine will be served. Classical Greeks blended their wine in varying degrees with water in a large vase called the ‘krater’ or ‘mixing bowl’ in the center of the room. Thus this passage is an allusion to a kind of physical *krasis*. When Eryximachus sends the flute-girl away, he says the symposiasts will entertain each other with speeches or, literally, ‘be together by means of *logoi*.’ This signals that language will replace ordinary, sensible music as the medium for harmonisation.

⁹See, for example, Huffman [?, pp. 73-74, etc.].

¹⁰Forms of the words ‘pleasure’ and ‘pain’ appear (*aēdēs*, 176c8; *chalepon*, d1).

¹¹In the *Phaedo*, note 0.1 has the ‘krasis’ between pleasure and pain (59a6-7). Note 0.2 has pleasure and pain ‘joined’ together but does not repeat the word ‘krasis’ (60b3 – c1).

¹²The narrator, however, is supposedly continuing to walk toward Athens, in the background.

SPEECH BEGINS HALFWAY BETWEEN NOTES

So Eryximachus proceeded: ‘The beginning of my speech (*logou*) is in the words of Euripides’ Melanippe, $\frac{4}{8}$ for ‘not mine the tale’ that I intend to tell; it comes from Phaedrus here. He is constantly complaining to me and saying, – Is it not a curious thing, Eryximachus, that while other gods have hymns and psalms indited in their honor by the poets, the god of Love, so ancient and so great, [177b] $\frac{5}{8}$ has had no song of praise composed for him by a single one of all the many poets that ever have been? And again, pray consider our worthy professors, and the eulogies they frame of Hercules and others in prose, – for example, the excellent Prodicus. This indeed is not so surprising but I recollect coming across a book $\frac{6}{8}$ by somebody wise, in which I found salt superbly lauded for its usefulness, and many more such matters [177c] I could show you celebrated there. To think of all this bustle about such trifles, and **not a single man ever essaying till this day to make a fitting hymn** $\frac{7}{8}$ to Love! So great a god, and so neglected! **SHAME** Now I think Phaedrus’s protest a very proper one. Accordingly I am not only desirous of obliging him with a contribution of my own, but I also pronounce the present to be a fitting occasion for us here assembled to honor the god. [177d] So if you on your part approve, we might pass the time (*diatribē*) **NOTE 1.1** well enough in speeches; **HARMONY: KRASIS RESTORES VIRTUE** for my opinion is that we ought each of us to make a speech in turn, from left to right, singing praises to Love as beautifully as he can. Phaedrus shall open first; for he has the topmost place at table, and besides is father of our debate.’ ‘No one, Eryximachus,’ said Socrates, ‘will vote against you: **HARMONY: ORDER, AGREEMENT** $\frac{1}{8}$ I do not see how I could myself decline, [177e] when I set up to understand nothing but erotics; nor could Agathon and Pausanias either, nor yet Aristophanes, who divides his time between Dionysus and Aphrodite; nor could any other of the persons I see before me. To be sure, we who sit at the bottom $\frac{2}{8}$ do not get a fair chance: but if the earlier speakers rise nobly to the occasion, we shall be quite content. So now let Phaedrus, with our best wishes, make a beginning and give us a eulogy of Love.’ To this they assented one and all, (1/9) [178a] bidding him do as Socrates said. Now the entire speech in each case was beyond Aristodemus’s recollection, $\frac{3}{8}$ and so too the whole of what he told me is beyond mine: but those parts which, on account also of the speakers, I deemed most memorable, I will tell you successively as they were delivered.

Note 1.1 (177d1)

This passage is, like the previous note, an important instance of harmony as agreement: the symposiasts all consent to make speeches in praise of Eros in a certain order, from left to right.

This passage is a model for many later passages which mark notes: something shameful outweighs its virtuous contrary, but this imbalance is put right by a harmony or *krasis*. Here the neglect of Eros is put right by an agreement to honour the god by passing the time with speeches.

This phrase ‘passing the time’ is another instance of *diatribein* at a note. As mentioned earlier (see 0.1), this word means, etymologically, ‘mix thoroughly,’ and thus plays the role in Plato’s symbolic schemes of an allusion to mixing or forming a *krasis*.

Songs (hymns and paeans) are mentioned, which also puts an explicit reference to music and thus to musical harmony at the note.

Altogether, the constellation of symbols here has important implications for understanding later marking passages. Sharing speeches (*logoi*) is itself a way of forming a *krasis*, and this may be understood as a form of music. Again, Socrates’ prose speeches will be explicitly called a kind of ‘music without instruments’ by Alcibiades (note 10.0). Thus a harmony in or among the speeches – or their speakers – should be understood as analogous to a musical harmony.

Narrative Structure Reflects Musical Structure: Eryximachus begins his short speech (at least he calls it a *logos*) halfway between quarter-notes.

Appendix E

OCT Line Numbers for the Musical Notes

As discussed in Kennedy [?] and chapter five, the measured locations of the musical notes on the *Symposium's* musical scale are surprisingly accurate, despite the changes the text may have undergone during its transmission. The Stephanus pages have significantly variable lengths but, in the *Symposium* and not generally in other dialogues, the interval between quarternotes is coincidentally about one Stephanus page.

This coincidence does, however, make it clear that the Stephanus numbers prevented rather than helped detecting the musical structure of the dialogues. Here, the distance between quarternotes in the range from 0.1 to 1.2 is very nearly one Stephanus page (see below). Suppose a reader had noticed the repeated pattern of motions and agreements in the frame, and began examining other passages at similar intervals, using the Stephanus page numbers as a measure (and so looking for symbols around c3-8 on succeeding pages). Already by notes 2.0 and 2.1, the error between the actual location of the notes and the location found using the Stephanus numbers would be about half a page. Using the Stephanus page numbers as a measure would thus obliterate any trace of symbols repeated at equal intervals.

Wholenotes and quarternotes in the *Symposium*:

Note 0:	172a1,	1q: 173c3,	2q: 174c8,	3q: 175c7,
Note 1:	176c7,	1q: 177c8,	2q: 178d5,	3q: 179d8,
Note 2:	180e5,	1q: 182a4,	2q: 183a8,	3q: 184b3,

Note 3:	185b6,	1q: 186c1,	2q: 187c8,	3q: 188d1,
Note 4:	189d5,	1q: 190d6,	2q: 191d7,	3q: 192d8,
Note 5:	193d7,	1q: 194e4,	2q: 195e7,	3q: 197a2,
Note 6:	198a8,	1q: 199b4,	2q: 200c1,	3q: 201c5,
Note 7:	202c7,	1q: 203d1,	2q: 204d5,	3q: 205d10,
Note 8:	206e4,	1q: 208a1,	2q: 209a6,	3q: 210b1,
Note 9:	211b4,	1q: 212c2,	2q: 213c3,	3q: 214c1,
Note 10:	215c2,	1q: 216c6,	2q: 217c8,	3q: 218d2,
Note 11:	219d6,	1q: 220d6,	2q: 221d8,	3q: 222e7,
Note 12:	223d12			

Wholenotes and quarternotes in the *Euthyphro*:

Note 0:	2a1,	1q: 2b11,	2q: 2d2,	3q: 3b2,
Note 1:	3c6,	1q: 3d9,	2q: 4a9,	3q: 4c2,
Note 2:	4d4,	1q: 4e7,	2q: 5b2,	3q: 5c5,
Note 3:	5d9,	1q: 6a3,	2q: 6b7,	3q: 6d1,
Note 4:	6e5,	1q: 7a10,	2q: 7c4,	3q: 7d7,
Note 5:	8a4,	1q: 8b8,	2q: 8d1,	3q: 8e6,
Note 6:	9b1,	1q: 9c3,	2q: 9d6,	3q: 10a3,
Note 7:	10b7,	1q: 10c13,	2q: 10e7,	3q: 11a8,
Note 8:	11c3,	1q: 11d6,	2q: 12a4,	3q: 12b9,
Note 9:	12d3,	1q: 12e6,	2q: 13b1,	3q: 13c7,
Note 10:	13e1,	1q: 14a5,	2q: 14b8,	3q: 14d4,
Note 11:	14e8,	1q: 15b1,	2q: 15c5,	3q: 15d7,
Note 12:	16a4			

Fifths in the *Symposium*:

One: 182d5, Two: 192e8, Three: 203b7, Four: 213e3

Fifths in the *Euthyphro*:

One: 5a6, Two: 7e1, Three: 10c7, Four: 13b9

Sevenths in the *Symposium*:

One: 179d2, Two: 187b4, Three: 194c1, Four: 201e6,
Five: 209c1, Six: 216d4

Sevenths in the *Euthyphro*:

One: 4b10, Two: 6b2, Three: 8b2, Four: 10a9,
Five: 12a7, Six: 14a6

Ninths in the *Symposium*:

One: 177e7, Two: 183e3, Three: 189d5, Four: 195b1,
Five: 201a3, Six: 206e4, Seven: 212e1, Eight : 218b4

Ninths in the *Euthyphro*:

One: 3e3, Two: 5c1, Three: 6e6, Four: 8c1,
Five: 9e6, Six: 11c2, Seven: 12e10, Eight : 14c8

Bibliography

- [1] Aristotelis. *Fragmenta Selecta*. Clarendon Press, Oxford, 1955. Edited by W.D. Ross.
- [2] Aristotle. *On Coming-to-be and Passing-away*. Clarendon Press, Oxford, 1926. With introduction and commentary by H.A. Joachim.
- [3] Yuri Balashov. Should Plato's line be divided in the mean and extreme ratio? *Ancient Philosophy*, 14:283 – 295, 1994.
- [4] Andrew Barker. Aristedes Quintilianus and constructions in early music theory. *The Classical Quarterly*, 32(1):184 – 197, 1982.
- [5] Andrew Barker. *The Science of Harmonics in Ancient Greece*. Cambridge University Press, 2007.
- [6] E. Berti. Contributo allo studio dei manoscritti platonici del critone. *Studi Classici et Orientali*, 15(210 – 220), 1966.
- [7] Theodor Birt. *Das Antike Buchwesen*. Verlag von Wilhelm Hertz, 1882.
- [8] Gerard Boter. *The Textual Tradition of Plato's Republic*. E.J. Brill, Leiden, 1989. Supplement to Mnemosyne.
- [9] L. Brandwood. Stylometry and chronology. In R. Kraut, editor, *The Cambridge Companion to Plato*, pages 90 –120. Cambridge University Press, Cambridge, U.K., 1992.
- [10] Christian Brockmann. *Die handschriftliche Überlieferung von Platons Symposion*. Serta Graeca: Beiträge zur Erforschung griechischer Texte. Dr. Ludwig Reichert Verlag, 1992.
- [11] Walter Burkert. *Lore and Science in Ancient Pythagoreanism*. Harvard University Press, Cambridge, Mass., 1972.

- [12] Walter Burkert. *Ancient Mystery Cults*. Harvard University Press, Cambridge, Mass., 1987.
- [13] R. G. Bury. *The Symposium of Plato*. W. Heffer and Sons, Ltd., 1932.
- [14] E. R. Dodds. *Plato: Gorgias*. Clarendon Press, Oxford, 1959.
- [15] K. J. Dover. *Greek Homosexuality*. Harvard University Press, second edition edition, 1989.
- [16] Euclid. *The Elements*. Dover Publications, Inc., New York, 1956. ed. and trans. by T. L. Heath.
- [17] Alastair Fowler. *Spenser and the numbers of time*. Routledge and Kegan Paul, London, 1964.
- [18] A.C. Hamilton, editor. *The Spenser Encyclopaedia*. Routledge, London, 1991.
- [19] J. Rendel Harris. *Stichometry*. C. J. Clay and Sons, London, 1893.
- [20] Jeffrey Henderson. *The Maculate Muse: Obscene Language in Attic Comedy*. Oxford University Press, 1991.
- [21] S. K. Heninger. *Touches of sweet harmony: Pythagorean cosmology and Renaissance poetics*. Huntington Library, San Marino, 1974.
- [22] S. K. Heninger. *Sidney and Spenser: the poet as maker*. Pennsylvania State University Press, University Park, 1989.
- [23] Roger Herz-Fischler. *A Mathematical History of the Golden Number*. Dover Publications, Inc., 1998.
- [24] A. Kent Hieatt. *Short time's endless monument: the symbolism of the numbers in Edmund Spenser's 'Epithalamion'*. Kennikat Press, Port Washington, N.Y., 1972. First published by Columbia University Press, 1960.
- [25] Marjorie Hoefmans. Myth into reality: The metamorphosis of daedalus and icarus. *L'Antiquite Classique*, LXIII:137–160, 1994.
- [26] Carl A. Huffman. *Archytas of Tarentum: Pythagorean, Philosopher and Mathematician*. Cambridge University Press, Cambridge, 2005.
- [27] Rosalind Hursthouse. The central doctrine of the mean. In Richard Kraut, editor, *The Blackwell Guide to Aristotle's Nichomachean Ethics*, page 96 ff. Blackwell Publishing, 2006.

- [28] Carolus Janus. *Musici scriptores graeci: Aristoteles, Euclides, Nicomachus, Bacchius, Gaudentius, Alypius et melodiarum veterum quidquid exstat*. Georg Olms, Hildesheim, 1962.
- [29] J. B. Kennedy. Flirtation, humiliation, and seduction: Some erotic wordplay in Plato's *symposium*. *submitted for publication*, 2010.
- [30] A. Krohn. *Der Platonische Staat*. R. Mühlmann, Halle, 1876.
- [31] John G. Landels. *Music in ancient Greece and Rome*. Routledge, London, 1999.
- [32] J. Lear. Inside and outside the republic. *Phronesis*, XXXVII(2):184 – 215, 1992.
- [33] A. H. Lesser. The unity of Plato's *Phaedo*. *Philosophical Inquiry*, XXV(3 – 4):73 – 85, 2003.
- [34] Bruce Louden. *The Odyssey: Structure, Narration, and Meaning*. Johns Hopkins University Press, 1999.
- [35] Richard Neuse. The triumph over hasty accidents: A note on the symbolic mode of the epithalamion. *The Modern Language Review (JSTOR)*, 61(2):163 – 174, 1966.
- [36] Whitney J. Oates. The doctrine of the mean. *The Philosophical Review (JSTOR)*, 45(4):382 – 398, July 1936.
- [37] Kurt Ohly. *Stichometrische Untersuchungen*. O. Harrassowitz, Leipzig, 1928.
- [38] Plato. *Plato's Euthyphro, Crito, and Apology of Socrates*. Clarendon Press, Oxford, 1924. edited with notes by John Burnet.
- [39] Ronald M. Polansky. *Aristotle's De Anima*. Cambridge University Press, 2007.
- [40] Alice Swift Riginos. *Platonica: the anecdotes concerning the life and writings of Plato*. E. J. Brill, 1976.
- [41] David Roochnik. *Of Art and Wisdom: Plato's Understanding of Techne*. Pennsylvania State University Press, 1998.
- [42] R.B. Rutherford. *The Art of Plato: Ten Essays in Platonic Interpretation*. Duckworth, London, 1995.
- [43] Martin Schanz. Zur stichometrie. *Hermes*, 16(2):309 – 315, 1881.

-
- [44] Edmund Spenser. *The Yale edition of the shorter poems of Edmund Spenser*. Yale University Press, New Haven, 1989. Edited by William A. Oram *et al.*
- [45] Peter Struck. *Birth of the Symbol: ancient readers at the limits of their texts*. Princeton University Press, Princeton, NJ, 2004.
- [46] Harold Tarrant. *Plato's First Interpreters*. Duckworth, London, 2000.
- [47] E. M. Thompson. *An Introduction to Greek and Latin Palaeography*. The Clarendon Press, Oxford, 1912.
- [48] Theodore. J. Tracy. *Physiological Theory and the Doctrine of the Mean in Plato and Aristotle*. Mouton and Co., The Hague, 1969.
- [49] M. L. West. *Ancient Greek Music*. Clarendon Press, Oxford, 1992.
- [50] L. Zhumd. Plato as architect of science. *Phronesis*, 43(3):210–244, 1998.