

Introduction

A general outline of the character and contents of this epistle has been provided in the music chapter in the introductory volume of essays that accompanies the present series of the *Rasā'il*.¹ Although certain matters will need to be revisited here, reduplication has been avoided where possible, so that the main burden of the following remarks is less to attempt a survey of themes and structure and more to discuss specific topics not previously addressed or not examined in sufficient detail. The former concerns the approach adopted in editing the text and in translating the resulting version, the latter matters of content, principally musicological, that present particular interpretative problems or call for further clarification.

1. Text

1.1 Manuscripts

The version of the text presented here is based upon the following manuscripts,² which are considered some of the earliest surviving

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- 1 Owen Wright, 'Music and Musicology in the *Rasā'il Ikhwān al-Ṣafā'*', in *The Ikhwān al-Ṣafā' and their 'Rasā'il': An Introduction*, ed. N. El-Bizri (New York and London: OUP-IIS, 2008), pp. 214–247.
 - 2 See also the Foreword above, pp. xx–xxi. For further background, see in the introductory volume the relevant material in the Prologue (by N. El-Bizri), pp. 20–22, and the chapter by I. K. Poonawala, 'Why We Need an Arabic Critical Edition with an Annotated English Translation of the *Rasā'il Ikhwān al-Ṣafā'*'.

that contain this specific epistle, and range from the late twelfth to the fifteenth centuries:

1182	Atif Efendi 1681	ع
ca. 1242	Tehran (Mahdavi) 7437	ط
ca. 1287	Esad Efendi 3638	أ
ca. 1296	Bibliothèque nationale 6.647–6.648	د
ca. 1304	Feyzullah 2130	ف
ca. 15th century	Köprülü 870	ك
1417	Köprülü 871	ل

A number of later manuscripts (in the Bibliothèque nationale and the Bodleian, those coded ح, ج, ز, ر, and خ) have been consulted in relation to particular passages, but the further variants they generally introduce have not been taken up in the apparatus, although occasional reference to them is made in the footnotes to the translation. The same applies to the earlier testimony of the *Jumal al-falsafa* by Muḥammad ibn ‘Alī al-Hindī, dated 1135,³ which includes passages extracted from the *risāla*.⁴ The material has been recast in question and answer format, but still provides a useful control.

1.1.1 Relationships

We thus have, at the most conservative estimate, a gap of some two hundred years between the earliest complete manuscript, ع, and the composition or consolidation of the text: time enough for it to have passed through the hands of several copyists, with consequent mistakes, adjustments, omissions and additions, some inadvertent,

3 Muḥammad ibn ‘Alī ibn ‘Abdallāh al-Hindī, *Jumal al-falsafa*, ed. Fuat Sezgin (Frankfurt: Institut für Geschichte der Arabisch-Islamischen Wissenschaften, 1985), pp. 114–123.

4 Full details can be found in Eckhard Neubauer, ‘Das Musikkapitel der *Ġumal al-falsafa* von Muḥammad b. ‘Alī al-Hindī (1135 n. Chr.)’, *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften*, 4 (1987/1988), pp. 51–59; repr. with text in E. Neubauer, *Arabische Musiktheorie von den Anfängen bis zum 6./12. Jahrhundert: Studien, Übersetzungen und Texte in Faksimile*, ed. F. Sezgin, *The Science of Music in Islam*, vol. 3 (Frankfurt: Institut für Geschichte der Arabisch-Islamischen Wissenschaften, 1998), pp. 311–332.

others deliberate. But the differences these seven manuscripts exhibit are not readily explicable as the result of accumulated deviations from a single original; to judge by the evidence, this *risāla* may have circulated in slightly different versions from a very early stage.

The degree of coincidence between the seven manuscripts is quite variable: there are passages where they are completely or virtually identical, others where there are considerable differences. Setting aside the question of material present in some and absent in others, one may take the following passage⁵ as indicative of how much they can diverge:

ولها [ك: وله] آلة صناعية [ع: متناهية] يقال لها [ع-: لها] الأرعن
[ك، ل: الأرعين. ف+: والهما؟ كانت تسمى ارقا] كان [ع: كانوا.
ف: كانت] اليونانيون يستعملونها [ع، ل: يستعملونها اليونانيون] عند
الحروب يفزّعون [د، ك، ل: ويفزّعون. أ، ف: يربعون] بها نفوس [أ-:
نفوس] الأعداء،

followed by:

أ، ع: مشدودةً [أ: مسدودة] آذانُ النافخين فيها.
ف: ويسدون النافخون فيها آذانهم عند استعمالها والنفخ فيها مسدودة
آذان النافخين فيها.
د، ط، ك: ويسدون [د: ويشدون. ك+: النافخون فيها] آذانهم عند
استعمالها وتحريكها والنفخ فيها [ك-: والنفخ فيها].
ل: وآذانُ النافخين فيها مسدودة [+: في الهامش، في خط آخر: ويسدون
آذانهم عند استعمالها وتحريكها].

Comparing these versions, we may make the following preliminary deductions:

Manuscripts أ، ع، and ف (group A) have material in common not shared by the others.

Manuscripts د، ط، ك، and ل (group B) have material in common not shared by group A.

⁵ Unfortunately, this is not included by al-Hindi.

In group A, أ and ف have more in common with each other than either has with ع.

In group B, د and ط have more in common with each other than either has with the other two; and ك and ل have more in common with each other than either has with the other two.

Both ف and ل show evidence of having called upon more than one source text: ف adds material found in B, and other material found in neither A nor B; ل at one point has a layer related to A struck through and discarded in favour of the B equivalent.

This division into two main groups is confirmed elsewhere. To take a very clear example, B contains a Persian poem that A does not. But it would fallacious to conclude that its absence from three of the four or five earliest manuscripts demonstrates that it constitutes a later addition to a hypothetical original, for its prior existence is assumed in two of the three A manuscripts, which include a phrase introducing the poem, and one even leaves space for it. Its absence does, though, serve to confirm that none of the B group could derive directly from any of the A group.

For the A group, there is abundant evidence to confirm that the relationship between أ and ف is close, whereas there are frequent differences to be observed between them and ع, the earliest. But, as is shown by the passage above, it is not simply the case that ف is copied from أ, even if most of the errors it contains, some of which are quite gross (and preclude it as a possible source for any of the later manuscripts),⁶ could be explained readily enough as deviations from the superior text in أ. But أ has occasional quirks of its own:⁷ within Chapter 16, for example, the order of two of the dicta is reversed in أ (and only in أ). With or without intermediaries, we may conclude that ف is not derived from أ, but that both may be traced to a common source. If we turn to ع, we find several occasions on which it gives a different reading to all

6 For example, ف manages to convert تسلط الأشرار into نشاط الأشرار, from which there is no way back.

7 For example, in place of أدبى لهم (found also in ف) it has the evident slip أولهم, which would be difficult to correct without having recourse to another manuscript.

the remaining six manuscripts,⁸ and it is impossible to establish a direct line of transmission from ع to any of them.

It is equally clear that the other six do not form a single family; the other group A manuscripts, أ and ف, include features that time and time again separate them from those of B,⁹ which constitutes an equally loose group itself, and further evidence can be adduced to confirm the internal split into the two pairs already proposed. If we take the specific example of the Persian verses mentioned above, we find that the version of the first hemistich in د and ط differs from that in ل and ك, and the latter manuscripts elsewhere share a metrically and semantically unacceptable variant. The division into pairs, however, is not quite as neat as this might suggest. In Chapter 16, again, the order of two of the dicta is reversed in ك but not in ل. Furthermore, د omits material found in the other three, and, in general, has many features in common with ط that distinguish them both from the remainder.¹⁰ However, د also includes material not found in them but present in group A manuscripts,¹¹ which indicates that the divide between the two groups is, again, not always clear-cut.

It is consequently apparent that the relations between the seven manuscripts upon which this edition is principally based are difficult to determine with precision. An initial representation of the main groupings may be given schematically (Fig. 1), with the chronological distribution shown by dispersing the entries vertically.

8 As just one example, we may cite the evidently correct فاسمعوا من النفس حديثها corresponding to which ع has فسمعوا حديثها. Further evidence that ع could not have been the source of any of the other six is shown by its omission of, say, والأحزان والغموم والهموم وفي المآتم يعزي النفوس ويخفف عنها ألم المصائب، which, with slight variations, is found in all the others, and is hardly likely to be a later accretion.

9 For example, in place of the otherwise universal زهدت في الملاذّ, both have هدت في الملاذّ.

10 For example, د includes in a list of instruments the mysterious السعائق and الوتد, and ط adds above the text الشغائق والوتد. There is nothing equivalent to this in the other manuscripts.

11 The most obvious of these being the verses attributed to al-Basūs, which appear only in د, أ, and ف.

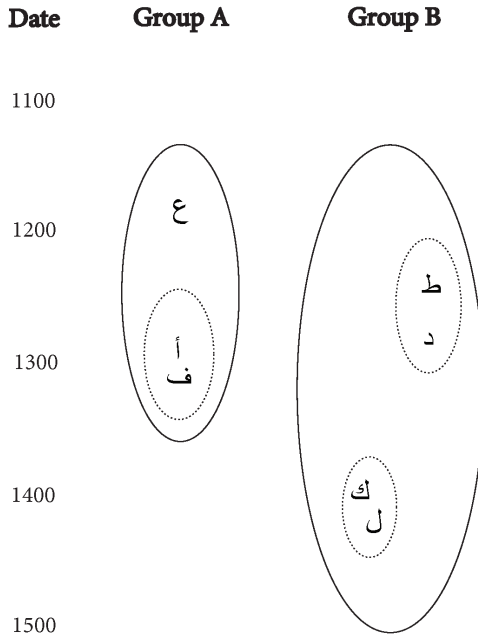


Figure 1

Evidence has already been given of links between various areas of this diagram, so that arriving at a stemma is by no means easy, even if no account is taken of the further problems that would arise from attempting to include any later manuscripts.

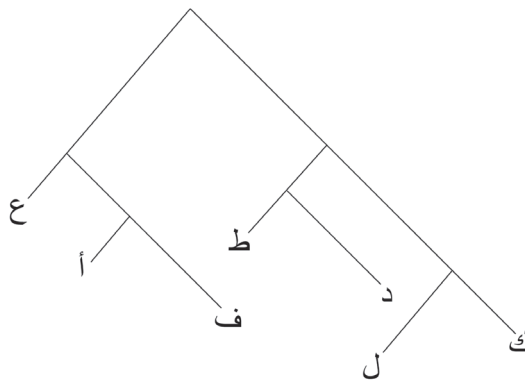


Figure 2

The relationships suggested in Fig. 2, therefore, must be regarded as conjectural and provisional, as well as an over-simplification: in particular, the distance between ع and أ suggests a more complex earlier history than the simple set of divergences from a common source indicated here.

A comparison of the last part of the versions of the passage given above in the later manuscripts suggests resemblances between ج, خ, and ر and group A: all end at آذان النافخين (فيها), while the following material appears in ز, ح, and غ, linking them with group B. However, خ, ج, and ر, differ from group A (as well as B) at the beginning, substituting يقال لها تسمى for يقال لها, while the differences between them suggest a derivation sequence of ر → ج → خ as a plausible line of development. But another sample passage might well produce different alignments, and it is clear that much more extensive study would be required before one could hope to provide even the sketch of a comprehensive stemma.

1.2 Edition

Indeed, because of the various lines of cleavage between the manuscripts, and the conclusion that the earliest ones result from different lines of transmission that cannot readily be shown to derive from one single original version, the very concept of an Urtext is questionable; they could, rather, represent points in the evolution of a text that was from the beginning, to a certain degree, malleable. It would certainly be possible to demonstrate the earliest extant stage of the text by basing the edition on ع, which is quite reliable in general, but, as it differs in significant respects from the others, to do so would involve sacrificing adequate representation of the manuscript tradition as a whole.

Instead, the text offered here prefers to attempt a broad representation of the manuscripts. It does not seek to give precedence to any one line of transmission but is, rather, deliberately synthetic, which means that editorial decisions inevitably, and quite frequently, involve having to opt for one reading over another equally good one, and although the tendency has been to prefer the version in ع (frequently supported by ل) over those in أ and ط (which are preserved in the apparatus)

on a case-by-case basis, so that sometimes أ is rejected in favour of ط. Further, it consciously (as well as unwittingly) includes, on occasion, what are probably clarificatory expansions designed to aid comprehension, and thus does not attempt to establish a hypothetical earlier state of the *risāla*, even where evidence is available. For example, in the text offered here,

وأما الحيوانات الخرس كالسمك والسرطان والسلحفاة وغيرها فهي
خرس لأن ليس لها رئة ولا جناحان فلا يكون لها أصوات،

the words ‘وغيرها’ may well be a later interpolation, and given the occurrence in two of the three oldest manuscripts of لا rather than فلا in the final clause, one might hypothesize a balder (and clumsier) earlier version, consisting of something like:

وأما الحيوانات الخرس كالسمك والسرطان والسلحفاة فلأن ليس لها
رئة ولا جناحان لا يكون لها أصوات.

This is then amplified by adding ‘وغيرها’, expanding فلأن to لأن, and changing لا to فلا to clarify the syntax accordingly. Similarly, technical definitions may exhibit clarificatory accretions. That of movement, for example,

النقلة للشيء من مكان أول الى مكان ثان في زمان ثان،

may at an earlier stage have taken the simpler form:

النقلة من مكان الى مكان في زمان ثان.

But such amplifications do not necessarily appear only in the later manuscripts: in this particular case, they occur in ع, but not in أ or ل, so that the notion of a simple process of gradual accretion through time should be discarded. In such cases, the general approach adopted has been to include material that helps to clarify the argument, even if it is demonstrably a later amplification.

Despite this rather elastic approach, certain passages remain problematic. Catalogues, in particular, are something of a free-for-all, with variations in the order and number of items, as with:

غناء الديلم والترك والأكراد والأرمن والزنج والفرس والروم.

غناء الديلم والأتراك والأعراب والأرمن والزنج والفرس والروم.
غناء الديلم والأتراك والفرس والروم والهند والعرب والأرمن والزنج.

But it is not only vocabulary that can present problems: syntax and morphology also exhibit a considerable degree of diversity, so that editorial decisions are sometimes arbitrary.

1.2.1 Apparatus

The degree of variability also presents problems for the preparation of the critical apparatus. Mechanically reporting all variants, although possible, would be tedious in the extreme and would result in an excessively long volume with very few text lines per page, because of the footnote layout required for technical reasons. In consequence, selective pruning has been done (the drawback being that it is no longer possible, on the basis of the apparatus, to reconstitute the text of each manuscript exactly), with the particular areas concerned outlined as follows.

1.2.1.1 *An evident omission or lapsus calami*

When found in only one manuscript, such peculiarities might be of interest with regard to the stemma but not otherwise; therefore they will frequently remain unrecorded. In this respect, ف and د are the most capricious and are consequently those whose egregiously erroneous variants most often disappear from view. With أ, ع, and ل, on the other hand, the approach, even if not carried out rigorously, has been to preserve individual quirks.

1.2.1.2 *Formulaic expressions, especially honorifics*

These show considerable diversity, but in each instance just one has been selected, with the other(s) being left unrecorded. Those addressed to God naturally provide the greatest diversity:

جل ثناؤه - جل جلاله - جل وعز - سبحانه - سبحانه وتعالى - تعالى
- تعالى جل ثناؤه - عز اسمه - عز وجل - تقدس اسمه.

For prophets, there is also a range of expressions:

صلى الله عليهم — صلى الله عليه وسلم — صلوات الله عليهم — عليهم
السلام،

while the Ikhwān address themselves with both a short formula,

يا أخي — أيها الأخ

(here the former alternative has been preferred — the latter occurs in أ and ف, which also use the expanded form, أيها الأخ البار الرحيم), and a longer one:

يا أخي (أيها الأخ) أيديك الله وإيانا بروح منه.

1.2.1.3 Chapter (فصل) divisions

Also to be noted are the unrecorded variations in the presence or absence of chapter divisions. The preference has been inclusion rather than exclusion, simply to provide more reference tools. The chapter numbers are editorial additions.

1.2.1.4 Formulae concluding a chapter

These appear only occasionally, and in ك alone, and have therefore been left unrecorded.

1.2.2 Editorial interference

In addition to the arbitrary choices between the above formulaic possibilities, there are also selections and amendments to note concerning, in particular, orthography and morphology.

1.2.2.1 Orthography

Adjustments have been made to make the text conform to current norms. The most frequent cases involve supplying ا and ء in a wholly predictable way, so individual instances do not require comment. Typical examples are:

ثلاثة	for	ثلثة
إلاهي	for	إلهي

يا أيها	for	يأيها
هكذا	for	هكذى
قائل	for	قایل
غناء	for	غنى
لئلا	for	لأن لا

In the Persian verse, similarly, *د* has been substituted for *ذ* where appropriate, *گ* for *ک*, and *به* for *بـ*.

Changes that are more properly corrections are few, with examples such as the following:

مثّلت	for	مئّلت
حمالو	for	حمالوا
مساواة	for	مساوات

1.2.2.2 Concord

A considerable degree of variation may be observed here, and while more orthodox forms have been preferred, no attempt has been made to impose uniformity, with the result that there are cases where standard expectations are not met.

With verbs, one may note considerable fluctuations in gender concord within as well as between manuscripts (and also frequent undecidability when dots are omitted), but more surprising are eccentricities of number in such phrases as,

كانوا يستعملونها اليونانيون.

The gender of suffix pronouns may vary where there is more than one possible antecedent. A noun may, similarly, be plural instead of an expected dual, and one may note a case of attraction by syntactic parallelism and *saj'* euphony interfering with normal concord:

عالمها الروحاني ومحلها النوراني ودارها الحيواني.

With numerals, not unexpectedly, occasional unorthodoxies are encountered, and dual case forms can be confused, with a predictable preference for the oblique: these have generally been tidied up, as have the hesitations over the various forms of *ذو*, whether singular or plural.

In relative clauses, there are instances of the resumptive suffix pronoun being omitted in one manuscript whilst included in another, as with,

التي ذكرنا - ذكرناها

or

الذي ذكرنا ووصفنا - ذكرناه وصفناه.

These differences are not included in the apparatus.

1.2.2.3 Syntax

Here, too, there are a number of instances where the manuscripts offer alternatives, one of which has been chosen and the other left unrecorded, such as the following:

The inclusion or omission of initial *و*, as in *واعلم*.

Occasionally, the choice between *و* and *ف* where there is no evident difference of meaning.

The choice (essentially capricious) between verb + object and verb + transitive pronoun, principally *ب* (the verbs concerned are *احتاج الى* (after *احتاج* and *استنشاق*), and (with a verbal noun) *ل* (after, e.g., *استنشاق*), and *انقسم*).

Similarly, the choice between, e.g., *بعضها ببعض* and *بعضها بعضا*.

1.2.3 Additions/omissions

It may be observed, finally, that the terms used in the apparatus for '+' (زيادة في) and '-' (سقط من) should not be regarded as necessarily carrying an implication with regard to status. In other words, it cannot be assumed *a priori* that material marked as absent from one or more manuscripts points to an omission from an earlier, fuller, version: it might equally well reflect an earlier state of the text, whereas the edition has included subsequently added material; nor can it be assumed, conversely, that material excluded from the edited text and hence marked as extra in one or more manuscripts has been added to an earlier version.

2. Translation

With a text for which a considered and lavishly annotated translation has already been supplied by Amnon Shiloah,¹² a distinguished scholar who has studied this *risāla* in depth, any newcomer who undertakes the daunting task of rendering it afresh is faced with two temptations. One, despite the wish to demonstrate some degree of stylistic independence, in addition to offering alternatives where the new edition of the source text requires, is to consult his version too frequently and as a result end up with a highly derivative act of homage. The other is deliberately to avoid it, thereby gaining independence at the price of a potential reduction in the standard of scholarship and a consequent loss of accuracy and insight.

The approach adopted here is closer to the second option but, at the same time, the translator is happy to acknowledge his indebtedness to the scholarship displayed by Shiloah in (and around) his translation(s). What this means in practice is that a deliberate attempt not to be influenced in terms of style was made by the simple expedient of not consulting Shiloah's work at all during the course of producing the first draft; this, then, was not only different where the text proposed did not coincide with the Beirut edition on which Shiloah relied, but was wholly independent. The various passages where problems had been encountered were then checked against Shiloah's earlier and smoother French version, and on occasion amended accordingly,¹³

12 A. Shiloah, tr., 'L'Épître sur la musique des Ikhwān al-Ṣafā', *Revue des Études Islamiques*, 32 (1965), pp. 125–162, and 34 (1967), pp. 159–193. This supersedes the pioneering translation by F. Dieterici, *Die Propädeutik der Araber im zehnten Jahrhundert*, *Die Philosophie bei den Arabern im X. Jahrhundert n. Chr.*, III (repr. Hildesheim: Georg Olms Verlag, 1969), pp. 100–153. Shiloah later produced an English translation, *The Epistle on Music of the Ikhwān al-Ṣafā'*, *Documentation and Studies* 3, (Tel Aviv University, Tel Aviv: 1978), repr. in A. Shiloah, *The Dimension of Music in Islamic and Jewish Culture* (Aldershot: Ashgate Variorum, 1993); however, the French is to be preferred, especially because much of the annotation was stripped out for the English version. His Hebrew translation, *Ha-Iggeret 'al ham-musika shel Ikhwān al-Ṣafā'* (Tel Aviv, 1976), has not been consulted here.

13 This is especially the case in those passages of an astrological and numerological nature.

although without diminishing the stylistic divide. Only in a few cases was the English translation also consulted.

As a result, what is offered here provides, when set aside Shiloah's English version, at least an alternative with a rather different stylistic feel and a different approach to handling some of the technical problems the original raises. Which is not to claim that it is better: any student of the *risāla* will need to take account of Shiloah's translations as well as of his researches, and the present version is manifestly indebted to both. Another and more specific form of indebtedness concerns the various Qur'anic citations in the text; the versions offered for these are all taken from Muhammad Abdel-Haleem's translation.¹⁴

The original text spans the gamut from the plainly factual and expository to the highly wrought and hortatory. Some attempt has been made to reflect these differences of tone, and certainly to preserve as much as possible of the syntax, with its preference for sinuous periods made up of bundles of parallel (and often nearly synonymous) clauses. The lengthy English sentences that result are presented quite unapologetically; on the other hand, an attempt has also been made by means of typographical layout to clarify certain of the passages that are essentially catalogues. The fundamental aim has been to provide a version that should at least be approachable, even if not always smoothly readable, and, more especially, to make it accessible for a musicologist unfamiliar with the theoretical tradition within which the *risāla* is set and to which it makes such an individual contribution. Accordingly, while some explanatory comments of a general order have been provided in the footnotes, the emphasis has been on annotating and contextualizing those terms and passages that are more obviously musicological — at least as generally understood today.

In several cases, however, the questions raised are rather too broad, or complicated, to be dealt with effectively within the confines of a footnote, and it is to a survey and discussion of these that the remainder of this introduction is devoted. The major musicological topics concern pitch relationships, rhythm, and instruments, but consideration of these may usefully be prefaced by a rather more detailed account than that

¹⁴ *The Qur'an: a New Translation* (Oxford: Oxford University Press, 2004).

given in the companion volume of the various cosmological frameworks within which the Ikhwān integrate music.¹⁵

3. Cosmology

There is no need to expatiate yet again on the fundamentally cosmological orientation of this *risāla*; enough has already been said on its general thematic range and approach. What may usefully be done here is to add a supplementary inventory of the main areas within which its ramifications are presented in some detail. From a musicological perspective, those of greatest interest concern, on the one hand, number, especially in the form of proportions manifest as interval ratios expressed both locally, on the lute, and cosmically, producing the harmony of the spheres, and, on the other hand, sets of relationships, related to the strings of the lute, that trawl through a wide range of fourfold phenomena but give particular prominence to the theory of the humours and thence to the therapeutic potential of music.

3.1 Strings, elements, humours

To begin with the four strings of the lute, it may first be recalled that their number is regarded not as arbitrary, but as resulting from a deliberate decision on the part of the inventor sages to make them match other phenomena grouped in fours.¹⁶ There result various schemes of correspondence, prominent among them being the pairings with the elements and humours. The former also have associated qualities, so that we have:

15 See Wright, ‘Music and Musicology in the *Rasā’il Ikhwān al-Şafā’*’.

16 It may be noted that al-Kindī had already developed a more general perspective, discussing instruments with different numbers of strings with a whole catalogue of associations for each. See *Kitāb al-Muṣawwītāt al-watariyya min dhāt al-watar al-wāḥid ilā dhāt al-‘asharat al-awtār*, in *Mu’allaḥāt al-Kindī al-mūsiqiyya*, ed. Zakariyyā Yūsuf (Baghdad: Maṭba‘at Shafiq, 1962), pp. 63–92.

highest ¹⁷ string (<i>zīr</i>)	fire	(heat and fierceness)
second (<i>mathnā</i>)	air	(wetness and softness)
third (<i>mathlath</i>)	water	(wetness and cold)
lowest (<i>bamm</i>)	earth	(heaviness and thickness).

The corresponding set with the humours lays out the negative as well as the positive associations and effects, the notes of each string being regarded as capable of strengthening one humour and weakening another:

<i>zīr</i>	+ yellow bile	– phlegm
<i>mathnā</i>	+ blood	– black bile
<i>mathlath</i>	+ phlegm	– yellow bile
<i>bamm</i>	+ black bile	– blood.

The positive relationships are the same as those given by al-Kindī,¹⁸ who does not, however, mention the negative ones, although it could be argued that they are implied by the disposition given: displayed in circular format, the opposite poles will supply the positive and negative pairs. Analogous effects, if less exact and symmetrical, emerge from a threefold distinction within the general range of pitches, each register having intrinsic qualities related to the elements, which in turn affect the humours, again counteracting an imbalance and creating equilibrium. Thus a heavy combination of humours is moderated by high sounds, which are characterized as hot, while low sounds, considered to be cold and wet, counteract a combination of humours deemed too hot and dry. Sounds in the middle register, not surprisingly, help maintain a balance among the humours. It follows from all this that an expert physician is able, depending on the diagnosis of the ailment, to add a suitable allopathic ingredient of music therapy, a further element of which is the selection of the appropriate period of day or night for performing the relevant melodies.¹⁹

17 That is, the highest in pitch. (The text may define this string as the lowest, referring to its position on the vertical plane of the instrument when performed.)

18 *Mu'allafāt al-Kindī al-mūsīqiyya*, pp. 86–88.

19 The general idea persists in later texts, but they switch from strings to modes as the appropriate vehicles for music therapy. See Eckhard Neubauer, 'Arabische Anleitungen zur Musiktherapie', *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften*, 6 (1990) [pub. 1991], pp. 227–272.

3.1.1 Fourfold things

The above are treated as separate topics, but the strings, elements, and humours are also included within a grand scheme of fourfold things (*murabba'āt*).²⁰ This is arranged in four blocks, each one headed by one of the four seasons²¹ (beginning with spring) and containing further time-based sets that likewise progress straightforwardly from beginning to end: the ages of man and the quarters of the month and of the day; and a similar temporal progression around the celestial globe informs the disposition of the astrological entries: the zodiac (beginning with Aries) and the corresponding segments of the ecliptic and quadrants. But not everything follows the same linear (or circular) progression, for we unexpectedly encounter a zigzag arrangement for the cardinal points and the winds, which go from south to east to west to north.

We then reach more familiar territory with the elements, strings, natures (e.g., hot and wet), and humours, but the order is again unexpected, for instead of that given above (i.e., *zīr* = 1, *mathnā* = 2, *mathlath* = 3, *bamm* = 4), we have:

strings	2	1	3	4
elements	2	1	4	3
humours	2	1	4	3.

The reason why *mathlath* and *bamm* are not reversed along with the others is not immediately clear, and is certainly not explained, but the manuscripts are unanimous. To be surmised is an unexpected reflection of practical habits, for instead of the theoretical tuning processes laid out in the *risāla*, according to Ibn al-Ṭaḥḥān musicians were in the

20 For a synthetic tabular presentation see Shiloah's French translation, pp. 179–180, and, for a similar display conflating the relationships covered by al-Kindī, see Johann Christoph Bürgel, *The Feather of Simurgh*, (New York: New York University Press, 1988), p. 94. For a translation of al-Kindī's treatment of this area of enquiry see Henry George Farmer, 'Al-Kindī on the "êthos" of Rhythm, Colour and Perfume', *Transactions of the Glasgow University Oriental Society*, 16 (1955–1956), pp. 29–38.

21 In al-Kindī's text, the various phenomena are ordered under the four strings of the lute. That the Ikhwān should have chosen to present the division of the year into four seasons as a set so self-evident as to serve as exemplary is attributable to intellectual tradition rather than observation of the climate in Iraq.

habit of stringing the lute (and presumably also tuning) in exactly the order given, ending with the *bamm*.²²

Also quite unexpected is the set of entries for rhythm. Given that there are eight of these, one would naturally predict a 4 x 2 arrangement, and in the first block we do, indeed, encounter two entries, but they disconcertingly consist of juxtaposed names of lute strings (to be discussed in 5.3.2) rather than rhythmic cycles. The four entries are:

<i>zīr-bamm</i> ;	<i>mākhūrī</i> and the like;
the heavy and the like;	<i>hazaj</i> and <i>ramal</i> .

The remaining material consists of categorizations of human nature, behaviour, virtues, types of verbal and poetic expression, and, finally, a range of sensory stimuli: tastes, colours, and scents.²³

3.2 Number

The most basic set of associations in which numerical expression comes to the fore is that relating the 4:3 ratio of the difference in the thickness of the strings to the elements, but the presentation is a little confusing. For the strings, beginning with the thickest, the order is *bamm*, *mathlath*, *mathnā*, and *zīr*. The elements are then presented as (concentric) spheres of decreasing size, in the order fire, air, water, and earth, which could suggest a correlation of *bamm* with fire, and so on, whereas in fact the opposite order is intended, for later it is made clear that fire is the thinnest element and earth the thickest; we thus abandon the order listed above in 3.1.1 and revert to the earlier juxtaposition of strings and elements. Further, the text in effect superimposes the concept of the elements as spheres upon the standard cosmological spheres of the earth and the sublunary strata, *nasīm*, *zamharīr*, and *athīr*, so that, in all, we have the following:

22 Ibn al-Ṭaḥḥān al-Mūsīqī (d. after 1057), *Ḥāwī al-funūn wa-salwat al-maḥzūn*, ed. E. Neubauer, facsimile in Publications of the Institute for the History of Arabic-Islamic science, series C, vol. 52 (Frankfurt: Institut für Geschichte der Arabisch-Islamischen Wissenschaften, 1990), pp. 179–180.

23 Much of this is foreshadowed in al-Kindī. See Farmer, ‘Al-Kindī on the “*ēthos*” of Rhythm, Colour and Perfume’.

Introduction

(thickest)	<i>bamm</i>	earth	earth
	<i>mathlath</i>	water	air (<i>nasīm</i>)
	<i>mathnā</i>	air	bitter cold(<i>zamharīr</i>)
(thinnest)	<i>zīr</i>	fire	ether (<i>athīr</i> = fire).

Taking the 9:8 ratio of the whole tone as a springboard, more extensive treatment is then accorded to the number 8 and, assigning this to the diameter of the earth, to the relative diameters of the other celestial spheres and the relationships between them expressed as musical proportions. This particular set of relationships, it may be observed, is quite independent of that implied above, for there, if the diameter of the earth is 8, that of the sphere of air should be $10\frac{2}{3}$, and that of the moon almost 19, whereas here the sphere of air is 9 and that of the moon 12. The complete range of the celestial spheres, together with the intervallic relationships between them, is given in Fig. 3 (see p. 20). It will be seen that these ratios combine to produce a conjunct Greater Perfect System, as follows (with the earth being assigned an arbitrary C):

earth	air	moon	Venus	sun	Jupiter	fixed stars
C	D	G	c	d	g	c'

Those planets standing outside the system, Mercury, Mars, and Saturn, produce dissonant intervals with all the others and are consequently deemed to be of ill omen.

Epistles of the Brethren of Purity

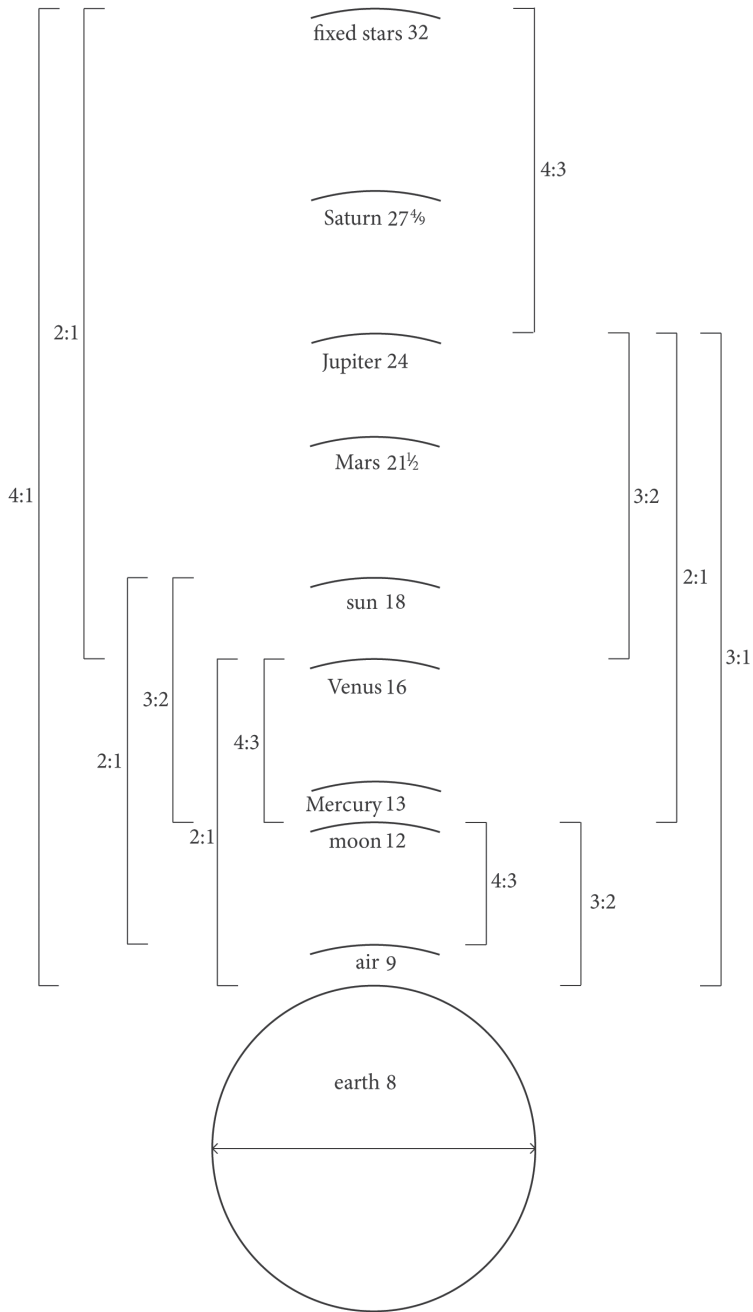


Figure 3

3.2.1 Calligraphy

The ideal proportions embodied by these ratios are held to be manifest not only through their actualization in sound, whether human or celestial, but also in non-musical domains. Two in particular are singled out for extensive treatment: calligraphy and physiology.

The calligraphic essentials are the two geometric fundamentals of line and circle, and all letter shapes, in whatever script, are deemed to be derivable from these. There is confirmatory citation of other scripts (Hebrew, Indian numerals, Syriac, if largely garbled in the extant manuscripts), but detailed exemplification is naturally confined to the Arabic letters, with a description of the nature and proportions of the elements of each. Here the number 8 reappears as a significant element, the width of the first letter of the alphabet, \aleph , being specified as one eighth of its length. The line of \aleph then provides the diameter of a circle, segments of which combine with it to form the remaining letters.

3.2.2 Physiology

When we turn to physiology, we find a general catalogue of body parts, including internal organs, held to be proportionate to one another, and a more specific set of detailed measurements held to be valid for the ideal human form, that of the newborn infant unaffected by any of the ills to come. The unit of measurement is the handspan, and 8 (with internal 4 x 2 segments) is again a key figure:

height	8
finger tip to stretched finger tip	8
soles of feet to knee-caps	2
knees to groin	2
groin to top of the heart	2
top of the heart to the parting	2
finger tip to elbow	2
elbow to clavicle	2.

In addition, using the navel as the central point, a circle described by a

compass extended to the finger tips when stretched above the head will reach the tips of its toes, and have a diameter of 10, as shown below in Fig. 4. The comparison with Leonardo da Vinci's drawing of Vitruvian man is inescapable, and is not just an unavoidable consequence of a common anatomy: there is a direct echo of Vitruvius' circle, centred upon the navel, that touches the outstretched fingers and toes, and of the square within which height equals extended arms. However, there is otherwise little resemblance between the Ikhwān's measurements and those of Vitruvius,²⁴ and the Ikhwān go on to offer a far longer list of items, some subdivisions of those given in Fig. 4, but the majority additional, including numerous facial proportions.

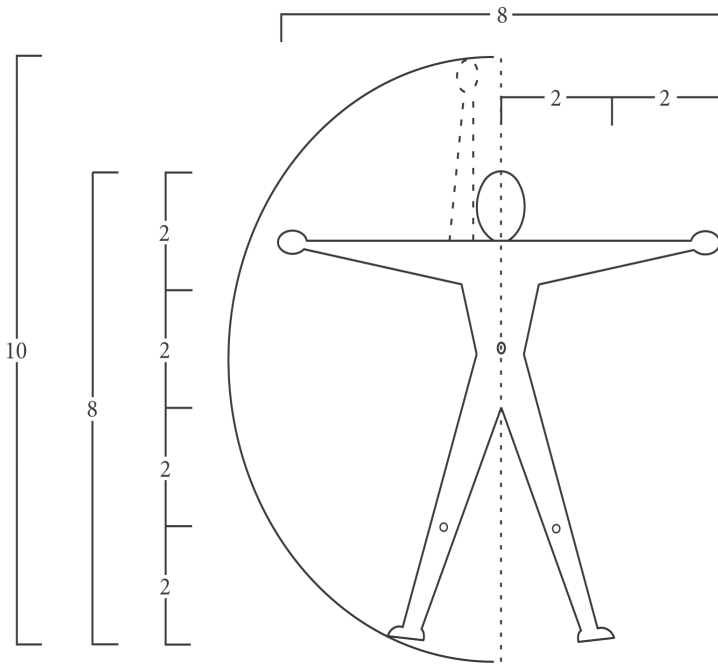


Figure 4

²⁴ They often measure different things, and where there are common items the measurement may not coincide: from elbow to finger tip is one fifth of height for Vitruvius, one quarter for the Ikhwān.

4. Instruments

Given that they are referred to in various contexts and for different reasons, it is not surprising to find that more than one generic term is used for musical instruments. In fact, we encounter four in all: the standard general term *āla* (pl. *ālāt*), ‘instrument’ (of any kind) coupled with which in one passage is the rather more abstract *adawāt* (‘devices’, ‘implements’), the equally standard *malāhī*, and *mūsīqān* (a derivation from *mūsīqī*), peculiar to the Ikhwān and used especially in the chapter on wise sayings on music, the learned flavour of which is well suited to its ancient Greek atmosphere.

Apart from the description of the lute, which is considered separately, there are two main passages dealing with instruments. In addition to the intrinsic interest of the range of instruments represented, they raise two issues, one concerning whether we can infer the presence of a general organological classification, the other whether we can define with any degree of precision the type of instrument to which a given name relates. The two issues are, of course, related: a degree of reliability in the latter is a prerequisite for being able to address the former.

Texts earlier than the *risāla* contain incidental references to a number of instrument names, but some appear to have fallen out of use by the ninth century,²⁵ and few occur in contexts that satisfactorily define them beyond allowing us, at best, to assign them to the general classes of struck, plucked, or blown.²⁶ Theoretical texts are not particularly informative in this respect either, so that it is likely, especially taking regional diversity into account, that a considerably wider range of instruments existed than is revealed by the literature. Mention is made by al-Kindī of a number of chordophones, but few are named, and, apart from his detailed account of the lute, his interest, cosmologically driven, is specifically in the number of strings. (More

25 For example, *muwattar* and *kirān* (presumably types of plucked lute) appear only in early poetry.

26 Although ostensibly concerned with instruments, the *Kitāb al-Malāhī* of Abū Ṭālib al-Mufaḍḍal ibn Salama (d. 290/902) is not particularly forthcoming, being more concerned with literary citation. See ‘A. al-‘Azzāwī, *Al-Mūsīqā al-‘irāqīyya fī ‘ahd al-mughūl wa’l-turkumān min sanat 656–1258 ilā sanat 941–1534* (Baghdad: Sharikat al-Tijāra wa’l-Ṭibā‘a al-Maḥdūda, 1370/1951), pp. 73–89; trans. J. Robson, *Journal of the Royal Asiatic Society*, 2 (1938), pp. 231–249.

informative, despite their often laconic brevity, are the definitions given by al-Khwārizmī.)²⁷ In contrast, al-Fārābī provides extensive accounts of the instruments selected for discussion, but his primary concern is not with materials, morphology, or playing technique but with the scales associated with the instrument in question.²⁸

4.1 *Types of Instrument*

4.1.1 Idiophones and membranophones

Given these concerns, it is not surprising to find that these authorities ignore unpitched instruments; in contrast, it is interesting to see the Ikhwān give percussion its due, even if only a few instruments are specified. Alongside *ṭabl* (pl. *ṭubūl*), probably a generic term for double-headed drums struck with beaters,²⁹ the other common term mentioned is *daff* (pl. *duḥūf*), a frame drum. These probably varied in shape (some being square) and size, and possibly also in playing technique, for although striking with the hand or fingers was presumably the norm, there is relatively early iconographical evidence for the use of small beaters also.³⁰ Two other drum types are named, and a third is referred to. One, the *kūs*, is defined in terms of volume, context of use, and geography: presumably a very large kettle drum, it could be heard at a considerable distance, and was used in the border regions of Khurāsān, where it accompanied (and presumably also helped summon) warriors going forth to battle. The other type, named *dabādib* (sg. *dabdaba*),

27 Al-Khwārizmī, *Mafātiḥ al-‘ulūm*, ed. G. van Vloten (Leiden: Brill, 1895), pp. 236–240.

28 Al-Fārābī, *Kitāb al-Mūsīqī al-kabīr*, ed. Ghaṭṭas ‘Abd al-M. Khashaba, rev. and intro. Maḥmūd Aḥmad al-Ḥifnī (Cairo: Dār al-Kitāb al-‘Arabī li’l-Ṭibā‘a wa’l-Nashr, 1967), pp. 494–877; tr. in R. d’Erlanger, *La musique arabe*, vol. 1 (Paris: Geuthner, 1930), pp. 163–306.

29 In a court context, *ṭabl* could also denote a waisted type of drum where pressure on the tensioning laces could alter the pitch. See G. D. Sawa, *Music Performance Practice in the Early ‘Abbāsīd Era* (Toronto: Pontifical Institute of Medieval Studies, 1989), p. 148.

30 On eleventh-century Fāṭimid ivory plaques, see A. Contadini, ‘Fatimid Ivories within a Mediterranean Culture’, *Journal of the David Collection*, 2/2 (2005), pp. 227–247, at p. 231.

may have been a smaller kettle drum, but in any case probably differed from the *ṭabl* in being single-headed rather than double.³¹

There is, further, a reference to the drums played by the *mukhannathūn*, effeminate musicians of unsavoury reputation. Other sources allow us to name this drum, possibly a slim, waisted, single-headed type, as *kūba*.³² We thus have references to membranophones across the social spectrum, from those associated with military campaigns to those used in celebrations to those associated with purely entertainment contexts, and it is also within this last that may be placed the one idiophone cited, the *ṣanj* (pl. *ṣunūj*), or small cymbals.³³ It should be noted, however, as a foretaste of problems to come, that although this seems the more likely identification here, *ṣanj* may also designate a harp.

Finally, in the treatment of rhythm mention is also made of a beater or wand, the *qaḍīb* (pl. *quḍbān*). Although instances are recorded during the ‘Abbāsīd period, the reference is fundamentally a textual relic of an earlier stage of musical practice, before accompaniment of the voice by the lute became the norm, when a light stick or switch had been used to tap out the rhythm.

4.1.2 Aerophones

The problem here is not so much which instrument names belong in this category, but which particular types they designate. The names mentioned are *nāy* (pl. *nāyāt*), *surnāy* (pl. *surnāyāt*, *sarānī*), *mizmār* (pl. *mazāmīr*), *ṣaffāra*, and *shabbāba*. Although there will later emerge a clear divide between *nāy*, designating an obliquely held end-blown bamboo flute, and *surnāy*, designating a double-reed shawm, at this stage there may have been no hard and fast distinction, with *nāy* being

31 This is, however, no more than reasonable conjecture. There is certainly iconographical evidence for kettle drums (of various sizes), but for *dabādīb* the Ikhwān are the only witnesses cited in Lois Ibsen al-Faruqi, *An Annotated Glossary of Arabic Musical Terms* (Westport, CT: Greenwood Press, 1981).

32 Al-Ghāzālī, *Ihyā’ ulūm al-dīn*, tr. D. B. Macdonald as ‘Emotional Religion in Islām as affected by Music and Singing. Being a Translation of a Book of the *Ihyā’ Ulūm al-Dīn* of al-Ghazzālī, with Analysis, Annotation, and Appendices’, *Journal of the Royal Asiatic Society* (1901), p. 213.

33 According to al-Khalīl, quoted by al-Khwārizmī, these were the jingles attached to frame drums.

used as a generic term and possibly more frequently in relation to reed instruments; al-Khwārizmī's terse definition of the *nāy* is *mizmār*.³⁴ He also defines *sur-nāy* as *ṣaffāra*, and although we are dealing here with approximate equivalences rather than with organological precision, this suggests, somewhat unexpectedly, that at this stage the name *sur-nāy* may not have been associated specifically with a reed instrument.³⁵ Reeds fail to be mentioned,³⁶ and the only remarks on instrument morphology in the *risāla* occur in a passage commenting on the effect of wider and narrower bores and of wider and narrower finger holes and their relative proximity to the mouthpiece.

Of the other names, one might suppose that, like the *ṣaffāra*, the *shabbāba* was not a reed instrument, and hazard that they may have been, respectively, a whistle (or a duct flute)³⁷ and an end-blown flute (but if so there is insufficient evidence to establish a distinction between it and other end-blown flutes to which the term *nāy* might on occasion have been applied). The one instrument that may be identified with greater confidence as having a reed is the *mizmār* (together with the etymologically related *zamr* and *zummāra*), but among reed instruments it is by no means clear that a consistent differentiation was maintained between single and double reeds.³⁸ In the absence of precise descriptions, early contexts of occurrence are seldom informative enough to assign an instrument to one specific type or another, and early representations in iconography are not always easy to interpret — and in any case have no names attached. What they do, however, is confirm the importance of wind instruments as part of court music making, something that would

34 Al-Khwārizmī, *Mafātīḥ al-ʿulūm*, p. 237. See H. G. Farmer, 'A Note on the *Mizmār* and *Nāy*', *Journal of the Royal Asiatic Society* (1929), pp. 119–121.

35 This conclusion is confirmed by Ibn Sīnā, who contrasts the *mizmār*, which is taken into the mouth (i.e., it has a reed), with instruments where one blows into a hole (i.e., the tube end), such as the *yarāʿa*, an end-blown flute made of cane or reed 'which is known as *sur-nāy*'. See Ibn Sīnā, *Kitāb al-Shifāʾ, al-Riyādiyyāt. Jawāmiʿ ʿilm al-mūsīqī*, ed. Z. Yūsuf (Cairo: al-Maṭbaʿa al-Amīriyya, 1956), p. 143.

36 The exception is al-Khwārizmī, who speaks of *shaʿīrat al-mizmār*, literally, 'the barley stalk of the *mizmār*'.

37 The related verb *ṣafara* means 'to whistle'.

38 Farmer wisely opts for discretion, and prefers to use the non-specific designation 'reed pipe'.

never be suspected from the material collected in the *Kitāb al-Aghānī*,³⁹ the most comprehensive of musical source texts, in which performers on wind instruments, apart from the celebrated *nāy*-player Barṣawmā, are encountered rarely if at all.

It should be noted that the principal list of instrument names contains no trumpets or horns. The key term *būq* (pl. *būqāt*) does, however, appear elsewhere, alongside drums, placing it therefore in the military and ceremonial band. Given the length and the apparently cylindrical bore of the examples in early iconography, it is probably to be defined as a straight trumpet.⁴⁰

There are two further problematic cases, *urghun* and *armūnīqī*. In the first case there is no difficulty in identifying the instrument, the (presumably hydraulic) organ. A number of works of the period mention it, and it appears, with descriptions of its construction, in treatises on ingenious mechanisms. The question concerns, rather, the uses to which it was put: given that it is absent from the *Kitāb al-Aghānī* as well as from al-Fārābī's *Kitāb al-Mūsīqī al-kabīr*, the likelihood is that, although it must have been restricted to the court, on account of cost, it remained essentially a curiosity, an impressive display of engineering skill to go alongside whistling mechanical birds on artificial trees, but one remarkable for volume rather than finesse.⁴¹ With the *armūnīqī*, in contrast, the problem is knowing exactly what instrument it was. It has been confidently identified as panpipes,⁴² but this appears to be a leap of faith unsupported by lexical evidence: *armūnīqī* is unknown to classical Greek (in which the standard term for panpipes is *syrinx*), while in later Arabic sources we encounter, rather, *shu'aybiyya* and *mūsīqāl*.⁴³ Although the literature around 'Abbāsīd court music practice makes no mention of an instrument readily identifiable as panpipes, there is no

39 Abū'l-Faraj al-Iṣbahānī, *Kitāb al-Aghānī*, 25 vols. (Beirut: Dār Ṣādir, 2004).

40 Farmer, however, distinguishes between *būq*, as a generic term but used more for conical bore instruments, and *naḡīr*, designating the cylindrical; *Studies in Oriental Musical Instruments*, First Series (London: Reeves, 1931), p. 173.

41 See H. G. Farmer, *The Organ of the Ancients: from Eastern Sources* (London: Reeves, 1931).

42 H. G. Farmer, *A History of Arabian Music to the XIIIth Century* (London: Luzac, 1929, repr. 1973), p. 210; al-Faruqī, *An Annotated Glossary*.

43 Farmer, *Studies in Oriental Musical Instruments*, First Series, p. 173.

reason to think that it could not have occurred in other social milieux, even though its iconographical representation occurs considerably later;⁴⁴ but a no more unlikely alternative would be the mouth organ, for even though its iconographical representation is considerably earlier, it was still known to al-Khwārizmī.⁴⁵ There is, nevertheless, insufficient good evidence to support or refute either identification.

4.1.3 Chordophones

The various terms assigned to this category include a number that are not at all controversial and others that are rather problematic. The readily identifiable types include the short-necked lute (‘ūd, see 4.1.3.1), long-necked lute (*ṭunbūr*), harp (*jank*), and fiddle (*rabāb*). A rather more generic term is *ma‘āzif*, covering one or more types with unstopped strings,⁴⁶ while the problematic ones consist of *shulyāq* and *shawshak* (or more precisely, in each case, multiple variants thereof).

As well as being the vehicle preferred by theorists for demonstrating interval sizes and scalar/modal structures, the ‘ūd was clearly the predominant instrument in court circles, but its popularity was, for a time at least, challenged by that of the *ṭunbūr*.⁴⁷ It is possible, though,

44 Called *shu‘aybiyya*, it appears in an anonymous fourteenth- or fifteenth-century Arabic text, *Kashf al-humūm wa’l-kurab fī sharḥ ālāt al-ṭarab* — reproduced in H. G. Farmer, *The Sources of Arabian Music* (Leiden: Brill, 1965), pl. V — and thereafter frequently in Ottoman miniatures, the Ottoman name being *miskal*.

45 An instrument of the East Asian *sheng* type, known as *mushtak/mushtaq* (*ṣīnī*), and to al-Khwārizmī as *mustaq* or *mushtaq*, it is represented in Sāsānian metalwork and rock carving; see H. G. Farmer, *Islam, Musikgeschichte in Bildern*, Band III: Musik des Mittelalters und der Renaissance, Lieferung 2 (Leipzig: VEB Deutscher Verlag für Musik Leipzig, 1966), p. 19. Its appearance in an early fifteenth-century *Khamsa* of Niẓāmī (British Library MS Add. 27261, fol. 225v) presumably indicates not continuity but a later re-importation from the Far East. There is a contemporary description from Samarkand by al-Marāghī, who again considers it Chinese; *Jāmi‘ al-alḥān*, ed. Taqī Bīnīsh (Tehran: Mu‘assasa-yi Muṭāla‘āt wa-Taḥqīqāt-i Farhangī, 1366/1987), p. 209.

46 For references, see H. G. Farmer, ‘The Mediaeval Psaltery in the Orient’, reprinted in *Studies in Oriental Musical Instruments*, Second Series, pp. 15–16.

47 The *ṭunbūr* appears to have overcome the same kind of morally dubious reputation that was attached to the *kūba*, homosexuality being the element common to both. The *kūba* was associated with the effeminate *mukhannathūn*, concerning whom the *Kitāb al-Aghānī* contains anecdotes involving homosexual acts. For the *ṭunbūr*, obloquy surrounded its presumed origins: in one account

that this name was attached to more than one type of long-necked lute: rather than the type with a piriform resonator that can be considered the ancestor of the Persian *setār* and the Turkish *saz*, early representations prefer a type in which the soundbox has square shoulders, an ancestor, presumably, of the barbed lute known later as *rubāb*, and tend to show two pegs as against the four of the lute.⁴⁸

Although associated by the Sāsānians with the royal court,⁴⁹ the harp does not appear to have been prominent during the Umayyad and early ‘Abbāsīd periods. The type current was almost certainly a relative of that depicted on late Sāsānian rock carvings: a vertical harp without forepillar. In addition to *jank*, this type of harp was also called *ṣanj*, the two terms apparently being used indiscriminately.⁵⁰ Its range, to judge from al-Fārābī’s account, was probably two octaves.⁵¹

Possibly an offshoot of a horizontally held harp, the psaltery is one of the instruments supposedly subsumed under the generic term *mi‘zafa* (pl. *ma‘āzif*), which may well also have been used to designate members of the lyre family.⁵² It is mentioned by al-Mufaḍḍal ibn Salama, but he is only concerned to emphasize its geographical marginality, associating it especially with the Yemeni rulers in Sanaa, and he offers no clue as to its identity.

There remain the *shulyāq* and *shawshak*, or, more precisely, two groups of names the manuscripts (and other sources) collectively

— see al-Mas‘ūdī, *Murūj al-dhahab*, ed. and tr. Charles Barbier de Meynard and Abel Pavet de Courteille as *Les Prairies d’Or*, 9 vols. (Paris: Imprimerie Nationale, 1861–1877), vol. 8, p. 89 — it was invented by the people of Lot, in another it was imported from the Persians; in either case it was used as an instrument of pederastic seduction. Despite this, it was the preferred instrument of a number of prominent performers at court, and there were even books written on famous players; see Farmer, *The Sources of Arabian Music*, nos. 61 and 155.

48 See Farmer, *Islam*, pp. 39, 47.

49 The harp is prominent in the Taq-i Bustan reliefs; see Farmer, *Islam*, pp. 15, 17; and B. Lawergren, ‘Harp’, *Encyclopaedia Iranica*, vol. 12, pp. 7–13.

50 For al-Khwārizmī, *chang* (= *jank*) is the Persian equivalent of the Arabic word *ṣanj*.

51 Later representations in Safavid and Ottoman miniature paintings normally show upward of twenty strings, suggesting an increase in range to three octaves.

52 Farmer speaks of a ‘more primitive lyre or kithara’; *Studies in Oriental Musical Instruments*, First Series, p. 174.

provide, one consisting of *s.lbāq*, *sh.lbāq*, *sh.lhāq*, *shīlbā*, and *sīlbā*, the other of *shawshak*, *shawshal* (and its plural *shawāshil*), *sawsal*, and *sawsak*. The confusion this welter of variants reveals may be attributed to ignorance on the part of most of the copyists with regard to the identity of the instrument in question, which would be hardly surprising in the first case as the name may have dropped out of use, and in any case referred to an exotic instrument. It has been suggested that the most promising candidate among them is *salbāq*, because of the not unreasonable idea that it may be derived from the Greek *sambyke*.⁵³ This would provide an etymological basis for detecting here a reference to an arched harp,⁵⁴ contrasting therefore with the angled *jank*, but this runs up against the unfortunate fact that such harps had disappeared from Persian representations at least 1,000 years earlier, and were not to be attested again; all Islamic harp depictions are of the angled type, with an upper soundchest. In any case, the derivation itself can hardly stand close scrutiny: most manuscripts have an initial *sh*, not *s*; the vowel change is suspect; and there seems to be no good reason for the dissimilation *mb* → *lb*. A perhaps more fruitful lexical connection is one that leads us towards the lyre, for in astronomy the Arabic term for the constellation Lyra is either *lūrā* or *sulyāq* or *shulyāq*, and the latter (or *shalyāq*) is precisely the form given by al-Khwārizmī in his list of instruments (and is the form preferred here).⁵⁵ However, the constellation pictures in Ibn al-Ṣūfī manuscripts show a stylized lyre shape devoid of strings that could not be identified as an instrument without prior knowledge, and there is no evidence for the lyre being known in the environment of Arab art music. Together with Ibn

53 Farmer, *History of Arabian Music*, p. 155. *Studies in Oriental Musical Instruments*, First Series, p. 154 mentions the derivation *sambyke* → Aramaic *šabbekā*.

54 See M. L. West, *Ancient Greek Music* (Oxford: Clarendon Press, 1992, repr. 1994), pp. 75–77.

55 More precisely, *shalyāq* is the reading preferred by the editor, Van Vloten. The manuscripts have *sh.lyāq* or *s.lyāq*. A similar lack of familiarity is exhibited by copyists of Ibn Sīnā's *Kitāb al-Shifā'*, the manuscripts of which have *s.lyāq*, *s.lṣāq*, *s.ltāq*, and *sh.ltāq*; see *Jawāmi' ʿilm al-mūsīqī*, p. 143. Ibn Sīnā places it, together with the *šanj*, in a category that is defined in terms appropriate to both harps and lyres. (Unfortunately, he makes no reference to anything resembling the other problematical term, *shawshak*, discussed below.)

Khurradādhbih,⁵⁶ al-Khwārizmī refers to the *shulyāq*, or *shalyāq*, as a Greek/Byzantine instrument: the former credits it with twenty-four strings, while the latter states that it resembles the *jank*. We are thus left, rather uncomfortably, with the notion of an otherwise unattested twenty-four-stringed Byzantine harp-like instrument,⁵⁷ presumably one perceived to be at the same time both contemporary and ancient (and thus fitting with the introductory claim concerning invention by the sages).

Equally problematic is the *shawshak* group. Farmer,⁵⁸ followed by al-Faruqi, selects *shawshak* itself from the various forms available and tentatively relates it to the *ghizhak*,⁵⁹ suggesting therefore that it may have been a type of spike-fiddle. But the Ikhwān al-Ṣafā' cannot be adduced as authorities for 'the use of the bow' with respect to this instrument,⁶⁰ and although not decisive as evidence, it may be observed that, unlike the *rabāb*, the *shawshak* is not included among the instruments capable of producing continuous sounds. In short, the identification does not inspire confidence: a definition of *ghizhak* as a spike-fiddle only occurs much later,⁶¹ and the sound-shifts required appear suspect; however, given the number of lexical variants that are attested,⁶² a path could probably be found with a modicum of

56 See H. G. Farmer, *Byzantine Musical Instruments in the Ninth Century* (London: Reeves, 1925).

57 Al-Faruqi, *An Annotated Glossary*, suggests that *salbāq* might be an 'ancient triangular harp' — without, presumably, implying the presence of a forepillar. But as al-Khwārizmī attributes it to the contemporary *rūm* as well as the ancient *yūnāniyyūn*, the contrast with the *jank* can hardly be one of ancient and modern.

58 Farmer, *History of Arabian Music*, p. 210.

59 Al-Faruqi, *An Annotated Glossary*.

60 Farmer *History*, p. 210. The Ikhwān made no specific mention of it: the earliest explicit reference is in al-Fārābī's account of the *rabāb*.

61 However, the term may have existed considerably earlier; see Nicholas Sims-Williams, 'A Greek-Sogdian Bilingual from Bulayīq', in *La Persia e Bisanzio*, Atti dei Convegni Lincei, 201 (Rome: Accademia Nazionale dei Lincei, 2004), pp. 623–631.

62 Steingass includes also *qachak*, *qījak*, and, further, *shīshak*, somewhat vaguely glossed as 'musical instrument', 'violin', and 'a four-stringed instrument' respectively. The last is attested in a Pahlavī source, but there is no means of

philological ingenuity.⁶³ Nevertheless, the sheer multiplicity of forms is puzzling, and there remains the point that if the *shawshak* were a bowed instrument, one might expect it to be listed alongside the *rabāb*; and we would also need to assume the parallel existence of two distinct types, presumably the boat-shaped fiddle and the spike-fiddle. In any event, in both of these difficult cases we are dealing with instruments that were unknown to tenth-century Arab court music as reflected in the *Kitāb al-Aghānī* (and which were therefore less likely to receive iconographical attestation later).

4.1.3.1 *The lute*

Given that over the centuries, from al-Kindī on, the lute was the standard tool of theorists for the demonstration of tunings and frettings and the definition of scalar and modal structures, it is no surprise to find the Ikhwān singling it out for particular attention. Nor is it unexpected to find them adopt, broadly, the approach of al-Kindī, who deals not only with intervals and scales but also with the materials and dimensions of the instrument, an aspect also touched upon in a number of later texts.⁶⁴ For example, they strike a realistic note in the practical injunction to choose for the strips of the body a hard, light wood that rings when struck. The dimensions are articulated not as measurements but as proportions: the relationship of breadth to depth is stated to be 2:1, that of length to breadth 3:2, and that of total length to total length less neck 4:3. The ratio 4:3, that of the perfect fourth, is then said to govern the relative thickness of the strings, specified as being made successively of sixty-four, forty-eight, thirty-six, and twenty-seven threads of silk. It might be thought that the relative dimensions given

knowing what, precisely, it designates; J. Unvala, *The Pahlavi Text 'King Husraw and His Boy'* (Paris, n.d. [1921]), pp. 27–29.

63 The change *gh* → *sh* is abrupt and unlikely, and *sh* → *gh* even more implausible. At best, one might hypothesize **g* → *gh* and **g* → *j* → *ch* → *sh*, following recognized routes of affrication and palatization respectively.

64 The available materials, including the accounts of al-Kindī and the Ikhwān, are presented and discussed in detail in E. Neubauer, 'Der Bau der Laute und ihre Besaitung nach arabischen, persischen und türkischen Quellen des 9. bis 15. Jahrhunderts', *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften*, 8 (1993), pp. 279–378.

are less the result of exact measurements than the ideal proportions they are in fact stated to be, yet there is at the same time an emphasis on referring to practitioners, and it is probable that they corresponded fairly closely to the proportions of actual instruments of the day.

4.2 Ratios and tunings

The steps by which the strings are tuned and the fret positions fixed are clearly spelt out, and require no further explanation. First, on any given string the frets are attached to produce the following intervals (measured in cents) from 1, the open string:

1	2	3 ^b	3	4
← 204	→ ← 204	90	→ ← 114	→ ← 90
		294	408	498

The strings are then tuned in fourths, so that, with A being given, arbitrarily, as the equivalent of the open *bamm* string, we have in all:

<i>bamm</i>	<i>mathlath</i>	<i>mathnā</i>	<i>zīr</i>
A	d	g	c'
B	e	a	d'
c	f	b ^b	e ^{b'}
c [#]	f [#]	b	e'
d	g	c'	f'

For Farmer, the fretting defined by both al-Kindī and the Ikhwān demonstrates the abandonment of neutral intervals,⁶⁵ thus suggesting a regression from the more complicated scale system described by al-Fārābī to the diatonic structure described by Ibn al-Munajjim (d. 913) and associated with Ishāq al-Mawṣilī,⁶⁶ before complexity re-establishes itself at the beginning of the eleventh century in the accounts of al-Ḥasan al-Kātib and Ibn Sīnā. But such would be a rather perverse view of the evolution of the scale system, and there is no reason to assume that any attempt is being made here to account

⁶⁵ Farmer, *Studies in Oriental Musical Instruments*, First Series, p. 191.

⁶⁶ See Neubauer, 'Al-Khalīl ibn Aḥmad und die Frühgeschichte der arabischen Lehre von den "Tönen" und den musikalischen Metren', *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften*, 10 (1995/1996), pp. 255–323.

for the complexities of practice; the stress is on a Pythagorean fretting which is based on, and restricted to, simple ratios (2:1, 3:2, 4:3, and 9:8) which accord with Neoplatonic numerology (and the attraction of these ratios is such that mention is also made in this context of the just intonation major third, 5:4, even though it is not yielded by the fretting). To take into consideration the irrational ratios associated with neutral intervals, even though they were clearly well established in practice, would have meant completely undermining the cosmological inferences of this scheme.

A further cosmological element emerges in a metaphoric play upon the distinction between high and low notes. Both from the modal descriptions of Ibn al-Munajjim and the comments by al-Kindī on the variable tunings applied to the lowest string, it appears likely that the two highest strings were primarily the bearers of the melody, and that the lower two tended to be used more for registral contrast and to strengthen, by supplying appropriate consonant intervals, modally significant notes in the melody. This contrast is first stated in terms of body (low) and spirit (high), and there is then a quite baroque elaboration in which the performer becomes a scribe, his quill a plectrum conjuring from the higher strings melodic letters that form song-utterances written on the parchment of the air, the ideas they convey again being likened to spirits lodged in bodies. Finally, the temporal dimension of the melody is an imitation of the cosmological rhythms inscribed by the movements of the heavenly bodies, and it thereby serves as a reminder of the felicity the soul may attain in the celestial realm.

4.3 Classification

Reference has been made above to a distinction between continuous and discontinuous sounds. Although not designed as a criterion of organological classification (the discontinuous sounds are exemplified by methods of attack rather than by reference to particular instruments), it certainly allows a listing of instruments (together with water wheels) that produce continuous sounds. These include, predictably, various aerophones but also the *rabāb*, clearly implying that it was a bowed

instrument.⁶⁷ The wind instruments cited are, first, *mizmār* and *nāy*, and then, after the *rabāb*, *surnāy*. These may well be no more than a random selection, but, if not, one might venture the suggestion that the omission of the *ṣaffāra* and *shabbāba* points us in the direction of reed instruments and thence to the possibility of the further prolongation of sound through the technique of circular breathing.⁶⁸

There are two other passages where a number of instruments are mentioned together. The first moves broadly from percussion to wind to strings, but is perhaps to be more precisely interpreted in terms of a set of functional categories. The first would be military and ceremonial, thereby explaining the inclusion of trumpets (*būqāt*) among the drums, *ṭubūl* and *dabādīb*. This group is followed by frame drums (*dufūf*), typically used to accompany social events and celebrations, whether urban or rural, and selected aerophones (*nāyāt*, *sarānī*, and *mazāmīr*), which were probably all reed instruments used in similar contexts. Finally, there is a laconic mention of lutes (*īdān*) ‘and the like’, interpretable as referring in the first instance to the instruments favoured by the social élite and therefore least in need of specification.

Although this is not made explicit, the other and more extensive list approaches more closely an organological classification, and it is of interest to note that it again begins with percussion instruments, which as a category tend to be ignored by other theorists.⁶⁹ It contains the problematic terms already referred to, and it should be noted, although this is not a serious difficulty, that the order of the items listed is not the same in every manuscript. Marking the problematic cases as ‘x’, and the others as ‘p’ (percussion), ‘s’ (string), and ‘w’ (wind), we have in the reading proposed:

p p p w w w w w s x s s s s s w x

67 For those who argue for an early tenth-century date for the *Rasā'il*, this indication would then predate al-Fārābī and thus be the earliest evidence for bowing.

68 The *Kitāb al-Aghānī* contains an anecdote demonstrating that this technique (*zamr*) was already known in the Umayyad period; vol. 17, p. 101.

69 Presumably, because they do not produce functional pitches. The only early major theorist to refer to them in a classificatory context is al-Marāghī; see *Jāmi' al-alḥān*, ed. Binish, pp. 198, 209–210.

Ignoring, for the moment, the last two, it seems fairly clear that this embodies the same tripartite taxonomy as before, and one might further venture the conclusion that the order within each group is not random. Thus, dividing percussion into ‘m’ (membranophone) and ‘i’ (idiophone) and, rather less confidently, wind into ‘r+’, (with reed) and ‘r-’ (without reed), we have:

m m i / r± r+ r+ r- r-

However, the distinctions proposed are by no means certain, and when we turn to the string group, no clear organological sequence can be established on the basis of the usual identifications. The expected juxtapositions of *salbāq*, *ma‘āzif*, and *jank*, and *shawshak* and *rabāb* do not occur, and if we discriminate ‘p’ (plucked) from ‘b’ (bowed) and ‘s+’ (stopped strings) from ‘s-’ (unstopped), we have:

p	b	p	p	b	p
s-	s+	s+	s-	s+	s-

But even if nothing emerges beyond the pointless observation that the first line is palindromic, it is still clear that there is a broad classificatory principle at work (indeed, it is because of this that it is possible, without running a serious risk of circularity, to assign to *ṣunūj* the sense of cymbals rather than harps), and it may be that among the chordophones a different factor was at work. It is certainly striking that the most important ones, the ubiquitous short- and long-necked lutes, come after two rare instruments with classical associations that can, accordingly, be thought to bear a particular form of cultural prestige. The same approach, it may be noted, appears very clearly in al-Khwārizmī’s account, which begins with four Greek instruments (and continues thereafter to stress geographical and hence cultural associations).⁷⁰

After the subsequent list of mainstream contemporary chordophones the group ends with *ma‘āzif*, a plural noun, possibly comprising marginal or local instruments of lesser prestige. But it is also conceivable that they initiate a final group, containing also *urghun* and *armūnīqī*,

⁷⁰ A particular form of *ṭunbūr* is associated with Baghdad, the *rabāb* with Fārs and Khurāsān, the *mi‘zafa* with Iraq, and the *mustaq/mushtaq* with China.

that is both organologically consistent, to the extent that each pitch has a separate sound producer,⁷¹ and at the same time a kind of antiquarian appendix: the *mi'zafa* appears to have been a rather generic term that was obsolescent, representative of an earlier stage of Arab musical culture; the organ, as noted above, was of interest for its mechanical complexity, and embodied not so much a significant musical resource as a prolongation of the classical heritage, being usually considered to have originated as a Greek battlefield device designed to inspire awe and terror; and the elusive *armūnīqī* (the identification of which as panpipes may owe something to its coming immediately after the organ) is lexically of quite explicitly Greek derivation.

5. Rhythm

As has been suggested in the introductory volume, the treatment of rhythm is quite complex and in some respects problematic. The particular difficulties concern in the main the definitions of a number of individual cycles (the longer ones in particular), but before addressing these it may be helpful to review the terms in which they are couched and the conceptual framework within which they occur, especially as various relevant themes are touched upon in different chapters of the *risāla*.

5.1 Perception

In presenting the cycles as specific arrangements of attacks and intervening durations the Ikhwān give definitions largely derived from al-Kindī, yet they also set these in a wider context, taking independent account of general issues of duration and memory as these relate to the perception of events in time. Relevant here is the contrast (see above, 4.3) drawn between continuous sounds produced by bowed or wind instruments and discontinuous sounds produced by successive attacks on, e.g., plucked instruments. Although the melodies played using the former were doubtless equally subject to the temporal discipline

71 This is a distinction that would presage the classificatory division between stopped and unstopped made in relation to string instruments by Ibn Sīnā; *Jawāmi' 'ilm al-mūsīqī*, p. 143.

of a rhythmic cycle, it is essentially in terms of the latter that the pattern of the cycle is articulated, and since the attacks that mark it are, inevitably, separated by intervening durations, the question then arises of how these can be measured, whether by ear or by mechanical means, so that the relationships between them are perceived to fall into meaningful recurrent sequences. From this derives the concept of a minimum indivisible time unit, expressed negatively as ‘that into which another attack cannot be put’,⁷² with longer durations being analysed as multiples thereof. Given the dependence of the description of rhythmic phenomena upon prosodic models, it is not surprising to find the equation of the minimum unit with a short syllable. Nor is it surprising, given the lack of adequate devices for measuring short durations with greater precision, to find that tempo is defined in straightforwardly relative terms: a given speed, *y*, is defined as faster than *z* but slower than *x*. The appeal here is to culturally familiar phenomena, the particular example cited being the pounding of the pestles of gypsum grinders (*y*) as compared with the strokes of oars (*z*) and the blows of blacksmiths’ hammers (*x*). The notion of comparatively slower and faster tempi, already implicit in the binary distinctions found in the nomenclature of the cycles, is expanded in abstract terms to four, differentiated by the number of time units per attack in each, one, two, four, and eight respectively.⁷³ Why the possible tempo range could not be subdivided further is not discussed, but why it could not be extended by the addition of yet slower bands is explained as resulting from cognitive constraints: the gap between attacks cannot be so great as to destroy the perception of a meaningful relationship between them, and the limit proposed is eight time units. In most manuscripts the symbols for these are laid out as a square, the notion being that from a given point (the top right corner being suggested by the direction of the Arabic script) one proceeds round the square to arrive, eight symbols later, back at the starting point. This form of representation can be seen to

72 It may be noted, though, that indivisibility is a relative rather than absolute concept, at least for al-Fārābī, who allows tremolo subdivisions.

73 This is one of the few parallels to be detected between the Ikhwān al-Ṣafā’ and al-Fārābī in this area; see Neubauer, *Arabische Musiktheorie*, pp. 133–134, 304. However, al-Fārābī also expands from one to two, three, and four; *Kitāb al-Mūsīqī al-kabīr*, pp. 449–452.

prefigure the later use of circular diagrams for the rhythmic cycles, and is almost certainly derived from the concept of the prosodic circle (*dā'ira*) around which related metres could be displayed.⁷⁴

Beyond this limit, it is argued, the mental image of the first attack would fade before the impact of the second is registered. It follows that external aids would be needed to establish the nature of the relationships involving longer durations, and what these might be emerges in the course of a comparison between aural and visual perception. In exactly the same way as with hearing, it is argued that coherent spatial relationships can be perceived over short distances, but otherwise need to be established by using external units of measurement such as feet and yards. The search for temporal equivalents leads not to comparable units such as seconds and minutes, but to the appropriate contemporary technology, despite its inability to operate accurately on such a small scale, to crucial regulatory parts of the water-clock, and beyond these to various forms of astrolabe.

5.2 Prosodic parallels

The basic approach to the description of patterns of attacks and intervening durations is to co-opt prosodic terms and methods of analysis, themselves reflecting features of the Arabic script which determine an approach governed by the concept of the letter rather than the syllable. Thus, an attack (*naqra*) is equated with a letter (*ḥarf*) representing a consonant. The consonant may be followed by a short vowel which is represented not by another letter but by a diacritic and is termed a 'movement' (*ḥaraka*). The resulting 'letter + movement' (*ḥarf mutaḥarrik*) may be symbolized as 'CV' which, according to the syllable structure of Arabic, forms a short syllable. By analogy with the short syllable, we have a short rhythmic cell. This consists of 'attack + movement' (*naqra mutaḥarrika*), and is viewed as indivisible. The attack itself is considered to be instantaneous, and the cell as a whole, which only acquires duration through the addition of the following

74 It is also used extensively by Ṣafi al-Dīn al-Urmawī (d. 1294) and his successors to show consonant intervals in modes and to display in concentric layers the pitch relationships they have in common.

movement, is regarded as the shortest entity that can be differentiated from continuous sound. It may be readily equated with the concept of a (minimum) time unit.

5.2.1 Cell combinations

To the short syllable implied by prosodic analysis corresponds, inevitably, a long. To the first ‘letter + movement’ is added a second letter, this time not followed by a short vowel. Lacking movement, it is consequently termed ‘motionless’ (*sākin*). Such a letter can only be final in a syllable, that is, added to a short CV syllable, thereby forming the long, which may be symbolized as CVC.⁷⁵ But, importantly, the ‘absence of movement’ (*sukūn*) associated with the *sākin* letter is theoretically equal in duration to the movement found in a short syllable. Consequently, a long syllable has twice the duration of a short — in other words, CVC is to be analysed as CV + CØ, where Ø has the same notional duration as V.

In exactly the same way, the Ikhwān posit a long rhythmic cell, the duration of which is twice that of the short. They symbolize the short cell in two ways, both equivalent to CV: one uses the short syllables (*mu*, *ta*, *‘i*) occurring in the various prosodic feet, the other the short syllables *ta* or *na* which occur in syllable strings representing rhythmic structures. The representation of the long cell similarly uses either long prosodic syllables (*fā*, *‘ī*, *‘ū*, *lā*, *mus*, *taf*, *lun*, *tun*) or extends *ta* and *na* by adding a final *n*, all, then, equivalent to CVC.

The long and short syllables combine to form three basic prosodic elements; from various arrangements of these the prosodic feet are formed; and the feet in turn combine to form the poetic metres. The Ikhwān al-Şafā’ duly list the three basic elements and the prosodic feet, but do not go on to catalogue the metres. They then use the same three-tiered model as an analytical framework for rhythm, providing first the exact equivalents of the three prosodic elements, defined as *tan*,⁷⁶ *tanān*, and *tanānan*. But the second stage does not correspond exactly to an elaboration of the prosodic feet: rather, we are given various schematic

⁷⁵ The fact that the long syllable might be phonologically CVV is not relevant here, since the sole determinant is the (identical) distribution of the script symbols.

⁷⁶ Prosodists allow *tana* (equivalent in duration) as a variant, but the Ikhwān make no mention of this.

(and thus essentially theoretical) combinations of the three elements. Representing the three as *a*, *b*, and *c* respectively, we are presented, first, with all nine possible duple combinations (i.e., *ab*, *ac*, *bb*, *bc*, *cc*, *cb*, *ca*, *ba*, *aa*) and then with a selection of ten (out of a possible twenty-seven) triple combinations. Given the lack of unanimity in the manuscripts, it is not absolutely certain which ten they are, although the most likely seem to be all six possible permutations of all three (i.e., *abc*, *bac*, *acb*, *cab*, *bca*, *cba*) followed by four in which the first and third terms are the same (i.e., *aca*, *bcb*, *cac*, *cbc*). However, one might have expected to encounter in addition *aba* and *bab*. Quite why these have been set aside is not clear, nor, indeed, why the total should have been set at ten: an overall sum of (10 + 9 + the original 3 =) twenty-two is noted, but this is not a number of particular cosmological significance. What is clear is that the combinations do not correspond to the prosodic feet, of which there are only eight,⁷⁷ and given that the prosodic feet are empirically derived from the range of sequences exhibited by the metres, it might reasonably be conjectured that correspondence should be sought not in the result but in the corpus from which it is derived. However, the various duple and triple combinations are far in excess of what is needed to account for the rhythmic cycles, and it is in any case clear that, just as with the prosodic feet, the various duple and triple combinations are logically unnecessary: whatever patterns might be detected in the cycles (or poetic metres) and expressed in these terms, all can be analysed in binary terms, as concatenations of simple elements.

5.3 *The rhythmic cycles as a set*

So far we have been given, in this account of basic prosodic and rhythmic concepts, a review of two parallel sets of constituent elements, but just as this first survey does not go on to itemize the individual metres, so too it avoids describing the structure of each cycle at this stage, a task that is deferred to a later chapter. Rather, it confines itself to characterizing them in general terms and naming them. Significant here is that they are qualified as characteristic of Arab music, a point further

⁷⁷ Formulated in the same way, these would be *ab*, *ba*; *aab*, *baa*, *aba*; *bc*, *cb*, and *aaa*.

emphasized later when they are described in detail. The qualification needs to be put in the context of a general awareness of differences between the musical traditions of various ethnic groups: at one point Daylamis, Turks, Kurds, Armenians, Africans, Persians, and Byzantines (among others) are mentioned as distinct, so that it should not be presumed that the same rhythmic structures were current far beyond the orbit of the court idiom. Even much later, in the thirteenth century, when a common modal system appears to have prevailed, the point is still being made that Arabs and Persians had divergent rhythmic preferences.⁷⁸ However, as neither the Ikhwān nor the other theorists writing during the ninth and tenth centuries comment on the nature of these differences or provide information about any of these other traditions, the matter cannot be taken further.

The total number of rhythmic cycles (*alḥān*) is stated to be eight, and an equivalence is then suggested between them and the eight prosodic feet. Viewed against the previous stress on taxonomic parallelism, it would be tempting to set this aside as a simple but misleading numerical coincidence between different levels, unhelpfully disguising the proper equivalence, that between a rhythmic cycle and a poetic metre. However, since some of the combinations that correspond to the prosodic feet can in fact account for or be equated with some of the shorter cycles (whereas all metres consist of multiples of prosodic feet), the relationship begins to appear less fanciful, and will be considered again below in 5.5.

Rather more significant is the related statement, echoing al-Kindī,⁷⁹ that the eight are fundamental structures definable as species (*ajnās*), that is, they are in some sense logically prior to other structures that may be viewed as dependent upon them or, to cite the particular metaphor used, as branching off (*tafarra'*) from them. On this topic, however, the text of the *risāla* remains as lapidary as al-Kindī, offering no insight into the criteria according to which a particular structure was selected as archetypal, nor any statement leading to an understanding of the nature of the relationships that subsisted between fundamental

78 Ṣafī al-Dīn al-Urmawī (d. 1294), *Kitāb al-Adwār*, ed. H. M. al-Rajab (Baghdad: Manshūrāt Wazārat al-Thaqāfa wa'l-I'lām, 1980), pp. 143, 149, 153.

79 *Mu'allafāt al-kindī al-mūsiqiyya*, p. 97.

and derived forms, and hence no way of telling how distant the latter might be from the former while still being classified as offshoots of it. For a theoretical analysis of this area it is to al-Fārābī that we would need to turn, but, rather than attempt an overall characterization of the transformational processes he explores, here reference will be made only to those variants relevant to the discussion of individual cycles.⁸⁰

On their first appearance, the eight cycles are arranged into four complementary pairs: the first two pairs each consist of a 'heavy' cycle and its 'light' counterpart, while the last two each juxtapose a cycle with a proper name (*ramal*, *hazaj*) and its light counterpart. In each case, therefore, the nomenclature suggests that the heavier member of the pair constitutes the prior, unmarked term. However, on their second appearance, immediately preceding their individual descriptions, the symmetry of the first presentation is lost, for the first term of the final pair is given as 'the light [counterpart] of the light' (*khafif al-khafif*) and the second as *hazaj*. But there is no light to which the former could be a counterpart (and in any case a light/extra light contrast would be a displacement of the heavy/light contrast), and the light counterpart to *hazaj* has been lost.

The subsequent individual accounts follow this asymmetrical second list, inherited from al-Kindī. It thus seems likely that we have here a tacit admission that practice was not quite as neat as theory would wish, and that the first presentation was an over-tidy abstraction which, it may be conjectured, distorted matters in the case of *hazaj* by proposing a light counterpart for what was already a light rhythm. The 4 + 4 arrangement, accordingly, would have been a systematization that was imposed on what in practice appears to have been, rather, a combination of three slower cycles and five faster ones — and there is, further, the suggestion that there may have also been conventional

80 For a general overview of this area, see G. D. Sawa, *Music Performance Practice in the Early 'Abbāsīd Era*. See also G. D. Sawa, *Rhythmic theories and practices in Arabic Writings to 339 AH/950 CE. Annotated translations and commentaries*, Musicological Studies, vol. 93 (Ottawa: The Institute of Mediaeval Music, 2009); E. Neubauer, 'Die Theorie vom Īqā'. Part 1: Übersetzung des *Kitāb al-īqā'āt* von Abū Naṣr al-Fārābī', *Oriens*, 21–22 (1968–1969), pp. 196–232; Part 2: 'Übersetzung des *Kitāb Iḥṣā' al-īqā'āt* von Abū Naṣr al-Fārābī', *Oriens*, 34 (1994), pp. 103–173, repr. in *Arabische Musiktheorie* (references will be to the latter volume).

tempo discriminations within the faster band. Moreover, it is significant to note that for al-Fārābī there are seven rather than eight cycles, and that only seven are listed by al-Khwārizmī.⁸¹ We seem, in short, to be faced with an artificial 4 + 4 arrangement cobbled together to provide a counterpart to the 4 + 4 categorization of modal phenomena that had recently been established,⁸² presumably inspired by the similarly patterned Byzantine *octoechos*.⁸³

If it is difficult to trace in any detail the developments leading to the situation the Ikhwān profess to describe, it is easy enough to observe that different kinds of names are juxtaposed. On the one hand, there is the evident parallelism of the two pairs made up of ‘the first heavy’, ‘the light [counterpart] of the first heavy’, ‘the second heavy’, and ‘the light [counterpart] of the second heavy’, even if, on the basis of the definitions given, it is a trifle disconcerting to find that the straightforward relationships that existed between the heavy-light pairs according to al-Kindī (and later authorities) have been switched in the *risāla*, so that they are now connected chiastically:

al-Kindī	heavy:	first	second
	light:		
		first	second
Ikhwān	heavy:	first	second
	light:	/	\
		first	second.

In any event, we are dealing with a set of exclusively musical technical terms to which can be added, in the second formulation, the asymmetrical

81 *Mafātīḥ al-‘ulūm*, pp. 245–246.

82 This is attributed to Iṣḥāq al-Mawṣilī (767–850); see J. W. Fück, ‘Iṣḥāq b. Ibrāhīm al-Mawṣilī’, *EI2*, vol. 4, p. 110.

83 Speaking of the differing categories or approaches (*madhāhib*) used by various nations on the lute, al-Kindī refers to the eight Byzantine *alhān* — using the term that, in the *risāla*, constantly slips between the melodic and the rhythmic, and it is indeed to the rhythmic cycles that he has recourse when giving the Arab counterpart; *Mu‘allafāt al-Kindī al-mūsīqiyya*, pp. 136–137. However, this does not imply a compressed process of derivation but rather, as Neubauer cogently observes, reflects the fact that in the earlier stages of recording the musical details of songs, the rhythmic cycle had conceptual primacy, with mention of the melodic mode coming in only later; see Neubauer, *Arabische Musiktheorie*, pp. 16–17.

'light [counterpart] of the light'. The others, though, point in a different direction, for both *hazaj* and *ramal* are also names of poetic metres. Unfortunately, the relationship is obscure, as although it would be reasonable to hypothesize that the patterns of these metres, both of which are made up of repetitions of a single foot, *fā'ilātun* (– ∪ – –) in the case of *ramal* and *mafā'ilun* (∪ – – –) in the case of *hazaj*,⁸⁴ could have generated rhythmically regular patterns of text setting that then established themselves as autonomous rhythmic cycles, the particular manifestations described by the Ikhwān cannot readily be derived from the corresponding prosodic structures; to this it may be added that there is no evidence to indicate that there had previously been a tendency to set poems in one of these metres in the homonymous cycle.⁸⁵

With regard to *hazaj*, a yet further asymmetry should be noted, one which distances it both from the other cycles and from the *hazaj* metre, for it is elsewhere conceived not as a cycle but as a pulse. It is reasonable to accept that *hazaj* as pulse and *hazaj* as cycle are related, but there is nothing to indicate how one mutated into the other. Given all these possible differences of identity, origin, and association, it might well be that, rather than forming a coherent and balanced set, the eight cycles described by the Ikhwān represent a collection of structures that in certain cases sat uncomfortably together and possibly overlapped.

5.3.1 Associations

The terms 'heavy' and 'light' suggest obvious differences of character, and even if the individual cycles are not assigned specific qualities, they are spread across sets of associations and contexts of use that clearly indicate a perception of their potential to create (or, at least, be appropriate to) various emotions and states of mind. This emerges quite clearly in the recommendations for what is suitable for the various stages of a festive social gathering as it moves from its initially

84 Thus one can be seen as a transformation of the other by the displacement of a single segment, and this relationship was recognized by al-Khalil ibn Aḥmad by inscribing both, along with *rajaz*, in the same prosodic circle.

85 For a review of the evidence see O. Wright, 'Music and Verse', in *The Cambridge History of Arabic Literature: Arabic Literature to the End of the Umayyad Period*, ed. A. F. L. Beeston et al. (Cambridge: Cambridge University Press, 1983), pp. 433–459.

serious state towards final merriment and drunkenness. Associated with this trajectory, not surprisingly, is a shift from heavy rhythms at the beginning to lighter ones later,⁸⁶ with the added injunction to revert to more sedate rhythms at the end if the inebriated become rowdy. There are two further such groupings: one, cited above, within the sets of fourfold phenomena (see above, 3.1.2), the other mentioning which cycles are appropriate for setting poetry on different themes, and taking all these together we can form a fairly clear, if not wholly consistent, picture of the qualities and potentialities deemed to inhere in the various cycles. Thus the first group, suitable for projecting seriousness and setting verse on the connected themes of glory, generosity, and nobility, consists of the two heavy cycles, while the second, characterized as joyful and suitable for setting poems that arouse pleasure, consists of *hazaj* and *ramal*. Beyond that, we have an association between dancing and *mākhūrī* (an alternative name for the light counterpart of the first heavy), while both that same cycle and the slightly imprecise ‘light and the like’ are deemed suitable for setting poems eulogizing impetuous bravery.⁸⁷

The groupings within the fourfold sets are similar: one contains *mākhūrī* ‘and the like’, another ‘the heavy and the like’, and a third *hazaj* and *ramal*. But, although the tripartite division is maintained, leaving the fourth set to be filled by something else, the order is a little unexpected: the joyful *hazaj* and *ramal*, for example, are now associated with winter and old age and with poetry praising nobility and justice.

5.3.2 *Zīr-bamm*

More surprising still is the entry provided for the fourth set (in fact, the first in order of presentation, that of spring), for here we find *zīr-bamm*,

86 A similar arrangement seems to characterize the *nawba* as it evolved in al-Andalus, but, for ‘Abbāsīd court practice, the evidence reviewed by Sawa suggests an absence of pattern, with the cycles occurring more or less randomly; *Music Performance Practice*, pp. 166–170.

87 The name *mākhūrī* has an obvious connection with *mākhūr*, the ‘wine-tavern’, which one could well imagine as a suitable setting for both dancing and Falstaffian braggadocio — except that the bravery mentioned is real, not fake. It is interesting to note, however, that because of its disreputable implications, the derivation *mākhūr* → *mākhūrī* is avoided by al-Fārābī in favour of a metaphorical connection with *makhkhara* ‘to cleave the waves’ (said of the prow of a ship).

that is, a compound of two strings. There is sufficient agreement among the manuscripts to ward off any suspicion that the text might be corrupt,⁸⁸ and, in any case, to decant one or more of the rhythmic cycles into this set would undermine the previous tripartite division.

Although any interpretation must perforce be hypothetical, there are one or two scraps of information that may have a bearing on this curious entry. One is the actual identity of the strings. These are the highest and lowest on the lute, and one could think of a particular technique of alternating strokes whereby the lowest provided a particular rhythmic drone to support the melody in the higher register. But given that both names are Persian words, it might be more realistic to think of the long-necked *ṭunbūr*, on which, given its Persian associations, the two strings probably had these same names. In addition to the possibility of using exactly the same kind of alternation (but with greater facility), or of a single stroke combining melody and drone string in a particular rhythmic pattern, it allows a further relevant technique, stopping the lower string with the thumb, and it is this that is foregrounded in the other piece of evidence, a passage from an eleventh-century text where a complicated Persian rhythmic structure is said to be playable only on Persian lutes with thin (and, presumably, long) necks because it involves an unusual thumb technique on the *bamm* string.⁸⁹ Although there is no evidence to confirm it, there would be nothing unreasonable in the suggestion that there might be a connection between the melodic-rhythmic nexus implied by this technique and the rhythmic entities, sadly not described, that al-İşbahānī terms *hazaj ṭunbūrī* and *ramal ṭunbūrī*.⁹⁰

88 All manuscripts have *zīr*, while *bamm* is omitted from two and corrupted in a third to *thumma*.

89 The text is the *Ḥāwī al-funūn* of Ibn al-Ṭaḥḥān, ed. Neubauer, p. 204. For a discussion on this, see O. Wright, 'Die melodischen Modi bei Ibn Sīnā und die Entwicklung der Modalpraxis von Ibn al-Munaḡḡim bis zu Ṣafī al-Dīn al-Urmawī', *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften*, 16 (2004/2005), pp. 224–308, at pp. 258–259.

90 See Neubauer, *Arabische Musiktheorie*, p. 188.

5.4 *The individual cycles*

As the above discussion suggests that an examination of the individual cycles would not necessarily benefit from adhering to the pseudo-systematic order of the text, the following discussion will work from the easier, non-controversial definitions towards the more problematic. In the most baffling cases there is an almost irresistible temptation to force the text of the *risāla* to yield a version identical with that derivable from other sources, but, although this needs to be held in check since differences in space and time make it by no means certain that the same name should always relate to the same structure, the fact remains that the other theoretical accounts of the ninth to eleventh centuries provide a set of essential interpretative tools. They consist, in more or less chronological order, of the accounts given by al-Kindī, al-Fārābī, al-Khwārizmī, Ibn Khurradādhbih, al-Ḥasan al-Kātib, Sa'adya Gaon, al-Ma'arrī, Ibn Sīnā, and Ibn Zaylā.⁹¹ Of these, the last quotes al-Kindī (even if from a text not identical with those in the surviving corpus), while Sa'adya Gaon and al-Ma'arrī are both derivative to the extent that they may be discounted. This leaves, then, six potential points of reference, of which the first two are by far the most important: al-Fārābī because he provides incomparably the fullest and most precise analytical account, but above all al-Kindī, because it is evidently from him that much of the material in the *risāla* is derived.

These sources provide an initial general framework, allowing us to discern the existence of two basic sets: the two heavy cycles and *ramal*, and their light counterparts, that is, then, three corresponding pairs. The lighter ones are cycles of three, four, and five time units, while the heavier are equivalent structures at a slower tempo, i.e., with (at least) twice as many time units. How the remaining cycles relate to these remains to be seen.

In representing the various structures, the short cell (i.e., 'attack + indivisible duration'), will be symbolized as 'x', and its silent counterpart (i.e., 'non-attack + indivisible duration'), as 'o'. (The long cell becomes, accordingly, x o.) Thus 'x' indicates a time unit marked by an attack,

⁹¹ For general survey of this corpus, see Neubauer, *Arabische Musiktheorie*, pp. 197–200.

‘o’ a time unit not so marked. The term used throughout for attack/s is *naqra* (pl. *naqarāt*), which appears in the initial verbal definition given for each cycle, after which comes a second definition, or rather representation, in the form of prosodic and rhythmic mnemonics. Evidently, these ought to coincide and also illuminate one another, with the latter, especially, giving the supplementary information needed to fill the gaps in the verbal definitions — literally so, since what is lacking from some of them is a full and precise account of the pauses. Unfortunately, the state of the manuscripts is such that the mnemonic representations cannot always be established with certainty; and worse, what seem to be the best readings cannot always plausibly be aligned with the verbal definitions, so that other accounts must be resorted to in order to gain a clearer reading of the whole.

5.4.1 The light of the light

This could be considered the eighth or additional cycle in the sense that it is the one that does not appear, at least not under that name, in the accounts given by al-Khwārizmī, Ibn Khurradādhbih, and al-Fārābī. However, it is listed by al-Kindī, to whose definition the verbal description in the *risāla* is almost identical. It clearly indicates that the cycle consists of two consecutive time units each marked by an attack, followed by a third time unit not so marked:

(1) /x x o /.

The mnemonic definitions,

mafā ‘i lun mafā ‘i lun
ta nan tanan ta nan tanan,

present this structure four times over, although why they should do so is neither explained nor immediately clear.

5.4.2 The light counterpart of the second heavy

Again, we have a verbal definition almost identical to that given by al-Kindī (but, given the terminological switch noted above, for the light counterpart of the first heavy). This cycle differs from (1) in having

three rather than two consecutive time units each marked by an attack, followed by a fourth time unit not so marked:

(2) /x x x o /.

The mnemonic definitions,

fa'i lun fa'i lun
tananan tananan,

present this structure twice over. As with the fourfold presentation of (1), there seems to be no particular reason for this; certainly, none is given, but it may be noted that, following al-Fārābī, al-Khwārizmī similarly repeats the mnemonic outlines, and, considered in the light of both the versions given for some of the other cycles and the analytical approach of al-Fārābī, it may well be that repetition was considered to give a fuller and more satisfactory identification. More specifically, it may have been that the first cycle was not considered complete until the first attack of the second was reached, in which case it made sense to give it again in full, and that the double format was supported by another prosodic analogy, for although the hemistich, like the single cycle, contained a complete encapsulation of the metre, it still needed to be repeated.⁹²

Definitions of (2) (again called the 'light [counterpart] of the first heavy') as /x x x o / are also given by al-Fārābī⁹³ and al-Khwārizmī.

5.4.3 The light counterpart of *ramal*

Unusual is the fact that the verbal definition of this cycle specifies that the attacks are 'moving' (*mutaḥarrik*), a qualification made for no other cycle. Since every attack is automatically followed by a duration (*ḥaraka*), the inclusion of this specification is either otiose or carries some further implication. If the latter, it might possibly point to a tempo habitually faster than that of the other light cycles, but there is no

92 See Sawa, *Music Performance Practice*, p. 39; Neubauer, *Arabische Musiktheorie*, pp. 133, 183; Sawa, *Rhythmic Theories*, p. 251.

93 See Sawa, *Music Performance Practice*, p. 43; Neubauer, *Arabische Musiktheorie*, pp. 142, 154–155, 202–203, 218.

strong evidence for this, even if al-Khwārizmī qualifies the attacks as ‘light’.⁹⁴

The terms of the definition are clear, if terse: nothing is said about pauses and mention is made only of three consecutive (*mutawālī*) ‘moving’ attacks, which would suggest a cycle of three time units each marked by an attack:

(3) /x x x /.

The cyclic character would presumably be established by differences of timbre and/or dynamics, although no reference is made to this. From al-Kindī’s definition, which has the same three consecutive attacks, followed only by a formulaic phrase indicating the resumption of the cycle, we may find confirmation that the omission of any reference to a pause is because there is none. However, Ibn Zaylā reports a different definition on the authority of al-Kindī, /x x o /,⁹⁵ and that the cyclic identity could be — or indeed normally was — ensured by omitting the third attack is confirmed by al-Fārābī and al-Khwārizmī, who give the same basic pattern.⁹⁶ Unfortunately, this coincides with (1) and therefore complicates matters somewhat. But it may well be that for al-Fārābī /x x x / was a variant of a three-time-unit archetype, being subsumed by the generic form /x x o /; whereas al-Kindī, followed by the Ikhwān, separated them (presumably in order to round up the set of basic structures to eight) and in so doing assigned the designation of ‘light [counterpart] of *ramal*’ to what for al-Fārābī is a variant.

The congruence between verbal definition and mnemonic representation observed in (1) and (2) is not, unfortunately, the norm, and with regard to the remaining cycles it should also be noted that the mnemonic representation sometimes varies quite significantly between manuscripts. That most commonly given for (3) is:

94 If there was a cycle characterized by a particularly fast tempo, it was probably *hazaj*.

95 H. G. Farmer, *Sa’adya Gaon on the Influence of Music* (London: Probsthain, 1943), pp. 84–85.

96 See Sawa, *Music Performance Practice*, pp. 43, 61; Neubauer, *Arabische Musiktheorie*, pp. 142, 153–154, 201, 211, 225–226; al-Khwārizmī, *Mafātih al-‘ulūm*, p. 244. To be noted, however, is that al-Fārābī allows the addition of an attack in the last time unit, and mentions for it the possibility of qualitative differentiation.

mutafā ‘i lun
ta nanan tanan,

which instead of /x x x + x x x / or /x x o + x x o / seems to suggest /x x x o + x x o /, while one manuscript has a repeat of the first of those two elements:

mutafā /tananan = /x x x o /
+ *‘ilatun/tananan* = /x x x o /.

This may appear more convincing but creates a different problem, for it coincides, unhelpfully, with (2).

A possible solution to this difficulty is sketched below in 5.5, where it is suggested that both *mutafā* and *‘ilatun* might be interpreted as representing /x x x /. This would mean that there would be no need to conclude that the definition is defective or incoherent or, worse, that the cycle as described by the Ikhwān was significantly different from the version known to other authorities.

5.4.4 The light counterpart of the first heavy

In this case, al-Kindī offers a definition (for what he terms *mākhūrī*, ‘the light [counterpart] of the second heavy’) with three attacks, the first two consecutive, while the third is qualified as ‘isolated’ (*munfarid*). The duration of the preceding pause is not specified, but the text concludes by stating that there is one time unit ‘between its lowering and raising and raising and lowering’ (*bayn waḍ‘ih wa-raf‘ih wa-raf‘ih wa-waḍ‘ih*), that is, at the end of the cycle. This phrase presumably refers to the up and down hand movements of the performer, and is a welcome reminder that the articulation of rhythmic cycles was conceived not, as later, as a set of differentiated strokes on a percussion instrument, but primarily in relation to performance on the lute or *ṭunbūr*. A likely interpretation is that the first ‘lowering’ is the downstroke of the final attack and the second that of the first attack of the next cycle.

The Ikhwān begin their account in a way that suggests that they are dealing with what is essentially the same cycle: three attacks are mentioned, the first two again consecutive (*mutawālī*), while the third is characterized as both isolated (*mufrad*) and — the only difference

so far — heavy (*thaqīl*). Unfortunately, the placing of the third in relation to the first two is again not defined, and neither are we told how many time units separate the third from the beginning of the next cycle, so that the structure could be stated formally as $/x \ x \ p \ x \ q \ /$, where both p and q are unknown. A likely value for p is 1, while to q , if we recall al-Kindī's phraseology, we may rather more confidently assign the same value, thus yielding $/x \ x \ o \ x \ o \ /$. This assumes that the qualification of the third attack as heavy refers only to the presence of an additional following time unit, whereas if it is understood to refer also (or primarily) to a dynamic or timbral contrast, it might be written as $/x \ x \ o \ x \ o \ /$. The interpretation of the light counterpart of the first heavy as a cycle of five time units is confirmed by al-Fārābī, who gives as the basic pattern $/x \ x \ x \ x \ o \ /$, but adds that the variant recognized by Iṣḥāq al-Mawṣilī was, precisely, $/x \ x \ o \ x \ o \ /$.⁹⁷

Would this were all, but, unfortunately, the definition the Ikhwān give complicates matters by going on to mention a further four attacks. As a structure containing far in excess of the probable five time units proposed for al-Kindī's version would run counter to the prediction of identity, or at least close similarity, derivable from the previous cases, the most likely explanation for the discrepancy between al-Kindī's three attacks and the Ikhwān's seven, especially given the initial congruence between the two definitions, is that the latter are describing an enlarged unit consisting of two differentiated cycles,⁹⁸ the second, then, a variant containing one more attack than the first.⁹⁹

The first of the extra four attacks is characterized as *maṭwī*, that is, it is affected by *ṭayy* ('folding'), a form of reduction. This term is taken from prosody, where it designates the substitution of a short syllable for a long, and hence a reduction of the length of the foot (and

97 See Neubauer, *Arabische Musiktheorie*, p. 204; Sawa, *Music Performance Practice*, p. 64; Farmer, *Sa'adya Gaon*, p. 82. The brief definition given by al-Khwārizmī, which could also fit this shape, although it is not specific about pauses, distinguishes between two light attacks and a third heavy one; see *Mafātīḥ al-'ulūm*, p. 246.

98 Neubauer comes to the same conclusion; *Arabische Musiktheorie*, p. 198.

99 The Ikhwān nowhere discuss such a phenomenon, but it is explored extensively by al-Fārābī, who terms it *mukhālafa* ('contrast, differentiation').

hence of the whole line) by the value of a short syllable;¹⁰⁰ the question raised by its application to a rhythmic cycle is whether it relates to the deletion of an attack or, as strict analogy would indicate, a time unit. The answer is provided by the one authority to define this term, al-Fārābī, for whom it is a feature of variant forms, which consists of the omission of an attack from the generic form but without the loss of the related time unit, e.g., /x x x o / → /x o x o /. As the variants that al-Fārābī lists demonstrate, such omission could occur fairly freely in the course of the cycle, but no example is given in which it applies to the first attack. However, in relation to the text of the *risāla*, it makes no sense to specify, for what is purportedly a generic form, a group of attacks from which one is omitted, so the most likely conclusion is either that the duration between the first and second of the four was reduced by comparison with the durations between the other three or that a time unit somehow associated with the onset of this group of attacks was not normally marked. The difficulty attendant upon the first conclusion is that it requires more time units than are available in a second cycle of five. It is preferable, therefore, to understand the suppression indicated by *ṭayy* as relating not to the first of the four attacks mentioned but to the one preceding it, that is, to indicate the elision of the attack that would have been expected on the first time unit of the varied repeat. The resulting structure is

$$(4) /x x o x o + o x x x x/$$

(and it may be noted that the resulting two silent time units across the divide are also congruent with notion that ‘heavy’ might be correlated with longer duration).

As a solution, this might be thought less than wholly convincing, and matters are not helped by the corresponding mnemonic syllables, even though they include a third, bird-song version. The manuscripts unfortunately fail to agree: the best overall fit for the prosodic, rhythmic, and bird-song patterns yields a total of thirteen time units, but the majority version for the bird-song coincides with the rhythmic mnemonics in three manuscripts in yielding a total of eleven time

100 Specifically, this is the elision of the fourth letter of a foot, so that, e.g.,
 - - - - → - - - - .

units. In either case, as above in 5.4.3, we have excess when compared with the version derived from the verbal definition, and the reasons why this might be so are discussed below in 5.5, which also reviews the similar discrepancies that occur in the following cycles.

5.4.5 The first heavy

If the light cycles lie, in all probability, within the three to five time unit range, one might expect the heavy equivalents, perceived to be significantly slower, to be storable as cycles of six to ten time units. However, the definitions, as in the previous case, initially seem to point us towards significantly higher totals, in other words, either towards an even slower theoretical tempo band, that in which there are four time units for every one in the fastest, so that the corresponding range for these three cycles becomes twelve to twenty, or else towards a repeat of the phenomenon diagnosed in (4), the combination of a basic form with a following second cycle containing a variant.

The first heavy needs to be seen in relation to the /x x x o / cycle of (2), which the Ikhwān term the ‘light [counterpart] of the second heavy’; to this al-Kindī’s account corresponds exactly, lacking only the specification in the earlier definition that there is insufficient duration between the attacks to insert another. It is therefore implied that there is indeed sufficient duration between the attacks for the insertion of one or more others, and the conclusion that we have moved the same basic number and distribution of attacks to a slower tempo band is confirmed by al-Fārābī’s description.

As before, the Ikhwan begin as if about to reproduce al-Kindī’s definition exactly, mentioning a group of three consecutive attacks. But they then add a further six: one qualified as ‘heavy, isolated, and motionless’ (*thaqīl, mufrad, sākin*), and then, echoing the definition of (4), five attacks, the first of which is affected by *ṭayy*. Given the total number of attacks, it makes sense to think either of an assemblage of two cycles of eight time units each, as with (4), or directly of one of sixteen. In the latter case, though, the logical distribution of the first three attacks, following al-Kindī’s model, would be

/x o o o x o o o x o o o o o o /

and it would not be possible to accommodate the remaining six attacks satisfactorily. In the former case we would have, by the same analogy,

/x o x o x o o o /

with, more plausibly, a further cycle of eight time units to follow. The supposition that we are dealing with two cycles suggests that the distribution of the final set of five attacks should resemble that proposed for (4), in which case it would be reasonable to think of the ‘heavy, isolated, and motionless’ attack as initial in the cycle, thus yielding

(5) /x o x o x o o o / + /x o o x x x x x /.

It would follow that the reference to *ṭayy* relates to the omission of the attack in the third time unit, which would have been present if the model of the first, normative cycle had been followed. It should, however, be noted that no such omission occurs among the variants listed by al-Fārābī, the closest to the above being /x o x x x x x x /.¹⁰¹

The continuing problem of a disagreement between the time-unit totals suggested by the mnemonic as against the verbal definitions is common to all the heavy cycles. In the present case the majority of manuscripts agree on a seventeen-time-unit total, so that we again have an excess.

5.4.6 The second heavy

Here the verbal definition is problematic in exactly the same way, but it also adds a further complication. Appeal to al-Kindī and al-Fārābī suggests, as expected, a fundamental relationship with (4), which the Ikhwān term the ‘light [counterpart] of the first heavy’, viewed as a cycle of five time units but with a change in the internal morphology from /x x o x o / to /x x x o x / (al-Kindī) or /x x x x o / (al-Fārābī).¹⁰² This could then, in slower tempo bands, be stated in terms of either ten or twenty time units. But as with the first heavy, there would be insufficient

101 Sawa, *Music Performance Practice*, p. 58.

102 The parallelism between this form and the layout of the basic (slower tempo) four-time-unit pattern of the first heavy suggests that al-Fārābī may be imposing regularity, especially as he singles out the variant /x x o x o / as the one form recognized by Ishāq al-Mawṣili; see Sawa, *Music Performance Practice*, p. 60.

space in the latter to accommodate the extra attacks, of which there are now seven, making eleven in all, so that it is again preferable to think in terms of two cycles, consisting now of ten time units each: the basic form, /x o x o x o o x o /, followed by a variant.

The verbal definition begins predictably by echoing al-Kindī but then deviates in a way that suggests the text is defective. Juxtaposing the two, we have:

al-Kindī 3 consecutive + 1 motionless + 1 moving
 Ikhwān 3 consecutive + 1 motionless + 1 heavy + 6 with *ṭayy*.

The former definition gives us /x x x o x /, to be understood as /x o x o x o o x o /, with the ‘motionless attack’ (*naqra sākina*) indicating a pause. However, it is clear that when the Ikhwān give the total number of attacks as eleven, they are not including pauses, so that either their ‘motionless attack’ actually corresponds to al-Kindī’s ‘moving’ (*mutaḥarrika*) attack, in which case they have simply failed to refer to the pause preceding it, or — and this is more likely — the ‘moving’ attack has been omitted, leaving ten attacks and a pause.

Restoring the missing attack, we have an exact replica of al-Kindī’s version of the first cycle, with the heavy fifth attack and the remaining six making up the second. Assuming that the heavy attack occupies the first time unit, that qualifying it as heavy may again relate to a following pause longer than one time unit, and that reference to *ṭayy* again relates to the omission of the attack in the third time unit, present in the first, normative cycle, we may interpret the whole definition as

(6) /x o x o x o o x o + x o o o x x x x x /.

The mnemonic definitions, as with the first heavy, appear to point to a number of time units in excess of that in (6).

5.4.7 *Ramal*

Whether defined as /x x x / or /x x o /, it is clear that the light counterpart

of *ramal* is a cycle of three time units, and the consequent expectation that *ramal* should be a slower equivalent stateable as six time units is confirmed by al-Fārābī.¹⁰³ He gives as the basic structure /x o x o o o /, and adds in one passage that Ishāq al-Mawṣilī defined ‘heavy *ramal*’ as a variant thereof, /x o x x o o /.¹⁰⁴ This should help us interpret the rather opaque description offered by al-Kindī,¹⁰⁵ which speaks of a separate attack (*naqra munfarida*) followed by two consecutive attacks and then, in the same vein as for the light counterpart of the first heavy, concludes by stating that there is one time unit ‘between its raising and lowering and lowering and raising’ (*bayn raf‘ih wa-waḍ‘ih wa-waḍ‘ih wa-raf‘ih*). But, although the text here differs to the extent that the order of the hand movements is reversed, it is essentially only the testimony of al-Fārābī that urges us to find two time units after the last attack rather than the one mentioned, either by simply assuming that the text mistakenly has one instead of two, or by a rather casuistic reading of the order of events, such as understanding the first ‘raising’ as the hand movement after the third attack and the ‘lowering’ as a movement marking a pause. There would then follow a second pause, the one mentioned, with the subsequent ‘raising’ being the one preparatory to the initial attack of the next cycle.

As expected, the verbal definition given by the Ikhwān begins by replicating part of al-Kindī’s version: an isolated heavy attack is followed by two consecutive ones. But instead of referring to a following pause to complete the cycle, mention is made of a further two pairs of consecutive attacks. The duration of pauses is not specified, though we are told that there is no pause between consecutive attacks, so that

103 Sawa, *Music Performance Practice*, pp. 41–42; Neubauer, *Arabische Musiktheorie*, pp. 221–222. Al-Fārābī sometimes terms this cycle ‘heavy *ramal*’, a designation also used by al-Kindī.

104 Sawa, *Music Performance Practice*, p. 55; Neubauer, *Arabische Musiktheorie*, p. 223.

105 *Mu‘allafāt al-Kindī al-mūsīqiyya*, pp. 97–98. Farmer’s interpretation of al-Kindī’s definition, which can be reformulated as /x o o x o x o /, appears to ignore the final phrase about raising and lowering; see *Sa‘adya Gaon*, p. 84. It does, however, fit well with al-Khwārizmī’s curt definition of *ramal* (which, he says, is also called ‘heavy *ramal*’) as one heavy attack and two light ones, symbolized as *tanna tan tan*, and echoed later by Ibn Sīnā’s *tān tan tan*; see respectively, *Mafātih al-‘ulūm*, p. 245; *Jawāmi‘ ‘ilm al-mūsīqī*, p. 119.

the information given yields $/x p x x q x x r x x s /$. On the assumption that the last four attacks again occupy a second, variant cycle, we might reasonably propose, to conform to al-Fārābī's account, that p , r , and s are each equal to 1, and $q = 2$, thereby arriving at the following distribution for the whole:

$$/x o x x o o + x x o x x o /.^{106}$$

The distribution of attacks in the variant cycle is, though, unusual, for it is to be expected in a fundamentally triple structure that, apart from time unit 1, time unit 3 is the one most likely to be marked by an attack, and it should be noted that this particular variant is not included among the several listed by al-Fārābī: those that contain four attacks are $/x x x x o o /$, $/x o x x x o /$,¹⁰⁷ and $/x o x x o x /$;¹⁰⁸ an attack on time unit 3 is omitted in just one among those with five attacks: $/x x o x x x /$. That the above proposal may not be correct is also suggested by consideration of the rhythmic mnemonics. They include yet again a bird-call version, but despite this extra material the manuscript variants remain few and insignificant, with general agreement on a shape that yields a total of eleven time units. Since the general trend is for the mnemonic representations to produce a total not less but more than that suggested by the verbal definition, one would expect to be able to interpret *ramal* as two cycles of five rather than six time units each, and al-Kindī's account certainly allows us to do so; if we do not interfere with his explicit mention of one time unit for the final pause, his definition corresponds to $/x o x x o /$, and that this is a feasible interpretation is at least countenanced by al-Fārābī, for in the course of his discussion of the second heavy he says that variants, such as $/x o o o x o x o o o /$ (structurally equivalent, therefore, to $/x o x x o /$), were considered by Ishāq al-Mawṣili to be *ramal*.¹⁰⁹ As elsewhere, then, here we may see the Ikhwān perpetuating al-Kindī's indebtedness to Ishāq. The consequent form of *ramal*,

106 It may be added that the version given by Ibn Hindī can be read as defining the pause between the two pairs as consisting of one time unit.

107 Neubauer, *Arabische Musiktheorie*, p. 223; Sawa, *Music Performance Practice*, p. 55.

108 Neubauer, *Arabische Musiktheorie*, p. 217; Sawa, *Music Performance Practice*, p. 56.

109 Neubauer, *Arabische Musiktheorie*, p. 236.

(7) /x o x x o + x x o x x /,

is one that matches perfectly the remark with which they introduce it, namely that it is the reverse of *mākhūrī*, another cycle of five time units.

5.4.8 Hazaj

This cycle is, for those recognizing a total of seven cycles, the odd one out, having no light counterpart.¹¹⁰ It is also unusual in that there is some dispute as to its basic nature, for Ishāq al-Mawṣilī is accused by al-Fārābī of erroneously considering it less a pattern than a pulse,¹¹¹ and it could also be understood as a pulse from the curt definition provided by al-Khwārizmī, who places it, significantly, first in his exposition, as if, according to this interpretation, it presented the raw rhythmic material out of which all the following cycles would be fashioned. For al-Fārābī, however, it is a cycle of six time units,¹¹² and al-Khwārizmī's definition could also be interpreted thus.

According to the text of al-Kindī, however, it has four.¹¹³ His definition is quite explicit, yielding / x x o o /, and on the basis of the evidence so far one would expect the Ikhwān to echo this version. But, despite a similar reference to two attacks with a pause of two time units after the second one, their version, as it stands, appears impossible to construe as implying the absence of a pause between the two: the problem it presents, rather, is how the length of that pause is to be understood.

An initial oddity is the apparent definition of the first attack as 'motionless'. This renders *sākin*, and it is so qualified in three manuscripts, but in the majority, we find instead *musakkan*,¹¹⁴ a term that appears nowhere else. This might be taken as synonymous, but could also suggest an attack 'rendered motionless', which in other contexts might

110 For al-Fārābī, who makes further tempo distinctions, *hazaj* is in the fastest band, which would explain the lack of a light counterpart; see Neubauer, *Arabische Musiktheorie*, p. 140. However, it acquires one among some of those recognizing eight cycles; see, for example, Ibn al-Ṭahḥān, *Hāwī al-funūn*, pp. 180–181.

111 Neubauer, *Arabische Musiktheorie*, pp. 244 (where al-Kindī is regarded as equally culpable in this respect), 251.

112 Sawa, *Music Performance Practice*, pp. 45, 67–68; Neubauer, *Arabische Musiktheorie*, p. 32.

113 *Mu'allafāt al-Kindī al-mūsīqiyya*, p. 98; Farmer, *Sa'adya Gaon*, p. 86.

114 Ibn Hindī, too, has this reading.

be taken, very unusually but not implausibly, as a paradoxical indication that the first time unit of the cycle was distinguished by the absence of an attack. As described by the Ikhwān, however, *hazaj* is the one cycle where there is an explicit reference to a qualitative differentiation between the attacks, the second being lighter (*akhaff*) than the first. Accordingly, the value ‘o’ for the first time unit must be excluded, and the ‘motionless’ qualification must be understood to relate to the duration following the initial attack, presumably designating one longer than that inherent in ‘x’, in all likelihood, then, ‘o’. But the text then adds that there is a one-time-unit duration between the first two attacks, and the question arises whether this is pleonastic, being no more than a restatement and confirmation of the time unit value inherent in the qualification of the first attack, or whether it could conceivably be extra, adding a further ‘o’ to the ‘o’ already implied. In the former case, we would have a cycle of five time units (marking in italics the lighter second attack):

/x o x o o / ,

and in the latter, one of six:

/x o o x o o / .

In either case, though, the apparent clumsiness of expression is both baffling and suspicious: it would have been straightforward to formulate the definition, assuming one of these interpretations to be valid, as ‘an attack followed by a lighter one, with the time of one/two attacks between them’.¹¹⁵

Given that the majority verdict favours six, whereas al-Kindī has four, a version with five seems hard to credit — one might almost think it a desperate attempt at compromise; yet it is this that is reflected exactly by the mnemonic representations.¹¹⁶ But, whilst it seems perverse to suspect these when they do reinforce what the verbal definitions

115 To make the definition accord with al-Kindī’s, the phrase ‘between the two is the time of one attack’ (*baynahumā zamān naqra*) would have to be considered an erroneous scribal addition. But it is present in all manuscripts, including the early Ibn Hindī abridgement, and the following prosodic and rhythmic representations support it.

116 Farmer quotes the mnemonic as ‘*fā’il fā’il*’ rather than the full form ‘*fā’ilun fā’ilun*’; see *Sa’adya Gaon*, p. 86.

apparently yield, they have differed from them sufficiently frequently to make untrustworthy witnesses, and they therefore fail to provide cogent reasons for not reconsidering the adequacy of the verbal definition in the light of what other authorities tell us.

Between the six- and the four-time-unit versions, the definition can easily be read as conforming to the former. Yet it is markedly different in character, for al-Fārābī's basic shape is /x x x x x o /, with the subsequent omission of one or two attacks, normally those marking the second and fourth time units.¹¹⁷ Further, without variants it would be difficult to establish that /x o o x o o / actually consisted of six time units, and it could not be distinguished from, e.g., a slightly slower /x o x o /. In short, it lacks the asymmetrical shape needed in addition to the qualitative contrast between the attacks in order to define the cycle.

Given that the mnemonic representations provide a poorer fit with a cycle of six time units, and given, especially, the general indebtedness to al-Kindī, it is more tempting to see whether it cannot be brought in line with his cycle of four time units. This is the route taken by Shiloah, who assumes a straightforward omission of the phrase which in al-Kindī's version denies the presence of a pause between the two attacks.¹¹⁸ But, though convincing, and perfectly effective in that it arrives at the four-time-unit target, this is only a partial solution, as it fails to take account of the fact that there is also no trace in the Ikhwān's version of the 'two consecutive attacks' with which al-Kindī's description begins. We may, therefore, tentatively suggest that the problem arises from the redrafting of al-Kindī's text to indicate the qualitative difference between the two attacks. The latter part of his definition, which the Ikhwān abbreviate but without changing the meaning, may be disregarded,¹¹⁹ leaving only the transformation of the beginning to be considered. Accepting *musakkan* as a *lectio difficilior*, there remains the question of its meaning: rather than 'made vowelless' (that is, taking it as an exceptional, indeed

117 Sawa, *Music Performance Practice*, pp. 67–68; Neubauer, *Arabische Musiktheorie*, pp. 146–147.

118 We would thus have 'naqaratān mutawāliyatān [lā yumkin baynahumā zamān naqra wa-] bayn kull naqaratayn wa-naqaratayn zamān naqaratayn', with the omitted section bracketed.

119 Kindī's 'wa-bayn kull naqaratayn wa-naqaratayn zamān naqaratayn' becomes 'wa-bayn kull ithnatayn zamān naqaratayn'.

inexplicable, substitution for *sākin*), we may appeal to its broader (if rare) sense of ‘calm’, ‘relaxed/soft’, qualifying the intensity of the attack. In contrast to al-Kindī’s text,

naqratān mutawāliyatān lā yumkin baynahumā zamān naqra
‘two consecutive attacks, between which there cannot be the time
of an attack’,

we thus have:

naqra musakkana wa-ukhrā akhaff minhā baynahumā zamān naqrā
‘a soft attack and another [even] lighter one, between which there
is the time of an attack’.

This suggests that the original text of the *risāla* may well have been:

*naqra musakkana wa-ukhrā akhaff minhā lā yumkin baynahumā
zamān naqra*
‘a soft attack and another [even] lighter one, between which there
cannot be the time of an attack’,

and that the rare *musakkan* was later misinterpreted as indicating a pause, thereby explaining both the substitution in some manuscripts of the more obvious *sākin* and the omission of the following negative, now considered contradictory since it denies the existence of the pause which the first term is deemed to imply. If we emend accordingly, we arrive at

(8) / x x o o / ,

and the expression is no longer atypical and clumsy — the second ‘lighter’ attack fits perfectly. One might even add that a cycle consisting of a soft and then an even lighter attack followed by a pause of two time units would both be markedly different from the light counterpart of the second heavy with its four time units — and not so far removed after all from a pulse.

5.5 Prosodic definitions

As is apparent from the preceding examination of the individual cycles, the prosodic and rhythmic representations replicate the result of the verbal definitions exactly in only two cases. For one of these, the cycle is given twice, and for the other, it is given four times, but this is hardly problematic, and there appears to be no good reason to dwell further upon it at this stage. What is problematic, paradoxically, is the fact that here the two methods of representation do produce identical results, as the norm is for the verbal definition to yield x time units and the mnemonic definitions $x + 1$. Since the regularity of this excess can hardly result from chance, it may be concluded that we are dealing neither with error on the part of the Ikhwān nor irresponsibility on the part of the copyists, but with a systematic difference for which there should be a discernible cause, and the obvious area to consider is the adequacy of the method of representation for the purpose in question.

Considered in isolation, the rhythmic mnemonics (and, following them, the bird-song representations) could easily be articulated in a way that would fit the time-unit totals to which the verbal definitions correspond. Given the convention that *ta* is always initial in a group (corresponding, broadly, to a prosodic foot) and is always followed by *n*, *na*, or *nan*, the only thing they cannot do is represent accurately in all contexts the presence or absence of an attack. Thus, both $/x\ x\ o\ /$ and $/x\ o\ o\ /$ appear as *tanan*, $/x\ x\ x\ o\ /$ and $/x\ x\ o\ o\ /$ as *tananan*. But, as they could certainly provide the correct totals for each cycle, it may be suggested that the reason they do not is that they are parasitic upon the prosodic representation not only with regard to the divisions into feet, but also with regard to the total time-unit count — in other words, the reason for the discrepancy is to be sought in constraints upon the prosodic representation that render it incapable of such accuracy.

The assumption, then, is that the prosodic mnemonics are not just neutral transmitters of the rhythmic structures. Rather, it may be suggested that the forms of representation they take are influenced (that is, in context, distorted) by the norms of prosodic representation as embodied in the various metrical feet and the three elements of which they are constituted.

There is one immediately obvious limitation on their effectiveness. Since the Ikhwān refer only to the form – (CVC) for the first prosodic element in the system (by inference discarding the alternative, ◡ ◡), while for the second and third we have ◡ – (CVCVC) and ◡ ◡ – (CVCVCVC) respectively, it follows that neither the elements nor the prosodic feet compounded from them (nor, *a fortiori*, the metres compounded from the prosodic feet) can end in one or more short syllables. This constraint helps explain the representation of the first heavy, the second heavy, and *ramal*. To begin with the last: the first cycle, /x o x x o /, is rendered exactly by *fā'ilun*, while for the second, /x x o x x /, we have *mafā'ilun*, equally accurate until we reach the final letter, which gives one time unit too many. But to delete it would mean going against the grain of the prosodic system by admitting a final short vowel (it would need to be analysed as ◡ – plus ◡ ◡). It may therefore be hypothesized that here the final consonant is a dummy letter added to produce conformity with prosodic rules, yielding a surface reading /x o x x o / that should be taken to represent an underlying /x x o x x /.

We have, therefore:

fā 'i lun mafā 'i lu(n)
tan tanan tanan tana(n),
kay kakay kakay kaka(y)
 /x o x x o + x x o x x /.

Interpreting the final consonant as a dummy letter also provides a satisfactory solution for both the first heavy and the second heavy. In the former, we have a problem of initial segmentation, in that there is no prosodic foot consisting of two, three, or four long syllables, with the result that the division adopted for the second cycle is imported into the first, thereby creating an artificial foot of three long syllables followed by a single long:

maf'ū lun maf mafā 'ī lun ma(f)
tan tan tan tan ta nan tan tan ta(n)
 /x o x o x o o o + x o o x x x x x /.

It may be noted that this gives a good correspondence in the second

cycle between the syllabic organization and the pause plus following onset of the attacks.

The representation of the second heavy derives directly from the above, simply adding a further long syllable in each cycle to cater for the extra length:

maf'ū lun maf'ū mafā 'ī lun maf^cu(u)
tan tan tan tan tan ta nan tan tan tan ta(n)
 /x o x o x o o o x o + x o o o x x x x x /.

In the second cycle, there results a correspondence between the syllabic organization and the arrangement of pauses and attacks that is not quite so good, however; tackled independently, one might have expected it to begin, rather, with *fa'ilun*. Although the suggestion can only be tentative, it is possible that another factor may have been involved here, namely, a disinclination to begin with something other than a full prosodic foot, if it could possibly be avoided. Thus, whilst one of the prosodic elements is $\cup \cup -$, it does not appear independently as a full foot¹²⁰ but as part of the foot *mutafā'ilun* ($\cup \cup - \cup -$), which would be less than felicitous in this context. This could help explain the preference given to the slightly awkward option of adapting the model of the first heavy. To the objection that *fa'ilun* does in fact appear in the prosodic definition of the light counterpart of the second heavy, it may be responded, quite simply, that for this cycle there was no better option available; and it may be added that the desire to avoid an incomplete prosodic foot wherever possible may explain the use of *mafā'ilun* for the light counterpart of the light, covering two cycles, rather than representing a single cycle by the prosodically fragmentary *mafā* or *fa'ū*.

The same applies to the light counterpart of *ramal*, where we generally have *mutafā'ilun* or *mafā'ilun*, both giving a count of seven time units. Discarding the dummy final consonant from the latter, we have an exact match with two rhythmic cycles:

mafā : 'ī lu(n)
 /x x x + x x x /.

120 Though *fa'ilun* does occur, it never initiates a line, and is essentially a reduced form of *fā'ilun*.

But the former, to which the rhythmic mnemonics generally correspond, seems to suggest /x x x o + x x o /, in other words, that this time the dummy element has been added to the representation of the first cycle:

$$\begin{aligned} \text{mutafa}(a) &: 'i \text{ lu} \\ \text{tanana}(n) &: \text{tanana} \\ /x \ x \ x \ + \ x \ x \ o \ / . \end{aligned}$$

An equally straightforward case is that of the version proposed for *hazaj*, where to two cycles of /x x o o / corresponds 'fā'ilun fā'ilun' (echoed exactly by 'tan tanan tan tanan'). If there is a query, it concerns not the dimensions — for, again assuming a final dummy consonant in each, we arrive at another perfect fit:

$$\begin{aligned} \text{fā} \ 'i \ \text{lu}(n) &: \text{fā} \ 'i \ \text{lu}(n) \\ \text{tan} \ \text{tana}(n) &: \text{tan} \ \text{tana}(n) \\ /x \ x \ o \ o \ + \ x \ x \ o \ o \ / \end{aligned}$$

— but, rather, the identity of the prosodic foot, for *fā'ūlun* would seem to be a more apt choice.

It remains to consider *mākhūrī*, the light of the first heavy, for which we have, in addition, a bird-song version. As usual, the manuscripts fail to agree, but by far the most common form for the prosodic representation is:

$$\text{mafā}'ilu \ \text{or} \ \text{mafā}'ilun \ + \ \text{mutafā}'ilun,$$

which yields a total of twelve or thirteen time units, uncomfortably in excess of the expected total of eleven.¹²¹ Ignoring two wayward versions of the rhythmic mnemonics, we are left with three that follow the thirteen-time-unit version exactly, while two have a pattern which coincides with the majority version for the bird-song, and these do yield eleven.¹²²

$$\begin{aligned} \text{tanana} \ \text{tan} \ \text{tanana} \ \text{tan} \\ \text{kukū} \ \text{kū} \ \text{kukukū} \ \text{kū} . \end{aligned}$$

121 The only significant variant is *mafā'ilu* for *mafā'ilun*, which does not, however, alter the total number of time units.

122 One bird-song version (*kukū kukū kukukū kukū*) has thirteen time units, and one other (*kukūkū kukūkū*) has ten. This last seems too good to be true, but is from one of the least reliable manuscripts and carries insufficient weight as evidence.

If we again hypothesize that the long final syllable is a prosodically forced representation of a short, we arrive at a straightforward correspondence with the version proposed above:

ta nan tan : ta nanan ta(n)
ku kū kū : ku kukū ku(u)
 /x x o x o + o x x x x /.

It would be tempting to follow the alluring call of the bird song, discard the majority version for the prosodic representation of the second cycle, and adopt the reading of ˩, *mafā‘ilu(n)*. But this simply does not fit with *tananan ta(n)* (one would expect it to generate *tanantanan*), so that we are forced back to the longer mnemonic versions, despite the fact that they involve a greater degree of distortion than hitherto. However, the introduction of a dummy consonant in the first cycle, as before, is certainly plausible; and it is not implausible to suggest that the extra length in the second is again forced: a beginning with ˩˩ rather than ˩– (presumably because of the fast tempo) requires completion with –˩– to produce the only available full foot, *mutafā‘ilun*. This overlong representation would then generate a parallel form in some of the rhythmic mnemonics:

mafā ‘i lu(n) : mutafā ‘i (lun)
ta nan tana(n) : ta natan ta(nan)
ta nan tan : ta nanan ta(n)
ku kū kū : ku kukū ku(u)
 /x x o x o + o x x x x /.

5.6 Ramal and mākhūrī

A possible connection between these two cycles is suggested in two contexts. As noted above, when *ramal* is introduced it is referred to as the ‘reverse’ (‘aks) of *mākhūrī* (= ‘the light [counterpart] of the first heavy’). Comparing the interpretations of the two proposed above,

/x o x x o + x x o x x / and /x x o x o + o x x x x /,

it will be seen that this can readily be understood to refer to the

structure of the first cycles of each, /x o x x / being the reverse of /x x o x /. Assuming this to be what was intended, the reference is simply a descriptive aid.

The second context is a passage dealing with changes of cycle. These imply an aesthetic preference for smooth transitions between structures perceived to be similar, and the instances mentioned are changing from a heavy cycle to the corresponding light one or from a light cycle to the corresponding heavy one or another similar. This is a distillation of a more detailed passage by al-Kindī which occurs in slightly different forms.¹²³ These can reasonably be conflated to specify the following moves: from the light counterpart of the first heavy to the first heavy; from the second heavy to *mākhūrī* and vice versa; from the light counterpart of *ramal* to heavy *ramal*; from *hazaj* to the light counterpart of *ramal*; and from heavy *ramal* to *mākhūrī*.

As to the nature of these transitions, al-Kindī gives the specific example of the last move, from heavy *ramal* to *mākhūrī*, and the process is reproduced in full by the Ikhwān. It is effected by stopping at the last two percussions of *ramal*, continuing with a single percussion, making a brief pause, and then beginning *mākhūrī*. From this we may arrive at the following interpretation:

$$\begin{array}{c} /x o x x + o x o \\ /x x \quad o x o + o x x x x / , \end{array}$$

which is evidently in accord with an aesthetic desire to avoid the abrupt, as it allows a smooth transition by creating an overlapping pre-echo of the second cycle within the first.

5.7 Summary

The versions that result from this necessarily rather convoluted discussion of the individual cycles are, it must be conceded, disputable in places; they lack the regular differentiations and complementarities that would allow them to be considered a coherent set rather than a somewhat random accretion of disparate elements. Ignoring the switch of names peculiar to the Ikhwān, we can certainly establish a grouping

¹²³ *Mu'allafāt al-Kindī al-mūsīqiyya*, pp. 84, 98.

of two light/heavy pairs, based on four- and five- or eight- and ten-time units respectively:

	first	second
light	/x x x o /	/x x o x o : o x x x x /
heavy	/x o x o x o o o : x o o x x x x x /	/x o x o x o o o x o : x o o o x x x x x x /

But thereafter regularity recedes:

	<i>ramal</i>	<i>hazaj</i>	light of the light
light	/x x x /	/x x o o /	/x x o /
heavy	/x o x x o : x x o x x /		

Here the light/heavy contrast may not have been as clear-cut; the light counterpart of *ramal* does not obviously relate to the version proposed for *ramal* in the same straightforward way; the light counterpart of the light appears to be little more than a variant of the light counterpart of *ramal*; and the version of *hazaj* proposed here likewise appears to be little more than a variant of the light counterpart of the first heavy. By comparison, the repertoire of seven cycles as described by al-Fārābī is tidier, in the sense that it rejects one unnecessary entry; but it still contains an element of duplication in that both *ramal* and *hazaj* are now storable as cycles of six time units, and although this fits neatly with the association of the two with regard to mood and affect, according to his systematic rules of transformation, the structure of one could be derived from the other and, therefore, relegated to the status of variant.

5.7.1 Variants

A salient and rather surprising feature of these definitions, particularly as they are offered as generic types (*ajnās*), is that for four of the cycles the Ikhwān present two forms. The first corresponds closely or exactly to the generic type given by other theorists, while the second would,

surely justifiably, be considered by them a secondary derivation thereof, and one sometimes quite distant from the putative original form, to the extent that they might even be thought of as showing how (or how far) the generic form could be varied in practice, constituting, in short, a representative sample from the range of variation types systematized by al-Fārābī. Alternatively, they might possibly be interpreted as specific variants preferred by local musicians to avoid the regularity of the generic form. If we prefer to accept at face value the inference that they were an integral part of the generic form, then they were presumably variants that alternated with the basic form to create a normative compound structure.

It is, in any case, worth noting that if the interpretations proposed are valid, all four result from applying a similar process of transformation, that is, the deletion of one of the attacks in the basic form and the addition of one or (usually) more attacks to fill the latter part of the cycle:

/ x x o x o / → / o x x x x /
/ x o x o x o o o / → / x o o x x x x x /
/ x o x o x o o o x o / → / x o o o x x x x x x /
/ x o x x o / → / x x o x x /

The Ikhwān present these examples without comment, almost as if wishing to slip in, alongside definitions of the generic forms, surreptitious examples of how others can be derived from them. But whatever the motivation, by including them in a text not otherwise concerned with the minutiae of practice, they underline the central importance of the processes of transformation that make the rhythmic cycles so much more flexible and alive than the bald outlines of the generic forms might suggest, and give a glimpse into a world of rhythmic variation that, as al-Fārābī reveals, was one of considerable complexity.