THE THEORY OF CLASSICAL ARABIC METRICS

by

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A.B., Goucher College
1968

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
at the
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
January, 1973

Signature of Author .....
Department of Foreign Literatures
and Linguistics, January 17, 1973

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Submitted to the Department of Foreign Literatures and Linguistics on January 17, 1963, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

ABSTRACT

This study proposes a reanalysis of the system of sixteen meters of classical (including pre-Islamic) Arabic poetry. The results suggest that metrical systems can be accounted for by metrical grammars. Base rules generate a simple abstract metrical pattern and corresponding tree structure from which all other meters can be derived. Various deletion, substitution and copying transformations generate other abstract patterns which correspond to the subgroups of meters traditionally called "circles." The traditional terminology reflects the main principle of Arabic metrics: the Arabic poetic tradition makes use of all possible meters that can be generated from the basic pattern(s) by cyclical permutation. The output of the transformations is a set of sequences of the three metrical elements, K = cord, P = iambic peg, and Q = trochaic peg. The correspondence rules relate these abstract patterns to metrical sequences of breves (⏑) and macrons (—). The matching of these metrical sequences of breves and macrons with actual lines of poetry can be considered analogous to lexical insertion. It is shown that the correspondence rules must refer to foot boundaries within the halfline. A surface structure filter rejects any unmetrical outputs, specifically any sequence of four or more breves. An intermediate point in the derivation is determined which defines a level at which all halflines in a given poem must be (abstractly) identical.

Thesis Supervisor: Morris Halle
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to my mother and father

ACKNOWLEDGEMENTS

It is a pleasure to thank my thesis advisor, Professor Morris Halle, for many hours of fruitful discussion, for his advice, criticism and, above all, his enthusiasm throughout the development of this thesis. This thesis owes much to his investigations into metrical theory in general, and into the Arabic meters in particular. I wish to thank my readers, Professors Paul Kiparsky, Kenneth Hale, and Anne-marie Schimmel and Wheeler Thackston of Harvard University for their valuable comments on earlier drafts of this thesis, and for their encouragement and suggestions of other topics for investigation. I am indebted to Madeleine Fletcher, John Makhoul and Wheeler Thackston for their help in translating passages of Arabic and Persian. Finally, I would also like to thank my friends and fellow graduate students, especially Ivonne Bordelois, for discussions of all kinds; from them I have learned that good research is always a collective as well as an individual effort.

I am grateful to the National Institutes of Mental Health and to the National Science Foundation for the graduate fellowships which made this work possible.

Last but not least, I would like to thank John Makhoul for his help in the typing of this manuscript.

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CHAPTER I

Introduction

1.1 The only serious, valid form of "classical" Arabic poetry is traditionally thought to be the ode, or *qaṣīda*, a poem of between twenty and one hundred lines, rarely more, written in one of sixteen quantitative meters. The lines are divided into clearly distinct halflines which are set apart in print, even in the rare cases when a word crosses the cesura. The first two halflines form a rhymed couplet, and the same rhyme is continued throughout the rest of the poem, but only in the second halflines. Although there is no strophic division, the *qaṣīda* follows a highly conventionalized pattern of themes.

According to Arab tradition, the *qaṣīda* developed in the Arabian peninsula during perhaps three centuries before the rise of Islam (622 A.D.) out of an oral tradition of rhymed prose (*sajʿ*) and short poems which must have included some kind of metrical patterning in addition to rhyme. It is generally agreed that the earliest Arabic meter was the one known as *rajaz*,[1] often described either as diiambic

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[1]Especially when it was written entirely in rhymed couplets, this flexible meter was generally considered unsuitable for serious poetry. In a discussion of the status of *rajaz*-poetry, Ullmann (1966, p. ?) includes this anecdote: when the poet al-Aʿlab al-ʿijlī was once asked to compose a poem, he replied by asking, "Do you want *rajaz* or a *qaṣīda*?" Later poets, however, did write *qaṣīdas* in this meter.

(e.g. in Geyer, 1908) or as a simple iambic meter (e.g. in Ullmann, 1966). However, little else is known about the historical development of the various meters. The earliest recorded pre-Islamic poetry already shows signs of a rather sophisticated literary tradition. Arab critics consider the half century before Islam to be the classical period of Arabic poetry, best represented by seven famous odes by different authors, collectively called *al-muʕallaqāt* "the suspended ones." For the purposes of this thesis, however, the term "classical" will be used to cover all Arabic verse written in one of the sixteen quantitative meters.

Two of the most common meters, especially in pre-Islamic poetry, are *ṭawīl* "long" and *kāmil* "perfect". Wright's *A grammar of the Arabic Language* gives the regular acatalectic pattern of these two meters as follows (one halfline only):

ṭawīl ⏑ — ⏒ | ⏑ — ⏓ — | ⏑ — ⏒ | ⏑ — ⏑ — ‖

kāmil ⏓⏑ — ⏑ — | ⏓⏑ — ⏑ — | ⏓⏑ — ⏑ — ‖

The most important feature of these two meters, like other Arabic meters, is the existence of a fixed iambic sequence, consisting of a short syllable followed by a long syllable, in each foot. This fixed iamb occurs at the beginning of each foot in the meter *ṭawīl*, at the end of each foot in the meter *kāmil*.

1.2 If Arabic poetry goes back to pre-Islamic times, the science of prosody (*ʕilm al-ʕarūḍ*) goes back only to the

second half of the eighth century, when al-Xalīl ibn Aḥmad (died ca. 795 A.D.) analyzed the poetry into a system of fifteen meters (the sixteenth traditional meter was added later by another prosodist). The study of metrics was developed concurrently with the study of grammar, of which metrics was considered a part. Al-Xalīl's contribution was not simply the classification of all the meters of Arabic poetry, but rather the grouping of them into five circles to show their theoretical and abstract relationships. As von Grünebaum (1955, p. 28) observes: "Omitting from their schema a small number of rare rhythms or rather trying to account for those as variants of an accepted measure, the prosodists were inclined to disregard the historical development in favor of a systematic construction." (We shall see below, §2.3.1, that those "rare rhythms" need not be omitted, but in fact complete the circles established by al-Xalīl.)

Prosodists in Islamic countries have by and large accepted the Xalīliam metrical analysis unquestioningly; western prosodists on the other hand, have tended to reject the analysis as complicated, burdensome and even inadequate, usually in favor of a metrical description more like that of classical Greek and Latin quantitative verse. Even most contemporary scholars have failed to appreciate the motivation behind the circle analysis. For example, Bateson (1970, p. 31) remarks that "it is not difficult to believe

that an Arab grammarian might have arranged his ideas in a circle just for the mystical fun of it - no matter how vicious that circle might be." And von Grünebaum (1955, p. 29) observes that "despite its obvious inadequacy as a description of Arabic prosody and despite much criticism leveled against it during the ninth century, the circle-theory has become authoritative." He then goes on to say that "When Arabic prosody is analyzed from our viewpoint, that is by starting from its real elements, the consonant plus a short vowel (ba-) and the sequence, consonant plus short vowel plus consonant (bal), the essential simplicity of its system becomes apparent." While we agree that the concept "syllable", which the Arab grammarians apparently lacked, is essential to any description of quantitative verse, von Grünebaum fails to realize that the use of the syllable is in no way incompatible with the circle theory, and furthermore, that Arabic prosody cannot be described adequately only in terms of the syllable, but must refer to a more abstract level. It is precisely this more abstract level of metrical representation that the circle theory is intended to express. One purpose of this thesis is to show that al-Xalīl's system of circles is not only a simple, elegant and insightful analysis of the meters, but that it provides the only basis for an adequate metrical description of Arabic verse.

1.3 One of the recurring issues in Arabic prosody is whether or not other linguistic factors, in particular stress, play a role in establishing the rhythm of the various meters. It has been said by Joshua Whatmough (p. 10) that "it is clear that no pattern - Sanscrit, Greek, and Latin included - is solely quantitative, but other factors of accent, pitch and word structure enter into any verse pattern." Thus it is not surprising that an abstract level of representation has been considered by most western scholars to be insufficient justification for the circle theory. In his important contemporary study, Gotthold Weil (1958)[1] attempts to argue that al-Xalīl's system of meters must have been justified by some type of information other than syllable length. This additional information, he claims, was an accentual system superimposed on the quantitative system. Stress, which is not phonemic in Arabic, results automatically from certain syllable sequences. The natural stress patterns of the spoken language enhanced certain meters by reinforcing those syllables in each foot which are of fixed length, thereby contributing to the rhythmic effect. According to Weil's hypothesis, then, the meters given above would be stressed as follows:

ṭawīl ∪ — ˊ ⏑ | ∪ — ˊ ⏑ — | ∪ — ˊ ⏑ | ∪ — ˊ ⏑ — ‖

kāmil ⏑⏑ — ∪ — ˊ | ⏑⏑ — ∪ — ˊ | ⏑⏑ — ∪ — ˊ ‖

---

[1] Weil (1960), a short summary of the theory proposed in Weil(1958), is the most comprehensive study of Arabic metrics available in English.

In a very critical review, Alfred Bloch (1959) presents persuasive arguments against Weil's hypothesis concerning the role of stress in Arabic verse. His conclusion, which I share, is that al-Xalīl wanted only to indicate which syllables were fixed in length and which were free.[1] This is exactly the information represented at the more abstract level by positing abstract metrical constituents, peg and cord.

The role of stress is seen to be greater or smaller at various stages in the history of Arabic poetry. Von Grünebaum (p. 27) says that "Arabic has a stress accent but prosody is exclusively quantitative even though the coincidence of ictus and word accent is frequent, esp. in the more recently or more popularly developed forms." Weil (1960, p. 676) asserts that stress prevails in modern popular poetry because the loss of case inflection and the shortening of unstressed long vowels has wiped out the regular alternation of long and short syllables. And it has often been suggested that the quantitative meters developed out of a verse form in which stress rather than syllable length was regulated.

Perhaps the question of what role stress plays or can

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[1]Bloch (1959, 72-3) does not believe that "sich das Dasein eines Iktus aus dem System des Chalīl erschliessen lasse: vielmeher hat Chalīl durch die Kreise nur zeigen wollen, wo die Pflöcke [pegs] und wo die Stricke [cords] sind, d.h. - da in den Kreisen die Veränderungen der Versenden nicht dargestellt werden können - welche Silben unveränderlich und welche veränderlich sind."

play in any quantitative verse can only be answered by an empirical study of the correlation between stress and certain metrical positions. It is unfortunate that M. Bateson (1970) did not include this topic as part of her statistical examination of five of the *muʕallaqāt* (although she does state that this question could be answered by a statistical approach (p. 128)). Despite the numerous articles speculating on the existence of ictus in quantitative verse, to my knowledge no one has attempted to answer the question of what degree of "coincidence of ictus and word accent" would prove or disprove the superimposing of an accentual system on an essentially quantitative verse.

The need to subject such theoretical hypotheses about meter to empirical verification was recognized by Jan Rypka, the Czech Orientalist, whose (1936) article "La Métrique du mutaqarib épique persan" is the only study of its kind in the literature that I know of. Rypka shows that the location of word boundaries is not significant in this Persian meter. He further concludes that there is a correlation between word stress and foot boundaries; however, this conclusion seems to me not to be warranted by the data (see Maling (forthcoming) for discussion). Obviously, no generalization about the other Persian meters nor about the corresponding Arabic meters can be made.

Chapter II

The Circle Theory

2.0 Both in morphology and in metrics, the Arab grammarians distinguish between two levels of representation: *'aṣl*, pl. *'uṣūl*, the abstract, underlying patterns, and *farʕ*, pl. *furūʕ*, the set of allowable deviations from or realizations of those abstract patterns. It is precisely this fundamental distinction between "deep structure" and "surface structure" which allows the prosodist to express the subtle rhythmical regularity to be found in the seemingly unlimited freedom of Arabic quantitative verse. This distinction correlates perfectly with the distinction made between abstract pattern and correspondence rules made by Halle and Keyser (1971, Ch. III) in their metrical theory, which they summarize as follows (p. 140):

> We propose to view meter as the encoding of a simple abstract pattern into a sequence of words. This is achieved by establishing a correspondence between the elements constituting the pattern and specific phonetic (or phonological) properties of the word sequence. The study of meter must therefore be composed of two separate parts, namely, the study of abstract patterns and the study of the correspondence rules which enable a given string of words to be viewed as an instance of a particular abstract pattern.

In this thesis, we propose to view the rules of Arabic prosody as a metrical grammar. The base rules are those

which introduce the metrical entities of Arabic verse in the form of a simple abstract pattern reflecting the periodicity of the Arabic meters. The metrical entities are the peg (*watid*, pl. *'awtād*) and the cord (*sabab*, pl. *'asbāb*); they correspond to the S (strong) and W (weak) units respectively of Halle and Keyser's metrical theory. Various deletion, substitution and copying transformations generate other abstract patterns which correspond to the subgroups of the sixteen meters traditionally called "circles". The traditional terminology reflects the main principle of Arabic metrics: like most poetic traditions with periodic meters, Arabic verse makes use of all possible patterns that can be generated from the basic pattern(s) by cyclical permutation. Finally there are the correspondence rules which relate sequences of pegs and cords to metrical sequences of long and short syllables. In other words, our metrical grammar generates a set of "grammatical" sequences of long and short syllables which correspond to the actually occurring lines of Arabic verse. Any sequence of syllables not generated by the grammar will be considered unmetrical. Thus our metrical grammar is properly a part of *ʕilm al-ʕarūḍ*, which is defined to be the "science of rules by means of which one distinguishes correct metres from faulty ones in ancient poetry" (Weil, 1960, 667).

In this chapter, we will examine the sixteen meters as abstract metrical patterns and the systematic relationship

between them as expressed by the circle theory of al-Xalīl. The correspondence rules will be the subject of Chapter III.

2.1 Before discussing the meters and their arrangement into circles, we must first make a definition which is the basis of any quantitative verse, namely, that of "long" syllable and of "short" syllable for the purposes of meter.

2.1.1 In classical Arabic, there are three kinds of phonetically long syllables: CVC, $C\bar{V}$ and $C\bar{V}C$. The syllable type CVCC never occurs in Arabic. For Arabic verse, we define a short syllable to be any sequence $C\begin{bmatrix} V \\ -\text{long} \end{bmatrix}$ *followed by* a single C and a V, where C = consonant and V = vowel, and where boundaries between words are ignored. Otherwise, a syllable is defined to be *metrically* long.[1] In other words, any syllable which does not fit this environment is considered to be metrically long by definition, regardless of its actual phonetic length. A phonetically short CV syllable will, therefore, be considered metrically short as well, except at the end of a halfline. In this case, even a phonetically short syllable will be considered metrically long because there can be no *following* syllable. We note that

[1]This definition of metrically long/short is essentially the same as that which M. Halle has proposed for classical Greek metrics in a course on "Linguistics and Poetics" given at MIT in the fall of 1971. The only difference is that in Arabic, every syllable must begin with a consonant (and only one consonant), whereas in Greek, one must allow for syllables beginning with a vowel. Persian metrics would use the same definition as Greek, since a syllable may begin with a vowel, although this fact is not indicated by the Arabic script used in Persian. See Appendix B.

syllable length in metrics is typically a binary opposition.

To illustrate the application of the definition of metrically long/short, we give examples of two of the most common meters in Arabic verse. The halflines are given in transcription, then divided into syllables, and then scanned. In the scansion we use the traditional symbols, the *macron* (—) for metrically long syllables and the *breve* (∪) for metrically short syllables.

(1) *qifā nabki min ðikrā ḥabībin wa manzili*

qi fā nab ki min ðik rā ḥa bī bin wa man zi li

CV CV̄ CVC CV CVC CVC CV̄ CV CV̄ CVC CV CVC CV CV

∪ — — ∪ — — — ∪ — — ∪ — ∪ —

"Halt, you two, and let us weep for the memory of a beloved and an abode..."

line 1a of the *muʕallaqa* of Imru'u l-Qays
meter: *ṭawīl*

(2) *hal ǰādara š-šuʕarā'u min mutaraddami*

hal ǰā da raš šu ʕa rā 'u min mu ta rad da mi

CVC CV̄ CV CVC CV CV CV̄ CV CVC CV CV CVC CV CV

— — ∪ — ∪ ∪ — ∪ — ∪ ∪ — ∪ —

"Have the poets deserted a place which needs to be patched?"

line 1a of the *muʕallaqa* of ʕAntara
meter: *kāmil*

Note that the last syllables of the halflines in (1) and (2) happen to be phonetically short, but have been scanned as

metrically long. This feature of Arabic quantitative verse, which is also found in classical Greek and Latin verse, will be discussed below in §2.1.2.

All three kinds of metrically long syllables are found in the following line:

(3) *'alā 'ayyuhā l'laylu ṭ-ṭawīlu 'alā njalī*

'a lā 'ay yu hāl lay luṭ ṭa wī lu 'a lān ja lī

CV CV̄ CVC CV CV̄C CVC CVC CV CV̄ CV CV CV̄C CV CV̄

⏑ — — ⏑ — — — ⏑ — ⏑ ⏑ — ⏑ —

"Oh, o long night, give way to dawning..."

line 46a of the *muʕallaqa* of Imru'u l-Qays
meter: *ṭawīl*

Most cases of CVC syllables arise across word boundaries.

2.1.2 The definition of metrically long given above has the same important consequence for both Greek[1] and Arabic metrics, namely, that a syllable in verse final position cannot be considered metrically short. This follows from the definition because the necessary following CV obviously cannot be present. It is for this reason that the last syllables in the halflines in (1) and (2) above were scanned as metrically long. Phonetically, the final syllables of the other halflines

[1]Maas, *Greek Metre*, §34: "The last element of the line...is never a breve or a disyllabic biceps; it is always an anceps in so far as any last syllable of a line may be prosodically long or short."

in the poem may be either short or long, but for the purposes of meter, they are equivalent. Given this definition, it is unnecessary to state for each meter that the last syllable can be either short or long phonetically.

In §2.3.4 and §3.6.3, we will discuss certain facts which provide evidence in support of this consequence of our definition. In the meters of the so-called fourth circle (listed in §2.2.2), one of the iambic pegs (∪—) is replaced by a trochaic peg (—∪). If as a result of this substitution, the halfline will end in a trochaic peg, then the abstract pattern will obviously conflict with the definition of metrically short, according to which no halfline can end in a breve. If we look at the meter *sarīʕ*, whose abstract pattern does end in a trochaic peg, we find that the final foot in this meter never occurs in its underlying form, but is always"defective." As Bloch (1959, 74) puts it: "Der letzte Fuss des diesen Kreis anführenden Sarīʕ, *mafʕūlātu* ———∪, ist am Versende rhythmisch eine Unmöglichkeit." In other words, the final short syllable never appears, just as our definition would predict.

Thus far, we have assumed that both halflines behave the same way with respect to a final breve. However, there is apparently some question as to whether or not a first halfline can, or should be allowed to, end in a short syllable. Bloch seems to allow for a short syllable at the end of a first halfline, but not at the end of a second halfline (i.e. end

of the line).[1] Wright (p. 364) states that in the meter *mutaqārib*, if the last foot of the line is catalectic (i.e. shorter than called for in the abstract pattern), then the last foot of the first halfline must be either catalectic or else end in a short syllable (∪—∪). Unfortunately, Wright does not give any examples. Such lines must be considered within the context of the whole poem to determine if the relevant syllable is metrically long, or not pronounced at all, as would be the case if the syllable in question is an inflectional ending and the word is read in pausal form, or if the definition of metrically short ignores the cesura as well as word boundaries. See §2.3.4. We note that in Persian verse, neither the first nor the second halfline can end in a short syllable (Blochmann,p. 11).

2.1.3 The more of less phonetic definition of metrically long/short which is used in Arabic, Greek and Persian metrics seems to be a natural definition for quantitative verse, and it is probably the most common such definition. But it is not the only possible definition. Medieval Hebrew poetry written in Spain used the Arabic meters, but a different definition of long/short. Metrically short syllables were essentially those with epenthetic reduced schwa vowels followed by a single consonant and a vowel; all other vowels were by

[1]Bloch (1951, 210-211): "So am Ende des ersten Halbverses des Mutaqārib, wo ∪—∪ mit ∪— abwechseln kann: im zweisilbigen Ausklang muss —[4]die gleiche Zeit beansprucht haben wie —∪ im dreisilbigen." And in fn. 4 he says: "Wohl zu Unrecht leugnet R. Geyer den Ausgang ∪—∪ indem er in seiner Aʿšā-Ausgabe durch Einsetzung der Pausalformen überall ∪— herstellt."

definition metrically long (*Encyclopaedia Judaica,* 13:1212). In any language in which syllable length is not phonemic, some arbitrary convention must be introduced if quantitative meters are to be employed. "In purely Turkish words there are, of course, no long syllables, but the Perso-Arabic letters of prolongation were used as vowel-letters. By a poetic license, these were regarded as long where the metre demanded it" (*Encyclopaedia of Islam,* I, 677). In Browning's translations of Arabic poetry, where he tried to imitate the Arabic meter,[1] stress was equated with the long syllable, lack of stress with the short syllable.

Even in Persian where the Arabic meters have been successfully adopted, the poet makes use of a metrical rule of schwa-insertion whose purpose is to break up consonant clusters and create short syllables for the demands of the Arabic meters. "Quand, dans un vers persan, turc ou hindoustani, une consonne quiescent doit compter dans la scansion pour une brève, on la prononce avec un *i* qui représente, dans ce cas, notre *e* muet" (Garcin de Tassy, p. 233, fn. 1). For Persian verse, then, we posit a rule of schwa-insertion something like

$$\emptyset \rightarrow \text{ə} / \left\{ \begin{matrix} \overline{\text{V}} \\ \breve{\text{V}}\text{C} \end{matrix} \right\} \text{C} ____ \text{CV}$$

The schwa vowel is called *nim-fatḥa* "half an *a*". Consonant clusters at the end of a halfline would be permitted since

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[1] Cf. Arberry, p. 9, and Sir Charles Lyall, *Translations of Arabic Poetry* (Williams and Norgate, 1930), p. xlix.

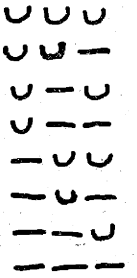
the rule environment is not met. The schwa-insertion rule applies to a line of verse before it is scanned into long and short syllables. Although this rule has the form of a phonologically possible rule, it is presumably not a part of the actual grammar of Persian nor of any dialect of Persian. In Iranian Persian the *nim-fatḥa* has no vocalic value, but the preceding syllable may be somewhat prolonged (Wheeler Thackston, pers. communication). See Appendix B for a complete discussion of the *nim-fatḥa* in Persian metrics.

2.2 As mentioned in the introduction, most western scholars rejected al-XaĪĪl's unfamiliar theory which grouped the meters into five circles, and preferred instead to superimpose the (to them) more familiar classical Greek metrics on the meters of Arabic verse. Yet anyone who has tried to make sense of the system of Arabic meters as described in a standard handbook such as Wright's *Grammar* comes to realize that Greek metrics provides no insight into the subtle rhythms of Arabic verse. After giving the "basic" pattern for a meter, Wright must then list all the alternative variants. For example, he states (p. 362) that "the basis [of *rajaz*] is ⏑—⏑— (diiamb), which may be varied in one or two places by the substitution of ——⏑— or —⏑⏑—, and more rarely ⏑⏑⏑—." This type of description of the facts - a mere listing of the variants - misses the generalization that in this particular meter, the first two syllables (the

cords) of each foot are free in quantity, whereas the last two syllables (the peg) are fixed. The way in which Wright divides lines into feet is arbitrary; where two possible divisions for a given meter are suggested, it is always the division which better conforms to the Greek iambs, spondees and trochees that is preferred. While we agree with Bloch (1959, 75) that "die Chalîlische Abteilung der Versfüsse nicht über jeden Zweifel erhaben ist," neither has the universal superiority of the Greek feet been established beyond doubt, especially as a description of Arabic meters. We have found that it is necessary to make use of the metrical entity "foot" to adequately describe the metrical variation. Evidence in support of this claim will be provided in Chapter III, where we show that the location of the foot boundary makes certain predictions as to the variants a particular sequence of syllables called a "foot" will exhibit.

The abstract analysis of feet in terms of pegs and cords will be seen to have several advantages over a surface analysis purely as sequences of long and short syllables. The abstract analysis incorporates the fact that certain syllables in the Arabic meters are *anceps* positions, that is, free in length (quantity), while other syllables are fixed. Because of this abstractness, such an analysis limits in a non-ad-hoc way the number of possible syllable sequences found in Arabic verse. The acatalectic foot is either three or four syllables long. A three-syllable foot has $2^3 = 8$ different, theoreti-

cally possible sequences of long and short syllables:



A four-syllable foot has $2^4 = 16$ theoretically possible variations. There are in addition two possible five-syllable feet: ⏑—⏑⏑— and ⏑⏑—⏑—. Thus one might expect to find a total of twenty-six different feet used in Arabic verse. However, only eight basic or abstract feet are recognized in Arabic metrics, for which eighteen distinct surface forms occur in acatalectic feet, or twenty surface forms if shortened, catalectic feet are included. Furthermore, only when the meters are expressed abstractly in terms of pegs and cords does the principle of cyclical permutation have any explanatory power, as shown in §2.3. In other words, only with an abstract analysis of the meters can one explain why there are sixteen meters in Arabic verse, rather than some other number of meters.

2.2.1 Before presenting a list of the meters, we make the following definitions. The peg (*watid*, pl. *ʾawtād*) is the metrically strong or invariant unit of the foot. It is usually iambic (*watid majmūʿ*), consisting of a short syllable

followed by a long syllable. In the meters of the fourth circle, one of the pegs may be trochaic (*watid mafrūk*), consisting af a long syllable followed by a short. Theories of Arabic verse which hypothesize the existence of an ictus, or rhythmic role for word stress, assume that the long syllable of the peg (and perhaps other syllables in the foot as well) bears the rhythmic stress. However, it should be noted that word stress, which is not phonemic in Arabic, does not necessarily fall on either syllable of the peg unit, and may in fact be entirely independent of the meter. Moreover, in the recitation of poems written in certain of the meters, there is a marked tendency for stress to be shifted onto the penultimate syllable of the line, even when this syllable is phonetically short and should be unstressed, and where the penultimate syllable corresponds to a cord and not to a peg.[1]

The cord (*sabab*, pl. *'asbāb*) is the metrically weak or varying unit of the foot. It corresponds to a single syllable, either long or short. The unmarked form of the cord is traditionally assumed to be the long syllable.

---

[1]Bloch (1946, 13, fn. 20): "Lediglich die vorletzte Silbe wurde, wenigstens im Ṭawīl und Basīṭ, in höherer Tonlage und mit stärkerm Druck gesprochen, also etwa Nāb[iga] 1,1 *kilīni lihámmin yā 'Umaimata nāṣibi * wa laillin 'uqāsīhī baṭī'i lkawākibi* - merkwürdig genug, da doch diese vorletzte Kürze nur selten vom Wortakzent betroffen und von allen Metrikern, die einen Iktus annehmen, gerade als tonschwach bezeichnet wird - Uebrigens empfand ich beim Anhören dieses sonst iktuslosen Vortrags noch deutlich das Gefühl eines [p.14] Rhythmus; man kann demnach mit Aeusserungen wie derjenigen Hölschers a.a.O. S.371 unten den metrischen Akzent auszuschalten hiesse auf ein rhythmisches Lesen ganz verzichten, nicht vorsichtig genug sein."

The very terms "peg" and "cord" reflect the distinction made by Arab prosodists between metrically strong and weak units. Ibn ʕAbd Rabbihi, a tenth century Arab scholar, observed that the cord is so called because it is sometimes taut, sometimes slack, whereas the peg is always firm and fixed.[1] As we shall see in the next chapter, §3.6, the pegs are also subject to variation, but usually only in the last foot of a halfline. The variations in the length of the cord syllables are not felt to affect the rhythm of the line, whereas variations in the peg unit do. Thus the prosodists refer to variations in the cords as *ziḥāfāt* "minor relaxations", whereas variations in the pegs are called *ʕilal* "major defects or diseases."

2.2.2 The sixteen meters are traditionally divided into five groups called circles (*dā'ira*, pl. *dawā'ir*). They are listed here as abstract patterns. We represent an iambic peg by P, a trochaic peg by Q and a cord by K. Note that within each circle, if one of the patterns is assumed to be the basic pattern, then the other patterns can be derived from it by cyclical permutation. For example, from the string *abc*, one can derive the strings *bca* and *cab*, but not *cba* or *bac*. It is important to remember that the use of this

[1] *Kitāb al-ʕiqd al-farīd*, III (Cairo ed., A.H. 1316) p. 133: *"wa 'innamā qīla lis-sababi sababun li'annahu yaḍṭaribu fa yaθbutu marratan wa yasquṭu 'uxrā wa 'innamā qīla lil-watidi watidun li'annahu yaθbutu falā yazūlu."*

principle of cyclical permutation is not intended to make any claim about the origin or historical development of the classical meters. Finally, if a meter always occurs shorter than its abstract pattern, then the foot which is to be deleted is enclosed in square brackets. For example, the meter *madīd* always occurs in trimeter rather than tetrameter half-lines.

I	*ṭawīl*	PK PKK PK PKK	PK PKK PK PKK
	basīṭ	KKP KP KKP KP	KKP KP KKP KP
	madīd	KPK KP KPK[KP]	KPK KP KPK[KP]
II	*wāfir*	PKK PKK PKK	PKK PKK PKK
	kāmil	KKP KKP KKP	KKP KKP KKP
III	*hazaj*	PKK PKK PKK	PKK PKK PKK
	rajaz	KKP KKP KKP	KKP KKP KKP
	ramal	KPK KPK KPK	KPK KPK KPK
IV	*sarīʕ*	KKP KKP KKQ	KKP KKP KKQ
	munsariḥ	KKP KKQ KKP	KKP KKQ KKP
	xafīf	KPK KQK KPK	KPK KQK KPK
	muḍāriʕ	PKK QKK[PKK]	PKK QKK[PKK]
	muqtaḍab	KKQ KKP[KKP]	KKQ KKP[KKP]
	mujtaθθ	KQK KPK[KPK]	KQK KPK[KPK]
V	*mutaqārib*	PK PK PK PK	PK PK PK PK
	mutadārik	KP KP KP KP	KP KP KP KP

Table I

2.2.3 The rules of any grammar af Arabic metrics must account in some natural way for the particular set of meters found in Table I above. In this section we will propose the rules which will generate the abstract metrical patterns of Arabic verse. We will be particularly concerned with the completeness or incompleteness of the traditional circles, given the principle of cyclical permutation.

The base rules of our metrical grammar are the following, where L = line, H = halfline, and F = foot.

Rule 1. $L \rightarrow H + H$

Rule 2. $H \rightarrow F + F + (F) + (F)$

Rule 3. $F \rightarrow PKK$

Rule 1 expresses the fact that Arabic meters are divided into identical halflines by a cesura.[1] According to Rule 2, the

---

[1]It has been assumed traditionally that every line of Arabic verse is composed of two halflines. The sixteen basic meters are composed of either six or eight feet. However, lines of four, three, two or occasionally only a single foot (*cf.*Freytag, p. 236, for an example) do occasionally occur. The three foot line presents certain obvious problems for the traditional analysis: how is it to be divided into halflines? There are at least seven different analyses given in the literature. Most prosodists consider the three foot line to be either the first or the second halfline of a normal six foot line. Another proposal suggests the following analysis (taking the meter *rajaz* as example):

—— ⏑ — | —— ⏑ — ‖ —— ⏑ —

Under this analysis, the halfline is not a real"half"-line. It should be possible to chose between analyses be looking at the metrical behavior of the foot preceding the supposed cesura: if the second foot of the three foot line never has a final K correspond to a short syllable and freely occurs in catalectic form, just like any other foot at the end of a halfline, then positing the cesura is justified; otherwise the line should be considered undivided by a cesura. By far the most common "shortened" lines are those where each H is minus a single foot.

halfline may be dimeter, trimeter or tetrameter. The number of feet per halfline is correlated with the traditional circle to which a meter belongs; this correlation departs from traditional theory only with respect to circle IV, as discussed in §2.3.5.

dimeter ⇔ circle IV

trimeter ⇔ circles II, III

tetrameter ⇔ circles I, V

Rule 3 generates a single basic foot consisting of a peg followed by two cords, PKK.[1] From the PKK foot we can derive two other feet by cyclical permutation, namely KPK and KKP. We will show that all the feet which occur in Arabic meters, feet of three, four and five syllables, can be derived from the single basic foot, PKK, by means of the transformations proposed below. The maximum of two cords per foot imposes a constraint on the degree of freedom in Arabic quantitative verse: there are never more free syllables than fixed syllables in an acatalectic foot.

The base rules 1-3 generate sequences $(PKK)^n$ for n = 2, 3 or 4, together with the appropriate tree structure. If no transformation apply, we generate the meter *hazaj* = $(PKK)^3$ as illustrated on the next page.

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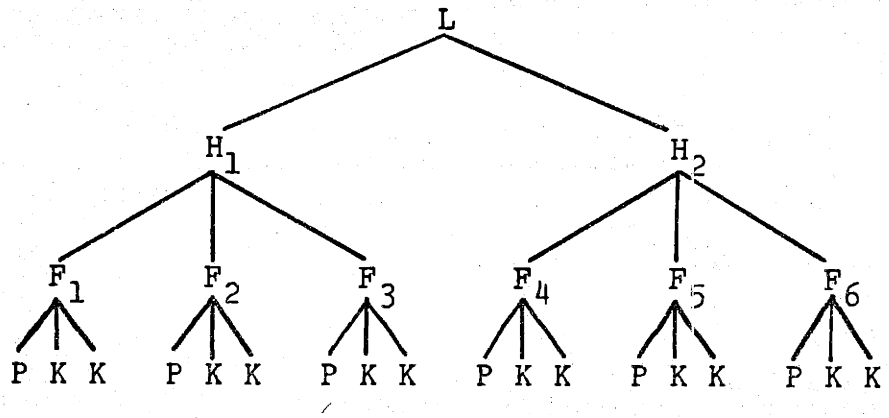
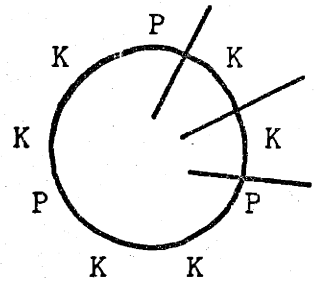
[1]It is of no consequence whether the basic foot is taken to be PKK or KKP, since cyclical permutation yields the same set of feet in either case. Somewhat arbitrarily, we chose PKK so as to avoid implying that *rajaz* = $(KKP)^3$ is the *Ur*-meter in any synchronic sense.



Abstract pattern for meter *hazaj*

2.3 Metrical transformations

We are now ready to look at the principle of cyclical permutation in some detail. Al-Xalil's whole theory of Arabic metrics is based on the insight that the meters are related according to this principle. This insight is expressed by the use of circles. The same sequence of cords and pegs produces several different meters merely by starting the line at different points along the circles. For example:



is a schematic representation of the meters of circle III, where the lines intersecting the circle indicate the three possible starting (or ending) points of the halfline. Thus

this circle represents the following three halflines:

(4)

PKK PKK PKK	*hazaj*
KKP KKP KKP	*rajaz*
KPK KPK KPK	*ramal*

Furthermore, it is obvious that these are the only distinct strings which can be generated from the pattern $(PKK)^3$ by cyclical permutation. The principle of cyclical permutation is meant to express a formal, systematic relationship between the meters, and not, we repeat, to make any claim about the origin or historical development of the classical meters.

Without formally stating the transformation that permutes the metrical elements in a line cyclically, we note that this transformation may be defined to apply over F_i for all F_i in the line L. That is, whatever permutation operations apply in the first foot must also apply to every foot of the line. This is equivalent to saying that the Arabic meters are periodic, and that the foot is the unit of repetition.

Yet another reason for expressing the meters at an abstract level should be obvious: it is this abstract representation of the meters in terms of pegs and cords that makes the principle of the circle a valid principle for Arabic metrics. And it is this principle which allows the prosodist to predict which of the theoretically possible sequences of long and short syllables will be allowed. Consider the string PKK PKK PKK. In (4) we listed the only three distinct

strings which can be derived from it by cyclical permutation. If however, this string were expressed at the level of the syllable as ∪——— ∪——— ∪———, then we would expect to find four distinct meters:

(5) a. ∪——— ∪——— ∪———

b. —∪—— —∪—— —∪——

c. ——∪— ——∪— ——∪—

d. ———∪ ———∪ ———∪

But (5d) is not one of the occurring metrical patterns. Obviously, it is only at the abstract level that we get the correct result. The same is true in the other circles: if the meters are expressed at the level of the syllable, we expect to find more meters than actually occur in Arabic poetry.

In the following sections, we will propose transformations to derive the meters of the circles other than circle III. We will be particularly concerned with the question of whether all of the patterns generated by cyclical permutation are in fact utilized as meters. We will take up circles V, II, I and IV in turn, and show that by making full use of the abstract level of representation, most of the gaps in the five circles can be explained in a non-ad hoc way.

2.3.1 The two meters of circle V can be derived from the tetrameter halflines $(PKK)^4$ and $(KKP)^4$ in a very obvious way: by deleting one K from each foot. Let us state a rule of cord-deletion as follows:

(6) $K \rightarrow \emptyset \; / ___ KX$

where X is a variable. Rule (6) says to delete the first of any two adjacent K's. If (6) applies to the basic pattern $(PKK)^4$, then the sequence $(PK)^4$ will be generated. Cyclical permutation applied to $(PK)^4$ produces only two distinct sequences, which are exactly the abstract patterns of circle V:

PK PK PK PK *mutaqārib*

KP KP KP KP *mutadārik*

Suppose, however, that we apply the cord-deletion transformation *after* cyclical permutation instead of before. If the permutation transformation has already applied to $(PKK)^4$, then (6) applies to the three distinct tetrameter meters:

(7) a. P~~K~~K P~~K~~K P~~K~~K P~~K~~K ⇒ *mutaqārib*

b. ~~K~~KP ~~K~~KP ~~K~~KP ~~K~~KP ⇒ *mutadārik*

c. KP~~K~~ KP~~K~~ KP~~K~~ KPK ⇒ ?

Patterns (7a) and (7b) correspond to the meters *mutaqārib* and *mutadārik*, but now there is a third pattern (7c): KP KP KP KPK. This pattern corresponds to a meter called *mutadārik muraffal*, which is *mutadārik* with an extrametrical syllable at the end

of the line. The prosodists are not agreed as to whether or not true examples of this meter exist (*cf.* §3.6.6). Insofar as there is disagreement, then the particular ordering of cord-deletion before or after cyclical permutation remains an empirical question. However, if *mutadārik muraffal* does exist as a meter, then this source avoids the otherwise necessary complications of the rule of *tarfīl* (*cf.* Appendix A-15), which would have to be constrained to allow an extrametrical syllable after a KP foot in *mutadārik* but not in *basīṭ*.

2.3.2 Apparent gaps in circle II

Three distinct meters should be derivable from the abstract pattern $(PKK)^3$ within the circle theory:

(8)	PKK PKK PKK	*hazaj*
	KKP KKP KKP	*rajaz*
	KPK KPK KPK	*ramal*

This is the case in circle III, which has the same underlying abstract pattern as circle II, and which does have three meters as shown in (8). Why, then, does circle II, which is abstractly identical to circle III, have only two distinct meters instead of the expected three? If the difference between the two circles is that in the meters of circle II, one of the cords may optionally correspond to two short syllables as well as to a single long or short syllable, then why doesn't circle II have a third meter corresponding to

ramal, where each KPK foot could optionally correspond to —∪—∪∪ or perhaps to ∪∪∪—— ? To my knowledge, Freytag is the only prosodist to recognize explicitly the theoretical possibility of a third meter in this circle based on the foot *fāʕilātuka* —∪—∪∪ [KPK]. Freytag calls this potential meter a "Metrum ohne Namen" (p. 152), but offers no reason for the non-occurrence of this "nameless meter."

Looking more closely at circle II, we observe that the meters *wāfir* and *kāmil* differ from *hazaj* and *rajaz* respectively in that the first cord of any foot may correspond to two short syllables. The meters of circle II are traditionally represented in terms of this additional variation not found in the meters of circle III:

(9)

wāfir	∪—∪∪—	∪—∪∪—	∪—∪∪—
kāmil	∪∪—∪—	∪∪—∪—	∪∪—∪—

Let us state this fact by postulating a rule whereby in trimeter halflines (*i.e.*, circle III) a cord may correspond to two short syllables if and only if it precedes a cord in the same foot. This can be expressed formally as a correspondence rule whose application is optional:

(10) K → ∪∪/____K (optional)

where K = cord and ∪ = short syllable. We make use of the usual notational conventions of generative phonology as presented in Chomsky and Halle, *The Sound Pattern of English*.

The metrical correspondence rules proposed here are interpreted so as not to apply across foot boundaries which are not explicitly mentioned in the statement of the rule. Foot boundaries will be denoted by #. This means that rule (10) can never apply to the abstract pattern $(KPK)^3$ because in this pattern there will always be a foot boundary # between any two adjacent K's, and the environment will never be met.

Given the correspondence rule (10), we can consider circle II to be a special case of circle III. That is, a poem written in the meter *wāfir* or *kāmil* is merely a special case of *hazaj* or *rajaz*, respectively, in which rule (10) has applied to one or more feet. It happens to be rare for rule (10) to apply to all six feet in a line. Freytag (p.217) observes that "Dieser Fuss *mustafʕilun* [— — ∪ —] kommt so häufig vor [in *kāmil*], dass man selten einen Vers findet, in welchem er nicht angewendet ist und zuweilen findet man nur diesen Fuss angewendet." There is no third meter corresponding to *ramal* because rule (10) can never apply to $(KPK)^3$.

Although we have been led to collapse circles II and III, we shall continue to refer to the meters of each separately by their traditional names. It is worth noting that whereas we have considered circle III to be the basic circle, and derived circle II from, this apparently differs from traditional thinking. Garcin de Tassy (p. 219) notes that circle III is named *mujtaliba* "derived" because it is "derived" from circle I! However, Blochmann (p. 69) notes that "others

derive the name from *jalb* abundance, because the Hazaj, Rajaz, and Ramal metres are abundant." The etymology of the traditional names for the circles and the meters is usually very uncertain, and of no help to the prosodist.

Finally, it should be noted that the explanation used in this section to explain the apparent gaps in circle II makes use of a correspondence rule (see Chapter III) rather than of the transformations which establish the abstract patterns of the meters. In this respect we consider circle II to be different from the other traditional circles.

2.3.3 Apparent gaps in circle I

Even when the circles are represented at the abstract level of pegs and cords, we expect to find more meters in certain of the circles than are listed in Table I, §2.2.2. In the traditional analysis, the basis of circle I is a combination of two feet, PK and PKK. Five distinct strings should be derivable from the pattern $(PK\ PKK)^2$ within the circle theory:

(11) a. PKPKKPKPKK ⇔ *ṭawīl*

b. KPKKPKPKKP ⇔ *madīd*

c. PKKPKPKKPK ⇔ ?

d. KKPKPKKPKP ⇔ *basīṭ*

e. KPKPKKPKPK ⇔ ?

Of the patterns in (11), (a) corresponds to the meter *ṭawīl*, (b) to *madīd* and (d) to *basīṭ*. The question is, why are there no meters corresponding to patterns (c) and (e)?

I know of only one attempt to explain why there are only three meters in circle I. Gotthold Weil (1960, 675) suggested that there is a "general metric law according to which two cores [*i.e.*, pegs] can never succeed each other directly, but must always be separated by not more than two neutral syllables [cords]." From this metric law he concluded that the only permissible combinations of unlike feet are exactly the three found in circle I, provided of course, that no more than two different abstract feet are allowed in a given meter. Notice, however, that Weil's metric law does not rule out patterns (11c) and (11e). In these two strings as in the others in (11), no two P's occur back-to-back, nor are two P's ever separated by more than two K's. Thus it does not follow from Weil's proposed law that there are only three theoretically possible meters in circle I. But even though Weil's argument is invalid, his metric law may still be correct. As we shall see below, it may be the case that (11c) and (11e) should not be ruled out on theoretical grounds.

One of the problems which we have not mentioned so far is that of deciding how a given string in (11) is to be divided into feet. The traditional division of the meters into feet was given in Table I. Implicit in the statement of base rule (3), F → PKK, is the principle that a foot contains one

and only one peg, and at most two K's. Given this, then only two of the five strings in (11) can be divided into feet unambiguously, namely (11a) *ṭawīl* and (11d) *basīṭ*, which can only be analyzed as PK PKK PK PKK and KKP KP KKP KP respectively. It is interesting that the two unambiguous strings should also be the most frequently used meters of circle I. The remaining traditional meter *madīd* is divided as KPK KP KPK KP, where the fourth and final KP foot is always deleted. However, this pattern (11b) could just as well be divided (when trimeter rather than tetrameter) into KP KKP KPK Ø or KPK KPK PK Ø. Of the three possible divisions, only the traditional one is symmetric. Different division may make different predictions about the possible variations allowed in a given meter, depending on whether the meter contains KKP versus PKK or KPK feet .

What about the two remaining theoretical possibilities, (11c) and (11e)? Both are ambiguous in the sense discussed above:

(11c) PKK PK PKK PK = PK KPK PK KPK

(11e) KPK PK KPK PK = KP KPK KP KPK

Again, the only prosodist to mention these possible meters is Freytag. These two potential meters seem to be of a different status than the potential meter of circle II: unlike that nameless meter, these do have names. According to Freytag (p. 151): "Dann rechnet man zu diesem Kreise auch die beiden bei den ältern Arabern nicht gewöhnlichen Versarten des *mus-*

taṭīl und *mumtad*." The abstract patterns for these two meters are given as:

(12) *mustaṭīl* PKK PK PKK PK

mumtad KP KPK KP KPK

Although Freytag does not mention the possibility of dividing these particular sequences into feet in some other way, he seems to be aware of the general problem; elsewhere (p. 448) he observes "dass zuweilen eine andere Abtheilung der Füsse stattfinden kann." However, he does not discuss any reasons for preferring one divison over another. Examples of these two admittedly rare, and perhaps artificial, meters are found in Freytag (p. 453); both examples are taken from the poet ʕAṭā Muhammad, a poet who uses many meters "welche von den ältern gewöhnlichen mehr oder minder abweichen" (p. 448).

(13) dimeter *mustaṭīl*[1]

∪ — — — ∪ — — ‖ ∪ — — — ∪ — —

badīʕun bil-jamāli *taʕallā bit-taʕālī*

falā šibhun lahu fī *'anāsī bil-maθālī*

"Wondrous in beauty, exalted in exaltedness,
No one among men is like him."

(14) tetrameter *mumtad*

∪ ∪ — ∪ ∪ — — ∪ ∪ — — ∪ —

layta šiʕrī hawāhu yuṣliḥu l-muktawā

wa yuzīlu ʕaðābī wa yuqīmu l-qabūl

"Iwish that his love would heal the burned,
and remove my punishment and restore my acceptance."

---

[1]Those meters of circle I where the even feet have one less K than the odd feet cannot be distinguished when in dimeter form from the catalectic dimeter form of the corresponding meter of circle III.

It must be admitted that these two meters are at best artificial in Arabic poetry, and that their use is restricted to Persian. In so far as the Arabic system of meters has any synchronic validity for Persian metrics (see Chapter IV), then the correct analysis for Persian would be a transformation deleting one cord in odd-numbered feet ordered before cyclical permutation. This solution would generate the five meters listed in (11). But for Arabic verse, where only the three meters listed in Table I occur, it seems easier to try to derive them from the three distinct permutations on $(PKK)^4$. Then the problem is reduced to that of defining the appropriate rule of cord deletion.

The most common meters, *ṭawīl* and *basīṭ* (patterns (16a) and (16b) below), could be derived by deleting a K immediately after the first P and immediately before the last P, that is, by postulating two mirror-image transformations:

$$(15) \qquad K \rightarrow \emptyset \; / \left\{ \begin{array}{l} \#\#XP____ \\ ____PX\#\# \end{array} \right. \qquad \text{where X contains no P}$$

where ## = halfline boundary. This produces the following strings:

(16) a. P~~K~~ PKK PK~~K~~ PKK ⇒ *ṭawīl*

b. KKP ~~K~~KP KKP K~~K~~P ⇒ *basīṭ*

c. KP~~K~~ KPK KPK ~~K~~PK ⇒ *mumtad*

Patterns (a) and (b) correspond to the desired meters *ṭawīl* and *basīṭ*, but (c) essentially corresponds to the meter *mumtad*,

and not to the desired *madīd*, whose form is

(17) KPK KP KPK [KP] *madīd*

where the fourth foot does not occur. Undoubtedly, the corrected results could be obtained by imposing strong enough constraints on the application of the cord deletion transformation (15), for example, something like (18) might work:

(18) a. K → Ø /##(KK)PK___

b. K → Ø /___KPX##

where (18b) applies after the obligatory (ad hoc) deletion of F_4 = KPK in *madīd*. Such a solution, however, seems forced and completely unmotivated. Until a natural analysis is found, the meter *madīd* remains an unexplained anomaly in the system of Arabic metrics.

2.3.4 Apparent gaps in circle IV

The traditional basis for circle IV is KKP KKP KKQ. Nine distinct meters should be derived from this pattern within the circle theory, but only six meters are traditionally included. Three of those six never occur in their basic trimeter forms, but only in dimeter; the remaining three meters are said to occur in both trimeter and dimeter forms.

(19)a.	*	QKK PKK PKK	
b.	?*	KKP KKP KKQ	*sarīʕ*
c.	*	KPK KPK KQK	
d.	*	PKK PKK QKK	
e.		KKP KKQ KKP	*munsariḥ*
f.		KPK KQK KPK	*xafīf*
g.		PKK QKK [PKK]	*muḍāriʕ*
h.		KKQ KKP [KKP]	*muqtaḍab*
i.		KQK KPK [KPK]	*mujtaθθ*

The reasons for starring pattern (19b) even though it is one of the traditional meters will be discussed below, §2.3.5.

Again, only Freytag seems to be aware of the essential incompleteness of the meters of circle IV as they are listed in Table I. He observes (p. 153): "Im ganzen enthält er [circle IV] neun Metra von denen sechs von den ältern Arabern, drei davon überhaupt nur selten angewendet sind; nemlich *sarīʕ*, *munsariḥ*, *xafīf*, *muḍāriʕ*, *muqtaḍab*, *mujtaθθ* und drei ohne Namen". At this point, we must look to the Persian prosodists, who added precisely these three "nameless" meters to the list of Arabic meters, although not necessarily as part of circle IV. The names they provided for the abstract patterns (19a, c, d) are *mušākil*, *jadīd* and *qarīb*, respectively. Rückert (p. 387) gives their patterns as follows:

(20)

mušākil — ∪ — ⏑ | ∪ — — ⏑ | ∪ — — ⏑

jadīd ⏑ ∪ — — | ⏑ ∪ — — | ⏑ — ∪ —

qarīb { ∪ — — ⏑ | ∪ — ∪ ⏑ | — ∪ — —
— — ∪ | ∪ — — ∪ | — ∪ — —

Although it would seem very natural to include these three in circle IV, not all prosodists have agreed. Blochmann (p.71) admonishes: "But they must not be put together with the six metres of [circle IV], as Dr. Forbes has done in paras. 124 and 125 of his Persian grammar; for not all of the nine metres ... are musaddas [trimeter].....nor has the Doctor proved that the first two syllables of the first epitrite of the Mushákil are a watad i mafrúq [trochaic peg], although he has put them below the two last syllables of the second epitrite of the Munsarih, *i.e.*, the *fāʕi* of the Mushákil stands below the *lātu* of the Munsarih. A mixture of the western and eastern systems will never do."

Several comments are in order here. First, al-Xalil himself gives no criteria for determining whether a given syllable or syllables constitute a peg or cord in the abstract pattern, or rather in the mnemonic word which represents the abstract pattern. Ambiguities of this type can only be decided by studying the function of the syllable in question in the poem as a whole. In isolation, a sequence —∪—∪ could be analyzed as KPK, QKK or KKQ. As they are used in Persian (see (20) above), the meters *mušākil*, *jadīd* and *qarīb* can only be analyzed in such a way as to complete circle IV within the traditional Xalilian framework. Second, if Blochmann were consistent in his objection to grouping meters of different numbers of feet in the same circle, he would have to break up al-Xalil's circle IV, and

circles I and probably III as well. For example, since *muḍāriʕ*, *muqtaḍab* and *mujtaθθ* never occur in their canonical trimeter form but only in dimeter, they would have to be separated from *sarīʕ*, *munsariḥ* and *xafīf* which do occur in trimeter. Under this principle it would indeed seem strange that many of the meters can occur in various lengths. Furthermore, the Persian meters are often used with a different number of feet than their Arabic counterparts.

It might be noted here that the Persian prosodists not only added three meters which may be seen as completing circle IV, but they derived yet another circle from circle III by substituting trochaic pegs for not one, but two of the iambic pegs in a halfline of circle III (see Blochmann, p. 73):

(21)

KKP KKQ KKQ	*salīm*
KPK KQK KQK	*ḥamīm*
PKK QKK QKK	*ṣarīm*
KKQ KKQ KKP	*kabīr*
KQK KQK KPK	*nadīl*
QKK QKK PKK	*qalīb*
KKQ KKP KKQ	*ḥamīd*
KQK KPK KQK	*ṣayʏir*
QKK PKK QKK	*'aṣamm*

The meters of this sixth circle listed in (21) were not used by the Persian poets. The three additions to circle IV, however, were not just theoretical possibilities, but were used in the forms indicated in (20).

2.3.5 The verse-final trochaic peg

In the next section we will propose an analysis of circle IV which explains the peculiarities of the number and length of the meters as they are used in Arabic. First, however, we must provide evidence for a decision which is part of that analysis, namely, to reject as unmetrical the abstract pattern KKP KKP KKQ corresponding to *sarīʕ* (*cf.* (19)). In §2.1 we observed that the abstract pattern for the meter *sarīʕ* conflicted with the definition of metrically long, according to which no Arabic meter should end in a metrically short syllable. Since the abstract pattern of this meter is KKP KKP KKQ, a line should end in a short syllable, but in fact the short syllable never surfaces. Instead, the final foot of each halfline of this meter is always catalectic. It usually occurs as —∪— or ——, occasionally as ∪∪— and rarely as —.[1] On the other hand, in lines considered to be written in the meter *rajaz*, whose abstract pattern is KKP KKP KKP, the final KKP foot corresponds to either the basic ——∪— or to ————. Since the abstract feet of these two meters are otherwise identical, traditional accounts of Arabic meters in effect divide

[1] Wright (p. 362) lists a fifth possible final foot for *sarīʕ*: "A few later poets have taken the liberty of adding a syllable to the second hemistich, so that the last foot of the verse becomes —∪——." Such a foot could not be derived from KKP so that if the two meters are to be collapsed as is suggested here, then the final long syllable would have to be considered extra-metrical. Extra-metrical syllables do occur in other meters, especially in *kāmil*, which is also based on the KKP foot. I found no mention of this fifth kind of foot in any of the other works I consulted.

up all lines based on the KKP foot according to the surface realizations of the final foot: should it have three long syllables, then the poem is classified under the meter *rajaz*, should it contain fewer than three long syllables, then it is said to belong to the meter *sarīʕ*.

This classification is rather arbitrary. While it is true that for each meter, the subtypes are traditionally classified according to the shape of the last foot of the half-line (*cf.* Chapter III, §3.7), the meters themselves are not distinguished solely according to the surface form of the final foot. Therefore if *sarīʕ* is not different from *rajaz* in any other way, then it is probably best considered to be a submeter of *rajaz* rather than a totally distinct meter.

The ambiguity in the scansion of lines of *sarīʕ* versus *rajaz* has often been noted in the literature. In describing the *rajaz* meter, Ullmann (1966, 15) notes that the "echten distichoiden Rağaztrimetern...[sind] übrigens alle akatalektisch (die katalektischen wären Sarīʕ!)" Hölscher (pp. 370, 401) and Freytag (pp. 8, 253, etc.) note the similarity of *sarīʕ* to *rajaz* and/or *kāmil*. According to Freytag (p. 253, Anm. 5), the prosodists Djeuhari and Mutjah observed that the line in which the last foot of each half becomes — — — is not *sarīʕ* from — — — ∪, but *rajaz* from — — ∪ —. While discussing lines of Persian poetry which end in a — ∪ — foot, Garcin de Tassy (p.300, fn. 2) notes that they could be derived from the meter *rajaz* as well as from *sarīʕ*.

Freytag (p. 252, Anm. 3) gives a line from Ibn al-Qaṭṭāʕ as a possible example of the expected KKQ foot, —∪—∪, at the end of the first halfline; however, if read in pausal form, the line becomes the usual —∪—:

— — ∪—| — — ∪ —| — ∪ — (∪)‖
'in tas'alī fal-majdu ɣayru l-badīʕ(i)

— — ∪ —| — — ∪ — |— —
qad ḥalla fī taymin wa maxzūmi

"If you ask (where glory resides), then I must tell you that it is infamous glory which resides in the Taym and Maxzum tribes."

It should be noted that according to our definition, such a syllable (the one in parentheses) would not by itself provide a counterexample to our generalization that no meter ends in a short syllable, even if it were not read in pausal form. (In this case, the final foot would be an example of the —∪— — kind which Wright referred to (*cf.* the footnote at the beginning of this section)). It is traditional practice to recite phonetically short inflectional endings as long syllables at the end of either halfline, and such short syllables may correspond to phonetically long syllables in other lines. (See, for example, Garcin de Tassy, p. 319, fn. 3.) Obviously, a single line by itself would not be a counterexample unless every line in the poem also ended in a phonetically short syllable in this position. In the example given by Freytag, however, there are metrical reasons for

reading the last word in pausal form. According to Freytag, this poem contains but three lines. One of the corresponding halflines ends with the word *an-nazāl, i.e.,* in a —∪— foot; the other halfline also ends in a —∪— foot where the final syllable is CVC rather than CV̄C. Furthermore, if the third line were not read in pausal form, then it would be scanned as —∪∪—, which is metrically very different from the resulting from of the other two lines, namely —∪——. Such a difference in the length of the penultimate syllable where both sequences correspond to KKP is not possible in Arabic metrics. Freytag argues for reading the lines in pausal form "weil doch das Wegwerfen eines Endvokals selbst mitten im Verse nicht ganz ungewöhnlich ist und der Fuss *fāʕilān* weniger von dem im dritten Verse vorkommenden Fusse *fāʕilun* verschieden ist" (pp. 252-3).

The discussion on this line centers on the length of the last syllable. Because they are written with an extra letter in the Arabic script, syllables of the form CV̄C are considered "longer" than syllables of the form CVC, even though both are scanned simply as "long" syllables in the meter, as is clearly shown by the correspondences in these three lines. Such "extralong" syllables arise not only within words, but even more frequently across word boundaries, as illustrated in the example halfline scanned in (3), §2.1. Thus in the halflines in question, there seems to be no reason not to read them in pausal form, even though words are usually read

in pausal form only at the end of the entire line, and not at the end of the first halfline where the pausal form may not be syntactically justified (there is a more or less general rule prohibiting enjambement (*taḍmīn*), so that the end of a line is often the end of a clause or sentence, and thus would naturally be read in pausal form).

To conclude, there appear to be no clear examples of a line-final short syllable in Arabic verse, and hence no unambiguous examples of a line-final trochaic peg. Therefore, we can consider the meters traditionally classified as *sarīʕ* to be new submeters of *rajaz* without complicating the rest of the system in any way. On the contrary, doing so leads us to an analysis of circle IV which is both simpler and more explanatory, as demonstrated below in §2.3.6.

Having rejected the pattern KKP KKP KKQ as unmetrical, or at least unnecessary, one might at this point question the existence of a trochaic peg Q (or any other metrical entity) which is never allowed to surface and has no apparent reflexes of any kind within the metrical system. To my knowledge, Bloch (1959, 74) is the only prosodist to have raised this question: "Da der Fuß mafʕūlātu des Sarīʕ keiner Realität entspricht, ist man berechtigt zu fragen, ob die Annahme dieses Fußes und überhaupt des fallenden Rhythmus in den anderen Versmassen des Kreisen 4 wahrscheinlich ist." On the basis of the non-occurrence of the Q in *sarīʕ*, Bloch proposes to dispense with the trochaic peg altogether, pre-

ferring to reanalyze the other meters of circle IV, which he calls "eine geradezu verzweifelte Konstruktion" (1959, 74). He observes that the trochaic peg can be said to produce a falling rhythm, as opposed to the rising rhythm of the iambic peg, in only two meters, *munsariḥ* and *xafīf*, because these are the only trimeter meters in this circle (aside from the questionable *sarīʿ*, of course), and therefore the only ones where the Q can occur in the middle of the halfline and contrast with the iambic pegs in the first and last feet of the halfline. Bloch attempts to argue for certain surface structure constraints to explain the fixed length of syllables which are traditionally considered to be part of the trochaic peg. In the meter *xafīf* (KPK KQK KPK), for example, he argues that the reason that the KQK foot cannot correspond to — ∪ ∪ — is not because the second syllable is the long syllable of a trochaic peg, but because otherwise the resulting line would contain two dactyls — ∪ ∪ — ∪ ∪ — (—), which he claims is an "unerwünschten Ausgang." He proposes (p. 75) to replace the Q by admitting only iambic pegs and by adding a new kind of foot where necessary. The new foot would contain three cords grouped around an iambic peg. He concludes that "Wenn uns die Annahme eines Abstandes von 3 leichten Stricken [cords] zwischen 2 vereinigten Pflöcken [iambic pegs] die Annahme des getrennten Pflockes [trochaic peg] erspart, so scheint sie mir empfehlenswert." (p. 75).

Although he is not explicit on this point, Bloch's

assumption would presumably admit four new feet as at least theoretical possibilities:

K K K P
K K P K
K P K K
P K K K

Bloch proposes to scan the meter *munsariḥ* as KKPK KKP KP rather than as KKP KKQ KKP. The number of distinct feet per meter is not limited to two as it is in Xalil's system; instead, any combination of feet would be permitted, at least in circle IV. If the analysis were extended to the other circles, it is not difficult to see that structural ambiguities of the type found in circle I (see §2.3.3) would arise. The meter *madīd*, for example, could be divided KPKK PK PK just as well as KPK KP KPK. Bloch does not discuss the scansion of any meters besides *munsariḥ* and *xafīf*. Moreover, Bloch explicitly allows for two types of cords: those that are "neutral" in length, and those that are fixed in length. It seems to me that unless the distribution of the longer foot could be described in some systematic fashion, then the traditional trochaic peg theory, whatever its deficiencies, is still preferrable. How ver, a systematic analysis using only K and P is still a desirable goal, since a metrical system wihh three entities (K, P and Q) is rare. We will return to the question of the trochaic peg Q and structural ambiguities at the end of Chapter III.

2.3.6 The dimeter circle

In §2.3.4, we saw that the Persian poets, and especially the Persian prosodists recognized the incompleteness of circle IV within the traditional Arabic theory of metrics, and that they added the necessary three meters to fill the gaps. But, how do we account for the incompleteness of the set of meters as used by Arab poets?

Halle (1966, 116) proposed the following rules in order to exclude patterns (19a, c and d) from circle IV:

(22) A trochaic peg cannot begin a halfline. (Halle's (11a))

(23) A halfline may not end in a trochaic peg followed by one or more cord units. (11b)

We must agree with Halle that rules (22) and (23) "have a rather unmotivated appearance in the form in which they are given above. This suggests that something essential has been missed here." We have no explanation for (22); the non-existence of a meter with initial Q remains a mysterious anomaly. In this section, however, we would like to propose what seems to be a motivated explanation for the facts expressed in (23).

First we observe that Halle's rule (23) was based on the abstract trimeter patterns. In light of the discussion of the meter *sarīʿ* (KKP KKP KKQ) in the preceding section, rule (23) could be generalized to reject a line-final Q as well, thus in effect prohibiting a Q in the third foot of

a trimeter halfline. The only effect on the system would be the reclassification of the *sarīʕ* meters as *rajaz*.

This suggests an alternative explanation, namely, that we consider circle IV to be essentially a dimeter circle, at least in Arabic, rather than trimeter. If this is the case, then the meters of circle IV would include all possible permutations on the basic pattern QKK PKK except the one rejected by (22) above:

(24)	a.	**QKKPKK	---
	b.	KKPKKQ	*munsariḥ*
	c.	KPKKQK	*xafīf*
	d.	PKKQKK	*muḍāriʕ*
	e.	KKQKKP	*muqtaḍab*
	f.	KQKKPK	*mujtaθθ*

The first pattern, (24a), does not occur except in the Persian meter *mušākil*; we account for this by including rule (22) in our metrical grammar of Arabic (but not Persian) metrics. Rule (22) can be formalized as

(25) ##QZ ⇒ *

where * marks an unmetrical sequence. The last three patterns (24d, e and f) are exactly the dimeter forms in which the meters *muḍāriʕ*, *muqtaḍab* and *mujtaθθ* occur in Arabic. Now the problem is to explain the fact that the meters *xafīf* and *munsariḥ* occur in trimeter as well as dimeter forms. In other words, can we justify the addition of an extra foot

in these meters, if their underlying form is dimeter.

I think the answer is yes. We have already noted that a halfline can never end in a short syllable, and that therefore a final Q can never occur in it s abstract form, but only in some catalectic variant. We would expect to find the same facts true of dimeter *munsariḥ* that we observed in trimeter *sarīʕ*. Since the halfline in this circle of dimeter meters is already rather short compared to the meters of other circles, we might suggest an alternative to the catalectic foot: namely, the addition of a third foot, identical to the first, containing an iambic peg. This addition of a third foot has the effect of making the trochaic peg nonfinal, thus avoiding a final short syllable.

This same argument can be applied to the meter *xafīf*. In Chapter III, we shall see that a single final cord is very often deleted to produce a catalectic foot. Should this happen in the sequence KPK KQK, then the trochaic peg Q would become verse-final, and we would have to lengthn the short syllable or else add an extra foot to the original dimeter pattern to protect the Q. It is so rare for both cords of a final PKK foot to be deleted (and we would, therefore, also expect it to be rare in a final QKK foot), that we can assume that the Q in the meter *muḍāriʕ* (PKK QKK) will never be left in final position; this meter can therefore be permitted to occur in dimeter form.

We are suggesting, then, that if a Q becomes verse-final for any reason, or rather, if a Q has a high probability of becoming verse-final, then we have two options:

(i) add an extra foot containing an iambic peg to protect the Q from becoming verse-final

(ii) delete that offending short syllable.

In Chapter III, we will look at the rules which effect option (ii). Option (i) can be formalized as follows:

(26) F $\underbrace{\text{X Q (K)}}$ where X contains no P
1 2 ⇒ 1 2 1

Rule (26) can apply only to patterns (24b and c), thus accounting for the fact that only meters *munsariḥ* and *xafīf* occur in trimeter as well as dimeter form.

The Persian poets use the meters of circle III and circle IV in tetrameter as well as, or rather than, trimeter. In particular, those meters of circle IV which are always dimeter in Arabic, namely *muḍāriʕ*, *muqtaḍab* and *mujtaθθ*, are typically tetrameter in Persian, whereas *munsariḥ* and *xafīf*, which are trimeter in Arabic, are also trimeter in Persian. Any tetrameter meter in Persian shows a marked tendency for teh first and third feet to be identical, and for the second and fourth feet to be identical (with respect to the particular metrical variations found). In other words, any tetrameter meter in Persian exhibits the same metrical parallel-

ism as is found in the Arabic meters of circle I. This metrical parallelism may be assumed to play as important a role in Persian verse as do syntactic and thematic parallelism.

2.4 Summary of the metrical rules

We summarize here most of those rules of our metrical grammar which generate the abstract patterns corresponding to the sixteen meters. In Chapter III, we will take up those rules traditionally called *ziḥāfāt* and *ʿilal*. Most of these are correspondence rules which relate the three metrical entities K, P and Q to sequences of breves (∪) and macrons (—). However, the traditional *ʿilal* rules also include certain cord deletion rules which change the abstract pattern of the final foot of a halfline, and thus do not really belong to the set of correspondence rules.

At the beginning of this chapter, we observed that every line of Arabic verse is divided into halflines by a cesura, and we expressed this observation by the base rule L → H + H. In any given poem, all halflines must share the same abstract pattern. This means that each halfline must undergo exactly the same set of permutation, deletion and substitution transformations as every other halfline in that poem. This suggests that we consider the halfline rather than the line to be the initial element, and that we generate the whole line by making a "copy" of the halfline H after these various pattern-

creating transformations have applied. (Note that if this normally obligatory copying transformation failed to apply, the the three-foot lines discussed in fn.1 at the beginning of §2.2.3 would result.)

Among the transformations given below, T_2 is used in the generation of circle V, T_3 for circle I and T_4 for circle IV. T_2-T_4 should probably be disjunctively ordered. With respect to circle I, we shall arbitrarily assume that we want to generate a meter *mutadārik muraffal* (*cf.* §2.3.1), and have therefore ordered T_2 after cyclical permutation (T_1). The contrary assumption would merely necessitate ordering T_2 before T_1 instead of after. Furthermore, we have stated T_3 generally without specifying whatever constraints will be needed to generate *madīd*. We are concerned less with the precise formulation of the metrical transformations than with the general shape of the metrical grammar as a whole.

(27) $H \rightarrow F + F + (F) + (F)$

$F \rightarrow PKK$

T_1: Cyclical permutation over F_i

T_2: $K \rightarrow \emptyset \; / ____ KX$ (6)

T_3: $K \rightarrow \emptyset \; / \begin{cases} \#\#XP____ \\ ____PX\#\# \end{cases}$ (15)

T_4: $P_i \rightarrow Q$ in dimeter meters only

T_5: $\#\#QZ \Rightarrow *$ (25)

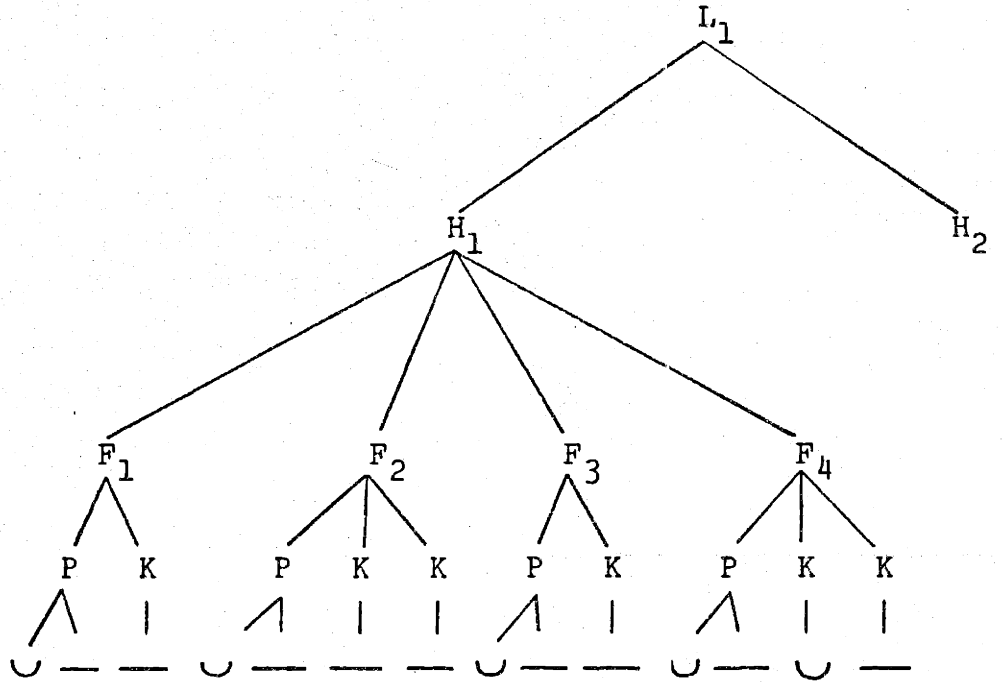
T_6: $\#\# \; F \underbrace{X \; Q \; (K)}_{1 \quad 2} \Rightarrow 1\ 2\ 1$ (26)

T_7: $H \rightarrow H + H$

We conclude this chapter with an analysis of the metrical structure of two example lines scanned earlier in §2.1.

(28) meter: *ṭawīl*

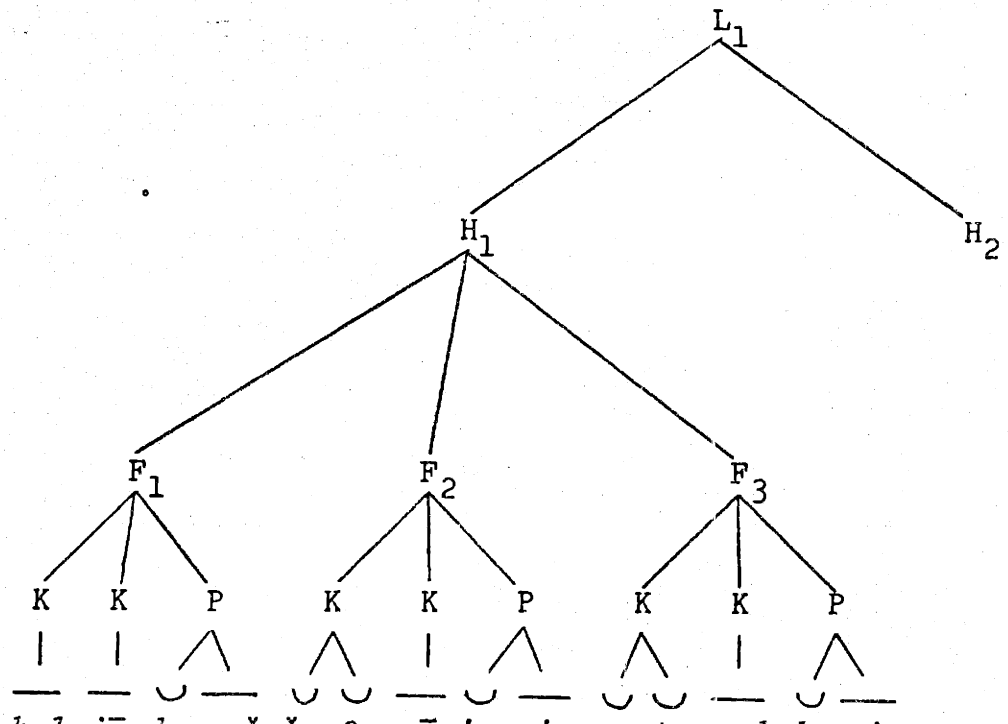
H → F + F + F + F
F → PKK
T_1 (vacuous)
T_3 (K-deletion)
T_7 (H-copying)
correspondence rules
lexical insertion



qifā nabki min ðikrā ḥabībin wa manzili

(29) meter: *kāmil*

H → F + F + F
F → PKK
T_1 (permute)
T_7 (H-copying)
correspondence rules
lexical insertion



hal jādara š-šuʕarā'u min mutaraddami

Chapter III

The Correspondence Rules: *ziḥāfāt* and *ʕilal*

> "Just as one is amazed at the regularity of the first part of the system - the five circles and their normal metres - so one is confused by the second part with its casuistry and its complications."
>
> Weil (1960, 671)

3.0 In this chapter we will study those rules which relate abstract sequences of pegs and cords to metrical sequences of long and short syllables. Out of the apparent disorder of the numerous traditional rules for deriving the "deviations" from the normal patterns comes a simple system of metrical correspondence rules. As indicated in the title of this chapter, the term "correspondence rule" covers the traditional rules of the *ziḥāfāt* and *ʕilal*. We have already alluded to the traditional distinction between *ziḥāfāt* and *ʕilal* as being one of degree: the *ziḥāfāt* are minor relaxations in the meter not affecting the rhythm; whereas the *ʕilal* are major defects or deviations in the meter which have a definite effect on the rhythm of the poem. Prosodists have not always made the distinction between the two terms clear, nor have they always agreed as to exactly where the distinction is to be drawn. Weil (1958, p. 25 and 1960, p. 671) divides the "deviations" into "two classes, which perform

different functions and appear in different parts of the line." The *ziḥāfāt*, he claims, are sporadic variations in non-final feet, whose effect is a small quantitative change in the weak cord syllables; the *ʿilal* are regular variations in the final feet, affecting the strong peg syllables, and therefore altering the rhythmic end of the line. However, as Bloch (1959, 71-2) rightly points out, the *ziḥāfāt* rules may also apply to final feet, in which case they need not be sporadic, but may be obligatory throughout a given poem or meter [*e.g.*, *ṭawīl*, in which the first cord of the final PKK foot is always a short syllable: ⏑ — ⏑ —], and the *ʿilal* can affect cord syllables as well as peg syllables. Bloch concludes that the *ʿilal* are restricted to the final foot, whereas the *ziḥāfāt* are not.

For our purposes, the term *ziḥāfāt* will be used to refer only to the rules which "shorten" the length of those syllables corresponding to cords, in any foot, final or otherwise. The term *ʿilal* is used to refer to the rules which "shorten" a peg unit such that it corresponds to a single syllable instead of two. We note that, whereas the *ʿilal* are said to affect only the final foot of a halfline, other feet may also be affected, frequently in Persian verse, but only rarely in Arabic. The primary function of the *ʿilal* is the derivation of catalectic (shortened) feet. Hence, the *ʿilal* traditionally include those rules which have the effect of deleting (as well as adding) a K position. While these rules will be

discussed with the true correspondence rules, we prefer to think of them as belonging to the set of transformations which establish the abstract metrical patterns.

3.1 The eight basic kinds of feet in Arabic verse are traditionally represented by mnemonic words whose syllables correspond exactly to the sequences of long and short syllables in each foot. Table II below lists the basic feet and the corresponding mnemonic words. The last two feet in the table are found only in the meters of circle II.

fāʕilun	KP	— ∪ —
faʕūlun	PK	∪ — —
mustafʕilun	KKP	— — ∪ —
fāʕilātun	KPK	— ∪ — —
mufāʕīlun	PKK	∪ — — —
mafʕūlātu	KKQ	— — — ∪
mustafʕilun	KQK	— — ∪ —
fāʕilātun	QKK	— ∪ — —
mutafāʕilun	KKP	∪ ∪ — ∪ —
mufāʕalatun	PKK	∪ — ∪ ∪ —

TABLE II

The cord K is always represented by a single long syllable (*sabab xafīf*) in these mnemonic words, except for the two-syllable cord (*sabab θaqīl*) of circle II. Thus the normal form of the foot is assumed to be the sequence of long and short syllables which would be generated if none of the op-

tional *ziḥāfāt* and *ʕilal* rules apply. All other realizations of a particular foot are traditionally considered to be "deviations" from the normal foot.

Note that although there are eight basic feet on both the abstract (peg and cord) level and the surface (syllable) level, the correspondence is not one-to-one. This is because a given mnemonic or four-syllable sequence may be ambiguous with respect to its underlying source. For example, could be derived from either KKP or KQK. Among the four syllable feet, only ∪ — — —(PKK) and — — — ∪ (KKQ) can be divided into pegs and cords in only one way. For this reason, al-Xalil always began his circles with unambiguous feet which could then serve to mark the peg positions in the other meters. Obviously the potential ambiguity increases as we allow certain cords to vary in length.

3.2 More than thirty different metrical variations on the eight basic feet are recognized in Arabic metrics within the two classes of the *ziḥāfāt* and *ʕilal* rules. A list and description of each of these variations is found in Appendix A, which I have adapted largely from Garcin de Tassy (pp.235-45). The numbering in the Appendix follows that of Garcin de Tassy, with the addition of one minor rule (No. 32) found in Freytag.

The abundance of Arabic terminology is due in large part to the fact that the Arabic notation is tied to the writing system of the language. The basic feet and their variations

are not described directly in terms of long and short syllables, but are represented by mnemonic words. Presumably the Arab grammarians did not possess even the concept of the syllable, much less that of syllable length. The lack of the concept "syllable" is not a serious a weakness as one might think for a description of meter, because the Arabic script itself reflects syllable length. A short syllable is written as a single voweled consonant; a long syllable consists of a voweled consonant followed by an unvoweled "*sukūn*ated" consonant. In other words, a short syllable consists of one letter, a long syllable of two letters (the $C\bar{V}C$ syllable would be written with three letters). Only a few fixed orthographic conventions fail to comply with this generalization. The graphic symbols used to scan verse simply indicate whether or not a consonant is voweled.

Yet the lack of the syllable concept and the resulting reliance on mnemonic words is a very definite handicap for the Arab prosodist. In order to refer to any variation in a given foot, it is necessary to specify which consonant of the corresponding mnemonic word is affected, and whether that consonant is voweled or unvoweled before that variation applies. Because there is no concept of syllable, there is no concise way of stating that the *zihāfāt* change only the length of the cord syllables, and no way of stating environments other than "the n^{th} consonant." These limitations of the Arabic script as a metrical representation are explicitly

noted by Garcin de Tassy and by Weil, but neither progresses beyond the analysis of the Arab prosodists because they too lack the concepts of "environment" and of "rule ordering." Within the framework of generative grammar, however, it becomes evident that the "confusion" and "complexity" of this second part of Xalil's system is only apparent. Because of notational weaknesses, several different terms must be used to refer to metrically equivalent variations in the meters, *e.g.*, to a single metrical process such as "cord shortening." At times, the script-based notation forces one to differentiate between two entities which are metrically equivalent.

3.2.1 An example of the latter case is the $C\bar{V}C$ syllable, which is always referred to as "extra-long" (German *gedehnt*), since these are spelled with one more letter than other long syllables. The extra letter is important only for the rhyme; metrically, CVC syllables behave in every respect like ordinary long syllables, both within and at the end of the line (as noted above, §2.1.3, and in Appendix B, this is not true of line-internal $C\bar{V}C$ syllables in Persian verse, where schwa-epenthesis is presumed to apply). On this point we agree with Weil (1958, 1): "Der Reim aber ist ein poetisches Ausdrucksmittel für sich selbst, das unabhängig vom metrischen Bau der Verse besteht und wirkt." According to the prosodists, such $C\bar{V}C$ syllables do not occur finally in two of the meters, *wāfir* and *xafīf* (*cf.* Appendix A, variations (26) *tas-*

bīɣ and (27) *'iðāla*; Garcin de Tassy, p. 243). I have no explanation for this fact, but do not consider it a significant enough gap to justify a change in our definition of metrically long.

3.2.2 Let us now return to the other case where Arabic notation and terminology disguises the similarity between the various *ziḥāfāt* rules. We shall consider the three variations called *qabḍ*, *kaff* and *ʕaql*, rules (6), (7) and (17), respectively, in Appendix A. *Qabḍ* deletes an unvoweled fifth consonant in the mnemonic words corresponding to PKK and PK feet (*cf.* Table II, 3.1), producing a short syllable immediately following the initial peg. This rule is said to apply only in the meters *ṭawīl*, *madīd*, *hazaj*, *muḍāriʕ* and *mutaqārib*. However, if we assume that this process, which we shall call "cord shortening," generalizes to shorten any cord which immediately follows a peg in its foot, then it should also apply to KPK feet as well as to PKK and PK feet, in all meters in which these three feet occur. This generalized process of cord shortening can be represented by the following rule:

(30) $K \rightarrow \breve{} / P____$ (opt.) (*qabḍ*)

If this assumption is correct, then by looking at the list of meters given in Table I, §2.2.2, we see that rule (30) should apply to the meters *wāfir*, *ramal*, *xafīf* and *mujtaθθ* in addition to the five meters mentioned above.

Now consider the variation called *kaff*, which deletes an unvoweled seventh consonant in the mnemonic words corresponding to PKK, KPK, QKK and KQK, producing a short syllable in the foot-final cord position. This rule is said to apply only in the meters *ṭawīl*, *madīd*, *hazaj*, *ramal*, *xafīf*, *mujtaθθ* and *muḍāriʔ*. The fact that *ramal*, *xafīf* and *mujtaθθ* are included indicates that the generalization of *qabḍ* expressed in the statement of (30) is correct for at least three of the four additional meters predicted by that assumption. Rule (30) already accounts for one of the four environments of *kaff*, namely KPK. To handle the other cases, we posit the following rules:

(31) $K \rightarrow \cup / KQ____$ (opt.) (*kaff*)

(32) $K \rightarrow \cup / \left\{\begin{matrix} P \\ Q \end{matrix}\right\} K____$ (opt.) (*kaff*)

In generalizing the statement of rule (30), we also predicted that the cord shortening process should take place in the meter *wāfir*. We find that there is a variation called *ʔaql* which deletes the fifth consonant of a PKK foot only in this meter. The Arab prosodists consider *ʔaql* a distinct process from the rule of *qabḍ* because it is ultimately derived from ∪ — ∪∪ — under their analysis. In our analysis, however, the meters *wāfir* and *hazaj* have the same source PKK. Then the two rules of *ʔaql* and *qabḍ*, which have the same effect, can be collapsed into a single rule.

This is just one example in Arabic metrics where the traditional notation obscures similarity in the metrical function of the variations listed in Appendix A. As one considers these variations one by one, and incorporates each into the system of correspondence rules, one discovers that the many *ziḥāfāt* rules are part of a single, very general process of cord-shortening. Moreover, the formalized correspondence rules apply to any of the sixteen meters whenever the environments of the rules are met; the traditional *ziḥāfāt* must not only specify the environment (*i.e.*, a particular mnemonic word or words) but also a subset of the meters containing that mnemonic word to which the rule is allowed to apply. Thus the formalism represents a considerable simplification in the description of the metrical facts.

3.3 In this and the next few sections, we will look at the output or effect of the entire class of *ziḥāfāt* rules, and their role in the derivation of acatalectic feet. We will discover a basic asymmetry in the general process of cord shortening: two adjacent cords can both correspond to short syllables if and only if both precede the peg in their foot, *i.e.*, only in a KKP or KKQ foot. The problem, then, is how to express this generalization within the system of correspondence rules. It should be kept in mind that the particular notation used here serves no other purpose than to express formally those facts which appear to be significant

properties or characteristics of the Arabic meters.

3.3.1 Rules (30) and (31) shorten a cord syllable immediately after an iambic or a trochaic peg, respectively. We might reasonably expect these two correspondence rules to be exactly parallel. There is one difference between them: rule (30) applies to both PKK and (K)PK feet, whereas rule (31) applies to KQK feet but not to QKK. If the process of cord-shortening is completely general, then (31) should apply to both KQK and QKK, and we could collapse (30) and (31) into a single, more general correspondence rule (33):

(33) $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} ____$ (opt.) (*qabḍ, kaff ʕaql*)

According to the set of *zihāfāt* rules, cord-shortening does not affect the first K of a QKK foot. Is this fact a significant fact about Arabic metrics, or is it an accidental gap? It is very probably an accidental gap due to the rarity of the meter, or even only an apparent gap, due to the ambiguity of scansion in certain lines. Note that the QKK foot occurs in only one meter, *muḍāriʕ*, "one of the rarest metres, and not employed by any early poet" (Wright, pp. 364-5), "nur selten angewendet, ohnstreitig wegen seiner grossen Aehnlichkeit mit der Versart *mujtaθθ* benannt" (Freytag, p. 274). *Muḍāriʕ* is potentially ambiguous with respect to other meters as well; in particular, a line of the form

⏑ — — ⏑ | — ⏑ ⏑ — ‖ ⏑ — — ⏑ | — ⏑ ⏑ —

could be scanned either as *muqtaḍab* (KKQ KKP), as it is in Wright (p. 366), or as *muḍāriʕ* (PKK QKK). Under the latter scansion, rule (33) has indeed applied to the final QKK foot. Of course, any single line in isolation may be ambiguous with respect to the meter, and must be scanned with respect to the poem as a whole. Such ambiguous scansions lead us to suspect that the cord-shortening correspondence rules should be states in the most general way so as to apply to any K in any foot.

The following two rules complete the list of the basic variations:

(34) $K \rightarrow \cup / ____ K\begin{Bmatrix}P\\Q\end{Bmatrix}$ (opt.) (*xabn*(A-4))

(35) $K \rightarrow \cup / ____ \begin{Bmatrix}P\\Q\end{Bmatrix}$ (opt.) (*ṭayy*(A-5),*xabn*)

Correspondence rules (32)-(35) together express the fact that in any meter a cord unit K may be actualized as a short syllable, at the poet's option. If none of the optional correspondence rules apply, then the cord will be actualized by a later obligatory rule, $K \rightarrow —$.

3.3.2 Thus far, we have said nothing about the interaction of the correspondence rules. Given the similarity of the environments, we must ask if (32) and (33), and (34) and (35) are conjunctively or disjunctively ordered; in other

words, of each pair, can both rules apply to a given foot? It turns out that rules (35) and (34) are conjunctively ordered. Either or both of the cords in a KKP foot may be actualized as short syllables. Rules (32) and (33), however, are disjunctively ordered. In a PKK foot, either but not both cords may be actualized as a short syllable (Garcin de Tassy, p. 246; Freytag, p. 107). If we extend the parenthesis notation to cover optional as well as obligatory rules, then we can collapse (32) and (33) into a single optional rule (36) as follows:

(36) $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} (K)____$ (opt.) (*qabḍ, kaff ʕaql*)

where (36) is interpreted as replacing rules (32) and (33) in that order, and where both (32) and (33) are optional. That is, we can choose not to apply (32) even where its environment is met. We assume that if one rule were optional, and the other obligatory, then parenthesis notation could not be used to collapse them. Our interpretation of parenthesis notation with respect to optional rules is a logically coherent extension of that notation which allows us to generalize similar metrical processes.

3.4 The Arab prosodists recognized three ways in which metrical rules could interact to determine what syllable sequences could correspond to two adjacent cords. These three possibilities are represented graphically in the fol-

lowing table, where an asterisk in a given column indicates that the particular syllable sequence is an unmetrical realization.

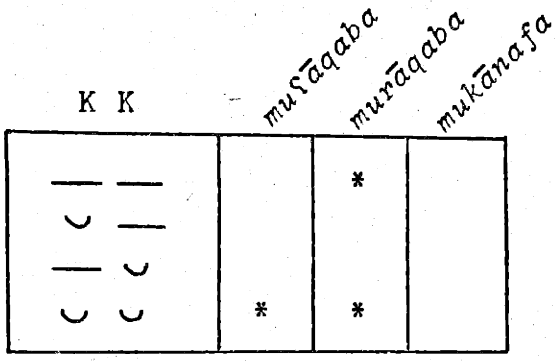


Table III

Since each of the optional cord shortening rules (32)-(35) affects a single K, we are concerned here with the way in which any two of these rules can interact. We can think of the three kinds of rule interaction in Table III as constraints on the application of those rules. The third column, *mukānafa*, represents the case where two rules are independent, and thus all four possible derivations are metrical. The first column, *muʕāqaba*, represents the case where the two rules are mutually exclusive, and only three of the derivations are considered metrical. In the second column, *murāqaba*, we have the case where one and only one of two optional rules must apply. This case, however, would be impossible to state as a constraint on rule application. In the following sections, we will consider each of these three

cases separately in some detail.

3.4.1 The property which prohibits both cords following a peg from becoming short syllables is called *muʕāqaba*. Weil (1958, 109, fn.3) attributes this property to a general surface constraint against sequences of three or more short syllables in Arabic verse. One might wish to use this surface constraint as an alternate solution to *muʕāqaba*, namely, by allowing all cords to be optionally realized as short syllables, and then rejecting as "unmetrical" all derivations resulting in sequences of three or more short syllables. But such a solution can be shown to be both incorrect and insufficient: incorrect because if two cords precede the peg in a foot as in KKP and KKQ feet, then both K's can be actualized as short syllables[1] (*mukānafa*), producing a ⏑⏑⏑ — sequence with three shorts in a row; and insufficient because in the PKK foot of the meter *muḍāriʕ*, PKK QKK, the shortening of both cords is prohibited (Freytag, pp. 272-3) even though that would produce a sequence of only two short syllables, since the next foot begins with a trochaic peg Q.

The constraint agains' two adjacent K's both becoming short syllables when they follow a peg applies across foot

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[1]The two cords of the KKP foot of the meter *muqtaḍab*, KKQ KKP, cannot both be short, presumably because the preceding KKQ foot ends in a short syllable, and this would result in a sequence of four short syllables - undoubtedly an unmetrical sequence in Arabic verse.

boundaries in the following meters: *madīd*, *ramal*, *xafīf* and *mujta*θθ. In other words, given two consecutive feet

$$K \begin{Bmatrix} P \\ Q \end{Bmatrix} K \# K \begin{Bmatrix} P \\ Q \end{Bmatrix} K$$

where # represents a foot boundary, then either but not both of the cords between the two pegs may be realized as a short syllable. We will discuss how to incorporate this constraint into the set of cord-shortening correspondence rules below in §3.4.6.

3.4.2 The *murāqaba* constraint is supposed to prevent two adjacent cord syllables from being the same length. As Garcin de Tassy (p. 246) describes it:

> Enfin, on est quelquefois oblige de faire usage de l'une des deux alterations entre lesquelles il y a incompatibilite [*muʕāqaba*]. Ainsi, dans certains metres, on ne peut pas faire usage du pied primitif regulier *mafʕūlātu*, mais il faut y substituer un des pieds secondaires, *maʕūlātu* ou *mafʕulātu*.

Garcin de Tassy never mentions any specific meter for which this constraint is supposed to hold, and since the KKQ foot which he does mention should *not* in general be subject to *muʕāqaba*, it can hardly be an example of *murāqaba*. According to Freytag (p. 110), the *murāqaba* constraint is supposed to hold in only two meters, namely *muḍāriʕ* and *muqtaḍab*, whose canonical dimeter forms are:

muḍāriʕ PKK QKK

muqtaḍab KKQ KKP

The question at hand is whether the *murāqaba* paradigm is in fact a correct description of the facts concerning the cord syllables in these two meters.

First, let us consider the derivation of two short syllables from the two adjacent cords KK. With respect to the meter *muḍāriʕ*, we note that the *muʕāqaba* constraint already accounts for *P∪∪ and *Q∪∪. Of course, even without appeal to *muʕāqaba*, Q would be an impossible final foot since the final syllable of a halfline can never be short. With respect to *muqtaḍab*, we have two different feet, KKQ and KKP, neither of which should be subject to *muʕāqaba*, and where we would therefore expect to find instances of $\cup\cup\left\{\begin{matrix}P\\Q\end{matrix}\right\}$. Suppose that the KKP foot were realized as ∪∪P = ∪∪∪—. Then the halfline would be KK—∪#∪∪∪—. As we have already noted, four short syllables in a row is an unmetrical sequence in Arabic verse, and can be rejected by means of a surface structure filter. Thus the non-occurrence of ∪∪∪— from KKP in the meter *muqtaḍab* can be explained on independent grounds, without appeal to an additional constraint such as *murāqaba*.

This leaves only the initial KKQ foot mentioned by Garcin de Tassy in the quote above. But contrary to his assertion, we find the following observation by Freytag (p.276, Anm. 2) about a KKQ foot which has already been affected by

the variation called *ṭayy:*

> Die Grammatriker (*sic*) behaupten, dass in dem Fusse nicht die Eigenschaft, *murāqaba* genannt, statt finden könne, dass aber in demselben die Veränderung *xabn* angewendet werde, so dass *faʕulātu* entstehe und der Grammatiker Alferra führt dazu folgenden Vers an.
>
> ∪ ∪ — ∪ — ∪ ∪ — ∪ ∪ — ∪ — ∪ ∪ —
> *ṣaramatka jāriyatun‖tarakatka fī waṣabi*
>
> "Es hat sich ein Madchen von dir getrennt und hat dich krank zuruckgelassen."

The non-occurrence of ∪∪—∪ from KKQ is thus only alleged, and all of the other cases where two adjacent cords cannot both be short syllables have been explained without appeal to a *murāqaba* constraint.

What about the occurrence or non-occurrence of the canonical forms ——$\left\{\begin{matrix}P\\Q\end{matrix}\right\}$ and $\left\{\begin{matrix}P\\Q\end{matrix}\right\}$—— in these two meters? In the meter *muqtaḍab*, this would produce ##————∪ as the initial foot, where ## represents the halfline boundary. Note that ##———— is a possible initial sequence only in *muqtaḍab*, *i.e.*, only from ##KKQ, where it just does not occur. It may be that such an initial sequence is considered unmetrical in Arabic verse,[1] just as sequences of four or more long syllables in a row are avoided. In the meter *muḍāriʕ*, the

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[1] Freytag (Anhang 4, p. 404ff.) gives examples from certain "new" poets who, perhaps under the influence of Persian verse, use long syllables almost exclusively in their poetry, and where such initial sequences do occur. Such cases are clearly exceptional in Arabic poetry.

canonical PKK foot would result in a line with four long syllables in a row: ⏑ — — — # — ⏑ — — — . Such sequences do occur occasionally in Arabic verse, but they seem to be avoided. The canonical patterns have either two or three long syllables in a row, never more than three except in circle IV. And in circle IV, there appears to be a tendency to break up such sequences of long syllables when they arise. Furthermore, in this meter the initial iambic peg is often shortened so that it corresponds to a single long syllable. In this case, if both cords also corresponded to longs, the resulting halfline would be ## — — — # — ⏑ — — — ##, which is unmetrical for the reason suggested above. It should be noted that both *muḍāriʕ* and *muqtaḍab* are among the rarest meters in Arabic verse.[1] Given the general tendency to avoid sequences of more than three longs, the non-occurrence of the canonical patterns might be attributed to the very limited number of lines written in these two meters.

We conclude that there are no true cases of the *murāqaba* constraint in Arabic metrics, and that we need only account for the case of *muʕāqaba*.

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[1] Probably less than one percent. See the statistics on the relative frequencies of the various meters in Vadet and Bräunlich.

3.4.3 Constraints on sequences of short syllables

In this section we return to the various constraints on the positions where sequences of three short syllables are permitted in Arabic verse, and how such constraints are best incorporated into a description of Arabic metrics. In §3.4.1 we observed that the function of the *muʕāqaba* constraint is to block the derivation of such sequences from PKK, QKK, KPK or KQK feet. The counterpart of *muʕāqaba* is *mukānafa*, the case where two cord-shortening rules are independent rather than mutually exclusive; according to Freytag (p. 111);

> Dieses Verhältnis ist in dem Fusse *mustafʕilun* des Metri *basīṭ*, *rajaz* und *sarīʕ* und *munsariḥ* in allen Theilen des Verses, ausgenommen dem *ʕarūḍ* und *ḍarb*.....Es findet dieses Verhältnis auch im Fusse *mafʕūlātu* vom *munsariḥ* statt.

Thus two adjacent cords can both correspond to short syllables only in a KKP or KKQ foot. In a KKQ foot, this will produce at most two short syllables in a row, since this foot can only follow an iambic peg and hence a long syllable. In a KKP foot, however, this will produce a sequence of three short syllables.

Bloch, who, unlike Freytag, is interested in the output of the correspondence rules rather than in the way they apply, observes (1946, 7):

> Im ganzen sind es aber nur die Folge von mehr als zwei Kürzen, denen die meisten Versmasse unzugänglich sind...Eine Folge

> von mehr als drei Kürzen fügt sich aber in keinem arabischen Vers, und drei aufeinanderfolgende Kürzen passen nur in das Schema derjenigen Versmasse denen der Fuss XX ∪ — eignet, also Rağaz, Sarīʕ, Basīṭ und Munsariḥ, doch ist die tribrachische Silbenfolge, wenn ich recht sehe, nur im Rağaz wirklich üblich.

It seems to be a general fact about Arabic verse that sequences of more than three short syllables are always unmetrical, and and sequences of three shorts are avoided and restricted to certain meters.[1] Statistics on the relative frequency of the various variations on a given foot are to be found only for

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[1] A. Bloch (1946, p. 2ff) discusses the effect that the metrical requirements have on the choice of words and inflection in Arabic poetry as opposed to prose. As we have seen, the main constraint is on sequences of three or more short syllables, sequences which are quite common in prose (p. 7). The most important consequence for poetry is that except in the meter *rajaz*, the third person masc. singular of most verbs can only be used if it is followed by a definite noun. Thus:

∪ ∪ —	
kataba l-kātibu	"the scribe wrote"
* ∪ ∪ ∪	
kataba kātibun	"a scribe wrote"
∪ ∪ —	
kataba l-maktūba	"he wrote the letter"
* ∪ ∪ ∪	
kataba maktūban	"he wrote a letter"

Bloch suggests that this restriction may in part be the reason for the lack of real epic verse in Arabic (unlike Persian): "Damit sind so alltägliche Verbindungen wie *faʕală zaydun* [Zaid did], *darabă kalban* [he hit a dog], *qatalăhum* [he killed them], *qutilă fī l-ḥarbi* [he was killed in the war], *laqiyă jayšan* [he met an army] aus der Dichtersprache ausgeschlossen, was zweifellos eine empfindliche Einschränkung darstellt und einem arabischen Epiker neben andern verstechnischen Hindernissen, wie dem einheitlich durchzuführenden Endreim... erhabliche Schwierigkeiten hätte bereiten müssen."

the KKP foot in the meter *rajaz*. R. Geyer (1908, 8-9) counted 1773 trimeter halflines (5916 feet) of this meter, and found the distribution to be as given in Table IV. Final catalectic and acatlectic feet do not alternate in the same position; hence the number of acatalectic feet indicated in Table IV includes both final and non-final feet. It is easy to compute that out of 1773 final feet, 690 (45.1%) are acatalectic in Geyer's sample.

	K_1 K_2 P	number of feet
acatalectic	— — ⏑ —	2475
	⏑ — ⏑ —	1321
	— ⏑ ⏑ —	923
	⏑ ⏑ ⏑ —	114
catalectic	— — —	620
	⏑ — —	463
		5916

Table IV

Relative frequency of the different variations of KKP in the meter *rajaz* (adapted from Geyer)

The different variations listed in Table IV are generated by the application of correspondence rules (34) and (35). Since both rules are optional, and both can apply to a given KKP foot, it is of interest to test whether the fact that two

K_1 K_2 P	number of feet	observed % of feet	expected % of feet	relative distribution
— — ⏑ —	2475	51.1%	55.1%	1-(p+q-pq)
⏑ — ⏑ —	1321	27.4%	23.4%	p-pq
— ⏑ ⏑ —	923	19.1%	15.1%	q-pq
⏑ ⏑ ⏑ —	114	2.4%	6.4%	pq
	4833	100.0%	100.0%	1

TABLE V

Expected distribution of the variations of KKP under the hypothesis of independence of correspondence rules, assuming p=.298 and q=.215.

rules are conjunctively ordered implies that they are independent. Let p be the actual percentage of the number of feet where K_1 correspomds to a short syllable, and let q be the % number of feet where K_2 corresponds to a short syllable. By adding the percentages in rows 2 and 4 in Table V, p is computed to be 29.8%; similarly, from rows 3 and 4, q is computed to be 21.5%. Assuming that p = 29.8% and q = 21.5% as computed from Geyer's sample are representative of the relative distribution of the variations on KKP in all of classical Arabic poetry, then if the two correspondence rules (34) and (35) are independent, we would expect the probability that both apply to a given KKP foot to be equal to pq = 29.8 x 21.5 = 6.4%. (This is to be compared with the observed number of feet in which both K's are short, which from Table V is 2.4%.) Under the above assumptions, the expected percentage occurrences of the various variations are given in Table V. The difference between the observed values and the expected distribution is statistically highly significant at p = 0.001 by the x^2-test. It can be shown that even if the probabilities p and q are chosen so as to minimize the value of x^2, the independence hypothesis fails miserably and can be rejected at a level of significance p = 0.001.

In §3.4.1, we rejected the idea of replacing the *muʕā-qaba* constraint by a surface structure constraint against three short syllables in a row because (i) sequences of three short syllables are metrical if they are derived from KKP or KKQ, and (ii) certain sequences of only two short syllables are unmetrical. We have seen that even in those meters where sequences of three shorts are permitted, they occur significantly less often than would be expected under the hypothesis that the various cord-shortening rules are independent. This leads us to suspect that the surface constraint is operative even in the case of the KKP and KKQ feet. So it seems worthwhile to explore the idea of a surface constraint in more detail.

Let us systematically consider all the ways in which sequences of short syllables can be derived. Since two pegs are separated by at most two cords, and a peg itself contains a short syllable together with a long syllable, it is possible to derive sequences of two, three or occasionally even four short syllables if all the cords in a foot are actualized as shorts. The following table lists all possible combinations of abstract feet, and the corresponding surface strings if all cords correspond to short syllables. The meters in which such sequences could in theory arise are indicated in the last column.

i.	(K)KP#KKP		⏑⏑⏑— # ⏑⏑⏑—	*rajaz, sarīʿ* *kāmil, basīṭ*
ii.	KPK#KP(K)	*	⏑⏑—⏑# ⏑⏑—⏑	*ramal, madīd*
iii.	PKK#PK(K)	*	⏑—⏑⏑# ⏑—⏑⏑	*hazaj, wāfir* *ṭawīl*
iv.	KKP#KKQ		⏑⏑⏑— # ⏑⏑—⏑	*munsariḥ*
v.	KPK#KQK	*	⏑⏑—⏑# ⏑—⏑⏑	*xafīf*
vi.	PKK#QKK	*	⏑—⏑⏑ #— ⏑⏑⏑	*muḍāriʿ*
vii.	KKQ#KKP	*	⏑⏑—⏑ # ⏑⏑⏑—	*muqtaḍab* *munsariḥ*
viii.	KQK#KKP	*	⏑—⏑⏑# ⏑⏑—⏑	*mujtaθθ* *xafīf*
ix.	QKK#PKK	*	—⏑⏑⏑# ⏑—⏑⏑	(none)

Table VI

Sequences of four short syllables can be derived only from those meters in circle IV in which a trochaic peg is followed by two cords and an iambic peg, as illustrated by the last three cases (vii-ix) in the Table. In most meters, sequences of three short syllables are generated, as shown in the first four cases (i-iv). There are only four possible sequences of three short syllables which can be generated:

(37) a. #⏑⏑⏑—#

b. * ⏑#⏑⏑—

c. * ⏑⏑ #⏑—

d. *#—⏑⏑⏑#

Since no Arabic meter contains more than one trochaic peg,

sequence (37d) will always be followed by an iambic peg as in (ix) in the Table, and therefore will always result in the unmetrical sequence of four short syllables. The remaining cases (37a-c) would seem to suggest a surface constraint to the effect that any sequence of three or more short syllables is considered unmetrical if it includes a foot boundary. We can simply say "or more" in stating the constraint because no metrical foot in Arabic has more than two cord syllables and therefore every sequence of four short syllables must include a foot boundary. If we adopted such a surface constraint, then we could allow any cord K in any meter to correspond to a short syllable (*i.e.*, all cord positions are anceps positions); then the surface structure constraint would act as a filter by rejecting as unmetrical most sequences of three short syllables. Such a solution would be a satisfactory alternative to the *muʕāqaba* constraint for most meters.

Cases (v-vi) above provide the crucial evidence for deciding between a solution using a surface constraint and one using the *muʕāqaba*, because the two solutions make different predictions for these two meters, *xafīf* and *muḍāriʕ*. The surface structure constraint would allow these deviations because they result in only two short syllables in a row; the *muʕāqaba* constraint would block them because the input string consists of $K\begin{Bmatrix}P\\Q\end{Bmatrix}K$ and $\begin{Bmatrix}P\\Q\end{Bmatrix}KK$ feet respectively. Since the two consecutive K syllables may <u>not</u> both be short in these

meters (*cf.* Freytag, pp. 110, 265), the solution using the *muʕāqaba* constraint is the correct one.[1] If *muḍāriʕ* is a rare meter in Arabic poetry, *xafīf* is not, so we cannot appeal to probability to account for the non-occurrence of the crucial surface forms.

More positively, if these two meters provide the crucial evidence needed to show that a surface constraint against sequences of three or more short syllables is inadequate, they also provide evidence for positing the existence of the metrical foot in Arabic verse. That is, the Arabic meters cannot be undivided sequences of metrical elements, *e.g.*, KKPKKPKKP, but rather, the foot boundaries are an essential part of their abstract representation. The location of the foot boundaries makes certain predictions about which surface forms will be considered metrical. For example, given that each foot must contain exactly one peg unit, the sequence of pegs and cords corresponding to the meter *madīd* can be divided into feet in two different ways:

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[1]As P. Kiparsky pointed out to me, one might still salvage the surface structure constraint by making use of the fact that a trochaic peg Q is derived from an iambic peg P. At an earlier level of representation, these crucial unmetrical sequences of two short syllables would be sequences of three short syllables with an internal foot boundary #. The right predictions would be made if the "surface" structure filter applied after the correspondence rules but *before* the rule P → Q, which is now thought of as inverting ⏑— to —⏑. However, under this solution, it would no longer be possible to define a point in the derivation at which all lines of a given poem must be abstractly identical, a point which necessarily falls after P → Q but before the correspondence rules.

(38) KP#KKP#KP#KKP

KPK#KP#KPK#KP

In such cases, the location of the foot boundaries becomes an empirical question.

3.4.4 *kāmil*, the "insertion-meter"

In our discussion of the *muʕāqaba* constraint, we have shown that it holds in all and only those meters containing PKK or KPK feet, namely *ṭawīl, madīd, wāfir, hazaj, ramal, xafīf, muḍāriʕ* and *mujtaθθ*, and that the constraint does not hold in meters containing KKP feet, namely *rajaz, sarīʕ, basīṭ, munsariḥ* and *muqtaḍab*. Except for circle V which is not relevant here, this accounts for all the meters except one, *kāmil*. Freytag includes *kāmil* in his list[1] (p. 107) of meters for which the *muʕāqaba* constraint holds, and Garcin de Tassy does not include ∪∪∪— as a possible actualization of KKP in this meter. That is, the acatalectic KKP foot in the meter *kāmil* has only four of the expected five variations predicted by the rules given thus far. A comparison of *kāmil* with *rajaz*, the meter from which we derive *kāmil*, re-

[1]Freytag includes *munsariḥ* in the list of meters for which *muʕāqaba* is said to hold, but on p.256 he states that ∪∪∪— is a possible actualization of KKP and that ∪∪—∪ is a possible actualization of KKQ in this meter, which shows that *muʕāqaba* does not hold except in the last foot. On p. 110, he notes that the *muʕāqaba* restriction applies only to the last KKP foot, which is preceded by a Q, and which would otherwise result in an unmetrical sequence of four short syllables.

veals the following paradigm:

KKP in *rajaz*	KKP in *kāmil*
* ∪∪ — ∪ —	∪∪ — ∪ —
— — ∪ —	— — ∪ —
∪ — ∪ —	∪ — ∪ —
— ∪ ∪ —	— ∪ ∪ —
∪ ∪ ∪ —	* ∪ ∪ ∪ —

Compare this paradigm with the following paradigm for the PKK foot.

PKK in *hazaj*	PKK in *wāfir*
* ∪ — ∪∪ —	∪ — ∪∪ —
∪ — — —	∪ — — —
∪ — ∪ —	∪ — ∪ —
∪ — — ∪	∪ — — ∪
* ∪ — ∪ ∪	* ∪ — ∪ ∪

Ideally, the derived meters of circle II should differ from their corresponding source meters in circle III only in allowing an additional variation produced by the rule

(39) $K \rightarrow \cup\cup / ___ K$

This is the case with the meters *wāfir* and *hazaj*. The question is why ∪∪∪— is a possible foot in *rajaz* but not in *kāmil*. We can hardly attribute this lack of correspondence to the rareness of the ∪∪∪— foot in the source meter, for this usually very rare sequence is reasonably frequent (2.4%)

in *rajaz*.[1] Since ⏑⏑⏑— and ⏑⏑—⏑— are in complimentary distribution in the Arabic meters, we might derive one from the other by the insertion of a long syllable:

(40) $\emptyset \rightarrow — / ⏑⏑___⏑$ (obligatory)

Like rule (39), rule (40) applies only in trimeter halflines, *i.e.*, the meters of circle II; unlike (39), (40) is obligatory. Thus, whenever long sequences of short syllables are generated by the normal application of the correspondence rules in the meter *kāmil*, one of two things must happen: first, any sequences of four short syllables will be rejected as unmetrical by a surface structure filter, and second, any remaining sequences of three short syllables must be broken up by the application of (40). This process can be considered part of the "conspiracy" to avoid sequences of three or more short syllables in Arabic verse. It is interesting that *kāmil* may also be the only meter to allow the insertion of an extrametrical syllable at the end of a line (*cf.*§3.6.6).

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[1] And in the meter *sarīʕ*, as well, I would think, since is virtually indistinguishable from *rajaz*, and we have considered them to be one and the same meter. The real question is whether there is a difference in acceptability of the ⏑⏑⏑— foot when *rajaz* is used for a *qaṣīda* than when it is used in other, lighter types of verse.

3.5 Incorporation of *muʕāqaba* in the correspondence rules

3.5.1 In §3.4.3 we showed that the *muʕāqaba* constraint is a necessary part of any adequate description of Arabic metrics. In this section we show that the constraint can be incorporated into the correspondence rules by making use of the foot boundary as a metrical constituent. In §3.3, we derived the following optional rule:

(36) $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} (K)____$ (opt.)

If we include an optional foot boundary in the environment of (36), then this correspondence rule can apply across foot boundaries as well as within a given foot.

(41) $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} (K)(\#)____$ (opt.)

Rule (41) is an abbreviation for the following four cases, each of which is optional:

(41) a. $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} K \ \#____$

b. $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} \ \#____$

c. $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} \ K____$

d. $K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} ____$

The use of parenthesis notation in the statement of (41) indicates that the four subcases are disjunctively ordered; thus only one of the subcases (a)-(d) may apply to the cord units following any one peg. This is, of course, exactly the situ-

ation expressed by the *muʕāqaba* constraint. Rule (41) will "shorten" any K syllable in a given foot except the second K of a KK$\{^{P}_{Q}\}$ foot and those cords preceding a peg, either P or Q, in an initial foot. To cover these remaining cases of cord-shortening, we posit the following two rules:

(42) $K \rightarrow \cup / K___\{^{P}_{Q}\}$ (opt.)

(43) $K \rightarrow \cup / \#\#___$ (opt.)

where ## represents the beginning of a halfline. The environment of correspondence rule (43) refers to the beginning of a halfline rather than to cords and pegs so that it will apply only to the first foot of the halfline. Thus rules (41) and (43) can never apply to the same foot. On the other hand, rule (42) can apply to any foot in the line, and is conjunctively ordered with respect to (41) so that both cords of a KKP or KKQ foot can be actualized as short syllables.

Before the application of the correspondence rules, the metrical representation which serves as input consists of base elements: K, P, Q and #. In the course of a derivation, the application of the various correspondence rules introduces breves and macrons into the metrical representation, so that at any particular stage, the representation is a linear sequence of both base elements and terminal symbols $\cup$ and — . The output string will consist only of terminal symbols and foot boundaries. No extrinsic ordering need

be imposed on the application of the correspondence rules.

Rules (41), (42) and (43) replace rules (32)-(35) of §3.3.1. All the basic variations in the cord positions (*zi-ḥāfāt*) in the Arabic meters can be generated by these three rules, and in addition, rules (41)-(43) incorporate the *mu-ʕāqaba* constraint. Both sets of rules are attempts to express formally the same metrical facts. We might ask which set of rules is a better description, empirically, of the facts. Suppose we tried to incorporate *muʕāqaba* into our first set of rules, which are reproduced here:

(32) $K \rightarrow \cup \; / \; \left\{\begin{matrix} P \\ Q \end{matrix}\right\} K ____$

(33) $K \rightarrow \cup \; / \; \left\{\begin{matrix} P \\ Q \end{matrix}\right\} ____$

(34) $K \rightarrow \cup \; / \; ____ K \left\{\begin{matrix} P \\ Q \end{matrix}\right\}$

(35) $K \rightarrow \cup \; / \; ____ \left\{\begin{matrix} P \\ Q \end{matrix}\right\}$

The set of rules (32)-(35) may seem to be simpler and more intuitive than rules (41)-(43); but, there is no way to block the generation of unmetrical sequences of long and short syllables as expressed by the *muʕāqaba* constraint. For example, consider any two consecutive feet written in the meter *ramal*: KPK#KPK. If (33) applies to the first of these feet, then (35) must not be allowed to apply to the second foot; and conversely, if (35) applies to the second foot, then (33) must not be allowed to apply to the first foot. This interaction between rules (33) and (35) cannot be stated in any

neat way. Only the use of parenthesis notation and the metrical constituent "foot boundary" allows us to incorporate the *muʕāqaba* constraint into our system of correspondence rules. In this sense, rules (41)-(43) provide a better description of the metrical facts.

3.5.2 We conclude this section with a list of all the correspondence rules established thus far. This completes the set of rules used in deriving acatalectic feet in Arabic verse.

(41)	$K \rightarrow \cup / \left\{\begin{matrix}P\\Q\end{matrix}\right\}(K)\ (\#)____$	(opt.)
(42)	$K \rightarrow \cup / K___\left\{\begin{matrix}P\\Q\end{matrix}\right\}$	(opt.)
(43)	$K \rightarrow \cup / \#\#____$	(opt.)
(39)	$K \rightarrow \cup\cup / ____ K$	(opt. in circle III)
(44)	$K \rightarrow —$	(opt.)
(45)	$P \rightarrow \cup —$	(opt.)
(46)	$Q \rightarrow — \cup$	(opt.)
(47)	$*\boxed{\cup\cup\cup\cup}$	(surface structure constraint)
(40)	$\emptyset \rightarrow — / \cup\cup____\cup$	(oblig. in *kāmil*)

3.6 The derivation of catalectic feet: the *ʕilal* rules

In the preceding sections, we showed that the permissible variations in the cord positions could be expressed by a set of rules(corresponding to the *zihāfāt*) whose applica-

tion is determined solely by the metrical environment stated in terms of abstract constituents, K, P, Q and #. This small set of rules replaces a large number of traditional mnemonic rules whose application is determined not only by the environment (specification of the abstract foot to which the rule applies) but also by a subset of the meters in which that foot is found to which the rule is allowed to apply. In this section, we will extend the set of rules to cover the derivation of catalectic and hypercatalectic feet. We use the traditional term *ʕilal* (sg. *ʕilla*) to refer to three kinds of variation: (i) the deletion of a cord unit K in a halfline-final foot, "cord deletion", (ii) the deletion of a short syllable in a peg, turning a two syllable iamb or trochee into a single long syllable, "peg shortening," and (iii) the insertion of an extrametrical cord. This third type of variation is very limited in Arabic verse, and will not concern us here; the other two types of variation are very general processes in Arabic metrics. We consider the rules of "peg shortening" to be correspondence rules, but the rules of "cord deletion" and "cord creation" to be part of the rules which establish the abstract patterns. We will discuss a number of traditional rules to show that they can be collapsed in the same way as the traditional *zihāfāt*. A small set of rules is proposed which, together with the already established correspondence rules of §3.5.2, will acoount for the catalectic feet which occur in the Arabic meters. Our

analysis differs from the traditional analysis primarily in the assumption of certain constraints on deletion rules: we suggest that it is never necessary to delete either an iambic or trochaic peg unit. Finally we show how the correspondence rules account for the number of different final feet, both catalectic and acatalectic, occurring in each meter.

The reader is referred to Appendix A, rules (8)-(14), (18), (21)-(25) and (28)-(32), for the traditional formulation of the *ʕilal* rules. It is assumed throughout this section that the rules affect only the final foot of a halfline unless explicitly stated otherwise.

3.6.1 Cord deletion.

Perhaps the major *ʕilal* rule is *ḥaðf* (A-21), which in our notation deletes the final K of any KPK, PKK or PK foot. *Ḥaðf* is said to apply in the meters *ṭawīl*, *madīd*, *hazaj*, *ramal*, *xafīf*, *muḍāriʕ*, *mujtaθθ* and *mutaqārib*. In addition, there is a rule *qaṣr* (A-9) which deletes only the second letter of a final cord unit, making the preceding syllable an "extra long" $C\bar{V}C$. *Qaṣr* is said to apply in the same meters as *ḥaðf*. Since we have already shown above (§2.2.1) that we need not distinguish between $C\bar{V}C$ and other long syllables, we may consider *qaṣr* and *ḥaðf* to be the same rule, since they have the same effect. The Arab grammarians also include under *qaṣr* the case where KQK ——⏑— becomes ————. This

we analyze as a case of Q → —(*cf.* §3.6.3).

Our rule of K-deletion applies, therefore, to the feet PK, PKK, KPK and KQK. If we look at the meters in which this rule is said to apply, we observe that all meters ending in a K are included except *wāfir* and the dimeter *muḍāriʕ*. With respect to *wāfir*, we find that there is another rule called *qaṭf* (A-24) which has precisely this effect, and is said to apply only in this meter. Clearly *qaṭf* is part of the same process of cord deletion, which we formulate as the following rule:

(48) K → Ø/____## (opt.)

where ## represents the end of a halfline. This rule says that any final cord may optionally be deleted. All of the eight basic foot types have been mentioned as subject to this rule except QKK, which occurs finally only in dimeter *muḍāriʕ*. *Muḍāriʕ* is usually said to occur only in acatalectic form, perhaps due to its rareness, or more likely, because it is always dimeter, and all the dimeter meters, *muḍāriʕ*, *muqtaḍab* and *mujtaθθ*, appear to be used only in acatalectic form (*cf.* Wright). However, Freytag lists a few catalectic forms for these meters, and the prosodists allow at least in theory for certain *ʕilal* rules to apply, for example, *taššīθ* (A-8), *qaṭʕ* (A-10) and *ḥatm* (A-30). A catalectic dimeter *muḍāriʕ* would have the form ∪—KK#—∪—.

Two other traditional rules which have the same effect

of cord deletion are *jabb* (A-29) and *hatm* (A-30). These two rules delete both final cords in a PKK foot. *Jabb*, which produces a CVCVC ∪— final foot, is said to apply only in the meter *hazaj*, whereas *hatm*, which produces a CVCV̄C ∪— foot, is said to apply in the meters *hazaj*, *ṭawīl* and *muḍāriʕ*.[1] The only other meter with a PKK foot is *wāfir*. None of the *ʕilal* rules given in Garcin de Tassy would generate a catalectic ∪— foot in this meter, but Freytag (p. 451) gives the following example of a tetrameter *wāfir*[2] from the poet *ʕaṭā Muhammad ben Sayyid Fataḥ Allah:*

∪— ⏑ — | ∪ — — —| ∪ — — — | ∪ —
saqāmī kulla waqtin zāda minnī bil-ʕanā

∪ — — — |∪ — — —| ∪ — — — —| ∪ —
falā fattaštumū ḥālī bimā qad 'asʕafā.

"My sickness increases every time out of worry, and you (pl.) do not look after my condition with what would help."

The most natural analysis here would be to assume the deletion of both final cords in a tetrameter *wāfir*. Freytag does not mention the possibility of deleting both cords in *ṭawīl* or *hazaj*, which suggests that this is a very rare variation of PKK.

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[1] *hatm* applied to *muḍāriʕ* would leave a final Q: —∪ ##, which should, of course, be metrically impossible. Without the actual lines, it is impossible to tell if alternations between halflines support the analysis with Q, or whether someother analysis is preferable.

[2] Note that K → ∪∪ happens not to apply in this line. I was unable to locate the poem elsewhere to illustrate that the meter is different from *hazaj*.

3.6.2 Peg shortening

If a foot ends in a peg unit rather than acord, there are still other rules to produce the same effect, namely, the dropping of a syllable. In this case, P will correspond to a single long syllable instead of a two-syllable iamb. The process of peg shortening is represented by the following rule:

(49) P → —/____## (opt.)

Rule (49) replaces several traditional rules indluding *qaṭʕ* and *taššīθ*. *Qaṭʕ* (A-10) has the effect of deleting the short syllable of the iambic peg of a KKP or KP foot, or in a KPK foot if the final K has itself been deleted. That is, this rule may apply to any P at the end of a halfline, whether or not that P was final in the abstract pattern. *Taššīθ* (A-8) also deletes the short syllable of a non-final iambic peg, in which case a KPK foot corresponds to ———— .

(50) P → —/____K## (opt.)

This rule is said to apply in all the meters containing a KPK foot: *madīd, ramal, xafīf, mujtaθθ*.

Rules (49) and (50) can be collapsed into a single rule:

(51) P → —/____(K)## (opt.)

3.6.3 Trochaic peg shortening and deletion

The Arab prosodists mention at least two rules which shorten or delete a trochaic peg, namely *kasf* (A-18) and *ṣalm* (A-23). Let us consider the three possible cases separately. The only meter ending in a QKK foot is dimeter *muḍāriʕ*, PKK QKK ‖ PKK QKK, which does not have any catalectic forms. That is, the trochaic peg cannot be shortened or deleted in a QKK foot. This is to be expected, however, since an iambic peg in a PKK foot also cannot be shortened.

The only meter ending in a KQK foot is *xafīf*, which has a dimeter form, KPK KQK ‖ KPK KQK. According to Freytag (pp. 263-4), the last foot in dimeter *xafīf* may be either the canonical ⏑—⏑— or the catalectic ⏑———. In particular there are lines of the form —⏑——|——⏑—‖—⏑——|⏑——, where the final foot ⏑—— alternates with ———⏑— at the end of the first halfline. Since both actualizations correspond to KQK, the final foot can only be analyzed as

K Q K
| | |
⏑ — —

This cannot be a simple case of K-deletion, because this rule would make the breve of the trochaic peg line-final.[1] We

[1] The correspondence rules cannot read ⏑ → — / ___ ##. Correspondence rules relate sequences of abstract metrical constituents to sequences of terminal symbols (breves and macrons); they do not interchange terminal symbols.

would expect to find ——∪— alternating with ∪— ∪—, and ∪—— alternating with ———— since the first syllable of this foot is an anceps position. Freytag does not mention what the possible variations are in dimeter *xafīf (cf.* Wright, p. 367).

None of the sixteen meters has a final KKQ foot except *sarīʕ*, which was discussed earlier. However, under the meter *munsariḥ*, Freytag (pp. 255-6) lists a type called *manhūk* consisting of only two feet: ## ——∪—|———— ##, presumably derived from KKP KKQ. However, there is no reason not to derive it from KKP KKP instead, especially since there exists a type of *rajaz manhūk* consisting of only two feet: ## ——∪—|——∪— ##. The so-called *munsariḥ* could be derived from *rajaz* by applying the already established rule of peg shortening (51). Freytag does not mention the occurrence of any dimeter forms of *munsariḥ:* KKP KKQ ‖ KKP KKQ; if such forms exist, we would expect the final foot to be defective as it is in the *munsariḥ manhūk* and in *sarīʕ*. Thus there are no clear cases where it is necessary to assume that a final Q is shortened.

To account for the alternations in dimeter *xafīf* we need a rule of trochaic peg shortening parallel to that for iambic peg shortening:

(52) Q → —/____K##

Since (52) is exactly parallel to (50), one might wish to

state both peg shortening rules in parallel form, collapsing them into

(53) $\begin{Bmatrix} P \\ Q \end{Bmatrix} \rightarrow \text{—} / \underline{\quad\quad} (K)\#\#$

A shortened trochaic peg will always be indistinguishable from a shortened iambic peg, unless there are alternations between shortened and unshortened Q's in the corresponding feet of the two halflines.

3.6.4 Other cases of peg-shortening

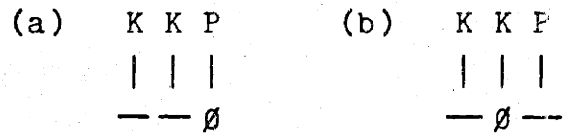
Freytag (p. 170) mentions two rules which are cases of peg-shortening: the rule *θalm* makes PK correspond to ——, and the rule *θarm* makes PK correspond to —⏑. Obviously, these two rules are cases of the same process of peg-shortening, where K can be either ⏑ or — as expected. According to Freytag, both of these variations are most frequent at the beginning of the first half (of any line in the poem?). Freytag goes on to say that at first, the —·— foot was used only at the beginning of a line; then later the rules were relaxed to allow the foot in the middle of lines, and then finally at the beginning of the second halfline, where it is rarest. *θalm* and *θarm* are discussed in Garcin de Tassy under the rule of *xarm* (A-31).

(54) $P \rightarrow \text{—} / \#\# \underline{\quad\quad}$

Rule (54) is much more typical of Persian meters (*cf.* Ch. IV).

3.6.5 Peg deletion

Most of the apparent cases of peg deletion lend themselves to reanalysis involving only cord deletion and peg shortening. The case most likely to involve the deletion of either an iambic or trochaic peg is that of the rule *salm* (A-23), which is said to produce —— from KKP in the meters *munsariḥ* and *muqtaḍab* and from KKQ in *sarīʕ*. In this case there are two possible derivations: (a) allow the deletion of a peg in such a foot, following the traditional analysis, or alternatively (b) assume that the peg corresponds to one of the remaining long syllables, and that it is one of the cords which deletes. These two alternatives are represented schematically below:



Solution (b) makes use of an already established rule, (48), by extending the environment in which cord deletion is allowed to apply:

(55) K → ø/___ ′P)$_a$## Condition: if a, then only in circle IV

This solution would not work for KKQ if the rule of peg shortening is restricted to iambic pegs; however, this is not a problem since we consider *sarīʕ* to be a submeter of

rajaz, and its abstract pattern is therefore KKP KKP KKP and not KKP KKP KKQ.

Solution (a), on the other hand, introduces a totally new kind of rule, namely peg deletion, which is counter to the peg/cord distinction which is the basis of Arabic metrics. Such a rule, like the extension of cord deletion, would have to be restricted to circle IV. It should be noted that the cases covered by *ṣalm* are very rare, and are not even mentioned by Freytag, except in the case of the questionable meter *sarīʿ*.

3.6.6 Minor insertion rules

In addition to the general rules of cord deletion, cord shortening and peg shortening, there are two minor rules which add extrametrical syllables to create a hypercatalectic line in certain meters. The most common of the two minor rules is *tarfīl* (A-15), which adds a cord after a final iambic peg in KKP and KP feet only. In theory, the addition of an extrametrical syllable should therefore be permitted in the meters *basīṭ*, *kāmil*, *rajaz*, *munsariḥ*, *muqtaḍab* and *mutadārik*; however, most prosodists restrict *tarfīl* to *kāmil*, *rajaz* and *mutadārik*. This variation may be even more restricted. Hölscher (p. 380) comments: "Die Erscheinung des *tarfīl* beschränkt sich auf das Versmass *ragaz* und seinem unmittelbaren Abkömmung *kāmil*....bei dem ganz jungen Versmasse *mutādarik* liegen die Dinge anders," implying that *mutadārik* should not

be included in the list of meters subject to *tarfīl*. Ullmann (p. 12) disputes Hölscher's examples for *rajaz*. This leaves *kāmil* as the only meter which allows the insertion of an extra syllable at the end of a line. It is interesting that it is also the meter *kāmil* for which we had to posit a rule inserting a long syllable, rule (40).

The other minor rule is called *xazm* (A-32). *Xazm* is the addition of at most four letters, but not more than two syllables of any length, at the beginning of a line, usually at the beginning of the first halfline rather than the second. According to Freytag (p. 85), this poetic license has no other purpose than to allow the poet to add a syllable "welcher zum Sinne nothwendig war, wie Z.B. eine copula *ḥarf al-ʕaṭf*" [conjunction *wa* "and"]. One wonders whether or not this license is restricted to such grammatical categories as conjunction, article, interjection, etc.

3.6.7 Finally, we give in Table VII a summary of all the rules of our metrical grammar, with the exception of the minor rules just mentioned. An important theoretical observation can be made about the list of rules in Table VII: it is possible to define an intermediate level of representation at which all lines of any given poem must be identical. All the correspondence rules except (53)"peg shortening" come after this point. The point in the derivation at which H-copying (T_7) applies represents an intermediate level at which all

	$H \rightarrow F + F + (F) + (F)$	
	$F \rightarrow PKK$	
	T_1: Cyclical Permutation	
(6)	T_2: $K \rightarrow \emptyset / ___ KX$	(circle V)
(15)	T_3: $K \rightarrow \emptyset / \left\{ \begin{matrix} \#\#XP \\ ___ P\overline{X\#\#} \end{matrix} \right.$	(circle I)
	T_4: $P_i \rightarrow Q$	(circle IV)
(25)	T_5: $*QZ$	
(26)	T_6: F $\underbrace{XQ(K)}$ $1 \quad 2 \quad \Rightarrow 1\ 2\ 1$	(obligatory)
	T_7: $H \rightarrow H + H$	(H-copying)
(55)	T_8: $K \rightarrow \emptyset / ___ (P)_a \#\#$	(K-deletion)
(53)	$\left\{ \begin{matrix} P \\ Q \end{matrix} \right\} \rightarrow — / ___ (K)\#\#$	(Peg shortening)
.....level of abstract identity.....		
(54)	$P \rightarrow — / \#\# ____$	
(41)	$K \rightarrow \cup / \left\{ \begin{matrix} P \\ Q \end{matrix} \right\} (K)(\#) ___$	(K-shortening)
(42)	$K \rightarrow \cup / K ___ \left\{ \begin{matrix} P \\ Q \end{matrix} \right\}$	(K-shortening)
(43)	$K \rightarrow \cup / \#\# ___$	(K-shortening)
(39)	$K \rightarrow \cup\cup / ___ K$	(only in circle III)
(44)	$K \rightarrow —$	
(45)	$P \rightarrow \cup —$	
(46)	$Q \rightarrow — \cup$	
(47)	$* \cup\cup\cup\cup$	(surface constraint)
(40)	$\emptyset \rightarrow — / \cup\cup ___ \cup$	(only in *kāmil*; obligatory)

Table VII

halflines in a given poem are abstractly identical. The metrical rules between these two points are those which generate catalectic feet; the two halflines of a poem need not end in the same final foot.

3.7 Classification of the meters according to the final foot

The sixteen meters are traditionally subdivided according to the shape of the final foot of each halfline, and the submeters are named accordingly. In the meter *ṭawīl*, for example, the last foot of the first halfline (the *ʿarūḍ*) is always *mafāʿīlun*, but the last foot of the second halfline (the *ḍarb*) can be *mafāʿīlun*, *mafāʿilun* or *faʿūlun*. Therefore, *ṭawīl* is said to have one *ʿarūḍ* and three *ḍurūb*. The submeters are named according to the particular variation which the *ḍarb* undergoes. Thus, if the rule *qabḍ* (A-16) applies to the final foot of *ṭawīl* to produce ∪—∪—, the meter is called *ṭawīl maqbūḍ*; if the rule *ḥaðf* (A-21) applies to produce ∪— —, then the meter is called *ṭawīl maḥðūf*.

Table VIII, adapted from Freytag (p..159ff), lists the traditional number of *ʾaʿārīḍ* and *ḍurūb* which each of the sixteen meters is said to have. The numbers in parentheses indicate the number obtained if final CVC and CV̄C syllables are counted as one submeter instead of two; Freytag has not made this distinction in all meters in which final CV̄C occurs, however. The traditional count is misleading in at least

circle	meter	ʕarūḍ	ḍarb
I	ṭawīl	1	3
	basīṭ	3	6(5)
	madīd	3	6(5)
II	wāfir	2	3
	kāmil	3	9(8)
III	hazaj	1	2
	rajaz	4	5
	ramal	2	6(4)
IV	sarīʕ	4	7(5)
	munsariḥ	3(2)	3(2)
	xafīf	3	5
	muḍāriʕ	1	1
	muqtaḍab	1	1
	mujtaθθ	1	1
V	mutaqārib	2	5(4)
	mutadārik	2	4(3)

TABLE VIII

two other ways: first, trimeter and dimeter forms of a meter are counted as separate submeters even if they have the same *ḍarb*, and second, not all of the occurring *ziḥāfāt* variations are listed for some of the meters, especially those based on KKP or KPK. The numbers in the table therefore are only an imperfect indication of the number of different variations occurring in a given meter.

If we regroup the sixteen meters according to the abstract foot on which they are based (PKK, KPK or KKP) rather than according to the circle to which they belong, then it becomes clear that there is a correlation between the number of different *ḍurūb* in a given meter and the location of the peg in the abstract foot of that meter. This is done in Table IX. The reason for this correlcation becomes evident if we consider the way in which the *ziḥāfāt* and *ʕilal* rules apply to the different abstract feet. A peg unit has two variants ∪ — and — ; a cord unit also has two variations, ∪ and ——, unless it occurs line-finally, in which case it can only be long. Any foot with a final K will have fewer variations than one with a final P, since only in a KKP foot are both cord units anceps positions. Table X shows the number of theoretically possible variations for each of the three major abstract feet, subject to all the metrical rules except the rare deletion of non-final cords.

P K (K)	ʕarūḍ	ḍarb	K P K	ʕarūḍ	ḍarb	(K) K P	ʕarūḍ	ḍarb
ṭawīl	1	3	*madīd*	3	6(5)	*basīṭ*	3	6(5)
wāfir	2	3	*ramal*	2	6(4)	*kāmil*	3	9(8)
hazaj	1	2	*xafīf*	3	5	*rajaz*	4	5
muḍāriʕ	1	1	*mujtaθθ*	1	1	*sarīʕ*	4	7(5)
mutaqārib	2	5(4)				*munsariḥ*	3(2)	3(2)
						muqtaḍab	1	1
						mutadārik	2	4(3)

TABLE IX

Classification of meters by final foot and variations thereof

	P	K K	K	P	K	K K	P
cord shortening	∪— ∪—	— — ∪ —	— ∪	∪— ∪—	— —	— — ∪ — — ∪ — — ∪	∪ — ∪ — ∪ — ∪ —
cord deletion	∪—	— ∅	— ∪	∪— ∪—	∅ ∅	rare	
P and K shortening	*— *—	— — ∪ —	— ∪	— —	— —	— — ∪ — — ∪ — — ∪	— — — —

Table X

Expected variations in final foot

To summarize, if the final foot in a given meter is PKK, then we would expect to find approximately three different final feet in common use; for meters ending in KPK, we would expect about six different final feet, and for meters ending in KKP, we would expect about eight different variations. Of course, *wāfir* and *kāmil* would be expected to have additional variations due to the application of the correspondence rule K → ∪∪. Note that in any given poem, the last two syllables will usually be fixed in length due to the requirements of rhyme rather than meter.

In the following sections, we will consider the different abstract feet separately.

3.7.1 Feet with initial peg: PKK, PK and QKK

We have already mentioned that the meter *ṭawīl* has only three different final feet: *mafāʕīlun*, *mafāʕilun* and *faʕūlun*. In other words, in this meter, both cord shortening and cord deletion apply to the abstract PKK foot, but peg shortening does not. This was expressed in the statement of correspondence rule (53) by allowing for only one K following the P. This also seems to be the case for the other meters in this group: *wāfir*, *hazaj* and *muḍāriʕ*. Only in the meter *mutaqārib*, where the final PK foot is said to reduce to — , does peg shortening seem to apply. From the data given in Freytag for each meter, we note that at least the following forms occur, as given in Table XI. Read QKK for PKK under the column for *muḍāriʕ*, making the necessary inversion of long and short syllables.

	P K K	*ṭawīl*	*wāfir*	*hazaj*	*muḍāriʕ*
K → ∪∪	∪ — ∪∪ —	*	✓	*	*
K shortening	∪ — — —	✓	✓	✓	✓
	∪ — ∪ —	✓	?	?	
K deletion	∪ — — ∅	✓	✓	✓	
P and K shortening	— — —	*			
	— ∪ —	*			

TABLE XI

For the meter *mutaqārib*, we have the following variations:

mutaqārib	P K
abstract	∪ — —
cord deletion	∪ — ∅
peg shorten	— ∅

TABLE XII

3.7.2 Next we consider the meters ending in a KPK foot: *madīd*, *ramal*, *xafīf* and *mujta*θθ. (There are no meters which end in KQK.) The meter *madīd* has been included in this group because it always occurs in trimeter rather than tetrameter form, and therefore ends in KPK rather than KP. Again, based on information given in Freytag, we note the occurrence of at least the following variations in the meters of this group:

	K P K	*madīd*	*ramal*	*xafīf*	*mujta*θθ
abstract	— ∪ — —	✓	✓	✓	✓
cord shortening	∪ ∪ — —	✓	✓	?	✓
cord deletion	— ∪ — ∅	✓	✓	✓	*
	∪ ∪ — ∅	✓	✓	✓	*
peg & cord shortening	— — —	*	*	✓	✓
	∪ — —	*	*	✓	?
peg short. & cord delete	— — ∅	✓	*	✓	*
	∪ — ∅	*	*	*	*

TABLE XIII

The KPK foot has more variation than the PKK foot both because the first cord is an anceps position and because the peg is subject to shortening (cf. rule (3-23)). In the meter *madīd*, the peg can be shortened only when it is foot-final, i.e. only when the final K has been deleted leaving the peg in final position. It would seem, therefore, that a medial iambic or trochaic peg can be shortened only in circle IV.

3.7.3 By far the largest and most interesting group is the set of meters ending in a KKP foot: *basīṭ*, *kāmil*, *rajaz*, *sarīʿ*, *munsariḥ*, *muqtaḍab*, or in a KP foot: *basīṭ* and *mutadārik*. No meter ends in a KKQ foot.

K K P		*basīṭ*	*kāmil*	*rajaz*	*sarīʿ* (KKQ)	*munsariḥ*	*muqtaḍab*
K → ⏑ ⏑	⏑ ⏑ — ⏑ — ⏑ ⏑ — —	* *	✓ ✓	* *	* *	* *	* *
abstract	— — ⏑ —				*		
cord shortening	⏑ — ⏑ — — ⏑ ⏑ — ⏑ ⏑ ⏑ —	? ? ?	✓ ✓ *	✓ ✓ ✓	* * *	? ✓ *	? ✓ *
peg & cord shortening	— — — ⏑ — — — ⏑ — ⏑ ⏑ —	✓	✓ ? ? ✓	✓ ✓ * *	* * ✓ ✓	✓	
peg & cord sh., K del.	— ∅ — ⏑ ∅ —		✓	* *	✓ ?		

TABLE XIV

For the final KP foot we have the following variations:

	K P	*basīṭ*	*mutadārik*
abstract	— ∪ —	?	✓
cord shorten	∪ ∪ —	✓	✓
peg shortening	— — ∪ —	?	?

TABLE XV

Chapter IV

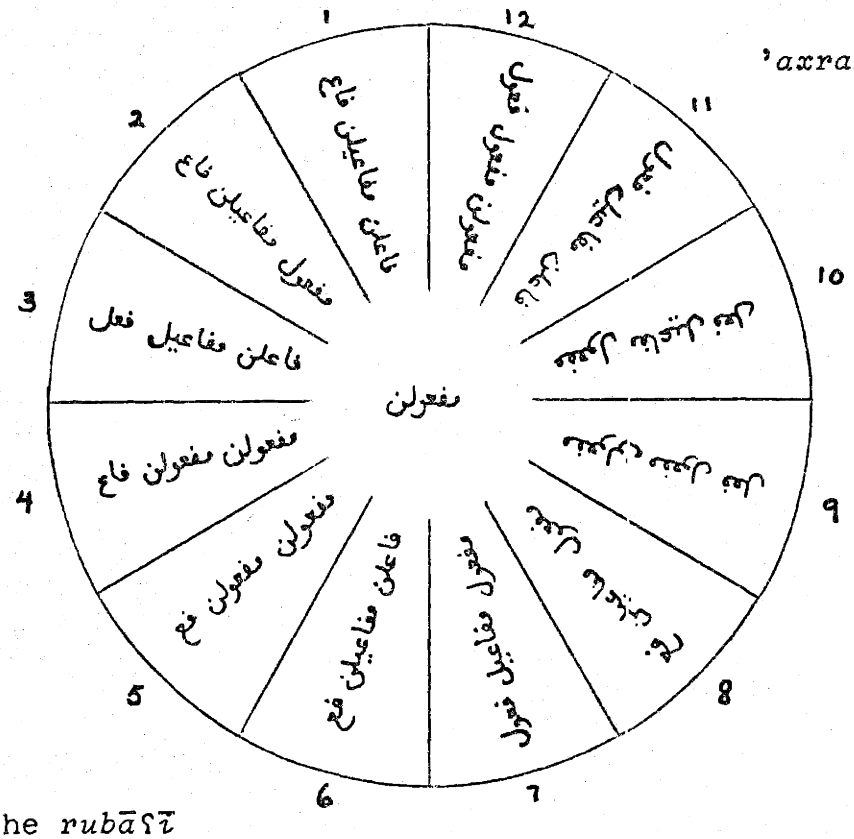
The *Rubāʿī*

The Persian verse form best known to the western world is undoubtedly the *rubāʿī* (pl. *rubāʿiyyāt*). The *rubāʿī* is simply four halflines or a quatrain in one of a number of traditionally fixed meters and with rhyme scheme aaba, or more rarely aaaa. The origin of the *rubāʿī* is a subject of scholarly controversy: Is the Persian *rubāʿī* derived from the Arabic or Turkish quatrains, or is it the source for the latter? Is it an independent New Persian creation, or a development of Middle Persian ballad verse? The question of origin is far too complex to be answered conclusively here (perhaps even irrelevant), but certain observations about the traditional analysis of the *rubāʿī* and other Persian meters within the framework of Arabic versification can be made. While the quatrain is an almost universal verse form (Meier, 1963, p. 1), and while a "genetic" relationship between the *rubāʿī* and the Arabic meter *hazaj* would be difficult to establish, there are nonetheless formal similarities between them which cannot but be suggestive of some historical connection. The real question is whether these similarities are an indication of Arabic influence on Persian verse, or merely an artifact of the Procrustean superimposing of Arabic metrical theory, *ʿArūḍ*, on Persian verse. We will begin by presenting the various forms of the meter of the *rubāʿī* and then compare them with both the Arabic *hazaj* and the Persian *hazaj*.

4.1 The metrically interesting and characteristic feature of the *rubāʕī* is the variety and apparent irregularity of its meter. There are said to be 24 different forms of the half-line, which are in traditional accounts of prosody derived from a *hazaj* halfline containing four feet. That is, the *rubāʕī* meter is thought to be made up of variations on the abstract foot *mafāʕīlun*, or PKK in our notation. Each of the 24 possible halflines can occur with any of the others in a single quatrain (Meier, p. 6; Blochmann, p. 68), *i.e.* the 4 halflines of a *rubāʕī* may consist of any four of the 24 variations. The only obvious regularity in the 24 variations is that the first two syllables are always long.

The schemata of the possible sequences of long and short syllables have been described and represented graphically since the 12th century (Meier, p. 5). The traditional graphic representation is in the form of two trees or occasionally circles, one for each of the two possible initial feet. The example circles shown on the next page are adapted from Garcin de Tassy, pp. 340-1. This form of representation in traditional prosody was undoubtedly modeled after the five metric circles of al-Xalīl in an attempt to incorporate the *rubāʕī* into the framework of classical Arabic metrics; however, there is an essential difference in function. Al-Xalīl's metric circles serve to express abstract interrelationships within the system of meters, whereas the *rubāʕī* circles are nothing more than a graphic listing of the 24 possible

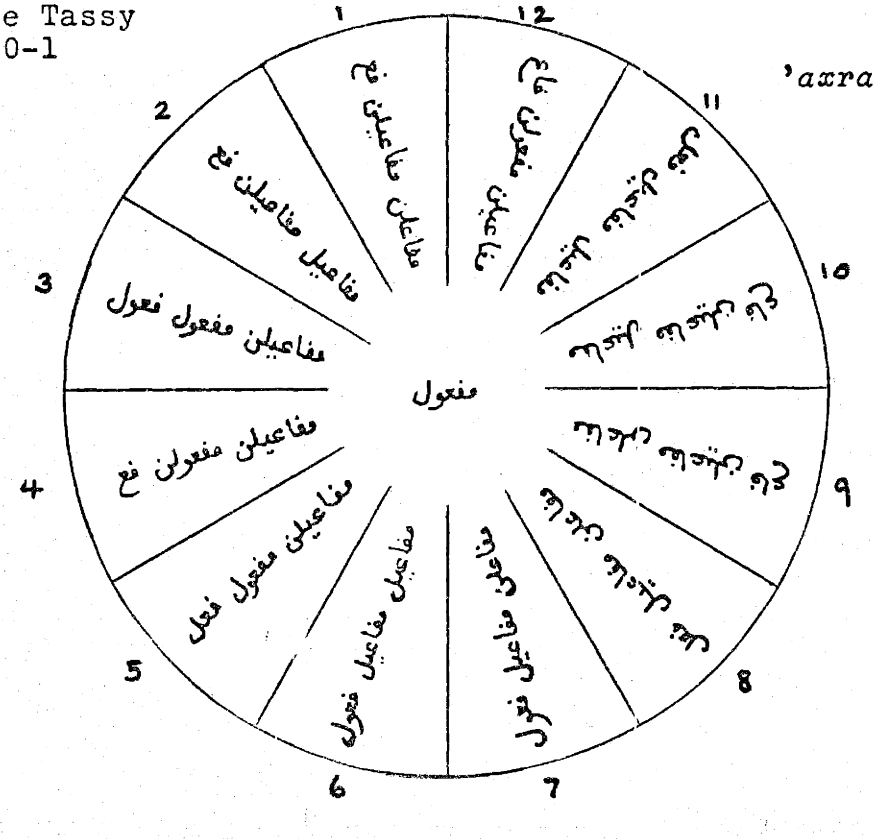
'axram



Meters of the *rubāʕī*

adapted from
Garcin de Tassy
pp. 340-1

'axrab



sequences of long and short syllables. We will find other ways in which the other Persian meters, as well as the *rubāʿī*, are essentially different from the Arabic.

One major difference is that the realizations of each foot in the halfline are not independent, that is the choice depends on what form the preceding foot assumes. This is clearly shown in the following table, taken from Meier, p. 5:

	1st foot	2nd foot	3rd foot	4th foot
(*'axrab*)	– – ∪	∪ – ⏑ –		
		∪ – – ∪		
(*'axram*)	– – –	– – ⏑		
		– ∪ –		
		∪ – – –	– – ⏑	
		– – –		
		∪ – ∪ –		
		– ∪ –	∪ – – ⏑	
		∪ – – ∪		
		– – ∪		
			∪ – – –	–
			– – –	
			∪ – – ∪	∪ –
			– – ∪	

Table XVI

Table XVI is supposed to describe the same metrical facts about the *rubāʕī* as the more traditional circles. Observe that the table accounts for only twelve distinct combinations of feet instead of the twenty-four different halflines listed in the two circles. This discrepancy is due to the fact that the Arabic script makes it necessary to distinguish between a long and an extralong (*'izāla*) final syllable (فَعْ versus فَاعْ , for example), both of which are represented simply by — in the table, and counted as metrically long according to our definition. Henceforth, we shall not make this distinction, and shall consider the *rubāʕī* to have only twelve distinct forms.

Before turning to the question of the relationship between the *rubāʕī* and *hazaj*, we should comment on the division of the halfline into feet. The division made in Table XVI and in the circles is based on the traditional assumption that the meter *hazaj* underlies the *rubāʕī* meter. If that assumption is dropped, then the halfline can be divided into three or four feet (both typical number of feet in Persian verse) in any number of ways. Here one gets into the subjective area of the poet's or the reader's feeling for rhythm (which Rückert calls *Taktgefühl*). Rückert (p. 377) seems willing to use his own *Taktgefühl* as a basis for locating feet boundaries, and scans the line this way:

— — ⏑⏑ —|— ⏑⏑ —|— ⏑⏑ --

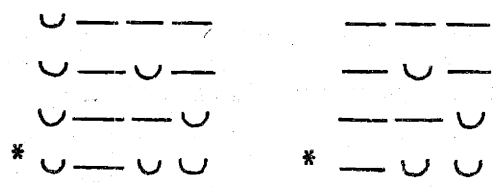
This scansion differs from both the Arabic scansion and Meier's

proposed scansion (see below (58)). One possible way to resolve the question of foot boundaries might be to do statistical studies for the *rubāʕiyyāt* similar to those Jan Rypka (1936) did for the epic *mutaqārib*, showing a correlation between word stress and teh theoretical foot boundaries: "Alors que, conformément au schéma fondamental, les brèves marquent le début du pied, l'accent tend à mettre en valeur la fin du pied" (p. 206). Such a study would have to include both Arabic and Persian poetry written in *hazaj* as well as *rubāʕiyyāt* in order to shed any light on the questinn. For the moment, we will accept the traditional assumption that the *rubāʕī* is derived from *hazaj*, examine the consequences, and then decide whether or not that assumption is justified. It may be worth noting here that Rückert (pp. 65, 387) cites a twenty-fifth possible variation on the meter not listed elsewhere: — — ⏑⏑ — |— ⏑⏑ — | — ⏑⏑ — —, as in Hāfiz no. 655, Brockhaus edition. This variation with an extra syllable in the last foot seems even more like tetrameter *hazaj* (although not with Rückert's division into feet, of course).

4.2.1 In this section, we examine the *rubāʕī* to see in what respects it is similar to or different from (i) the Arabic *hazaj* and (ii) the Persian *hazaj*. In making this comparison, we assume that the abstract metrical pattern of the *rubāʕī* is the same as that of *hazaj*, except that it is tetrameter rather than the more usual (in Arabic) trimeter. The basic pattern of the *rubāʕī* halfline is PKK PKK PKK PKK.

In order to derive all twelve forms of the *rubāʕī* and only those twelve, we must change the constraints on the correspondence rules proposed in Chapter III to account for the Arabic meters. If we allow peg shortening to apply in PKK feet, thenthis foot, subject to the *muʕāqaba* constraint, will have six distinct realizations:

(56)



In Arabic verse, the surface actualization of each foot in a halfline is in theory independent of the form of any other foot, subject only to constraints such as *muʕāqaba* which have been incorporated into the statement of the correspondence rules. (In practice, the poet will not choose to make use of all of the theoretically allowed freedom in a single poem; the theoretical independence of the feet is apparent only when one considers the whole body of poetry.) However, for the *rubāʕī*, it is obvious that the feet are highly interdependent in theory as well as in practice. In this respect the *rubāʕī* follows Persian metrical tradition rather than Arabic.

The second foot of the *rubāʕī* allows all six possible realizations of PKK as can easily be seen in Table XVI. We can make use of the *muʕāqaba* constraint to explain why the

theoretically possible sequences ∪—∪∪ and —∪∪ are unmetrical actualizations of PKK for the *rubāʕī* as well as for the Arabic meters. The three other feet in the *rubāʕī* are restricted to fewer than those six variations in (56), however. It is possible to incorporate these restrictions, *i.e.*, the interdependence of the four feet, into a system of correspondence rules for the *rubāʕī*, just as we incorporated the *muʕāqaba* constraint into our formulation of the correspondence rules for Arabic. We might propose the following set of correspondence rules to account for all the variations of the *rubāʕī*:

(57)	a.	KK → Ø/___##	(obligatory)
	b.	K → ∪/P___	(opt. only in F_2)
	c.	K → ∪/PK___	(optional)
	d.	P → ∪—/∪(K)#___	(oblig.)
	e.	K → —	(opt.)
	f.	P → —	(opt.)

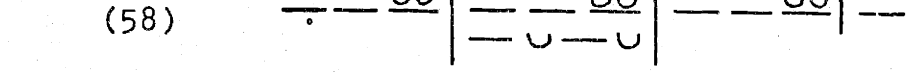
This set of six rules applies to the abstract pattern $(PKK)^4$. It can easily be verified that these six rules generate all and only the twelve distinct strings given in Table XVI. Every halfline will begin with two long syllables as a consequence of the way that rules (57d) and (b) have been formulated; these two rules restrict the actualization of P as ∪— and of K as ∪. The first syllable will always be long because (d) can never apply to the initial peg P. The first K

of the first and third feet will be long because of the restriction imposed on (57b). This restriction is admittedly ad hoc and unmotivated as states, but necessary if the metrical facts are to be described within the *hazaj* framework. Obviously, the need to impose such unmotivated restrictions makes this set of rules in some sense less "natural" than the set of rules proposed to account for the Arabic meters. When too many such constraints must be imposed on the correspondence rules, then the framework may be the wrong one, and the prosodist should look for another analysis.

4.2.2 Working within the framework of the traditional Arabic theory, we observed that only the second foot is a typical *hazaj* foot admitting all six variations of PKK subject to the *muʕāqaba* constraint; the other three feet are much further restricted. There are other ways of describing the same set of variations. Meier (p. 6) summarizes the variations in the following way:

> As we see, the sum of the quantitative values in all combinations is equal to 10 long or double morae. The number of short syllables is therefore always even, varying between 0 and 6; the number of longs is between 10 and 7. If we have 10 long syllables, which is rare..., then there are no short syllables. If there are 9 longs, then there must be two shorts; for 8 longs, there are 4 shorts, and for 7 longs, 6 shorts. The total number of syllables varies, therefore, between 10 and 13, that is, the halfline can have 10, 11, 12 or 13 syllables; the more shorts, the more syllables. Each of the 4 halflines of a *rubāʕī* can follow another of the possible distributions of longs and shorts. (my translation)

This statement is reminiscent of the ARabic characterisation of the circles in terms of the number of letters (morae) contained in the representative mnemonic words. Meier goes on to suggest yet another way of describing the data. He suggests that the description can be simplified by moving or removing the foot boundaries (*Taktstriche*) and giving up the assumption that the *rubāʕī* is derived from *hazaj*, thus denying any synchronic relationship or influence between *hazaj* and the *rubāʕī*. He proposes (p. 6) the following scansion instead (attributed to his student, Dr. Benedikt Reinert):

(58) 

For this scansion, just as in the Arabic framework, there is a very simple abstract pattern underlying the *rubāʕī* halfline:

(59) XXY XXY XXY X

Under this analysis, the correspondence rules are X → — and Y → ⏑⏑, plus an additional rule which allows the metathesis from — — ⏑⏑ to a ditrochaeus foot — ⏑ — ⏑ in the second foot only. One might wish to consider the *rubāʕī* halfline to be basically decasyllabic, a 10-beat line, where every third position can be realized as two shorts instead of a long. The optional substitution of the ditrochaeus in the second foot does seem unmotivated in this framework, whereas with the framework of *hazaj*, this was motivated and natural, and it was the restrictions on the other feet which were unmotivated.

There is the further question of the equivalence of two short syllables and a long syllable, and the role of that equivalence[1] in Persian verse (remember that the meters *kāmil* and *wāfir*, derived by the application of K → ∪∪, are not used in Persian poetry). However, this representation, (58), is probably the easiest way for a student to remember all twelve variations, and if one considers the *rubāʕī* apart from the historical and literary context of Persian poetry as a whole, (58) is, in my opinion, an attractive candidate for a synchronic description of the *rubāʕī*.

Meier, however, denies even a diachronic relationship between *hazaj* and the *rubāʕī*, which he considers to be a New Persian development. After agreeing that the *fahlawī*, whose meter is given by $\left\{\begin{matrix}\cup\,\overline{}\\ \overline{}\,\overline{}\end{matrix}\right\}$ – – | ∪ – – – | ∪ – –, is probably derived from or influenced by *hazaj* despite its admittedly unArabic initial foot, he goes on to say (p. 13):

> Nun, der Fall liegt beim *rubāʕī* etwas anders. Hier haben wir es ersichtlich nicht mehr mit einem *hazağ* zu tun. Zwar haben die Perser vom *hazağ* öfters *axrab*-Verse (– – ⏑̲ statt ∪ – – ⏑̲ im ersten Fuss) gebildet. Aber die übrigen Abwandungen die im *rubāʕī* auftreten, überspannen bei weitem das, was die arabische Metrik erträgt. Die persische Versuche, das *rubāʕī* dem *hazağ*-Metrum anzuschliessen, gehen am Kern der Sache vorbei und können nurs als sehr

[1] W. Thackston has suggested to me that such sequences of two short syllables may be restricted to certain lexical items, and may best be explained as a kind of synalepha in Persian metrics. If true, this would be further support in favor of (58)-(59) as an analysis of the *rubāʕī*. This merits looking into.

> hilfreiche Faustregeln Gultigkeit beanspruchen, etwa so wie wir beim Erlernen der schwachen Konjugation im Arabischen mit Nutzen das starke Verbum zugrunde legen. In Wirklichkeit scheint bei der Findung des *rubāʕī* nur das arabische Prinzip des Quantitierens, nicht aber ein bestimmtes arabisches Metrum im Hintergrund gestanden zu haben. Um so merkwürdiger ist es, dass gerade das *rubāʕī*, in seiner grosseren Entfernung vom Arabischen, eine Form der hochpersischen, nicht der dialektischen oder halbdialektischen Dichtung ist.

The apparent contradiction which Meier notices can be resolved only by considering the ways in which other Persian meters, especially the frequent *hazaj*, are essentially different from their Arabic counterparts. Meier quite rightly questions the assumption that the rules of Arabic prosody necessarily underlie all Persian verse, but he does not carry his questioning far enough. Formally the *rubāʕī* appears to me to be intermediate between the Arabic *hazaj* and the Persian *hazaj*. We shall suggest below that the Persian application of the Arabic meters makes use only of the principle of quantity, and not of the subtle rhythmic variations which justify the abstract analysis of the meters.

Meier considers the *rubāʕī* to be formally very different from the Arabic *hazaj*. But just how far beyond the limits of Arabic metrics do the allowable variations in the *rubāʕī* go? On the assumption that the abstract PKK foot does underlie this meter, we proposed a set of six correspondence rules (57) to account for the twelve variations on that abstract

pattern. But those six rules are all strikingly similar in form to those proposed in Chapter III to account for the Arabic meters. They differ only in that no restrictions are placed on the application of the correspondence rule P → — in Persian, whereas in Arabic metrics, the rule of peg shortening (51) must be constrained so as to apply only in the last foot of a halfline, and only if that foot is other than PKK. Thus peg shortening could never apply in the Arabic *hazaj*, whereas it can apply in any foot in Persian metrics. The effect is that in Persian, — is not the highly marked actualization of P that it is in Arabic verse. This is entirely in keeping with the characteristic predominance of long syllables[1] in Persian verse. The *rubāʕī* differs from the Arabic meters not so much in the form of the correspondence rules, but in the way those rules interact.

4.2.3 If the *rubāʕī* is formally similar to the Arabic how does it compare to the Persian *hazaj*? It seems to me that the Persian *hazaj*, like the other classical Persian meters, is far more un-Arabic in its use than the *rubāʕī*.[2]

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[1]The ratio of long syllables to short in Persian prose is approximately 2:1 (Rypka, 1936, 204), but especially in poetry, long sequences of long syllables do occur, in the extreme case as many as 10 longs in a row in the *rubāʕī*. This would be impossible in Arabic verse, where the limit is three or four.

[2]Rückert apparently shared this feeling. Commenting on the metrical variety of the *rubāʕī* he says: "keines der "ubrigen persischen Versmasse hat eine solche Freiheit der Abwechselung, dergleichen diese Schema zeigt. Sie sind alle viel beschränkter, als die arabischen deren grössere Freiheit nur dieses Versmass des persischen Rubâʕî theilt" (p. 65). He

Every variation on PKK occurs, but there is one essential difference: for a given poem the sequence of long and short syllables is fixed once the variations in the first line have been chosen. A study of the meters of Persian poetry must include a list of the occurring sequences of longs and shorts rather than a list of abstract patterns together with a set of correspondence rules.[1] Again ignoring the distinction between long and extralong final syllables, we find at least fourteen such sequences (*cf.* Rückert, p. 386, for the most complete list); these sequences are listed in Table XVII. If the abstract pattern for Persian *hazaj* is PKK PKK PKK (PKK), then we can determine a new set of correspondence rules to account for the variations found in Table XVII.

(60) a. $K \rightarrow \emptyset / ___ \#\#$ (opt.)

b. $K \rightarrow \cup / P ___$ (opt.)

c. $K \rightarrow \cup / PK ___$ (opt.)

d. $P \rightarrow \cup - / \cup (K) \# ___$ (oblig.[2])

e. $P \rightarrow —$ (opt.)

f. $P \rightarrow \cup —$ (opt.)

---

attributes the freedom of the *rubāʕī* to its great frequence and to its readily identifiable form as a quatrain, which would make a strict meter unnecessary. The meter of the other kinds of Persian poetry could not be determined, he claims, if the variety were not strictly limited. This argument is difficult to accept, however, for it fails to explain why the Arab *qaṣida* allows such freedom when the Persian *qaṣida* does not.

[1] *Cf.* Rypka(1936, 193): "les figures métriques...en persan...se présentent dans le maniement des quantités d'une facon incomparablement plus stricte que dans les prototypes arabes...on ne peut sortir de la simple réalité d'un mètre donné."

[2] The one exception, sequence no. 8 in Table XVII, must be extremely rare since it is not mentioned by either Rypka or Garcin de Tassy.

	F_1	F_2	F_3	F_4
1.	∪— — —	∪— — —	∪— — —	∪— ∪ —
2.	∪ — — —	∪— — —	∪— —	
3.	∪ — ∪ —	∪— ∪—	∪— ∪ —	∪— ∪ —
4.	∪— — ∪	∪— — ∪	∪— — ∪	∪— —
5.	∪— — ∪	∪— — ∪	∪ — —	
6.	— — —	— ∪ —	∪ — —	
7.	— ∪ —	∪— — —	— ∪ —	∪— — —
8.	— ∪ —	— ∪ —	∪— — —	
9.	— — ∪	∪— — —	— —	— — —
10.	— — ∪	∪— — ∪	∪— — ∪	∪— —
11.	— — ∪	∪— — ∪	∪— — —	
12.	— — ∪	∪— — ∪	∪— —	
13.	— — ∪	∪— ∪ —	∪— — —	
14.	— — ∪	∪ — ∪ —	∪— —	

Table XVII

Variations of Persian *hazaj*

In addition, a principle of parallelism appears to be operative, so that a given correspondence rule tends to apply either to both odd feet (F_1 and F_3) or to both even feet (F_2 and F_4). The set of rules given in (60) is in many respects similar to those given in (57), but it is a less adequate characterization of the meter it is supposed to account for. A

system of rules such as (60) claims that each metrical unit, K, P, H, is in theory realized independently of the realization of other metrical units; that is, one should not need to put constraints on the application of the correspondence rules of the type "if rule i applies to unit x, then rule j must apply to unit y". This is almost entirely true of Arabic, but not of Persian verse. The initial foot in both Persian and Arabic *hazaj* exhibits all six realizations of PKK given in (56), but in Persian, the other feet are so strictly limited that only fourteen distinct sequences occur. The set of theoretically possible *hazaj* halflines that could be generated by the rules in (60) is obviously much greater than fourteen. Even if we assume that P in non-initial feet is always ⏑ —, and allow only K to vary, we would expect at least 6·3·3·3 = 162 possible variations of *hazaj* tetrameter, or 6·3·3 = 54 possible variations of *hazaj* trimeter. How many variations actually occur in Arabic verse, I don't know, but it is surely a great deal more than fourteen!

The Persian *hazaj* is essentially different from both the Arabic *hazaj* and the *rubāʕī* in another way: the sequence of long and short syllables is absolutely fixed throughout the whole poem (According to Rypka, a couple of the varieties of *hazaj* include one or two free positions, but even this possibility is much more restricted than in Arabic). The *rubāʕī* allows different kinds of halflines to combine; the other Persian meters do not. Meier's observation that the *rubāʕī*

is based only on the Arabic principle of quantitative verse and not on a particular Arabic meter is at least as true of the other Persian meters. Classical Persian verse is quantitative in the same way that classical Greek and Latin verse is. The Persian meters are related to their Arabic counterparts in only a superficial way; in Persian, the peg is merely a metrically artificial construct. Persian poets studied and imitated the traditional Arabic meters and prosodic rules, but apparently, they either failed to perceive or found unsuitable for Persian the subtle rhythmical motivation for the peg/cord distinction.[1] To be sure, poems could be, and were, written in all sixteen Arabic meters, and in fact the Persian prosodists added fourteen meters to the list, two to complete circle I, three to complete circle IV, and a new but related circle of nine meters with two instead of one trochaic peg. This shows that they understood and made use of the abstract level of pegs and cords in the theory. But in practise, further constraints on the combining of different feet and on the variation of cord syllables were added, so that within a given poem, each (half)line is exactly like the others. In this way, the major motivation for the abstract level of pegs and cords is lost in Persian

[1] G. Meredith-Owens expressed it this way: "The most outstanding feature of the *ʿArūḍ* system as adopted by the Persians is the emphasis laid on quantity, which gives to Persian verse a lilt and swing which can be more readily appreciated by ears to which the more subtle rhythms of Arabic verse are unfamiliar" (*Encyclopedia of Islam* I, p. 677).

poetry. The Arabic theory of versification has been maintained as part of the received metrical tradition, but as a description of Persian verse it is forced and artificial. Historically, there can be no doubt that the Persian meters were borrowed from the Arabic, but an internal, synchronic analysis of Persian verse might well dispense with the concept of peg/cord and assume a form (more like the Greek meters?) in which the traditional Arabic names would serve only to designate certain sequences of long and short syllables, and not a corresponding abstract level of pegs and cords.

APPENDIX A

Ziḥāfāt and *ʕilal*

1. *'iḍmār.* The deletion of the short vowel after the *t* in the foot *mutafāʕilun*, which becomes *mutfāʕilun*. The mnemonic word denoting one of the eight basic feet has been altered to express the effect of the rule. When the resulting form is not one of the morphological patterns of Arabic, then the same sequence of long and short syllables is denoted by an equivalent mnemonic word which is a possible pattern. Thus in this case, instead of using the word *mutfāʕilun* to denote the variation, the word *mustafʕilun* is used. The foot is called *muḍmar*, which is a passive participle form derived from the name of the rule. This variation occurs only in the meter *kāmil*.

2. *ʕaṣb.* The deletion of the short vowel after the *l* in the foot *mafāʕilatun* which becomes *mafāʕiltun*, which is equivalent to *mafāʕīlun*. The foot is called *maʕṣūb*. This variation occurs only in the meter *wāfir*.

3. *Waqf.* The deletion of the short vowel after the *t* which ends the foot *mafʕūlātu*, which becomes *mafʕūlāt* or the equivalent *mafʕūlān*. The foot is called *mawqūf*. This variation is found in three meters, *sarīʕ*, *munsariḥ* and *muqtaḍab*.

4. *Xabn.* The deletion of the unvoweled letter of a *sabab xafīf* (cord) at the beginning of a foot. (By "deletion of a letter" is meant the deletion of the third mora of a long syllable, either the last consonant of a CVC syllable or the

second mora of the long vowel in a CV̄ syllable. The result of this deletion is always a short syllable. Note that none of the mnemonic words contain a CV̄C syllable.) Thus the feet *fāʕilun* and *fāʕilātun*, when they are *maxbūn*, become *faʕilun* and *faʕilātun*, respectively, except when *fāʕilātun* denotes QKK. The foot *mustafʕilun* becomes *mutafʕilun* or the equivalent *mafāʕilun*, and the foot *mafʕūlātu* becomes *maʕūlātu=faʕūlātu*. This variation occurs in all meters containing the feet mentioned above.

5. *Ṭayy*. The deletion of an unvoweled fourth letter of two consecutive cords beginning a foot. *Mustafʕilun* becomes *mustaʕilun* or the equivalent *muftaʕilun*, except when it denotes a KQK foot. The foot *mafʕūlātu* becomes *mafʕulātu=fāʕilātu*. A foot varied in this way is called *maṭwī*. This variation occurs in the meters *basīṭ*, *rajaz*, *sarīʕ*, *munsariḥ* and *muqtaḍab*.

Sometimes this variation applies to the foot *mutafāʕilun* if *'iḍmār* has applied first and changed it to *mutfāʕilun*. The output is *mutfaʕilun*. This variation is called *xazl*, and the affected foot is called *'axzal*.

6. *Qabḍ*. The deletion of an unvoweled fifth letter in the feet *mafāʕīlun* and *faʕūlun*, which become *mafāʕilun* and *faʕūlu*. The foot is then called *maqbūḍ*. This variation occurs in the meters *ṭawīl*, *madīd*, *hazaj*, *mutaqārib* and *muḍāriʕ*.

7. *Kaff.* The deletion of an unvoweled seventh letter in the feet *mafāʕīlun* and *fāʕilātun* (both as KPK and as QKK), which become *mafāʕīlu* and *fāʕilātu*, respectively. The foot is called *makfūf*. This variation occurs in the meters *ṭawīl*, *madīd*, *hazaj*, *ramal*, *xafīf*, *mujtaθθ* and *muḍāriʕ*.

8. *Taššīθ*. The deletion of the first syllable of the iambic peg of the foot *fāʕilātun*, which becomes *fālātun*, which is called *mafʕūlun*. The foot is then called *mušʕūθ*. This variation occurs in the meters *madīd*, *xafīf*, *ramal* and *mujtaθθ*.

9. *Qaṣr*. The deletion of the final vowel and consonant of a cord at the end of a foot. Thus *faʕūlun* becomes *faʕūl*, *mafāʕīlun* becomes *mafāʕīl=faʕūlān*, *fāʕilātun* becomes *fāʕilāt=fāʕilān*, and *mustafʕilun* (KQK) becomes *mustafʕīl=mafʕūlūn*. The foot is then called *maqṣūr*. This variation occurs in the meters *ṭawīl*, *madīd*, *hazaj*, *ramal*, *mutaqārib*, *muḍāriʕ*, *xafīf* and *mujtaθθ*.

10. *Qaṭʕ*. The deletion of the final vowel and consonant of an iambic peg [this process could also be analyzed as the deletion of the first syllable of the iambic peg]. Thus *mustafʕilun* (when KKP but not when KQK) becomes *mustafʕil = mafʕūlun*; *mutafāʕilun* becomes *mutafāʕil = faʕilātun*; *fāʕilun* becomes *fāʕil = faʕlun*. In the foot *fāʕilātun*, the last cord *tun* is deleted first, and then *qaṭʕ* applies to the remainder *fāʕilā* to produce *fāʕil = faʕlun*. The foot is called *maqṭūʕ*. This variation occurs in the meters *kāmil*, *ramal*, *mutadārik*, *madīd*, *sarīʕ*, *xafīf*, *mujtaθθ* and *muqtaḍab*.

11. *Rabʕ*. The application of both *xabn* (4) and *qaṭʕ* (10) to the foot *fāʕilātun*, which becomes *faʕal*. This foot is called *marbūʕ*.

12. *Jaḥf*. The deletion of the first cord and the iambic peg of the foot *fāʕilātun*, which is reduced to *tun* = *faʕ*. This foot is called *majḥūf*.

13. *Taxlīʕ*. The application of both *xabn* (4) and *qaṭʕ* (10) to the feet *fāʕilun* and *mustafʕilun*, which become *faʕal* and *mutafʕil* = *faʕūlun*, respectively. The foot is called *maxlūʕ*.

14. *Rafʕ*. The deletion of the first cord of the feet *mustafʕilun* and *mafʕūlātu*, which become *tafʕilun* = *fāʕilun*, and *ʕūlātu* = *mafʕūlu*. The foot is called *marfūʕ*.

15. *Tarfīl*. The addition of a cord after an iambic peg at the end of a halfline. Thus, the foot *mustafʕilun* becomes *mustafʕilātun*. The same process applies to the feet *fāʕilun* and *mutafāʕilun*, which become *fāʕilātun* and *mutafāʕilātun*. The foot is called *muraffal*.

16. *Waqṣ*. The deletion of the unvoweled *t* in the foot *mutfāʕilun*, derived from *mutafāʕilun* by *ʾiḍmār* (1) as shown above, to produce *mafāʕilun*. The foot is then called *mawqūṣ*. This variation occurs only in the meter *kāmil*.

17. *ʕaql*. The deletion of the unvoweled *l* in the foot *mafāʕaltun*, derived from *mafāʕilatun* by *ʕaṣb* (2), to produce *mafāʕitun* = *mafāʕilun*. The foot is then called *maʕqūl*. This variation occurs only in the meter *wāfir*.

18. *Kasf*. The application of both *waqf* (3) and *kaff* (7) to the foot *mafʕūlātu* to produce *mafʕūlā* = *mafʕūlun*. The foot is then called *maksūf*. This variation occurs in the meters *sarīʕ*, *munsariḥ* and *muqtaḍab*.

19. *Xabl*. The application of both *ṭayy* (5) and *xabn* (4) to the foot *mustafʕilun* to produce *mutaʕilun* = *faʕilatun*, and to the foot *mafʕūlātu* to produce *maʕulātu* = *faʕilātu*. This foot is then called *maxbūl*.

20. *Šakl*. The application of both *xabn* (4) and *kaff* (7) to the feet *mustafʕilun* and *fāʕilātun* to produce *mutafʕilu* = *mafāʕilu* and *faʕilātu*, respectively. The foot is called *maškūl*. This variation occurs in the meters *madīd*, *xafīf* and *mujtaθθ*.

21. *Ḥaðf*. The deletion of the cord at the end of a foot. Thus, *faʕūlun* becomes *faʕū* = *faʕal*; *fāʕilātun* becomes *fāʕilā* = *fāʕilun*; *mafāʕīlun* becomes *mafāʕī* = *faʕūlun*. The foot is called *maḥðūf*. This variation occurs in the meters *madīd*, *xafīf*, *hazaj*, *ramal*, *muḍāriʕ*, *mujtaθθ*, *ṭawīl* and *mutaqārib*.

22. *Ḥaðað* or more usually *Ḥaðð*. The deletion of an iambic peg at the end of a foot. Thus *mustafʕilun*, *mutafāʕilun* and *fāʕilun* are reduced to *mustaf* = *faʕlun*, *mutafā* = *faʕilun*, and *fā* = *faʕ*, respectively. The foot is called *maḥðuð*. This variation is frequent in the meters *basīṭ*, *kāmil*, *rajaz* and *mutadārik*, rare in those meters which contain *mustafʕilun* as KKP, and not at all in those meters where *mustafʕilun* is analyzed as KQK since the *ʕilun*-syllables do not form an iambic peg in this case.

23. *Ṣalm.* The deletion of the trochaic peg in the foot *mafʕūlātu* to produce *mafʕū* = *faʕlun*. The foot is called *maṣlūm*. This variation occurs in the meters *sarīʕ*, *munsariḥ* and *muqtaḍab*.

24. *Qaṭf*, The application of both *ʕaṣb* (2) and *ḥaðf* (21) to the foot *mafāʕilatun* to produce *mafāʕil* = *faʕūlun*. The foot is called *maqṭūf*. This variation occurs only in the meter *wāfir*.

25. *Batr*. The application of both *ḥaðf* (21) and *qaṭʕ* (10) to the foot *faʕūlun* to produce *faʕ*, or the application of both *jabb* (29) and *xarm* (31) to the foot *mafāʕīlun* to produce *fā* = *faʕ*. The foot is then called *mabtūr*. This variation occurs in the meters *hazaj* and *mutaqārib*.

26. *Tasbīɣ*. The insertion of a long vowel in a cord at the end of a foot. Thus *mafāʕīlun* and *fāʕilātun* become *mafāʕīlān* and *fāʕilātān* = *fāʕiliyyān*. The foot is then called *musabbaɣ*. This variation can occur in the meters *hazaj*, *ramal*, *muḍāriʕ*, *mutaqārib*, *madīd*, *ṭawīl* and *mujtaθθ*.

27. *'iðāla* or *Taðyīl*. The insertion of a long vowel in the final syllable of an iambic peg which ends a foot. Thus the feet *mustafʕilun*, *fāʕilun* and *mutafāʕilun* become *mustafʕilān*, *fāʕilān* and *mutafāʕilān*, respectively. The foot is called *muðāl* or *muðayyal*. This variation occurs in the meters *rajaz*, *mutadārik*, *basīṭ*, *kāmil*, *sarīʕ*, *munsariḥ* and *muqtaḍab*. It usually affects the last foot of a halfline (the *ʕarūḍ* and the *ḍarb*), rarely the feet internal to the halfline, and never the

first foot of a halfline (the *ṣadr* and the *'ibtidā'*).

28. *Jadʕ*. The deletion of the two cords and the final short vowel of the foot *mafʕūlātu* (KKQ) to produce *lāt* = *fāʕ*. This foot is called *majdūʕ*. If the long vowel of this reduced foot is then shortened, the foot is then called *manjūr*. This variation occurs in the meters *sarīʕ*, *munsariḥ* and *muqtaḍab*.

29. *Jabb*. The deletion of the two cords of the foot *mafāʕīlun* to produce *mafā* = *faʕal*. The foot is called *majbūb*. This variation occurs only in the meter *hazaj*.

30. *Hatm*. The application of both *ḥaðf* (21) and *qaṣr* (9) to the foot *mafāʕīlun* to produce *mafāʕ* = *faʕūl*. The foot is then called *mahtūm*. This variation occurs in the meters *ṭawīl*, *hazaj* and *muḍāriʕ*.

31. *Xarm*. The deletion of the first syllable of an iambic peg at the beginning of a foot. This variation usually applies only to the first foot of a halfline, and takes on different names depending on the foot affected. Thus, when the foot *faʕūlun* becomes *ʕūlun* = *faʕlun*, it is called *'aθlam*. When *xarm* (31) and *qabḍ* (6) both apply to *faʕūlun* to produce *ʕūlu* = *faʕlu*, it is called *'aθram*. The term *maxrūm* or *'axram* is reserved for the case when the foot *mafāʕīlun* becomes *fāʕīlun* = *mafʕūlun*. However, if *qabḍ* also applies to this foot, it is then called *'aštar;* if *kaff* applies together with *xarm* to produce *fāʕīlu* = *mafʕūlu*, then the foot is called *'axrab*. If both *hatm* (30) and *xarm* apply to produce *fāʕ*, then the foot is called *'azlal*. If both *ʕaṣb* (2) and

xarm apply to the foot *mafāʕilatun* to produce *fāʕiltun* = *mafʕūlun*, then the foot is called *'aqsam*.

32. *Xazm*. The addition of at most four letters at the beginning of a line, more rarely at the beginning of the second halfline. Cf. Freytag, pp. 79,85,345.

Appendix B

The *nīm-fatḥa* in Persian metrics

The fact that Persian is written in the Arabic script has influenced the metrics of Persian verse in two ways. First, although vowel length is probably not phonemic in Persian, the six vowels are divided into three "long" and three "short" vowels for the purposes of meter. Persian has a six-vowel system [i, e, æ, a, o, u]. Arabic, in which vowel length is phonemic, has only three vowels [i, a, u]. Persian uses the Arabic letters for these three vowels, which are considered long metrically; the other vowels, which are not indicated by letters in writing, are considered metrically short. Second, although a syllable can begin with a vowel in Persian, this is not reflected in the script (in Persian) since no syllable in Arabic can begin with a vowel. Thus there are no rules of synalepha (the reduction of two adjacent vowels to one syllable) in Persian metrics. Thus, a phrase like *dānā ānast* "he is learned" can be scanned in only one way: — — — —. The word *ānast* is written as if it began with a glottal stop consonant (*hamza*). Metrically all syllables may be assumed to begin with a consonant.

There is one environment in which a glottal stop may optionally delete: after a consonant. Thus the phrase *az ān* may be scanned in two ways: either $\overline{az}\ \overline{'ān}$ or $\breve{a}\ \overline{zān}$. We can account for the two possible scansions by postulating an

optional rule:

(B-1) ' → Ø/C____

and then applying the definition of metrically long/short as given for Arabic verse in §2.1.1. Further evidence for such a rule is found word internally. A word like *ma'āb* can only be scanned ⏑ —, whereas the word *mir'āt* (originally an Arabic word) can be scanned either *mir 'āt* or *mi rāt*. In this case, the scansion is also reflected in the spelling [مرآت vs. مرات], but not if the glottal stop begins a word.

This optional rule of glottal stop deletion interacts with the well-known metrical phenomenon of the *nīm-fatḥa*, or schwa, vowel used to break up consonant clusters which can arise in Persian but not in Arabic. In Persian, a syllable begins with at most one consonant, but it may end in up to two consonants following a long vowel. In classical Arabic every syllable begins with a single consonant, but ends in at most one consonant following a long vowel. (The syllable type CV̄C is not common in Arabic.) In order to maintain the facts of Arabic syllable structure in Persian verse, prosodists postulated a metrical schwa-vowel called the *nīm-fatḥa* "half an *a*", and several rules to determine the location of the schwa-vowel depending on the number of unvoweled letters in a row. Cf. Vaḥīd of Tabrīz, §§63-65. Assuming the existence of an optional rule of glottal stop deletion like (B-1), then the various metrical scansions involving consonant clusters can be accounted for with the following

three rules,[1] where $C_i \neq n$:

(B-2) $\emptyset \rightarrow$ ə / $\bar{V}C_iC$___C (optional)

(B-3) $\emptyset \rightarrow$ ə / $\bar{V}C_i$___C (obligatory)

(B-4) $\emptyset \rightarrow$ ə / $\breve{V}CC$___C (obligatory)

Thus, the phrase *dast dāram* can only be scanned — ⏑ — — since rule (B-4) must apply, producing *das̄ t̆ə dā̄ ram̄*. The phrase *dast 'ast* is scanned *das̄ tast̄* if rule (B-1) applies, or as *das̄ t̆ə 'ast̄* if it does not apply. The first CV̄CC syllable of the phrase *kārd bāyad* "there must be a knife" or of the compound noun *rāst gū* "truthful" [lit. right-speaker] can be scanned as either — — or — ⏑ depending on whether or not the optional rule (B-2) applies. *Kīst 'ān* "who is it?" can be scanned as either *kī̄ sət 'ān̄*, *kī̄s t̆ə 'ān̄* or *kī̄ s̆ə tān̄*. (The last two derivations in this case are metrically equivalent.)

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[1]These three subcases of *nīm fatḥa* provide support for the "Elsewhere Condition" proposed by Kiparsky (1972), since they cannot be abbreviated by means of parentheses or angled brackets, and nonetheless are disjunctively ordered. The two obligatory rules, B-3 and B-4, simply reflect the fact that there are two different kinds of long syllable: CV̄ and CV̆C. This would be expressed most naturally by a single rule

$$\emptyset \rightarrow \text{ə} \; / \; \left\{ \begin{matrix} \bar{V} \\ \breve{V}C \end{matrix} \right\} C___C.$$

But the condition that the following C not be n applies only if the vowel in question is a long vowel. One might allow for the n as follows:

$$\emptyset \rightarrow \text{ə} \; / \; \left\{ \begin{matrix} \bar{V}(n) \\ \breve{V}C \end{matrix} \right\} C___C \; .$$

However, it will still be necessary to impose the condition $C_i \neq n$ on (B-2). Otherwise, both the optional (B-2) and the

We illustrate with two lines from the poet ʕaṭṭār written in the meter *ramal*.

nīstat xusraw nišānī 'īn zamān

nī sə tat xus raw ni šā nī 'īn za mān

CV̄ CV CVC CVC CVC CV CV̄ CV̄ CV̄C CV CV̄C

— ◡ — — — ◡ — — — ◡ —

hamčo sagbā 'ustaxānī 'īn zamān

ham čo sag bā 'us ta xā nī 'īn za mān

CVC CV CVC CV̄ CVC CV CV̄ CV̄ CV̄C CV CV̄C

— ◡ — — — ◡ — — — ◡ —

"You don't have the attributes of Chosroës at this time

You are like a dog with a bone at this time."

---

obligatory (B-3) could apply to the string V̄nCC as shown in the following derivation:

V̄nCC	
V̄nCəC	by rule B-2
V̄nəCəC	by rule B-3.

[In order to apply (B-3), we first try to analyze the input string as V̄nC_C and then as V̄C_C]. It is clear that we are now missing the generalization that an n following a long vowel is ignored. What we really want to say is that (B-2) and (B-3) are disjunctive. This disjunctivity would follow naturally from Kiparsky's Elsewhere Condition because any input subject to (B-2) is also subject to (B-3), that is, the set of strings {V̄CCC} is a subset of the set {V̄CC}.

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