

THE OLD BABYLONIAN TUNING TEXT UET VI/3 899¹

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Introduction

A handcopy of UET VI/3 899 was published posthumously by the late Aaron Shaffer, and described in his introduction as “Akkadian instructions for tuning a stringed instrument” (Shaffer 2006, pl. 92 no. 899; see comment on p. 24). The only other such text is U.7/80, first published in copy and edition by O. R. Gurney (Gurney 1968), and later in copy alone as UET VII 74 (Gurney 1974, pl. 35 no. 74). Since its publication in 1968, the latter text has remained the most important source for the Babylonian tuning system. In the following article, we will examine both texts together and in relation to the other known musical texts.² This new fragment essentially confirms the hypothetical reconstruction of the tuning cycle as outlined in Gurney 1968. However, the new text requires a slightly revised reconstruction of UET VII 74, as well as some Akkadian musical terms. In particular, UET VI/3 899 offers a revised reading of the term which has hitherto been read as *nīš* GABA.RI “rise of the duplicate/opponent” as *nīš tuḫri(m)*. According to our reconstruction, UET VI/3 899 fits below the second column of UET VII 74, as the lower half of the second column of a three-columned text. We consider it most likely that UET VI/3 899 belongs to a duplicate manuscript of the tuning cycle.

Description

Gurney suggested that UET VII 74 is better described as a “re-tuning” text, rather than a “tuning” text (Gurney 1994, 101). It is more accurate to describe both these texts as “modulation” texts. Essentially, they are instructions which tell a musician how he or she can change a *sammû*-instrument’s tuning from one “mode”³ to another. The method of modulation is essentially cyclical. One can proceed either via successive tightening of “unclear” dichords,⁴ or conversely via successive loosening of “unclear” dichords. UET VII 74 begins in the middle of the “tightening” section. It proceeds through the cycle until *išartum* is reached. What appears to be the rubric “tightening” follows. Then the cycle is reversed by successive loosening of dichords. Lines 35–6 conform to the expected completion of the “loosening” cycle, after which we reconstruct the final chapter and the expected *nu-ú-um* “(It is the chapter) loosening”, which would be the counterpart to the “tightening” rubric of l. 12.

The protases are best understood as diagnoses. By playing a particular dichord, and hearing that it is “unclear”, one can tell in which mode the instrument is tuned. In order to reach the next mode in the tightening or loosening cycle, one must tighten or loosen one or more strings. This will make the previous dichord “clear”, although it will now make another dichord “unclear”. This “unclear” quality, and the dichord to which it applies, are what defines a particular mode.

Our reconstruction is based on the assumption that *išartum* is the beginning and end point of the system (cf. the reconstruction in Gurney 1994, 103). This is because ll. 11–13 demonstrate that *išartum* is indeed the point at which the cycle reverses, from tightening to loosening. This assumption is supported by the fact that the order of modes in the song catalogue KAR 158 follows exactly the pattern of the second “loosening” chapter, from *išartum* to *qablītum* (KAR 158 viii⁵ 45–51). According to the conventional interpretation of the tuning system as diatonic, and the “unclear” interval as a tritone, this would mean that *išartum* at l. 40 would be a semitone lower than the same mode at l. 13. As Gurney remarks, this may not matter as the interval

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²CBS 1766 has recently been interpreted as a music-theory text (Waezegggers and Siebes 2007). We wish to reserve comment on this text until we have had the opportunity to collate it; therefore, it will not form part of the preceding discussion.

³The word “mode” has a complex history, and several meanings. We use the word in the sense of a specific tuning.

⁴“Dichord” is used to describe paired strings, as listed in CBS 10996 col. i. This follows Kümmel’s term “Doppelgriff” (see Kümmel 1970, 252 n. 1).

⁵ = rev. iv, Ebeling KAR p. 272. Limet 1996, 151 corrects Ebeling’s numbering of columns v–viii, which should be reversed.

relationships would be the same (Gurney 1994, 104). It has often been stated that string 5 does not change in UET VII 74, leading to the assumption that string 5 is the only unchanging string, reflecting the central symmetrical position of this string in the nomenclature of the *sammû*'s nine strings (Crocker 1978, 101; Vitale 1982, 249, 251). At present, this question cannot be proved conclusively, as the section of the cycle where string 5 might be expected to change, between *išartum* and *qablūtum* (or vice versa), is not preserved on either tablet.

Transliteration

UET VII 74 col. ii

- §5 0 [šum-ma sammûm^(gīsZÀ.MÍ) pi-tum-ma]
 1 [e-e]m-b[u-bu-um la za-ku]
 2 ša-al-š[a-am qa-at-na-am ta-na-sà-ah/ha-ma]
 3 e-em-bu-bu-[um iz-za-(ak)-ku]
 §6 4 šum-ma sammûm^(gīsZÀ.MÍ) (e)-em-bu-bu-um-ma]
 5 ki-it-mu-um [la za-ku]
 6 re-bi úh-ri-im [ta-na-sà-ah/ha-ma]
 7 ki-it-mu-um iz-[za-(ak)-ku]
 §7 8 šum-ma sammûm^(gīsZÀ.MÍ) k[i-it-mu-um-ma]
 9 i-šar-tum la za-[ka-at]
 10 ša-mu-ša-am ù úh-ri-a-a[m ta-na-sà-ah/ha-ma]
 11 i-šar-tum iz-za-[(ak)-ku]
 12 nu-su-[hu-um]
 §8 13 šum-ma sammûm^(gīsZÀ.MÍ) i-šar-t[um-ma]
 14 qá-ab-li-ta-am <la za-ku-ta-am> ta-al-pu-[ut]
 15 [š]a-mu-ša-am ù úh-ri-a-am te-[né-e-am-ma]
 16 [s]ammûm^([gīsZÀ.MÍ]) ki-it-mu-[um]
 §9 17 [šum]-ma sammûm^(gīsZÀ.MÍ) ki-it-m[u-um-ma]
 18 [i-ša]r-ta-am la za-ku-ta-am t[a-al-pu-ut]
 19 [re-bi] úh-ri-im te-né-[e-am-ma]
 reconstruction
 20 [sammûm^(gīsZÀ.MÍ) (e)-em-bu-bu-um]
 §10 21 [šum-ma sammûm^(gīsZÀ.MÍ) (e)-em-bu-bu-um-(ma)]
 22 [ki-it-ma-am la za-ka-am ta-al-pu-ut / ta-la-pa-at-ma]
 23 [ša-al-ša-am te-né-e-am-ma]

UET VI/3 899

- 1 = 24 [sammûm^(gīsZÀ.MÍ)] pi-^rtum¹
 §11 2 = 25 [šum-ma sammûm^(gīsZÀ.MÍ)] pi-tum
 3 = 26 [(e)-em-bu-ba-am la] za-ka-am ta-la-pa-at-ma
 4 = 27 [ša-al-ša úh-ri-i]m te-né-e-am-ma
 5 = 28 [sammûm^(gīsZÀ.MÍ) ni]-di qá-ab-li-im
 §12 6 = 29 [šum-ma sammûm^(gīsZÀ.MÍ) ni]-^rdi¹ qá-ab-li-im
 7 = 30 [pi-ta-am la za-ka-am t]a-la-ap-pa-at-ma
 8 = 31 [É-a DÙ/a-ba-na-am te-né]-^re¹-am-ma
 9 = 32 [sammûm^(gīsZÀ.MÍ) ni-iš t]u-úh-ri-im
 §13 10 = 33 [šum-ma sammûm^(gīsZÀ.MÍ) ni-iš tu]-úh-ri-im
 11 = 34 [ni-di qá-ab-li-im la za-ka]-^ram¹ ta-la-pa-[at]-ma
 reconstruction
 35 [qú-ud-ma-am ù ši-ni úh-ri-im te-né-e-am-ma]
 36 [sammûm^(gīsZÀ.MÍ) qá-ab-li-tum]
 §14 37 [šum-ma sammûm^(gīsZÀ.MÍ) qá-ab-li-tum]
 38 [ni-iš tu-úh-ri-im la za-ka-am ta-la-pa-at-ma]
 39 [ha-am-ša-am te-né-e-am-ma]
 40 [sammûm^(gīsZÀ.MÍ) i-šar-tum]
 41 [nu-ú-um]

Translation

- §1 [If the lyre is *išartum* and *qablītum* is not clear, you tighten the fifth string (for me) and *qablītum* will become clear.]
- §2 [If the lyre is *qablītum* and *nīš tuhrim* is not clear, you tighten the first string and the second string from the back (for me) and *nīš tuhrim* will become clear.]
- §3 [If the lyre is *nīš tuhrim* and *nīd(i) qablim* is not clear, you tighten the fourth string (for me) and *nīd(i) qablim* will become clear.]
- §4 [If the lyre is *nīd(i) qablim* and *pītum* is not clear, you tighten the third string from the back (for me) and *pītum* will become clear]
- §5 ⁰⁻³ [If the lyre is *pītum* and] *embūbum* [is not clear, you tighten the] third [thin string (for me) and] *embūbum* [will become clear.]
- §6 ⁴⁻⁷ If the lyre [is *embūbum* and] *kitmum* [is not clear, you tighten] the fourth string from behind [(for me) and] *kitmum* will become [clear.]
- §7 ⁸⁻¹¹ If the lyre is [*kitmum* and] *išartum* is not clear, [you tighten] the second string and the back string (for me) and *išartum* will become clear.
¹² (It is the chapter) tightening.
- §8 ¹³⁻¹⁶ If the lyre is *išartum* and you play an [unclear] *qablītum*, you [loosen the] second string and the back string [(for me) and the] lyre is *kitmum*.
- §9 ¹⁷⁻²⁰ If the lyre is *kitmum* and you [play an] unclear *išartum*, you loosen the [fourth string] from behind [(for me) and the lyre is *embūbum*.]
- §10 ²¹⁻⁴ [If the lyre is *embūbum* (and/,) you play an unclear *kitmum*, you loosen the third string (for me) and the lyre is] *pītum*.
- §11 ²⁵⁻⁸ [If the lyre is] *pītum*, you play an unclear [*embūbum*,] you loosen the [third string from behind] (for me) and [the lyre is] *nīd(i) qablim*.
- §12 ²⁹⁻³² [If the lyre is] *nīd(i) qablim*, you play [an unclear *pītum*, you] loosen [the fourth string] (for me) and [the lyre is *nīš*] *tuhrim*.
- §13 ³³⁻⁶ [If the lyre is *nīš*] *tuhrim*, you play an [unclear *nīd(i) qablim*, you loosen the first and second string from behind (for me) and the lyre is *qablītum*.]
- §14 ³⁷⁻⁴⁰ [If the lyre is *qablītum*, you play an unclear *nīš tuhrim*, you loosen the fifth string (for me) and the lyre is *išartum*.]
⁴¹ [(It is the chapter) loosening.]

Notes

Our reconstruction of broken passages in UET VII 74 differs in some places from Gurney 1994, 102. The *sammūm* (⁶¹⁵zā.mí) is translated here as a “lyre”, as opposed to a harp. This follows the CAD, which, unlike AHw, translates this term unequivocally as a “lyre”. There has been much debate over the precise definition of this term. Notably, Lawergren and Gurney argue that the instrument is a harp, largely on the basis of mathematical texts (Lawergren and Gurney 1987). However, this must remain speculative. Kilmer and Krispijn have both enumerated reasons why the term is more likely to indicate a lyre (Kilmer 1980–3, 572; Krispijn 1990, 6–7). Recently, Kilmer argued that the instrument is a lyre, based on an Old Babylonian Mari text which mentions the delivery of silver for what may be interpreted as animal heads on the yoke of lyres (Kilmer 2000, 116; for the Mari text see Durand 1989). The use of physiognomic metaphors in the dichord names suggests that the bovine lyre is a likely candidate for the *sammūm* (see “The term *nīš tuhrim*” below).

0. The reconstructed spelling *pi-tum* follows l. 2 of UET VI/3 899. This differs from Gurney’s reconstructed spelling of this word as *pi-i-tum* (Gurney 1968, 229; Gurney 1994, 102). The latter spelling is known from a musical context, although it is Middle Assyrian, not Old Babylonian.⁶ The attestation of this term in UET VI/3 899 appears to be the only unbroken spelling of the word apart from KAR 158 viii 15, 48. In the Old Babylonian hymnody text N 3354+3355 it is spelt *si-ḫi-ip pi-t[im]* (obv. ii 9, Kilmer and Tinney 1996, 52) and [*p*]i-tu-¹um¹ (rev. ii 3, Kilmer and Tinney 1996, 53). In the Neo-Assyrian “benedictions” (*ikribu*) for the NAR “musician”, where each *ikribu* is associated with a separate string, it is unclear whether *ḫa-an-šu GIM pi-¹tu¹* means “fifth string, like *pītu* tuning/interval”, or whether GIM *pi-¹tu¹* is the incipit of an *ikribu* (BM 65217+66616 obv. 8, see Kilmer 1984, 73, 76). In the first column of CBS 10996,⁷ which is a table of

⁶ KAR 158 has been consistently dated “MA” (Pedersén 1986, 17, 21; Finkel 1988, 17; Kilmer 1995–7, 475; Gronberg 2003, 58: “most likely dates from the years 1114–1076 BC”).

⁷ Dated as “Kassite”, Kilmer 1960, 273; “MB” University Museum catalogue; but “NB”, Kilmer 1980–3, 575; ead. 1992, 101.

coefficients listing dichords and their corresponding strings, the term is spelt *pi!(GAD)-tum* (CBS 10996 i 4, corresponding to l. 9 in Kilmer 1965, 266. Regarding the reading of GAD as PI see Kilmer 1965, 266 n. 41). Assuming that the accepted emendation of the GAD sign is correct in this context, this provides a further attestation of the term without *plene* writing.

We adopt the *-ma* which Gurney adds to the first line of *šumma* clauses (ll. 0, 4, 8, 13 and 17 of UET VII 74) and the first line of apodoses (ll. 2, 6, 10, 15, 19 of UET VII 74). In UET VI/3 899, there is no *-ma* in the first line of *šumma* clauses (ll. 1 = 24, 6 = 29 and 10 = 33). However, we interpret the syntactic construction in UET VI/3 899 as a protasis consisting of one line followed by a three-line apodosis, thereby requiring no connective *-ma* (see the Syntactical Table below).

3. The spelling of *embūbum* with a *plene* vocalic onset is irregular and, as far as we know, unique to this text. Such initial *plene* spellings are sometimes orthographic oddities (see Kouwenberg 2003–4, especially p. 90).

7. We interpret *iz-za-[(ak)-ku]* (also in l. 11 and reconstructed in l. 3) as the N stem of *zakūm*, which is not attested in AHW and CAD. Our translation implies that the verb has an ingressive sense, which is known for some verbs in the N stem (see GAG, 3rd edn, §90g).

12. Krispijn interpreted this line as the D infinitive of *nasāhum* (see “The verb *nē’um*” below).

15. The verb *nē’um* is restored here and in l. 19 with the first-person-singular dative suffix *-am* (contra Gurney), following UET VI/3 899 ll. 27 and 31. This suffix could be interpreted as the ventive, simply implying movement during the act of tuning. However, we consider it likely to indicate “for me” i.e. the teacher, who gives verbal instructions to his pupil. In *Examenstext A*, the teacher asks his pupil whether he knows various instruments, including the *sammū* (Sjöberg 1975, 144 l. 28). Directly following these questions, the apprentice scribe reproaches his teacher: *za.e.me.en nu.e.dug₄ = at-ta ul taq-ba-a* “You did not say it to me” (Sjöberg 1975, 144 l. 30). Here, the relation apprentice scribe-teacher is expressed by *ta-* “you” and *-a(m)* “to me”. It may be the case that this dative suffix is also present in the *nussuhum* section.

The verb in these lines is understood as *nē’um*, as opposed to *enūm*. For further discussion see “The verb *nē’um*” below.

28–9. The bisyllabic construct state of *nīdum* is well attested (see CAD N/II 209–10). The musical term spelt *nī-dī qā-ab-li-[im]* is also attested in the Old Babylonian hymnody text UM 29-15-357 (Kilmer and Tinney 1996, 51 l. 2).⁸

30. There are three small horizontals between ll. 29 and 30, which are probably erasures.

31. The fourth string is attested as either *a-ba-nu-um* or *Ē-a bānū(m)* (DÙ) “Ea creator” (CBS 10996 i 17, 20, see Kilmer 1965, 266, 267). In UET VII 126 (formerly U 3011) = *Nabnītu* XXXII i 4, the string name is written *a-ba-nu-[ú]*. MSL 16 251 l. 4 reads A-[DÙ] (not collated),⁹ but according to Kilmer, who collated the tablet in 1977, Gurney left out *-ba-nu-[ú]* in his copy of UET VII 126 (see Crocker and Kilmer 1984, 82 n. 1). The term is attested as *a-ba-nu-um* in the Old Babylonian hymnody text UM 29-15-357 obv. ii 9 (see Kilmer and Tinney 1996, 51). In the Neo-Assyrian list of *ikribu* “benedictions”, where each *ikribu* is associated with a particular string, the fourth string is written *a-ba-nu* (BM 65217 + 66616 obv. 6, see Kilmer 1984, 72).

32–3. For the term *nīs tuhrim*, see below.

35. Other spellings of *qudmū(m)* are *qud-mu-um* (*Nabnītu* XXXII i 1, MSL 16 251) and *qud-mu-ú* (BM 65217 + 66616 obv. 1, see Kilmer 1984, 72; CBS 10996 i 11, 14, 17, 18, see Kilmer 1965, 266), but the Old Babylonian spelling is more likely to be *qū-ud-mu-um*.

One or two manuscripts?

For the reasons given below, we consider it most likely that these tablets are different manuscripts of the same text. UET VI/3 899 and the cast of UET VII 74 are both held at the British Museum. Unfortunately, the original of UET VII 74 is in Iraq, which precludes the use of clay composition or three-dimensional properties as a basis for a hypothetical indirect join. The cast of UET VII 74 is of high quality. However, no attempt was made to reproduce the three-dimensional shape of the tablet. Unfortunately, no photographs were made before its delivery back to Baghdad.¹⁰ The cast of UET VII 74 is thin and flat on its underside. In contrast, UET VI/3 899 is thick and wedge-shaped, fanning outwards from the bottom of the obverse. After examining these sources, it is clear that the tablets would not make a direct join. The question is whether UET VI/3 899 and UET VII 74 could make an indirect join. What we know regarding provenance is general, and of limited use. Although both tablets came from Ur, and they are both Old Babylonian, neither of them has a field excavation number (see Gurney 1974, 8; Shaffer 2006, 24). Conversely, the internal evidence offers two major clues regarding this question.

First, there are small palaeographic differences which might suggest that these tablets were written by different scribes, and therefore belong to different manuscripts. On UET VI/3 899 the

⁸ We thank A. D. Kilmer for this reference.

⁹ UET VII 126 has been sent back to Iraq. No cast or photograph was made (personal communication, Jon

Taylor, 2007).

¹⁰ Christopher Walker, personal communication, 2007.

TABLE 1 Syntactical Table (partly reconstructed or completed)

	<i>šumma</i> — protasis	apodosis
UET VII 74		
§5	<i>pītum-ma</i> (nominal clause) <i>lā zaku</i> (stative)	<i>tanassah(am)-ma</i> (present) <i>izzakku</i> (N present)
§6	<i>embūbum-ma</i> (nominal clause) <i>lā zaku</i> (stative)	<i>tanassah(am)-ma</i> (present) <i>izzakku</i> (N present)
§7	<i>kitmum-ma</i> (nominal clause) <i>lā zakāt</i> (stative) <i>nussuḫum</i> (D infinitive)	<i>tanassah(am)-ma</i> (present) <i>izzakku</i> (N present)
§8	<i>išartum-ma</i> (nominal clause) <i>talput</i> (preterite)	<i>tenē'am-ma</i> (present) <i>kitmum</i> (nominal clause)
§9	<i>kitmum-ma</i> (nominal clause) <i>talput</i> (preterite)	<i>tenē'am-ma</i> (present) <i>embūbum-ma</i> (nominal clause)
UET VI/3 899		
§11	<i>pītum</i> (nominal clause)	<i>talappat-ma</i> (present) <i>tenē'am-ma</i> (present) <i>nīd(i) qablim</i> (nominal clause)
§12	<i>nīd(i) qablim</i> (nominal clause)	<i>talappat-ma</i> (present) <i>tenē'am-ma</i> (present) <i>nīš tuḫrim</i> (nominal clause)
§13	<i>nīš tuḫrim</i> (nominal clause)	<i>talappat-ma</i> (present) <i>tenē'am-ma</i> (present) <i>qablūtum</i> (nominal clause)

signs are generally smaller and closer together. Secondly, the style of some signs varies significantly, in particular, the TUM and TA signs. On UET VII 74 the TUM signs (i 3, 4, 8, ii 9, 11) start with two parallel horizontals, followed by a distinctive Winkelhaken. The TUM on UET VI/3 899 (l. 2) does not feature this Winkelhaken. The TA signs on UET VI/3 899 (ll. 3, 11) have two verticals. The TA signs on UET VII 74 (ii 14 (× 2), 18 (× 2)) have three verticals.¹¹

Secondly, the syntactical differences between the tablets make it unlikely that they were written by the same scribe. As outlined in Table 1, three syntactical patterns are present. In UET VII 74 one pattern applies to the “tightening” chapter (0–11), and another pattern to the “loosening” chapter (13 ff.). A third syntactical pattern is employed in the “loosening” chapter represented in UET VI/3 899. Thus, there is an internal inconsistency within UET VII 74. However, the syntactical inconsistency in UET VII 74 is less jarring than that which exists between it and UET VI/3 899. If these tablets joined indirectly, the syntactical pattern would change within the “loosening” chapter, which we consider unlikely.

The verb nē'um

The complete verbal form *te-né-e-am-ma* in UET VI/3 899 l. 4, partly restored in l. 8 [*te-né*]-*e-am-ma*, demands a renewed discussion regarding the verb involved in the broken lines of UET VII 74 ll. 15: *te*-[*né-e-am-ma*] and 19: *te-né*-[*e-am-ma*]. *te-né-e-am-ma* has been analysed either as a form of *enūm* “to replace, change” or of *nē'um* “to loosen, to turn back”. We consider the evidence to point decisively towards *nē'um*. The first editors of the text UET VII 74 thought of a form of *enūm*, meaning in this case “to change” (Gurney 1968, Wulstan 1968). Krispijn reconstructed the rubric *nussuḫum* “tightening” in l. 12 of UET VII 74, and the main verb of the new section was reconstructed as its opposite — *nē'um* “to loosen” (Krispijn 1990, 15, notes to l. 171; Krispijn 2002, 472). This interpretation was adopted by Gurney (Gurney 1994, 101 n. 5), and has been generally accepted.¹²

In Old Babylonian texts we have found the following forms of *enūm*: *pi-i-ka la te-e-ni* “do not change your statement” (G pres.) AbB 5 2 r. 2'; A.ŠA-*am šu-a-ti in-ni-ma* “he is changing (the

¹¹In l. 18 of Gurney's copy (Gurney 1968, id. 1974, no. 74) the first TA is drawn with two verticals, although we see a trace of a third vertical on the cast.

¹²K. Volk takes the verb to be *enūm*, although it seems to be that *nē'um* is being referred to (Volk 2006, 39–43).

measures of) that field” (G pres.) AbB 7 46 13; *ma-tum ka-lu-ša mi-nam i-te-ni* “What (personnel) has the entire country substituted?” (G perf. or Gt preterite) AbB 11 133 5; *ri-ik-sa-ti-ia ú-ul e-en-ni* “I will not change my contract” (G pres.) AbB 12 5 28; *di-in-šu i-te-ni* “he has changed his verdict” (G perf.) CH §5 (VI) 13; *i-na di-in i-di-nu e-ne-em ú-ka-an-nu-šu-ma* “they will convert him of having reversed the verdict, which he has given” (G inf.) CH §5 (VI) 16; *ri-ik-sa-ti-šu ú-ul [i?]-in-ni* “He shall not change the terms of his contract” (G pres.) CH §52 (XV) 6; [ša?] *ri-ik-sa-ti-šu an-ni-a-at-t[i] la e-ne(?)e-[em]* “That he would not change these obligations of his (he swore)” (G inf.) BE 6/1 116 22 = VAB 5 204 22; *qá-bé-e qá-bu-ú-um-ma ul e-ni-a-ak-ki-im at-wa-a-am* “What I have said is said. I have not changed (what I have said in) the conversation in your favor” (G pret.) ZA 49 (1949) 162 4–5; JCS 15 (1961) 6–7; *ša i-nu* “who changes (the terms)” (G pret. + subj.) MDP 22 47 r. 14; *ša i-nu-ma* “who changes (the terms)” (G pret. + subj.) MDP 23 286 15; [ú] *ša-a ku-nu-uk-ka an-na-a i-in-nu-ú* “and who sets aside the terms of the sealed document” MDP 23 322 10; *et-nu-ú li-te-nu-ú* “They (soldiers) may take shifts” (Gt inf. + Gt prec.) ARM 1 20 7’, 10’; *li-iš-te-ni-ki* “he may interchange (it) for you” (Št prec.) AbB 1 63 13; *aš-šum PA.PA.MEŠ šu-te-ni-im* “about the matter of the substitution of the captains” (Št inf.) AbB 14 189 9. The conclusion of this survey is that only forms with contracted vowels: *e-ne-e-[em]* < *enēm*; *i-in-nu-ú* < **inni + u*; *et-nu-ú* < *etnû* (Gt inf.); *li-te-nu-ú* < **liteni + ū* have *plene* writing. Furthermore, the meaning of *enûm* is not really “to change” in general, but mostly “to replace (words, instructions, terms, dynasties), to revoke”. Concerning body parts it has the meaning “to be inverted” (CAD E 174 *enû* 1b, g). The normal Akkadian verb for “to change” is *šupêlum*, not *enûm*.

The spelling of *nê’um* is quite different in Old-Babylonian: *ip-ši-iḫ uz-za-šu-ma i-né-ḫ i-ra-as-sú iš-tu i-ra-as-sú i-né-ḫ* “his anger subsided and he turned his chest (broke off from the fight). After he had turned his chest” (G pret. and G pret. + subj.) Gilg. OB II 229–31 (George 2003, 180–1); *a-wa-ta-ak li-né i-ra-as-sú* “Let your word make him withdraw” (G prec.) CT 15 3 i 6; *šu tu.lu = ne-e-a-um* (G inf.) MSL 13 120 *Nigga* bil. 205. Forms of *nê’um* are mostly written in Old Babylonian with the signs *ṽḫ*, *ḫa* and *ḫu*, indicating a strong hiatus.¹³ The spelling *ne-e-a-um* indicates this hiatus by means of an extra vowel, as does *te-né-e-am-ma* in UET VI/3 899. *li-né* does not indicate this hiatus at all, as final aleph is normally omitted from verbs of this type in Old Babylonian (GAG §106w). Furthermore, *te-ne-ḫ-a* and *ne-e-a-um* clearly contain the vowel /e/. *te-né-e-am-ma* looks like a form of *nê’um* both in its inclusion of *plene* /e/ and the hiatus. For the meaning of *tu.lu = nê’um* we refer to Krispijn 1990, 15 and 2002, 472.

The term *nīš tuḫri(m)*

At ll. 32 and 33, we expect *nīš GABA.RI*. This is the mode which follows *nīd(i) qablīm* in the “loosening” cycle. In CBS 10996 i 11 and KAR 158 viii 50, the term is spelt *ni-iš GABA.RI*.¹⁴ CBS 10996 is certainly post-Old Babylonian, and perhaps Kassite (see above); KAR 158 is likely to be late Middle Assyrian (see above). It is proposed that *[ni-iš] ʿtuʿ-úḫ-ri-im* is a syllabic spelling of this term, which has hitherto been misread. The spelling *[ni-iš] ʿtuʿ-úḫ-ri-im* would be an expected Old Babylonian spelling of *ni-iš tuḫ-ri*.¹⁵

This term may be attested in ll. 1 and 11 of the first column of UET VII 74, which is mostly broken. These lines could be read as: *[ni-iš tu] ʿúḫ-ri-im* and *[ni-iš tu-ú] ḫ-ri-im* respectively. Gurney 1968, 229 reads i 1 as [... x ú] ḫ?-ri?-im. It was assumed by both Gurney and Crocker that the terms in these lines must be string names (Gurney 1968, 231; Crocker 1978, 102–5) because the only known terms ending in (-)úḫ-ri-im were the three string names *rebi uḫrīm* “fourth from behind”, *šalši uḫrīm* “third from behind” and *šini uḫrīm* “second from behind”, referring to strings 6, 7 and 8 respectively.¹⁶ Now, we have two possibilities according to our present knowledge of

¹³ This is also the case in later periods, e.g. the following MB text, where the Akkadian is not as idiosyncratic as the Sumerian: *ni.ig.na.me na.an.tu.uk.ku = *nīg.na.me na.an.tu.lu (!) = mi-im-ma la te-ne-ḫ-a* “In nothing give up” (G. pres.) MDP 57, 1 iv 20.

¹⁴ This term in CBS 10996 was initially misread by Kilmer as *man-ga(-)ri* (Kilmer 1960, 299), and later corrected to *nīš GABA.RI* (ead. 1965, 266, n. 43). Kilmer reads the relevant term in KAR 158 as *ni-iš!* (copy: *iʿ!*) *GABA.RI* (Kilmer 1965,

268). However, the second sign could be a Middle Assyrian *iš*, which can be similar to *il*. Limet 1996, 154 reads the term as *ni-i[š] qab-ri*. Limet’s indication of the restoration is mistaken, as this line is clear in Ebeling’s copy.

¹⁵ By analogy with *nīdī qablīm* in UET VI/3 899, 5–6 = 28–9, the spelling of the term in this text might alternatively feature a bisyllabic construct state: *nīši tuḫrīm*.

¹⁶ Strings 6–8 are numbered with reference to the back (ninth) string; see *Nabnūtu* XXXII, MSL 16, 251.

Akkadian musical terminology. This column is too fragmentary to speculate on the possible ramifications of such a revised reading.

The term *nīš tuḫri(m)* is almost certainly attested in the Old Babylonian hymnody text UM 29-15-357 rev. i 9, spelt ¹*ni-iš¹ tu-uh-[ri-im]*. This line was previously read as [x x] ¹*ni-id?*¹ *tu-ub-[x (x)]* (see Kilmer and Tinney 1996, 52 l. 9),¹⁷ which has no obvious meaning. Such a revised reading is likely from the context, as well as from the tablet, for the text consists almost entirely of Akkadian musical terms, in connection with a hymn whose incipit is *lipit-eštar* (UM 29-15-357 obv. i 1, see Kilmer and Tinney 1996, 50).

The term *nīš tuḫri(m)* is probably attested in the Hurrian hymns from Ugarit, which use Akkadian music-theoretical terms as performance instructions. A broken GABA sign followed by a RI occurs on two fragments: RS 19.164 n3, 06 (*Ugaritica* V 477 ff.). Güterbock claims that this term is present in the Hurrian hymn fragments, although he is uncertain whether it should be read logographically or phonetically (Güterbock 1970, 48 n. 4). Kümmel is uncertain (Kümmel 1970, 263). Laroche asserts the term's presence, adding that it should be read phonetically as *gab-ri* (Laroche 1973, 124–5). Kilmer agrees with Laroche (Kilmer 1974, 71). However, it must be borne in mind that Akkadian musical terms are attested in Ugarit in forms that are significantly different from those known in Mesopotamia (see the comparative tables in Güterbock 1970, 49 and Laroche 1973, 125).

tuḫru refers to part of the heel of the human foot, and is likely to designate the Achilles' tendon (see Adamson 1990, 32; Scurlock and Anderson 2005, 64: 3.183, 79: 3.244; Mirelman 2008). Scurlock and Andersen qualify it as the calf muscle to which the Achilles' tendon is attached (Scurlock and Anderson 2005, 291: 13.44). The revised reading of the term raises questions regarding its relationship to other physiognomic metaphors in Babylonian musical terminology. The words *qablu* "middle, hip" and *tuḫru* both occur in the terms for primary dichords/modes in CBS 10996. The first term in this text is *nīš tuḫri* (strings 1–5) "rise of the *tuḫru*". The fourth primary dichord/mode is *nīd(i) qabli* (strings 4–1) "fall of the middle". The fifth primary interval is *qablītu* "middle" (strings 5–2). The "rise of the *tuḫru*" for strings 1–5 is appropriate first because it refers to a rising dichord. Secondly, it is the beginning of a series of rising dichords, which is interrupted by *nīd(i) qabli*. The "falling" metaphor of *nīd(i) qabli* is appropriate, as it initiates a series of falling primary dichords. Secondly, the motion from strings 4–1 is literally a fall from the middle of the first seven strings (representing the heptatonic "scale"), to the first string. The significance of *qablītu* lies in the physical position of its starting string (string 5) in the middle of the *sammū*'s nine strings.

As shown in Table 2, primary dichords span an interval of five (counting upwards in a heptatonic system), and complementary dichords span three. The first three complementary dichords complete the seven-string gamut which is initiated by its corresponding primary dichord. The system is clearly heptatonic, as number 8 is replaced by number 1, and number 9 by number 2. Strings 8 and 1, and strings 9 and 2, are either tuned to the same pitch, or to two pitches in an octave relationship. This is proved conclusively by the simultaneous tightening and loosening of these string-pairs in ll. 10 and 15 of UET VII 74. At *nīd(i) qabli* the pattern changes. First, the primary interval is falling, although the incremental escalation of the dichord is uninterrupted in terms of the heptatonic system. Secondly, at this point the complements continue their incremental escalation in heptatonic terms, although the order of strings reverses. From this point onwards the complements are within the gamut of the primary dichords.

Some of the dichord terms are, at least on one level, physiognomic metaphors. If the *tuḫru* is the Achilles' tendon, the use of this word in the context of the *sammū* instrument may indicate the instrument's string, treated as the tendon of the instrument's foot. As the dichord of *nīš tuḫri* is 1–5, it is likely that the "rise of the *tuḫru*" is a metaphor for the rise of the sinew of the instrument, conceived as the tendon or sinew of an animal's foot, from its extremity to its middle. If the *sammū* is the bovine lyre, string 1 (*qudmum*) would be at the end of the instrument's attached head figure. The strings of the *sammū* were made of animal gut or tendon (cf. *šer'an sammē*

¹⁷ We thank A. D. Kilmer for noticing this possibility. Jeremiah Peterson has confirmed our revised reading of this line in UM 29-15-357.

TABLE 2 Primary and Complementary Dichords*

primary dichords			complementary dichords		
1-5	<i>nīš tuḫri</i>	rise of the <i>tuḫru</i>	7-5	<i>šēru</i>	?
2-6	<i>išartu</i>	normal	1-6	<i>šalšatu</i>	third
3-7	<i>embūbu</i>	pipe/wind-pipe	2-7	<i>rebūtu</i>	fourth
4-1	<i>nīd(i) qablī</i>	fall of the middle	1-3	<i>isqu</i>	lot/share
5-2	<i>qablītu</i>	middle	2-4	<i>titur qablītu</i>	bridge of the middle
6-3	<i>kitmu</i>	closed	3-5	<i>titur išartu</i>	bridge of the normal
7-4	<i>pītu</i>	open	4-6	<i>z/šerdu</i>	?

* This table is based on CBS 10996 col. i, see Kilmer 1971, 135. On the tablet, the complementary dichords appear below each primary dichord. A reasonably certain reading and literal translation of the terms is possible, apart from *šēru* and *z/šerdu*. *šēru* is either a Sum. loanword (according to Lieberman 1977, 463 no. 600), or cognate with the semitic root *šir* “song”. The term has also been interpreted as *šēru* “morning” (cf. CAD Š/II 332: 11 *zamār še-e-ri* “eleven morning songs”, KAR 158 viii 19), or a section of a song, due to its equation with Sum. *ki.ru.gú* (see Kilmer 1971, 143-4 n. 62; ead. 1995-7, 473: “(main theme of a) song”). *z/šerdu* was previously read as *muš-du* (Kilmer 1965, 266 l. 10), then corrected to the above reading by analogy with the form *zirte* known at Ugarit (Güterbock 1970, 49 n. 7). Kilmer made several suggestions, including a reading of *širtu* “high” (Kilmer 1971, 144 n. 69; ead. 1974, 71 n. 2). Kilmer 1995-7, 473 reads it as *serdū* “(name of a) lament”. This reading is followed by Krispijn 2002, 471, with the suggested meaning “die Saite der Wirbel(?)”. Here, the term is taken as *sirdū* “pole of a chariot, of a sedan chair” (CAD S 312). The meaning of “song” may be suggested by the entry in Proto-Aa [si-ir] EZEN = *si-ir-du-u-um* (MSL 14 102, 757:3), where EZEN could be read as *šir* “song”. The meaning “lament” is suggested by the bilingual lament for Dumuzi where *serdū* is equated with *širḫu* “lament” (4R 30 no. 2, 32 f.; see lexical section in CAD S 312; Kilmer 1984, 70 n. 2). However, the reading *z/šerdu* is suggested by the spelling in the Old Babylonian hymnodic text N 3354 + 3355 obv. ii 8: [z]i-¹er¹-du-um, where the ZI sign is clear from the copy (see Kilmer and Tinney 1996, 52). The reading of *z/šerdu* is also supported by the writing MUŠ-DU in CBS 10996, where the use of MUŠ for *se/ir* would be unexpected (as pointed out in Kilmer 1971, 144 n. 69). If this reading is adopted (following AHW 1091b), the meaning of the term is unclear.

“gut/sinew of the lyre”, AHW 1018b), which seem to have been conceived as similar materials. Similarly, the terms *qablītu* and *titur qablītu* refer to the physical middle of the instrument. The term *embūbu* can mean both a pipe instrument and a “windpipe”, normally qualified as *embūb ḥašē*.

The use of physiognomic or zoomorphic terms to describe instruments or instrument parts is known elsewhere, for example, in a “god-description” text: *sammū* (^{giš}ZÀ.MÍ) *qāt-s[u]*, translated by Livingstone as “his hand is a harp” (Livingstone 1986, 94-5). Similarly, a medical omen text uses the *sammū* to describe hands: *šumma* ŠU^{II} ZÀ.MÍ *šakin*(GAR), translated by CAD as “if he has lyre (-shaped) hands” (TBP 24 19, transl. from CAD S 119b). Lawergren and Gurney rightly point out that without details regarding position and perspective, the shape of a human hand could suggest either a lyre or a harp in this context (Lawergren and Gurney 1987, 49). Parts of the *sammū* were given physiognomic names, as shown by the following lexical sources: *áb-zà-mí* = *ḥa-sí-sà sa-am-mé-e* “cow of the lyre = ear of the lyre” (MB *Hh* V 401 from Emar, see Arnaud 1987, 76); [^{giš}TE + U]NU-ku “cheek” = MIN *šá sa-am-me-e* “ditto of the lyre” *Hh* VIIB 54 (MSL 6 121). For a possible identification of the “nose” of the lyre, see Kilmer 1980-3, 572. The material and iconographic sources for lyres make it clear that some lyres were perceived as bovine animals (see Rashid 1984, 28-35, 38-45; Collon 1987, 152, illustrations 667-9).

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Abstract

The text discussed here is one of only two identified fragments of Mesopotamian instructions for tuning a stringed instrument. Apart from its rarity, this text is important in several other respects. It confirms the reconstruction of the tuning cycle suggested by the other tuning fragment (UET VII 74), it appears to belong to a duplicate manuscript of the tuning cycle, it supports the

argument for the presence of the verb *nē'um* (as opposed to *enûm*) in Akkadian terminology for tuning, and it offers a revised reading of the music-theoretical term *nīš* GABA.RI as *nīš tuḫri(m)*.

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