

BABYLONIAN MUSIC AGAIN

By O. R. GURNEY

In *Iraq* 30 (1968) I published a fragmentary text from Ur, then numbered 7/80, containing part of a treatise on the tuning of the *sammû* instrument, and with the collaboration of the musicologist David Wulstan, who himself contributed a companion article, I added an interpretation, with a table showing that the text described seven different tunings, with instructions in two chapters for the conversion of each one to the next, first by lowering, then by raising the pitch of one string by a semitone. The copy of the text was subsequently published again as *UET* VII 74 and the number 7/80 was abandoned when the tablet was sent to Baghdad and renumbered in the Iraq Museum. This text, usually known as "the tuning text" — a better name would be "retuning text" — provided the decisive clue to the understanding of the Babylonian musical system and its terminology, which have since been expounded by several musicologists and compared with the Greek system of "octave species".¹ So well established did the theory become that it was applied without question by several scholars when a few years later a tablet apparently containing a musical notation using the same terminology was recognized among the tablets from Ras Shamra-Ugarit.² Little notice was taken in 1982 when Raoul Vitale wrote an article calling in question the basic assumption of the theory that the tuning system and the scales were upward rather than downward.³ Only recently has M. L. West proposed in this article "The Babylonian Musical Notation and the Hurrian Melodic Texts" (*Music and Letters* 75/4 [1993], 161–79) that Vitale's theory should be seriously considered.

The tablet was a mere fragment, broken away on the right side, but owing to the cyclical nature of the text it was possible to restore the two chapters in their entirety in a way that seemed at the time to be reasonably certain, on the assumption that the same verb *te-ni-m[a]* from *enû* "to change" was used throughout for the retuning of the strings. Line 12, however, which only contained two signs, NU SU, followed by a small trace, defied interpretation and was left untranslated. Subsequently R. L. Crocker proposed to interpret the signs as Sumerian for "no further", meaning that no more modulations should be carried out,⁴ and this suggestion was also accepted by all, including R. Vitale.

The Leiden Assyriologist Th. J. H. Krispijn has now perceived the correct reading of line 12, and in consequence of this the correct reading and restoration of the verb hitherto read *te-ni-m[a]* and the other verbs in the text, but his discovery is hidden rather than published in the philological note to line 171 of a difficult Sumerian text in *Akkadica* 70 (Nov./Dec. 1990), 15. Line 12 is to be read *nu-su-ḥ[u-um]*, the D infin. of the verb *nasāḥum*. This is the rubric belonging to the previous lines, the equivalent of a modern "heading", and implies that the same verb is to be restored throughout this first "chapter" in place of *te-ni-ma*, which was taken from line 19. *nasāḥum* (Sumerian *gíd-i*), or *nussuhum* (Sum. *zi-zi*), is the technical term for "to tighten" strings and its counterpart "to loosen" is *ne'um*, Sum. *tu-lu*, which must therefore be found in line 19, read *te-ni-e!*⁵ The text must now be transliterated as follows:

¹ A.D. Kilmer. The Discovery of an Ancient Mesopotamian Theory of Music, *Proceedings of the American Philosophical Society* 115 (1971), 131–49; D. Wulstan, The Earliest Musical Notation, *Music and Letters* 52 (1971), 365–86; Marcelle Duchesne-Guillemin, The Hurrian Musical Score from Ugarit; the discovery of Mesopotamian Music, *Sources from the Ancient Near East (SANE)* 2, fasc. 3 (Malibu 1984). The six texts known in 1984 are listed by Kilmer in *Iraq* 46, 69 ff.

² See Duchesne-Guillemin, loc. cit., 13 ff. with references.

³ La musique suméro-accadienne, *gamme et notation musicale*, *Ugarit-Forschungen* 14 (1982), 241–63. His theory was based on the names "thin" and "small" for the third and fourth strings, and on questioning which was the "front" and which the "back" of the instrument. Both these arguments are inconclusive. The front and back of the instruments can hardly be in doubt: in the case of harps, the back is often behind the musician's shoulder; in bull lyres the animal surely faces the front. Thus all such instruments may be

regarded as an extension of the player himself.

⁴ *Orientalia* 47 (1978), 99 ff. The interpretation is highly dubious, depending as it does on (a) the reading NU.SU.U[D], taken to be a phonetic spelling of Sum. *n u s u d* "not far", which does not even conform with the trace of the third sign, and (b) the interpretation of this as a verbal expression meaning "do not extend".

⁵ *gíd-i* = *na-sa-[hu]*, *tu-lu* = *ni/ne-e-[um ša pitni]*, Nabnitu XXXII iii 20–21 (*MSL*, XVI, 253); *zē-zē* = *gíd-gíd* = *nu-su-hu*, *Emesal Vocab.*, *MSL* IV 38, 114; *gíd-i*, *tu-lu*, *gi-en-gi-en*, *zi-zi-i*, *gā-gā*, *sū-sū*, Proto-lu 622–7 (*MSL* XII 55); see already Kilmer in *Assyriological Studies* 16 (*Studies in Honor of B. Landsberger*, Chicago 1965), 263; Krispijn, loc. cit., 5, note on line 160; and *CAD* 'N/2', 198, lexical section. I am also indebted to Professor Krispijn for a draft of his forthcoming article *Musik in Keilschrift: Beiträge zur altorientalischen Musikforschung* 2, from which I have derived much benefit.

- [šum-ma ^{giš}zā.Mi pi-i-tum-ma]
 1 [e-e]m-b[u-bu-um la za-ku]
 2 ša-al-š[a-am qa-at-na-am tu-na-sà-aḥ-ma]
 3 e-em-bu-bu-u[m iz-za-ku]
 4 šum-ma ^{giš}zā.Mi e-em-bu-bu-um-ma]
 5 ki-it-mu-um [la za-ku]
 6 re-bi uḥ-ri-im [tu-na-sà-aḥ-ma]
 7 ki-it-mu-um i [z-za-ku]
 8 šum-ma ^{giš}zā.Mi k[i-it-mu-um-ma]
 9 i-šar-tum la za-[ka-at]
 10 ša-mu-ša-am ù uḥ-ri-a-a[m tu-na-sà-aḥ-ma]
 11 i-šar-tum iz-za-[ku]
 12 nu - su - ḥ[u - um]
 13 šum-ma ^{giš}zā.Mi i-šar-t[um-ma]
 14 qa-ab-li-ta-am ta-al-pu-[ut]
 15 ša-mu-ša-am ù uḥ-ri-a-am te-[ni-e-ma]
 16 [^{giš}zā.Mi ki-it-mu-[um]
 17 [šum]-ma ^{giš}zā.Mi 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] uḥ-ri-im te-ni-e! [-ma]
 20 [^{giš}zā.Mi e-em-bu-bu-um]

The text is divided into two cycles or “chapters”, each consisting of a series of sections of four lines. At the end of the second cycle there would probably have been a rubric corresponding to the *nussuḥu* of line 12, either a form of *nē’um* or — as suggested to me by Professor Krispijn — of the verb *saḥāpu* “to lower” (Sum. šú or šú-šú).⁶ The sections are in the following form:

“(1–12) If the *sammū* is (tuned as) X and the (interval) Y is not clear, you tighten the string N and then Y will be clear. Tightening.

(13–20) If the *sammū* is (tuned as) X and you have played an (unclear) interval Y, you loosen the string N and the *sammū* will be (in the tuning) Z. [Loosening].”

The old inference that in the first chapter the pitch was lowered and in the second raised was the direct result of the assumption, based on the representations of Assyrian harps, that the first “front” strings were the longest and lowest and therefore the scale ran upwards from front to back of the instrument. The new reading, however, proves that Vitale was indeed right in 1982; for this instrument at least, the front strings must be the shortest and highest and the scales run downwards from front to back (see Vitale’s Table VII).

The first chapter ends and the second chapter begins with the *išartum* tuning. Both Wulstan and I reconstructed the full cycle on the assumption that this scale would also have been the first and last of the double cycle. It seemed obvious that without this the cycle would not be complete; there would be no instruction for retuning from *išartum* to *qablītum* or vice versa. This, however, was criticised by R. L. Crocker in *Or.* 47 (1978), 99 ff. on the ground that there was no practical reason for repeating the initial tuning a semitone lower at the end of the process. This assumes “thetic notation”,⁷ which presents the cycle as a scale on a musical staff with each retuned string marked as an accidental (sharp or flat), so that eight successive steps would tune the whole instrument a semitone higher or lower than it started. This cumulative pitch factor is not in the text. The table by which I represented the cycle⁸ eliminates it and treats each section as a separate and independent

⁶ šú-šú (= *suhḥupu*) is paired with zi-zi (= *nussuḥu*) in the Šulgi hymn edited by Krispijn line 160: see also A. Shaffer in *Iraq* 43 (1981), 82, suggesting this as the origin of the “*siḥpu*” scales in Nabnitu XXXII. Shaffer’s idea was that “throw down” might here have the sense “invert”, but as pointed out by Crocker in *Iraq* 46, 84, this cannot refer to an “inverted” interval in the modern sense, since the context in Nabnitu, and also in the Nippur hymnody fragment

N 3354 (below, n. 10), is clearly one of scales, not of intervals. Crocker and Kilmer suggested that the *siḥpu* scales might have resembled the Byzantine “plagal” scales (Greek πλαγίον “lying flat”) and the *sāgrama* scales of Indian music, with the keynote in the middle of the scale. But see below, n. 9.

⁷ Wulstan, *Iraq* 30, 221.

⁸ *Iraq* 30, 232.

FIRST CHAPTER

	Strings:	I	II	III	IV	V	VI	VII	VIII	IX	Starting Note
<i>išartum</i> tuning <i>qablūtum</i> (V-II) = tritone Tune up V		$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I	I		$\frac{1}{2}$	C
<i>qablūtum</i> tuning <i>niš GAB.RI</i> (I-V) = tritone Tune up I and VIII		$\frac{1}{2}$	I	I	$\frac{1}{2}$	I	I	I		$\frac{1}{2}$	F
<i>niš GAB.RI</i> tuning <i>nīd qablim</i> (IV-I) = tritone Tune up IV		I	I	I	$\frac{1}{2}$	I	I	$\frac{1}{2}$	I		B
<i>nīd qablim</i> tuning <i>pītum</i> (VII-IV) = tritone Tune up VII		I	I	$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I		E
<i>pītum</i> tuning <i>embūbum</i> (III-VII) = tritone Tune up III		I	I	$\frac{1}{2}$	I	I	$\frac{1}{2}$	I	I		A
<i>embūbum</i> tuning <i>kitmum</i> (VI-III) = tritone Tune up VI		I	$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I		i	D
<i>kitmum</i> tuning <i>išartum</i> (II-VI) = tritone Tune up II and IX		I	$\frac{1}{2}$	I	I	$\frac{1}{2}$	I	I		I	G
<i>išartum</i> tuning		$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I	I		$\frac{1}{2}$	C

SECOND CHAPTER

	Strings:	I	II	III	IV	V	VI	VII	VIII	IX	Starting Note
<i>išartum</i> tuning <i>qablūtum</i> (V-II) = tritone Tune down II and IX		$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I	I		$\frac{1}{2}$	C
<i>kitmum</i> tuning <i>išartum</i> (II-VI) = tritone Tune down VI		I	$\frac{1}{2}$	I	I	$\frac{1}{2}$	I	I		I	G
<i>embūbum</i> tuning <i>kitmum</i> (VI-III) = tritone Tune down III		I	$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I		I	D
<i>pītum</i> tuning <i>embūbum</i> (III-VII) = tritone Tune down VII		I	I	$\frac{1}{2}$	I	I	$\frac{1}{2}$	I	I		A
<i>nīd qablim</i> tuning <i>pītum</i> (VII-IV) = tritone Tune down IV		I	I	$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I		E
<i>niš GAB.RI</i> tuning <i>nīd qablim</i> (IV-I) = tritone Tune down I and VIII		I	I	I	$\frac{1}{2}$	I	I	$\frac{1}{2}$	I		B
<i>qablūtum</i> tuning <i>niš GAB.RI</i> (I-V) = tritone Tune down V		$\frac{1}{2}$	I	I	$\frac{1}{2}$	I	I	I		$\frac{1}{2}$	F
<i>išartum</i> tuning		$\frac{1}{2}$	I	I	I	$\frac{1}{2}$	I	I		$\frac{1}{2}$	C

Fig. 1. Table to illustrate the retuning text, UET VII 74.

unit, without regard to pitch: it remains in fact unchanged except that the starting notes (string I), being now at the top of the scale, will be: first chapter C-F-B-E-A-D-G-C, second chapter C-G-D-A-E-B-F-C (see Fig. 1). It is true, however, that in practice any retuning *through more than a single step* would be cumulative, and that with the text restored as in Fig. 1, a player tuning to *išartum* in the second cycle would find himself a semitone lower than if he had used the first cycle. Would this matter to him? An agreed pitch would of course be essential for an ensemble performance. But this text would be used by any solo player who knew he had a particular tuning and wished to convert it into another. He was free to choose his own pitch, and with this scheme no more than three strings would ever need to be retuned at a time. But without the initial and final *išartum* six steps would be necessary to convert *qablūtum* into *išartum* and vice versa, when it could be done in one. If he normally played as a soloist he might well prefer the simpler process of tuning even if it resulted in a change of pitch.⁹ Vitale followed Crocker in omitting these *išartum* sections from his transliteration, and has consequently concluded that there was no retuning of the fifth string; but as long as the beginning and end of the cycle are missing, this must remain uncertain. His convenient diagram of the scales in dynamic notation rearranged against the tonic sol-fa in ascending order (C'-C to B'-B) in his Table VIII is here reproduced as Fig. 2: the ninth string would of course be added at the *lower* end of each.

If the front strings are the shortest, the intervals in the text CBS 10996 must also be reversed: the fifths must be read as descending and the fourths ascending, as shown by Vitale in his Tables II and V. Further, this text cannot be simply a list of musical intervals as has been supposed, since 1-5, 2-6 and 3-7 all have different names, though each is a perfect fifth. Each of the fifths and fourths is in fact the first interval to be tuned in generating a particular scale; the names of the intervals can be explained as taken from the scales. CBS 10996 could thus have been the manual for the initial tuning of the instrument, not indeed in the sense of a tuning cycle, as supposed originally by Wulstan in *Iraq* 30, but for each scale separately. This explains why the two rear strings are not used. The order of the scales here is that of the strings on which the tuning would have to start to produce them, running in alternate lines from 1 to 7. The purpose of the intervening thirds and sixths admittedly remains a problem; they may, however, have been used as counterchecks, as suggested by West — they have been found in context in the Ugaritic musical notation, but so far nowhere else.

For what instrument was this system designed? The three basic texts — the list of string names in Nabnitu XXXII, the "interval" text CBS 10996, and the retuning text *UET* VII 74 — apply to an instrument with 9 strings. The name of the instrument is given in the retuning text as *sammū* (Sum. ^{gi5}ZA.MI). B. Lawergren and I have argued that the *sammū* was the harp.¹⁰ The Sumerian arched harps and the later vertical angular harps have different numbers of strings and the longest strings at the front and would therefore require a different set of manuals. Others indeed have thought the *sammū* was the lyre. We have argued against this, and the new understanding of the string positions cannot prove it, since the strings on lyres are usually shown as approximately equal in length. It must be admitted that at least one representation, the stele from Telloh (Rashid, *Musikgeschichte in Bildern: Mesopotamien*, Abb. 45) clearly has the shortest strings in front. But if our arguments are sound, the *sammū* of these texts could be the horizontal angular harp. On this instrument the row of fastenings in the soundboard would mark the shorter strings as "in front". The oldest evidence for this system and the 9 string names is actually the fragment of instructions for the accompaniment to a hymn to Lipit-Ishtar, 1934-1924 B.C., published by Kilmer in 1986,¹¹ and this is the time when the angular harp first appears on the monuments. The texts were probably composed as a group because the 9-stringed *sammū*-harp was the most popular instrument at that time.

Though these musical "manuals" may have been composed for this instrument at the beginning of the Old Babylonian period, the musical system, consisting of Pythagorean tuning, the heptatonic scale, seven scales or tunings with their "abasements" (?) (*sihpu*),¹² and the use of the same names for intervals, is not dependent on the instrument. The Hurrian texts from Ugarit show that it was widely

⁹ If this became a common practice among musicians and was extended beyond the *išartum*, could such "flattened" scales perhaps be the *sihpu* scales mentioned above in note 6?

¹⁰ See Lawergren and Gurney, *Iraq* 49 (1987), 49-51.

¹¹ N 3354, a fragment from Nippur, published by A. D.

Kilmer and M. Civil, Old Babylonian Instructions Relating to Hymnody, *JCS* 38 (1986), 94-98.

¹² Crocker and Kilmer, The Fragmentary Music Text from Nippur, *Iraq* 46 (1984), 83-5, and Kilmer in *Nippur at the Centennial* (1992), 103.

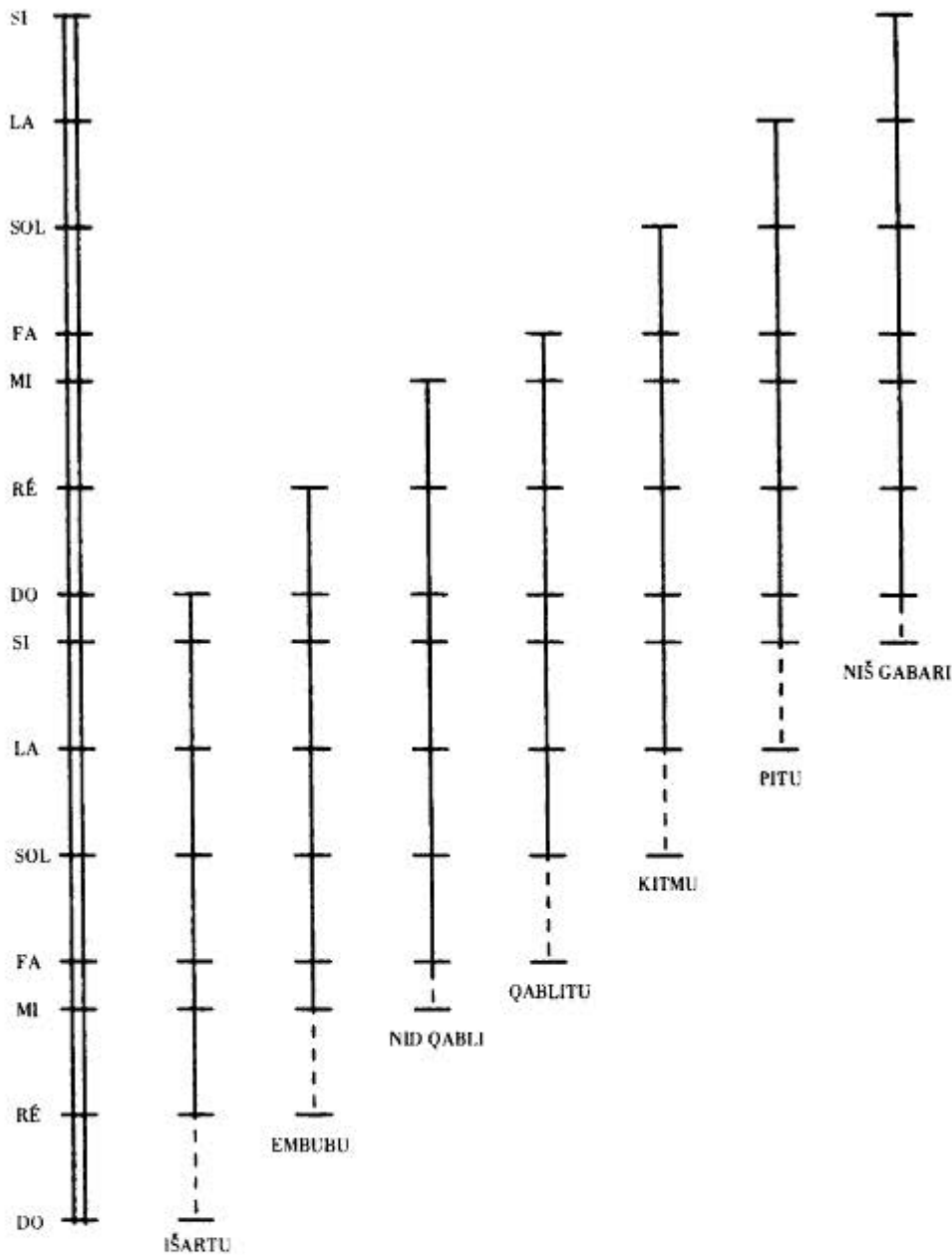


Fig. 2. Diagram of the seven scales, after R. Vitale, *Ugarit-Forschungen* 14, Table VIII, p. 252.

used in the second millennium B.C.¹³ The few references to tuning that occur in the texts of Shulgi are not sufficient to prove that the same system was current in Sumerian times, though there is ample evidence for elaborate vocal and instrumental music in the Sumerian temples.¹⁴

Wulstan has pointed out¹⁵ that Plato's "harmony of the spheres" yields a scale that corresponds to the Babylonian *išartum* (as previously interpreted) and that this doctrine has always been thought to have been borrowed from the Near East. He also drew attention¹⁶ to the "octave species" of Ptolemy, which he presented as ascending scales corresponding to the ascending scales (as he took them) of the Babylonians. Professor West has pointed out to me, however, that such indications as there are suggest that in fact the Greeks thought of their scales as descending. There is a remark by a writer of the Peripatetic school that the normal direction of the tetrachord was downward;¹⁷ the

¹³ See especially Kilmer in *Nippur at the Centennial* (1992), 101.

¹⁴ See Th. J. H. Krispijn, *Beiträge zur altorientalischen Musikforschung*: 1. Šulgi und die Musik, *Akkadica* 70

(1990), and 2. (forthcoming).

¹⁵ *Iraq* 30, 225.

¹⁶ *Ibid.*, 221–2.

¹⁷ M. L. West, *Ancient Greek Music* (Oxford 1992), 192.

order of the original string names was from high pitch to low, *tritē* being the third highest;¹⁸ even the notation ran in a downward direction.¹⁹ Though the main source is Ptolemy, the diatonic scale which must have resulted from "Pythagorean" tuning is attested as early as Philolaus, who is only a century after Pythagoras himself. It seems that — as indeed we might expect — the early Greeks took the principles of their music from the Near East after all. Subsequently they showed their own genius in the refinements of "enharmonic" tuning which was certainly unknown to the Babylonians.

¹⁸ Ibid., 219.

¹⁹ Ibid., 230, 256.