

# The Kikkuli Text. Hittite Training Instructions for Chariot Horses in the Second Half of the 2nd Millennium B.C. and Their Interdisciplinary Context

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## 1. INTRODUCTION

Among the cuneiform tablets found in the ancient Near East and the adjacent areas, the literary genre of the Hittite instructions for the training of chariot horses has become—as Johannes A. POTRATZ (1963, 181) noted—“something of a legend” in Hittitology including related philological and linguistic disciplines as well as Near Eastern Archaeology and Egyptology. Together with the Middle-Assyrian instructions on horse training from Aššur (EBELING 1951) we are provided with relatively rare first hand information about certain aspects on how training concepts of chariot horses in the second half of the 2nd millennium have been composed, structured and archived by the Hittite and Middle Assyrian scribes.

Examining the history of editions and studies on the so-called “Hittite Horse Texts”—written in the Hittite language on clay tablets using Hittite cuneiform signs—we are confronted with two developments in the history of research. Firstly, although studies on Kikkuli Text have been published (FORRER 1922; HROZNÝ 1931) within a relatively short time span, it took over 30 years before all Hittite Horse Texts available from 1906/07 until 1938 were presented in a single monograph. Secondly, nearly all of the basic text editions of the Hittite cuneiform tablets in KUB and KBo as well as most of the philological, linguistic and hippological comments and monographs are published in German for an academic audience familiar with peoples, languages, history and conventions to render cuneiform sign as well as *termini technici* from other languages such as Sumerian, Akkadian, Hittite or Old Indic (Vedic) [see chapter 4].

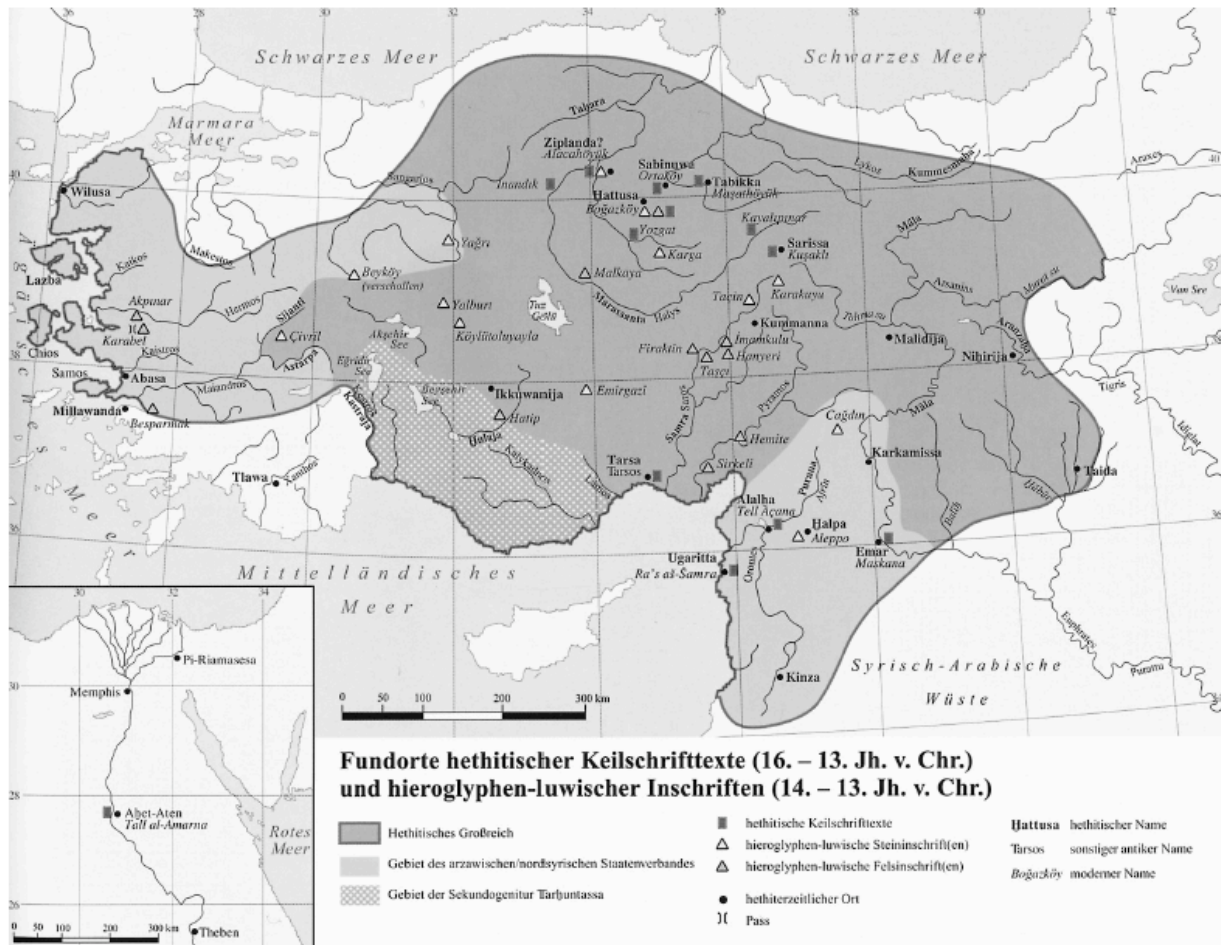


Fig. 1: Map of the Hittite empire with the capital Boğazköy/Ḫattuša showing excavation sites with cuneiform tablets and Hieroglyphic-Luvian inscriptions. RAULWING/MEYER 2004, 499 Fig. 3 after Norbert OETTINGER.

Taking into consideration that on one hand studies on the Hittite horse training texts published in English do not specifically provide an introduction to the genre and problems related to the Hittite Horse Texts and on the other hand, that a completely new hippological interpretation was suggested by Frank STARKE in 1995 which declared all former interpretations obsolete, it may be worth presenting a short overview on the Kikkuli Text and the training of Hittite chariot horses in the second half of the 2nd Millennium B.C., in English to an interdisciplinary readership.

## 2. NAME AND CONTENT OF THE “KIKKULI TEXT”

The so-called “Kikkuli Text” was discovered in the first campaign 1906–07 of the Boğazköy/Ḫattuša excavation in Anatolia (Turkey; see Fig. 1) led by the Assyriologist Hugo Winckler (1863–1913), and is named after its author, Kikkuli the “horse trainer from the land of Mittani”, as he introduces himself in the first line of the first tablet of his training instructions.

KUB I 13 I 1f.:

[Transliteration of the Hittite cuneiform signs]

Line 1: *UM-MA <sup>1</sup>Ki-ik-ku-li li <sup>LÚ</sup>a-aš-šu-uš-ša-an-ni*

Line 2: *ŠA KUR <sup>URU</sup>Mi-it-ta-an-ni*

[Translation]

Line 1: “Thus [speaks] Kikkuli, the horse trainer

Line 2: from the land Mittani”

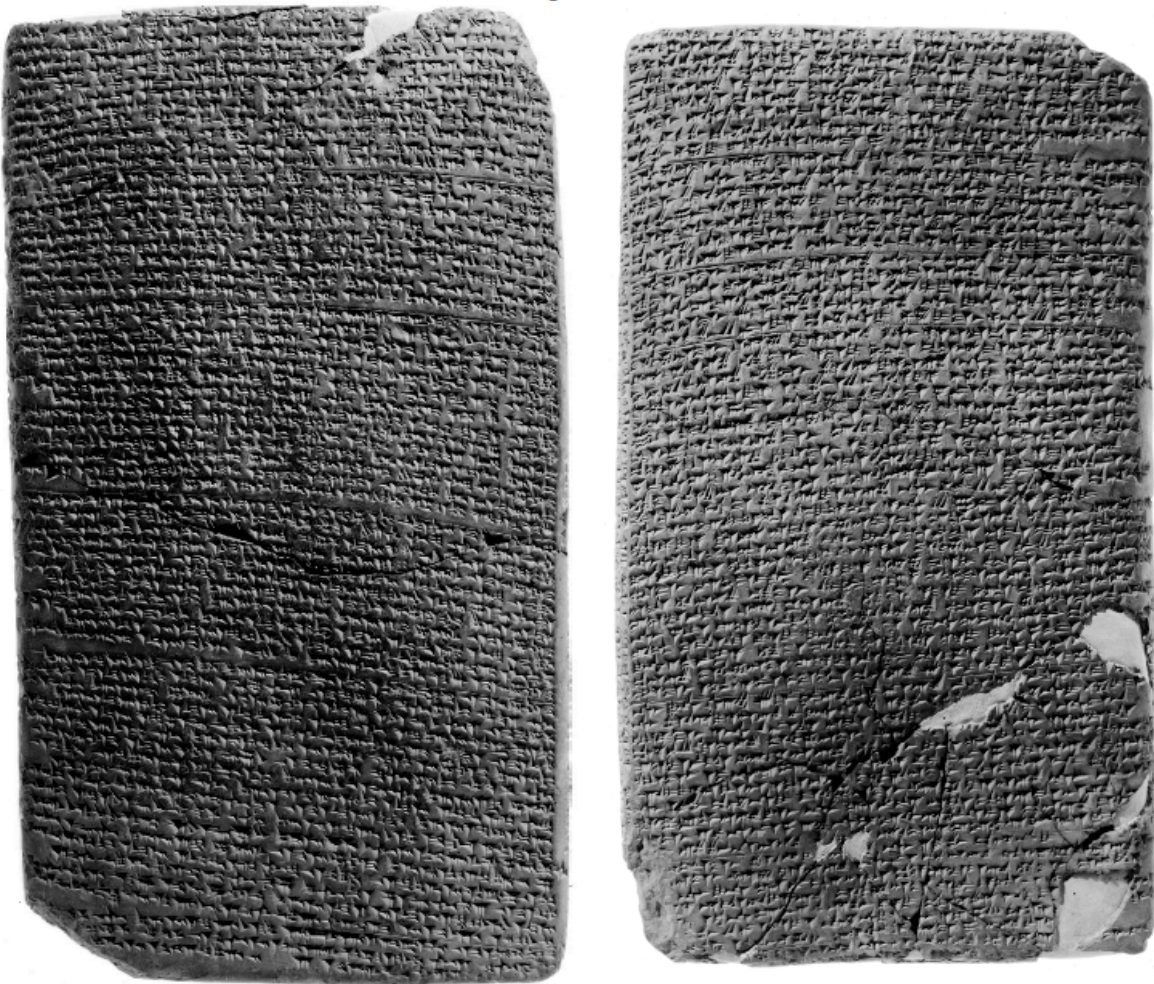


Fig. 2: Fourth tablet of Kikkuli Texts. Berlin, Vorderasiatisches Museum.

Following A. KAMMENHUBER's edition (1961), the training program of the Kikkuli Text is set to start in autumn and is based on a detailed schedule of at least 184 days of training units including instructions for feed and water rations, as well as horse care and management. In combination

with certain training units, feed and water for the horses are also withheld intentionally. The horses spend time in their stables, where they receive special treatment such as massages or blankets. If necessary, the horses are fitted with muzzles. Furthermore, the horses are put out to pasture. The training units are performed at different parts of the day, covering a time frame from early morning to midnight.

Although the number of each training day of the Kikkuli Text is not given (or has not survived) and must be reconstructed from the single units and the time of day given in the cuneiform tablets, we can deduce that Kikkuli “the horse trainer from the land of Mittani” developed a training schedule for chariot horses that was considered worth inclusion in the royal archive of the Hittite capital Ḫattuša (see VAN DEN HOUT 2002 with an instructive overview on “Hittite Literature”).

### 3. THE LITERARY GENRE OF THE KNOWN AS “HITTITE HORSE TEXTS” AND HITTITOLOGICAL NOMENCLATURE

As seen above, the tablets of Kikkuli and his colleagues from Mittani can be classified as belonging to the genre of the so-called “Hittite Horse Texts”. The tablets and fragments were found in the archive of building E on the western slope of the Büyükkale in Boğazköy/Ḫattuša (RAULWING/MEYER 2004, 493, Fig. 2). More tablets came to light in the layers excavated under the direction of Kurt BITTEL (1907–1991) in the 1930’s. The Hittite texts and fragments dealing with the training of chariot horses—distinguished in German-speaking publications into “Old” and “New Hittite Horse Texts” to reflect when they have been found—were grouped by Emmanuel LAROCHE in his *Catalogue des textes hittites* (1971) as CTH 284–286. In short, studies on the Hittite Horse Texts refer to the naming convention as shown in Figure 3.

	CTH (LAROCHE 1971)	Training Instruction	Named in Studies on Hittite Horse Texts as
“Old Horse Texts”	284	I	“Kikkuli Text”
“New Horse Texts”	285	II	“Training Instruction with a Ritual Introduction”
“New Horse Texts”	286	III	“Purely Hittite Training Instruction”

Fig. 3: Naming convention of the Hittite Horse Texts in Hittitological studies.

Annelies KAMMENHUBER (1932–1995), *Grande Dame* of the Hittite Horse Text, who published the fundamental transcription and translation in her *Hippologia hethitica* (1961) as a result of her intimate knowledge of the Hittite cuneiform tablets, was able to demonstrate that tablets I–IV of TRAINING INSTRUCTION I, containing 1080 lines, form one continuous text. This fact becomes especially apparent at the transition from tablet II to tablet III; thus, the modern naming of these four tablets as “Kikkuli Text” seems justified. However, this is not the case for TRAINING INSTRUCTION II and III which have not been composed by Kikkuli. Those two training instructions must be separated from the Kikkuli Text due to certain linguistic and grammatical features:

TRAINING INSTRUCTION II and TRAINING INSTRUCTION III are written in “correct” Hittite whereas any Indo-Aryan *termini technici*—with the exception of Kikkuli’s profession, mentioned in the colophon of TRAINING INSTRUCTION II (tablet III line '46)—are missing, as KAMMENHUBER (1961, 42–52) elaborated in her philological comments of her edition.

In contrast to A. KAMMENHUBER, Erich NEU (1936–1999), one of the most renowned Hittitologists in the second half of the 20<sup>th</sup> century, made important contributions towards the research on the Hittite Horse Texts. First, NEU succeeded in demonstrating that tablets I–IV of the Kikkuli Text found in 1906/07 are in fact a copy by a Hittite scribe working in the 13th century B.C. who copied the original text of the 15th century B.C. The scribe of the 13th century adapted the Middle-Hittite graphical use of cuneiform signs to the ductus commonly used—and therefore characteristic and typical—of his time. In other words, the Hittite scribe had “modernized” the Middle-Hittite use of cuneiform signs (NEU 1986, 161). Therefore, it was not the original tablets of Kikkuli and his staff that were found—NEU (1986) convincingly dated the lost original of the Kikkuli Text to the Middle-Hittite epoch—, but a Neo-Hittite copy of it written in the 13th century B.C. Furthermore, following NEU’s cogent palaeographic and philological arguments, the relative-chronological order of TRAINING INSTRUCTION I–III, proposed by KAMMENHUBER 1961, must be fundamentally revised. NEU’s important results (as shown in Figure 4) lead to an exact inversion of KAMMENHUBER’s proposal.

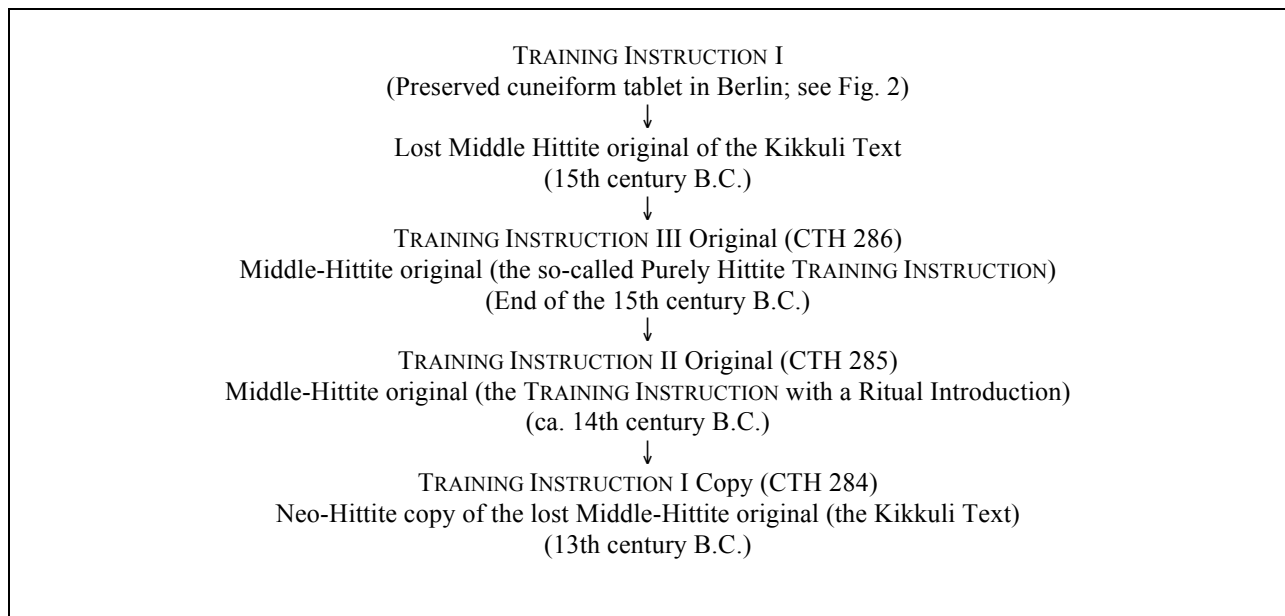


Fig. 4: Relative chronological order of the Hittite Horse Texts.

NEU was also able to demonstrate that the Hittite Horse Texts form part of a practice, attested since the 15th century B.C. in Ḫattuša, to codify available knowledge in written form as archived regulations and instructions show. Certainly, this does not mean that the Hittites did not have any

written “training instructions” before archiving the Kikkuli Text, thinking of Anitta of Kuššara (ca. 1700 B.C.), Ḫattušili I. (early 16th century B.C.) or Muršili I., the grandson of Ḫattušili (KLENGEL 1999), nor does the fact that the Kikkuli Text is the most ancient specimen of its kind known so far in the Ancient Near East allow the conclusion that these instructions were the exclusive domain of the speakers of Indo-Aryan speakers.

#### 4. LANGUAGES USED TO COMPOSE THE KIKKULI-TEXT

Vocabulary and syntax used in the Kikkuli Text give us an impression of the collaboration of the Hurrian horse trainers with their Hittite colleagues. Following KAMMENHUBER, who studied all original cuneiform texts and fragments of Kikkuli, tablets I–IV of TRAINING INSTRUCTION I belong together and form one unit of training instructions. It also seems that each tablet of the Kikkuli Text was written by a different individual Hurrian speaking scribe. The scribe of Tablet I shows the most “pedantic and solid knowledge of Hittite”. The scribe of Tablet II offers the most variants of grammatical expressions (but also contains the most peculiar grammatical and linguistic errors). Tablet III was written by a meticulous scribe who, as KAMMENHUBER pointed out, “has not been blessed with sufficient knowledge of Hittite”. Finally, tablet IV, was written by a scribe who was neither meticulous nor demonstrated sufficient knowledge of Hittite. The Mittani-Hurrian horse trainers and their Hittite colleagues used common terms as well as special hippological *termini technici* from different languages such as Sumerian, Akkadian, Hittite, Luvian, Hurrian and Indo-Aryan in the ancient Near East. Before we go deeper into the literary genre of the Hittite Horse Trainings Texts, it seems worthwhile for an interdisciplinary readership to briefly explain the languages used in the Hittite Horse Texts.

Sumerian, a linguistically isolated language of which no directly related language survived, was spoken in southern Babylonia (Sumer) in modern Iraq until the end of the 3rd or the beginning of the 2nd millennium BCE. Sumerian became extinct around the mid-2nd millennium BCE (STRUCK 2005; WOODARD 2008). Its use was restricted to formal contexts, especially in religious, scientific and literary texts until the 1st century BCE as also the Sumerian terms in the Hittite Horse Texts demonstrate. Sumerian as spoken language was replaced by Akkadian (named after Akkad in southern Iraq), an overarching term to denote eastern Semitic languages such as Assyrian and Babylonian from ca. 2300 BCE until the end of the 1st century BCE. Hurrian, linguistically not related to Sumerian and Akkadian, is attested in the ancient Near East from ca. 2300 BCE to around 1000 BCE. Hurrian became the spoken and written language of the kingdom of Mittani, a powerful state emerging in northern Syria from approximately the middle of the 2nd millennium BCE until ca. 1300 BCE (WEGNER 2000). Letters in Hurrian from the Mittani king Tušratta, who bears an Indo-Aryan throne name (RAULWING/CLUTTON-BROCK 2009, 69 ff. with fn. 256), to the Egyptian Pharaoh in the late 14th century BCE survived in the archive of Tell el-Amarna in Egypt (MORAN 1992, 41 ff. esp. 63 ff.). Although the spoken language in the Mittani kingdom was Hurrian, a few *termini technici* belonging an Indo-European language named Indo-Aryan is documented in the ancient Near East in cuneiform records from Ḫattuša,



Meskene, Maşat Höyük, Nuzi (the land of Arrapha), Alalah, Ugarit as well as in other archives and Egyptian sources of the New Kingdom. The Mittanian capital Uaššukkanni (with its royal cuneiform archive, as can be assumed) could not be localised geographically yet. The terms Indo-European and Indo-Aryan were coined by modern scholars in the early 19th and early 20th century AD in lack of the absence of genuine terms (FORTSON 2004; KOERNER 1981[82]; WIESEHÖFER 1990). Due to certain linguistic developments, Indo-Aryan represents an older dialect than the oldest Sanskrit (Vedic). Indo-Aryan as attested in the ancient Near East and Vedic must have been separated before the 16th century B.C. which can serve as a *terminus ante quem* for that separation. However, Indo-Aryan has neither been introduced from India into the ancient Near East nor has it ever reached India from the ancient Near East; it rather reached the eastern Mediterranean areas in connection with the migration of the Hurrians (for an introductory overview see WILHELM 1989; 1995; KÜHNE 1999). Furthermore, it was not spoken as “a living language” at the time when the (lost) original of the Kikkuli Text has been written, as Johannes FRIEDRICH (1893–1972) pointed out over 80 years ago (1928, 148). In this context, the expression was coined, that the Indo-Aryan *termini technici* in the Kikkuli Text have been “piously handed down as fossils” (KAMMENHUBER 1968, 18; 1993, 788). The terms “Indo-Aryan” and “Indo-Aryans” are used in this study exclusively within their linguistic definition (MAYRHOFER 1966; 1974; 1982; 2007 and WIESEHÖFER 1990). Hittite is the earliest Indo-European language attested in written records in the Asia Minor around the turn of the 3rd and the 2nd millennium BCE (FORTSON 2004, 158 ff.). Together with its sister language Luvian (FORTSON 2004, 167 ff.) Hittite belongs to the Anatolian branch of the Indo-European language family. Hittite and Luvian did, as many other languages in the ancient Near East, not survive the end of the Bronze Age.

## 5. HIPPOLOGICAL INDO-ARYAN TERMS IN THE KIKKULI TEXT

Certain hippological terms documented in the Kikkuli Text are undisputed regarding their Indo-Aryan (and not Hittite, Luvian, Sumerian, Akkadian or Hurrian) etymology; among them, Indo-Aryan terms for “rounds” and a term for training field or training area (first pointed out by JENSEN 1919). As a surprise, Wolfram VON SODEN (1908–1996), the Nestor of Assyriology in Germany in the second half of the 20th century, was able to identify hippological Indo-Aryan terms in the archive of Nuzi (the modern Jorgan Tepe near Kirkuk in Iraq) which indicate colour or age of horses (VON SODEN 1958). These terms build an important part of the Indo-Aryan vocabulary that survived the Kikkuli Text:

The noun *ua-ša-an-a* (*uašanna-*) *ua-ša-an-na-ša-ia na* (Genitive) and *ANA ua-ša-an-ni* (Hittite Dative-Locative) [EWAia II, 536 s.v. *VAH \*uaš<sup>h</sup>anas-ia*] “(of the) training area, ”, mentioned twice in the Kikkuli Text (tablet III. IV 22; IV. recto 26) measured in height (!) and width (KAMMENHUBER 1961, 121; 139; RAULWING 2006, 65 ff.). The verb *an-da-ua-ar-ta-an-zi* (*anda*) *u<sub>2</sub>artanzi* (Indo-Aryan root *u<sub>2</sub>art-*; cf. EWAia II, 518 f. s.v. *VART*; KAMMENHUBER 1961, 137) “they are plaiting up their tails” before being yoked to the chariot. The noun *-u<sub>2</sub>artanna* (Vedic *vartani-* “course, line, gauge, felloe” [EWAia II, 518 f. s.v. *VART*: “Weg, Bahn, Strecke, Radspur, Radfelge”]) is documented in compounds for “rounds” such as

in *a-i-ka-ua-ar-ta-an-na* (*aika-uartanna*) “One Round” (Vedic *éka-* “one”), *ti-e-ra-ua-ar-ta-an-na* (*tēra-uartanna*) “Three Rounds” (Vedic *trī-* “three”), *pa-an-za-ua-ar-ta-an-na* (*panza-uartanna*) “Three Rounds” (Vedic *pāñca-* “fünf”), *ša-at<-ta>-ua-ar-ta-an-na* (*šatta-uartanna*) “Three Rounds” (Vedic *saptá-* “sieben”), *na-a-ua-ar-ta-an-na* (*nauartanna-* haplological [shortened] from a reconstructable form *\*naua-uartanna*) “Three Rounds” (Vedic *náva-* “neun”). It is noteworthy to point out that these Indo-Aryan compounds for “round” only designated odd numbers (see chapter 8). Furthermore, the undisputed Indo-Aryan lexicon in the ancient Near East contains mentioned adjectives from Nuzi denoting horse colours or age-related features: Indo-Aryan *p/babru-*nnu** ≈ Vedic *babhrú-* “reddish brown, brown”, Indo-Aryan *p/barita-*nnu** ≈ Vedic *palitá-* “grey”, Indo-Aryan *p/binkara-*nnu** ≈ Vedic *piṅgalá-* “reddish brown, reddish yellow, greenish yellow. [VON SODEN 1957; MAYRHOFER 1966, 19; 1974, 15f.; 1982, 76; EWAia II, 210 s.v. *babhrú-*, 126 s.v. *piṅgalá-* - u. 103f. s.v. *palitá-* „grau“].

However, other Indo-Aryan *terminic technici* have been discussed more controversially. One recent example, we might quote here, is Kikkuli’s profession title as mentioned by himself in line 1 of the first tablet (see above).

Although most scholars accepted that Kikkuli’s profession title *aššu-ššanni* contains the Indo-Aryan word *\*ašva-* for “horse” as its first element (on this term see the recent overview in RAULWING/CLUTTON-BROCK 2009, 78 ff.), the remaining part of the compound has been interpreted with different results (MAYRHOFER 1966; 1974). RAULWING/SCHMITT 1998 (compare also RAULWING 2000, 113–116) have reconstructed that *aššuššanni* contains Old Indo-Aryan *ašva-* “horse” + the Vedic root *śami* “to make (the horses) tired, exhausted” (EWAia II, s.v. *ŚAM<sup>1</sup>*) + the Hurian morpheme *-nni* (see WEGNER 2000, 49 on the suffix *-nni*) and, furthermore, that *aššuššanni* goes back etymologically to Early Indo-Aryan *\*ašva-śa-ḥ* and Proto-Indo-European *\*h<sub>1</sub>ek’uo-k’mh<sub>2</sub>-* with the literary meaning “der das Pferd (scil. im Training) zur Aufbietung der letzten Reserven treibt, d.h. zur Ermattung bringt” [“the one who pushes the horse (during the training) to summon (up) all its strength/reserve, i.e. an exhaustion”]. F. STARKE (1995) and O. CARRUBA (2000) have suggested a Luvian etymology for Kikkuli’s profession title. However, STARKE’s rejection of an Indo-Aryan etymology (1995, 117 fn. 232 on *susanu* and p. 118 fn. 235 on *aššuššanni*) is linguistically unfounded: EBELING (1951, 11; see his comment on the Middle-Assyrian Horse Training Text VAT 10450, recto, line 5), 45 s.v.; 48 pointed out that—despite the loss of the initial vowel *a-* and a semantic expansion (which is similar to German *mareschalk* > *Hofmarschall*, French *maréchal de logis*)—there cannot be any doubt to connect Middle-Assyrian *susānu* as well as Neo-Babylonian *šušānu*, Neo-Assyrian *susānu* and Syrian *šušānā* with Indo-Aryan/Hurrian *aššuššanni* (MAYRHOFER 1966, Index p. 139 with further bibliography and KAMMENHUBER 1961, 6f.; 20f. and 1968, 209; However, the Middle-Assyrian fragments describing a training instruction for chariot horses go back, as the profession title *susānu* clearly demonstrates, to an Indo-Aryan source from Mittani (EBELING 1951, 53; 58–60 on the younger commentary fragment VAT 9426). In favour of the semantic aspect of our etymology of *aššuššanni* (deriving from an Early Indo-Aryan *\*ašva-śa-ḥ* + Hurian suffix *-nni*), we may hint at the following expressions in the Middle-Assyrian Horse Training Texts (see EBELING 1951, 31f.): N = Aššur 5866, 19172b, recto, line 6: [t]a-rakaš 7-šu i-na ḥ u-li tu-(N 6) [k]a-ša-ad 2-šu [1/2 ma-zi-a-ni] “du wirst (sie) anspannen, siebenmal wirst du (sie) auf dem Wege fertigmachen (hetzen), zweimal [1/2 Leistung (?)] = “you will harness (the horses), you will take all out (of them) (= exhaust, rush them) seven times on the road, two times [1/2 performance (?)]” (similar in E = VAT 9561, recto, line 3, verso, line 4 and 9 and *tu-ka-šad* in, F = VAT 9542 recto, line 9, verso, lines 2, 14, T = Aššur 3531, 13361b,



recto, line 5, verso, line 4 and in the Sumerian/Akkadian glossary: kur-kur (?) = *tu-ka-ša-ad* in the commentary fragment (VAT 9426, verso, line 4; see EBELING 1951, 19–21; 23; 27; 37). Regarding the semantics of these lines, EBELING’s translations and comments are unambiguous (1951, 52): “will der Wagenlenker die Pferde zu hoher Leistung anspornen, so hetzt er sie: “Er macht (sie) fertig” (*tukaššad*), d. h. verlangt von ihnen die höchstmögliche Leistung” (If the chariot driver wants to spur/to encourage the horses to a high performance, he exhausts (rushes) them: “He takes all out (of them)” (*tukaššad*), he demands the highest performance from the horses; see also AHW I, 461, s.v. *kašadu*, c) “jagen, hetzen, mA (Pferd)” (accepting EBELING’s translation). Taking into consideration that the Middle-Assyrian king Adad-nirari I. (c.1307–1275 B.C.)—as well as his successors Šalmanassar I. (c.1274–1245 B.C.) and Tukulti-Ninurta I. (c.1244–1208 B.C.), who both led campaigns into Mittani/Ḫanigalbat, the latter even using deported Babylonian, Hurrian and other workmen in the building of his new capital Kar-Tukulti-Ninurta (MOOREY 1989, 281)—expanded the borders of Assyria including the Hurrian kingdom of Mittani/Ḫanigalbat, we may well assume that the Assyrian kings may also tried to acquire hippological knowledge regarding the training of chariot horses; a similar situation is found in Ḫattuša with the *aššuššanni* Kikkuli from Mittani and the archiving of his training program.

## 6. THE KIKKULI TEXT IN THE FOCUS OF INTERDISCIPLINARY RESEARCH

Let us now return to the Kikkuli Text. The fact that the Hittites had “commissioned” training instructions for chariot horses, signed by a <sup>LÚ</sup>*aššuššanni* named “Kikkuli from the land of Mittani”, archived and copied it several generations later, has given rise to an all too enthusiastic evaluation of the Indo-Aryans’ role in ancient Near Eastern chariotry on the part of certain scholars under the influence of the social ideologies of their time. We find this enthusiasm still today, but they are certainly exceptions. It is therefore not necessary here to elaborate the fact that the Kikkuli Text does not allow any conclusions as to the initial introduction of *horse & chariot* to the ancient Near East. The same conclusion applies to the alleged intentions of acclimatisation and the introduction of new horse breeds.

Since the early 1920’s scholarly research on the Kikkuli Text has been mainly focused on four topics:

- i. From the point of view of Hittite, Luvian and Hurrian studies a critical edition of training texts; for the first time proposed by POTRATZ (1938) and for the first time completely, i.e. comprising all tablets and fragments of CTH 284–286, in KAMMENHUBER’s edition (1961) and on problems of translation resulting from the hippological *termini technici*.
- ii. From the point of view of historical-comparative linguistics, above all on a classification of the Indo-Aryan glosses and appellatives into the Indo-Aryan linguistic corpus of the Near East (see below).
- iii. From the point of view of hippological studies on the purpose of the training program, which is not explicitly described or mentioned by Kikkuli and therefore (if at all) only reconstructible by interpreting the text itself—over decades an object of controversies.
- iv. From the point of view of chariotry research on the controversial role of the Indo-Aryans in ancient Near Eastern chariotry. Viewing the literary evidence of (cattle) raids, combats

and chariot races provided in the Rigveda (SPARREBOOM 1985), Avesta (MALANDRA 1991) and other sources such as the comparison of Proto-Indo-European *\*h<sub>1</sub>ék'uos* and Indo-Aryan *\*ásva-* “horse” with the adjectives Proto-Indo-European *\*Heh<sub>3</sub>k'ú-* and Indo-Aryan *asú-* “swift” as well as Indo-Iranian names that contain the words “horse” for */ásva/, /aspa/* and “chariot” */rátha/, /raθa/*, POTRATZ, HROZNÝ, and others interpreted the Kikkuli Text as any instruction for the training of horses for chariot races while simply transferring the Indo-Iranian reconstructions, the Vedic and Avestan textual evidence on the Indo-Aryans in the Ancient Near East.

The eminent linguist and hittitologist Ferdinand SOMMER (1875–1962) argued against POTRATZ' interpretation (1939, 629f.) on the basis that the lack of a quantifiable scale for assessing increased performance as well as the hunger and thirst treatments and the number of exercises to be carried out by night. These pieces of information clearly speak against the interpretation of the Kikkuli Text as a preparation for racing, but rather as training instructions for chariot horses used in warfare. Although SOMMER's conclusion has become *communis opinio*, the theory of Kikkuli Text representing training instructions for chariot races has been voiced occasionally to this day.

If up to the middle of the 1990's we had tried to give a summary of the results of several decades of hippological research on the Kikkuli Text on the basis of KAMMENHUBER's (1961), we might probably have come up with the following:

- i. With the reviews of POTRATZ 1938 written by SOMMER (1939) and WOLFF (1942) the view has become accepted that the Kikkuli Text is an introduction manual for the training of chariot horses, covering a period of at least seven months (beginning in autumn).

KUB I.13 I 3f.

When he puts the horses out to pasture in autumn, 1 day he yokes them. He makes them go 3 miles in the *penna* pace (48).

- ii. Kikkuli “from the land of Mittani” has provided a program for the Hittites to build endurance and stamina reaching the limits of the physical capacity of the horses, as he demands up to 150 km daily (and this on several successive days), if we equate the measurement of 1 DANNA used in the Kikkuli Text with the Sumerian equivalent of 10,7 km.
- iii. The Indo-Aryan *termini technici* confirm the fact that the Indo-Aryans in the ancient Near East were experts regarding the hippological problems connected with the horse & chariot complex, and comparisons quoted with the Indo Iranian, Vedic and Iranian sources mentioned above suggest that this is an “age-old” association (“uralte Verbundenheit”). Not even Annelies KAMMENHUBER with her “minimalist” concept of the Indo-Aryans of the ancient Near East denied them a certain esteem in the *horse & chariot* complex, although this esteem had never been defined.

Once these hypotheses and conclusions have been more or less accepted from the 1960's onwards, it became relatively quiet regarding the Kikkuli Text in the 1970's and 1980's. However, in the last decade several hippological studies on the Kikkuli Text have been published (see also RAULWING 1999, 353ff. on the studies of NYLAND, HORN und MASSON):

- i. The Australian endurance rider Ann NYLAND (NYLAND 1993a; 1993b; and 1992) conducted an experiment to train horses for a period of seven months as demanded by the Kikkuli Text. Her Old Colonial Arabians were led from a vehicle in order to perform their daily exercise program.
- ii. Valentin HORN, a former professor for agriculture, gives a short overview of the history of the horse in the ancient Near East. He agrees with KAMMENHUBER's interpretation of the Kikkuli Text as a training program to build up stamina and provides useful tables containing running distances sorted by verbs of motion.
- iii. Frank STARKE, Hittitologist and specialist for Cuneiform Luvian (a sister language of Hittite spoken mainly in southern Anatolia) rejects all former interpretations of the Kikkuli Text as a training program to build up stamina. According to his understanding, Kikkuli required the training for flying changes in canter (STARKE 1995, 69ff., Fig. 5, p. 76, Fig. 6, p. 94, Fig. 7, p. 100, Fig. 8, p. 103). However, this interpretation must be rejected (see under v. below)
- iv. The Hittitologist Emilia MASSON gives a translation of the four tablets of the Kikkuli Text into French (*L'Art de soigner et d'entraîner les chevaux*, 1998) accepting STARKE's new hippological interpretation.
- v. Wolfgang DECKER, an expert on the history of sport in ancient Egypt and adjacent areas, also welcomed STARKE's interpretation in a review (DECKER 1996a; 1996b, 357). However, a closer look at STARKE's lines of argument (which have been critically analysed by RAULWING/SCHMITT 1998; RAULWING 1999; RAULWING/MEYER 2004) clearly show that his premises must be rejected for methodological reasons as is shown by his *petitio principii* argument regarding the reduction of the measurement DANNA and IKU to 900 meters and 9 meters (on reasons why STARKE's interpretations must be rejected from the hippological and methodological standpoint see below). Furthermore, STARKE wrongly interprets the Kikkuli Text and translates Hittite, Hurrian and Indo-Aryan *termini technici* according to his understanding of modern horse training.

## **7. THE BASIC PROBLEMS OF A HIPPOLOGICAL INTERPRETATION OF THE KIKKULI TEXT**

Although STARKE's new hippological interpretation of the Kikkuli Text seems to have been accepted by a few scholars—the majority seems to be skeptical which might be reflected in the fact that this book has only reviewed twice—, some unresolved obstacles still remain, because each

attempt to determine a hippological purpose of the Kikkuli Text is still confronted with fundamental uncertainties (this applies to the entire CTH group 284–286):

- i. The horse trainer from Mittani does not provide his Hittite colleagues with information about the hippological goal(s) of his training program, nor about how to make use of the chariot teams in battle (see below). At least this information is not given in the preserved fragments, although it could have been expected at the beginning of Kikkuli's instructions (or maybe in a separate text that has not been found yet), given the complex structure of Kikkuli's training concept. Judging, however, from the circumstances of preservation of the CTH group 284–286, it is very probable that such a separate text never existed. This leads to the conclusion that information given orally about the goal(s) of the training must have been sufficient for the Hittite horse trainers to be able to use the training instructions.
- ii. The equation of verbs of motion (mainly *penna-* “to drive” and *parḫ-* “to chase”) with the different gaits of the horse, i.e. walk, trot or gallop leaving out of consideration other theoretical possibilities such as *Tölt* and amble cannot be ascertained with a sufficient degree of certainty from an analysis of the texts themselves (GÜTERBOCK 1964). Therefore, POTRATZ (1963, 183f.) deduced “a greater likelihood, for general historical reasons”, that in the Kikkuli Text, no precise gaits are named, but only general instructions regarding the tempo are given in the sense of “Walk-Accelerated-Rapidly” (“Schritt-beschleunigt-rasant”). This view was later adopted by KAMMENHUBER (1968, 197).
- iii. The Hittite horse trainers were certainly careful about representing Kikkuli's request of distances as accurately as possible using the equivalents of DANNA “mile” and IKU (“field”) in Middle-Hittite times, since the training program, aside from the paces, tempi and further special types of exercises, was calculated for precisely defined distances. However, from the information given (or rather lacking) in the text, no exact definition of the units employed is possible, e.g. DANNA (HZL 259), which is usually translated as a “mile” (= 2 hours) and seen as representing a distance between 10.69 and 10.8 km. Nevertheless, the different interpretations of the equation of 1 DANNA—and consequently the subunit IKU, as well as its equivalent *gipeššar* (= 1/100 DANNA) employed in TrAn III instead of IKU—differ at a ratio of close to 12:1—from ca. 10.7 km (KAMMENHUBER 1961; HORN 1995 and others) to 1.5 km (MELCHERT 1980; VAN DEN HOUT 1987–90, 521) or 0.9 km (STARKE 1995).

What does this mean for the Kikkuli Text? First of all, we can start from the (probably banal) premise that the (non preserved) purpose of Kikkuli's training for chariot horses must have been known by the Hittite grooms, and that they were able to put into practice his concept on the basis of the written text, assuming at the same time that the Kikkuli Text had not just been copied thoughtlessly, but served as a reference for practical work in the Hittite Royal Archive (RAULWING/SCHMITT 1998, 679–687; RAULWING 2004, 492f.; 497–499). This would also apply to

those horse trainers who only had the Neo-Hittite copy at their disposition. Whether this means that the Kikkuli Text “was regarded as a equestrian classic” (as KÜHNE 1971, 118 footnote 588 supposed), this can probably not be answered adequately.

We should be very clear about the fact that the Hittite Horse Texts of group CTH 284–286 do not furnish any indications whether:

### 7.1. GENERAL HIPPOLOGICAL INFORMATION

- i. The Hittites had composed their own hippological horse training manuals before Kikkuli (as the fact that chariots are mentioned as early as in the Anitta Text (NEU 1974) in the 18th century B.C. may – under certain premises – indicate).
- ii. The Hittites actually inaugurated the archiving of training programs for chariot horses (which are not preserved) before the 15th century B.C.
- iii. The Hittites or the Indo-Aryans introduced the horse and the chariot into Asia Minor and the ancient Near East (RAULWING 2000; on the Hittite military organisation see BEAL 1992 and 1995).
- iv. Complementary hippiatric programs were conducted simultaneously within Kikkuli’s training schedule for chariot horses.
- v. Furthermore, we do not know, where the Hittites bought their horses and where they were bred.
- vi. If acclimatisation programs were conducted in case horses have been bought from outside of Anatolia.

### 7.2. SPECIFIC HIPPOLOGICAL INFORMATION

We do not know whether:

- i. Kikkuli from the land of Mittani was actually in Ḫattuša himself or if the Hittites just copied the training program that has been named after him. However, it seems very like that Kikkuli worked in the Hittite capital (RAULWING/SCHMITT 1998).
- ii. Kikkuli brought a written version (or notes) in his mother tongue, or if he and his colleagues passed on orally their knowledge comprising of at least 184 days that filled over 1000 lines on four cuneiform tablets.
- iii. We also do not know where the training area was located and what it looked like,
- iv. What kind of horses/breeds were chosen and which criteria were used for this selection (sex, age, experience, previous training, morphological criteria [*intérieur/extérieur*], temperament, Kikkuli’s personal experiences),
- v. Furthermore, the Kikkuli Text does not provide any information on how the training of horses, chariot drivers and warriors were composed and conducted as preparation for battle, how offensive and defensive strategies may have been chosen and practised in order

to carry out—as far as this is possible—training for noise, dust, heat, stress and deadly threats such as arrows, spears etc. of any battle in which chariot forces participated.

## 8. SOME REMARKS ON THE GENESIS OF INDO-ARYAN TERMS FOR “ROUND” USED IN THE KIKKULI TEXT

Given the Indo-Aryan *termini technici* in the Kikkuli Text (RAULWING 2006, 65 ff. and Fig. 3, p. 66) we may conclude that “rounds”, performed on race tracks by chariot drivers and their team of horses, are already of Indo-Iranian origin (on Indo-Iranian see SCHMITT 1989 ff.). The Kikkuli Text can be understood as a training program for horses which was developed further in north-western Mesopotamia by Kikkuli (and his grooms) in order to adapt to the needs for the training of chariot horses within the tradition and specific development of the ancient Near East and Asia Minor. On one hand, the Kikkuli Text still appears to preserve an Indo-Iranian variant of such race tracks when requiring the training units to be performed twice around an area called *uasanna*. How exactly this *uasanna* training ground matches its Indo-Iranian parallels, cannot be said with certainty. The scribe of Kikkuli Text tablet III. IV 24 explicitly mentions objects made of wood [GIS<sup>HI.A</sup>] which surround the *uasanna* training area on its outside. On the other hand, we can observe in the Kikkuli Text, as KAMMENHUBER (1968, 294) calculated, that in the ancient Near East the area of the *uasanna* (measured in height[!] and width) became a formula for the distance of 1 round in the *parḥ-* pace which equals 14–20 fields. In the Hittite Horse Texts, these former “rounds” (*aika-uartanna-*, *tera-uartanna-*, *panza-uartanna-*, *satta-uartanna-* and *na-uartanna*) became “frozen” as distance measurements and were “handed down as fossils” as KAMMENHUBER phrased it (1961, 293f.; 1968, 206). In this context, we must keep in mind that Indo-Aryan was not a spoken language at the time of Kikkuli and his colleagues from Mittani. Their mother tongue was most probably Hurrian (KAMMENHUBER 1961, 18 with further bibliography). Kikkuli and his colleagues used the odd Indo-Aryan *termini technici* that were, as “rounds”, part of the training program(s) that came into the ancient Near East at the time when speakers of Indo-Aryan separated from those who later reached India. During the adaptation of his program to the demands of the training of chariot horses in the ancient Near East, odd numbers for the newly abstracted distances were also needed in Kikkuli’s training program covering a period of at least seven months. This adaptation process, that starts already in northwestern Mesopotamia as the Hurrian translation *šinisella auzameua* as in Hittite *2-anki parḥuuar* “2-fold galopp?” [with *parḥ-*] (KAMMENHUBER 1961, 14070, 428, 19 and 294f. with further material) is reflected in the Kikkuli Text where Indo-Aryan *uartanna* was translated verbatim as Hittite *uahnūuar*. The question remains as to why the Indo-Aryan terms *aika-uartanna-*, *tera-uartanna-*, *panza-uartanna-*, *šatta-uartanna-* and *na-uartanna-* (short for *\*nava-uartanna-*) only apply for odd “rounds”. As discussed elsewhere (RAULWING 2006), it has been suggested that the odd numbers in the Kikkuli Text refer to the passing of the turning post and the even numbers to the starting post which is also (after completing all “rounds”) the finish post. Applying this method, Avestan sources have been explained in the same way. In this context, an observation made by E. HERZFELD (1930, 75f. and 1938, 170; see KAMMENHUBER 1968, 201, KÜHNE 1971, 116 fn.



575 und RAULWING 1999, 361) may lead to further results. HERZFELD describes that in 1929, Riza Schah Pahlavi held horse races near the Afghan border of 3, 5 and maximum 9 rounds of 1.4 km (nearly a mile); as HERZFELD enthusiastically points out, “exactly as in Kikkuli’s and Haosravah’s times, and the horses were not tired at all”. This may indeed, go back to Indo-Iranian times as horse training concepts such those described by A. TOKTABAEV (Academy of Science in Almaty) who published a study on training programs for horses that participate in horse races about distances between 30 and 35 kilometers in Kazakhstan (TOKTABAEV 1998) and which show certain similarities with the Kikkuli Text.

If the premises elaborated in RAULWING 2006 are correct, we would be able to trace the amalgamation of (at least) two aspects of training programs for horses (or parts of them) that date before Kikkuli’s times. Firstly, (horse and/or) chariot races were performed on race tracks with a length of 1, 3, 5, 7, or maximum 9 rounds. The distance of each round is purely speculative, although we might get an impression of HERZFELD’s observations. Secondly, with the Kikkuli Text archived in the royal archive of the Hittite capital in Ḫattuša, we may be able to get a rare glimpse into a training program for chariot horses in the ancient Near East that goes back to a time before speakers of Indo-Aryan separated in central Asia, and which was adapted to the demands of chariotry in the context of palatial structures. Kikkuli’s training program shows that the odd numbers for “round”, handed down “as fossils”, came to represent distance measurements. Altogether, it would not then seem necessary to apply the odd numbers to turning posts and the even numbers to a “fully completed” round.

Despite the lack of basic hippological information and a controversial discussion regarding the training intention of the Hittite Horse Texts and certain *termini technici*, the Kikkuli Text offers us a unique insight into concepts of the training of chariot horses in the 2nd millennium BCE.

## ABBREVIATIONS

AHw	W. VON SODEN, <i>Akkadisches Handwörterbuch</i> . I.–III. Wiesbaden, 1965–81.
CTH	E. LAROCHE, <i>Catalogue des textes hittites</i> . Paris, 1971.
EWAia	M. MAYRHOFER, <i>Etymologisches Wörterbuch des Altindoarischen</i> . I.-II. (1992–1996). [The Index volume was published in 2001].
GAG	W. VON SODEN, <i>Grundriß der Akkadischen Grammatik</i> . Rom 1995.
HZL	C. RÜSTER/E. NEU, <i>Hethitisches Zeichenlexikon. Inventar und Interpretation der Keilschriftzeichen aus den Boğazköy-Texten</i> . Wiesbaden, 1989.
KBo	Keilschrifttexte aus Boghazköi. Berlin, 1916ff.
KUB	Keilschrifturkunden aus Boghazköi. Berlin, 1921ff.
VAT	Berlin, Vorderasiatisches Museum.

## FURTHER READING

Still indispensable is the German edition of *all* Hittite Horse Texts by A. KAMMENHUBER (1961) which is neither replaced by F. STARKE's new hippological interpretation (1995) nor E. MASSON's French edition (1998) or G. PROBST's translation (1977) of parts of the Kikkuli Text. Brief overviews in English are given by KAMMENHUBER (1988[93]), A. GOETZE (1962), H. G. GÜTERBOCK (1963) and J. MARZAHN (1996; see also 2007 for a German version); the latter also include the Middle-Assyrian Horse Training Texts published by E. EBELING (1951).

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