**Methods of Decipherment of Unknown Scripts
and their Didactical Imparting Using the Example of
Luwian Hieroglyphs**

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"Einzigartig war sie [die Entzifferung] dadurch, daß so viele Gelehrte gleichwertige Beiträge leisteten und eine Vielfalt verschiedener Methoden und Mittel anwandten." (Pope 1978:161)

1. Introduction

Decipherment of unknown writing systems is both challenging and rewarding. The process in which the cryptic information becomes transparent enables us to not only understand the written source, but also to learn a great deal about the cultural background of the speakers of ancient languages. During their studies many students of Indo-European Linguistics are confronted with highly celebrated decipherments and the methods which facilitated them, learning about the discovery of the Rosetta Stone trilingual and how it enabled Jean-François Champollion to complete the decryption of Egyptian hieroglyphs, or the different approach taken by Georg Friedrich Grotefend who managed to decipher Old Persian cuneiform writing by making connections between the names of Persian rulers in Old Persian texts and their correspondences in Ancient Greek historical records (Gordon 1968).

Regarding the actual methods of decipherment in general however, very little has been published and even less material concerning the practical application of these methods is available to students. In the following paper, I present an approach to didactically educate students about a range of methods of decipherment of an ancient writing system in a practical way, using Hieroglyphic Luwian writing system. For that purpose, I created a special assignment, the solutions to which can be found in the Appendix 1.
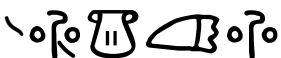
2. The Assignment

- 'Puduhepa' – Hittite queen, married to Hattusili III.

- amu – 'I'

- 'Gurgum' – Hittite state

- 'Pihami' – Personal name

- 'Kubaba' -Mesopotamian goddess

- hatura- 'letter'

- turpa/i- 'bread'

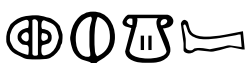- 'Warpalawa' – Hittite king

- 'Hepat' – Mesopotamian goddess

- 'Tuwana' – Luwian kingdom

- 'Danuhepa' – Hittite queen, married to Muršili II.

- 'Muwatali' – Hittite king

- 'Haranawiza' – Personal name

3. An Outline of the assignment

The assignment is divided into two separate columns, one of which lists the correct spellings of Hieroglyphic Luwian words as found in inscriptions[1]. In the second column I provided transliterations and meanings of the same words. The students' task consists of several steps: firstly, matching the Hieroglyphic Luwian words with the provided transliterations and translations correctly, secondly, identifying as many Luwian signs as possible, and thirdly, determining how the writing system works in general. The whole assignment is to be accomplished either individually or in small groups within a reasonable time limit. Upon completion of the exercise the lecturer serves as a mediator in the discussion of methods used for the decipherment.
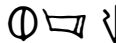
The exercise consists of thirteen lexemes, the vast majority of which are proper nouns including names of persons as they appear in Hieroglyphic Luwian inscriptions (⟨signs⟩ 'Pihami', ⟨signs⟩ 'Haranawiza'), names of rulers (⟨signs⟩ 'Puduhepa', ⟨signs⟩ 'Warpalawa', ⟨signs⟩ 'Danuhepa', ⟨signs⟩ 'Muwatali'), deities (⟨signs⟩ 'Kubaba', ⟨signs⟩ 'Hepat') and toponyms (⟨signs⟩ 'Gurgum', ⟨signs⟩ 'Tuwana'). The importance of names for the process of decipherment was highlighted by Johannes Friedrich, a great German hittitologist:

> Namen sind das wichtigste, oft das einzige Mittel, um in die
>
> Lesung einer unbekannten Schrift die erste Bresche zu schlagen;
>
> sie sind aber auch bei sprachlicher Deutung wichtig für
>
> die Gruppierung der Wörter, die wieder für die Wortdeutung
>
> und für die Bestimmung grammatischer Funktionen der Wörter
>
> Wert hat (Friedrich 1966:136).

Hence, the reasoning behind the choice to incorporate a great number of proper nouns is twofold. Firstly, names often offer a possibility for the researcher to achieve initial success in

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[1] See Hawkins 2000; Payne 2014.

decipherment of an unknown script as they refer to places and persons perhaps mentioned in historical sources of neighbouring nations. They are in such cases occasionally phonetically very similar, since "proper names are usually not translated into another language but are simply transcribed" (Gelb/Whiting 1975:100). On one hand, the decipherer can make speculations about the content of the inscription, the geographical region it originates from, as well as the period in history during which it was created and, on the other hand, there is a possibility of making correct guesses about the phonetic value of individual signs. Secondly, the more frequently the same proper names occur in the text, the higher is the probability to identify grammatical forms of the language. In fact, names of cities located in northern Syria and their rulers served as a significant factor in the decipherment of the Hieroglyphic Luwian writing system (Doblhofer 1993).

In addition to proper names, three other terms have been deliberately included in the assignment: 🐾 *amu* 'I', ☺ *turpa/i* 'bread' and ◐ ⊏ ⊢ *hatura* 'letter'. This was done with the purpose to illustrate various possibilities of signifying nouns and pronouns used in Hieroglyphic Luwian, which will be discussed in greater detail in the following section.

3. Methods of decipherment

The process of deciphering an unknown script depends on several different factors. Determined by what information about the writing system is available to the decipherer various methods can be applied, the main requirement being enough material available to the researcher: "Aus nichts kann nichts entziffert werden. Wo jede Möglichkeit der Anknüpfung fehlt, kann wohl der Dilettant seiner Phantasie freien Lauf lassen, aber kein Ergebnis von Bestand erzielt werden" (Friedrich 1966:135).

One of the first notions a decipherer should be conscious of is the fact that not every carving on a wall of a cave must necessarily represent a system of writing. Especially in the case of hieroglyphic scripts, due to their pictographic appearance, uncertainties should arise

concerning the question if one is dealing with a writing system or a mere work of art. Though students are confronted with an exercise aware of the fact that the writing system used is indeed an existing one, it is nevertheless an issue which should be addressed by the lecturer. Counting the number of distinct symbols and looking for repetitions of the same symbol is a good starting point in any decipherment - a method employed not only for determining the genuineness of a writing system but also what kind of writing system it is (Haas 1983).

There are different categories of writing systems depending on what types of symbols are being used: alphabetic, syllabic, logographic and mixed. Provided there is enough material available, counting the number of distinct symbols helps determining the type of the writing system. According to Fuls, 20 to 35 distinct characters indicate an alphabetical writing system, 40 to 90 suggest a syllabary, while even more imply that the script is logographic or a mixed logo-syllabic kind (Fuls 2009:4). But in some cases, "even a small amount of context can be extremely valuable in solving a cryptogram. [...] If a logo-syllabic system is unknown but largely pictographic, it may be possible to deduce the interpretation of some logograms from their pictorial representations" (Gelb/Whiting 1975: 101). There are two examples of logograms in the assignment which can be easily identified as such and matched with their correct translations, not only due to their pictorial character but also because they are standing alone: ☺ *turpa/i* 'bread' and 🐾*amu* 'I'.

Logographic signs additionally can help to determine the direction in which the symbols are to be written and read. The readers' eyes are to follow the gaze of the depicted creatures, as they indicate the direction in which a given line is intended to be read. As the characters are mirrored from line to line, the reading direction alternates. This type of writing system, referred to as *boustrophedon*, literally 'as the ox ploughs', besides Hieroglyphic Luwian was commonly used in Ancient Greece for writing inscriptions in stone (Werner 1991:11). Thus, 🐾*amu* 'I', an asymmetrical sign with two variant forms, should be read from left-to-right when facing the left and from right-to-left when facing the right direction. In addition to asymmetrical characters of this type there are two other methods to determine the beginning line of a *boustrophedon* type writing system. Firstly, the inscribers tend to be particularly careful when carving the first signs
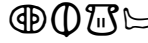
of the line, while the characters at the end of the line are often sloppily squeezed in due to insufficient space. Secondly, the very last line of the text is most likely not to be filled out completely.
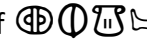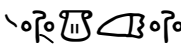
Some logographic signs have developed over time to determinative signs though a few retained their original function besides the new one. Determinatives were most likely not read out loud, but merely written down. Their function is to disambiguate the interpretation of the signs, which – as will be demonstrated later – may be occasionally interpreted in several ways, by marking semantic categories of words and showing the reader what type of lexeme will follow. The usefulness of determinative characters for the researcher was expressed by Gelb/Whiting: „if the cryptanalyst can guess what the message is, the solution of the cryptogram will be much easier. Even having a general idea about what the message might be will facilitate the decipherment" (Gelb/Whiting 1975:98).

Determinatives can, for the most part, be deciphered effortlessly due to their positioning either preceding or following the word concerned. In the assignment I included the most commonly used determinative characters of Hieroglyphic Luwian: ╲ (ˈ) and ⊕ (DEUS) are placed before the word they classify, the former signaling a person's name and the latter a name of a deity is to follow. The determinative △ (URBS) is placed after the word categorizing it as a geographical name of a city. A frequent methodological difficulty for a linguist when dealing with determinatives is to interpret how each sign was spelled out, since some of the determinatives appear exclusively in their function as such. In these instances, it might be helpful to search for correspondences in known varieties of the language, such as Cuneiform Luwian, or within the Anatolian branch of the Indo-European language family.

The last and the most common type of signs used in the Hieroglyphic Luwian writing system is a syllabogram. The function of syllabograms is fundamentally different to those of logograms and determinatives. While the latter suggest the meaning of a word or a topic by their appearance and resemblance to the signified, the function of the former is to write language phonetically. A syllabogram can represent simple vowels V, open syllables of the structure

consonant + vowel CV or more complex open syllables CVCV. Only very few glyphs which stand for closed syllables were identified (Werner 1991:12).

The best method to decipher syllabograms in the assignment is by determining patterns within words. For instance, when comparing the sequences of signs in ＼⧉𝍖①𝍩 ('Danuhepa') and ＼𝍩⊐ ①𝍩 ('Puduhepa') it becomes immediately discernable that the signs ① and 𝍩 are to be read as *he* and *pa*. This assumption can be confirmed if one compares the above words with another sequence of signs ⊕①𝍩⊐. By applying the information about the determinative character ⊕ (DEUS) the word can be deciphered as the name of goddess Hepat, an important figure in Hurrian mythology. Using this technique students should be able to decipher the rest of the syllabograms in the assignment.

One of the difficulties, however, is the afore mentioned problem with multiple possibilities to interpret a single sign. The sign 𝍩, which has been previously identified as *pa*, also occurs in the word ⊕◁▷ 𓅓𝍩𝍩 ('Kubaba'), though this time it should be pronounced with a voiced stop. Numerous other examples of syllabograms confirm that there was no systematic distinction between voiced and voiceless consonants in the Hieroglyphic Luwian script. Moreover, a single sign could have more than one vocalization option (Payne 2014). For instance, besides its phonetical value as *he*, ① can be also transcribed as *ha*, as in ＼𝍖①‖‖ ('Pihami'). Another imperfection of the Hieroglyphic Luwian writing system is the lack of signs signifying a single consonant. Thus, there is no manner to indicate consonant clusters or the absence of vowels, as in the last syllable of ⊕①𝍩⊐ ('Hepat'). The first attempt in finding a solution is apparent in ＼∘ʳ∘𝍩◁ᵇ∘ʳ∘ ('Warpalawa'), where an additional sign has been added to the syllabogram ∘ʳ∘ *wa* modifying it into *war*.

In addition to several interpretation of a single character, there is yet another obstacle the Hieroglyphic Luwian writing presents to researchers – for numerous syllables there exist multiple possible signs. For instance, both characters ⊐ and 𝓎 have phonetic value of *ta*. The

reasons for this phonemenon are mostly obscure, however, to be looked for in historical development of the writing system. Though the origin of the most syllabograms is unknown, it has been proposed that some of them "can be analysed as derived by acrophony" (Payne 2014:6). It is surely no coincidence that the character 𓂀, a clear depiction of a head of a donkey, stands for syllable *ta*, if one considers that the word for donkey in Luwian is *targasna* (Laroche 1960:63). Unfortunately, due to changes in appearance most of the signs accrued over time, not many of them can be explained as derived by acrophony. An extensive list with explanations can be found in Neumann (1992:39).

There remains yet one unsolved problem in the assignment – the exact meaning of the symbol 𓅃, which to this day has not been deciphered. No matter how different or useful the methods of decipherment might be, there will be always unanswered questions, a lesson every student should learn.

4. Conclusion

I hope to have demonstrated how research methods, often considered to be a rather dry topic, can be imparted onto students in a more interactive way and accompanied by information about a complex writing system employed for the Hieroglyphic Luwian language. Nevertheless, it should remain clear that the assignment provided in this paper is far from being a real decipherment. It is rather a bilingual text, the best-case scenario for a decipherer, in clear print rather than carved in eroded stones with the purpose to demonstrate how methods of decipherment can be applied. A 'real' decipherment would require much more: vast knowledge and good common sense, such as Champollion's competence in multiple foreign languages, as well as bravery, as in case of Sir Henry Creseicke Rawlinson who was hanging from a cliff in the air about 500 feet above ground in order to complete a copy of the Behistun inscription and endangering his life, and of course persistence, such as Zaza Alexidze, "who needed ultraviolet light to see the underlayer of Caucasian Albanian in the Sinai palimpsest, could only get sufficient darkness by locking himself in the monastery lavatory for hours, balancing the manuscript on his

lap and a lamp in his left hand copying the shape of each letter onto a pad with his right" (Evans 2010:133).

5. Bibliography

Doblhofer, Ernst. 1993. *Die Entzifferung alter Schriften und Sprachen*. Stuttgart: Philipp Reclam.

Evans, Nicholas. 2010. "Keys to Decipherment: How Living Languages Can Unlock Forgotten Scripts". In: *Dying Words: Endangered Languages and What They Have to Tell Us*. Malden: Wiley-Blackwell, 129–153.

Friedrich, Johannes. 1966. *Entzifferung verschollener Schriften und Sprachen*. 2. verbesserte Auflage. Berlin, Heidelberg, New York: Springer-Verlag.

Fuls, Andreas. 2009. "Methoden zur Entzifferung von Schriftsystemen". *MegaLithos* 3, 1–7.

Gelb, I.J. and Whiting, R.M. 1975. "Methods of Decipherment". *Journal of the Royal Asiatic Society of Great Britain and Ireland* 2, 95–104. www.jstor.org/stable/25203647. Accessed 10 June 2017.

Gordon, Cyrus H. 1968. *Forgotten Scripts. How they were deciphered and their impact on contemporary culture*. New York: Basic Books, Inc., Publishers.

Haas, William. "Determining the level of a script". *Writing in Focus*, vol. 24, Walter de Gruyter & Co., 1983, pp. 15–29. Trends in Linguistics. Studies and Monographs.

Hawkins, J.D. 2000. Corpus of Hieroglyphic Luwian Inscriptions, Volume I, Inscriptions of the Iron Age. Berlin, New York: de Gruyter.

Hawkins, J.D., Morpurgo-Davies, A. and Neumann, G. 1974. "Hittite Hieroglyphs and Luwian: New Evidence for the Connection". *Nachrichten der Akademie der Wissenschaften in Göttingen, I. Philologisch-historische Klasse* 6. Göttingen: Vandenhoeck & Ruprecht.

Laroche, Emmanuel. 1960. *Les hiéroglyphes hittites*. Paris: Editions du CNRS.

Neumann, Günter. 1992. "System und Ausbau der hethitischen Hieroglyphenschrift".
Nachrichten der Akademie der Wissenschaften in Göttingen, I. Philologisch-historische Klasse 4. Göttingen: Vandenhoeck & Ruprecht.

Payne, Annick. 2014. *Hieroglyphic Luwian: An Introduction with Original Texts*. *3rd Revised Edition*. Wiesbaden: Harrassowitz.

Pope, Maurice. 1978. "Die hethitischen Hieroglyphen". In: *Das Rätsel der alten Schriften: Hieroglyphen, Keilschrift, LinearB.* Pawlak, 152–162.

Werner, Rudolf. 1991. *Kleine Einführung ins Hieroglyphen-Luwische*. Freiburg, Göttingen: Universitätsverlag/Vandenhoeck Ruprecht.
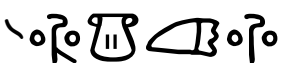
6. Appendix: The Solution

- 'Kubaba' -Mesopotamian goddess
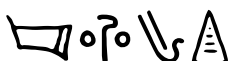
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