Abstracts

of

THE 5TH SOUND AND SCRIPT CONFERENCE

LautSchriftSprache [LSS-5]

From the Maya Script to the Germanic Runes – Case studies on the Typology of Scripts and Research on Writing Systems

University of Agder, Kristiansand–Fevik, October 25–28, 2022

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THE 5TH SOUND AND SCRIPT CONFERENCE: FROM THE MAYA SCRIPT TO THE GERMANIC RUNES – CASE STUDIES ON THE TYPOLOGY OF SCRIPTS AND RESEARCH ON WRITING SYSTEMS is an international multidisciplinary event to be held 25th–28th October 2022 at the University of Agder / Fevik Conference Hotel.

For further information see:
https://www.uia.no/arrangementer/internasjonal-grafematikk-konferanse-ved-uia-scriptandsound-5

Organizing committee of the event: Michael Schulte (host and main organizer), Gaby Waxenberger (co-organizer) in collaboration with Paola Cotticelli, Kerstin Kazzazi, Alessia Bauer, Alfredo Rizza and Daniel Petit (scientific advisory board)

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Preface

The UiA conference "From the Maya Script to the Germanic Runes - Case Studies on the Typology of Scripts and Research on Writing Systems" kicks off at Fevik Strandhotel, 25.–28. October 2022.

As part of the well-established series ScriptandSound / LautSchriftSprache, it is intended to shed new light on Historical Graphemics. This is an interdisciplinary research field still in the making – between philology, language history, epigraphy, paleography, semiotics, cultural anthropology and other disciplines.

While the first four LSS conferences in Italy, Switzerland and Germany dealt predominantly with alphabetic writing systems (the runes included), the announced conference expands the focus through various areas that have been dealt with randomly so far, e.g. North and South America, China, India, and it extends the timelines: from the linear Elamite writing around 2200 BC to Cherokee script in the 19th century AD.

The main goal of this conference is to deepen our understanding of the modus operandi of different scripts and writing systems by including further cultures and contexts.

The planned conference brings together an interdisciplinary circle of invited linguists and researchers within this field of research.

Aim and focus

The conference and book series LautSchriftSprache/ScriptandSound is devoted to Historical Graphemics. It promotes research on the general structures of documented scripts and writing systems, both synchronically and diachronically. Thus it explores changes in the language systems and their graphemic responses and consequences within individual writing systems, scripts and orthographies. As a multidisciplinary research field, Historical Graphemics bridges a gap between philology, language history, epigraphy, palaeography, semiotics and other disciplines. Historical Graphemics is a research field in the making; most importantly it constitutes an interface between the above fields and has been gaining in profile, not least through the LSS conference series.

The fifth LSS conference continues this trend in the now established series: The field of investigation will be further extended, including, e.g., Native American and Chinese scripts and writing systems, as well as theoretical and comparative approaches. Interestingly, the present program has a strong representation of Meso-American writing and writing systems. It also presents Grapholinguistics, a recently developed research field grounded in what German-speaking scholars label Schriftlinguistik.

While the first four LSS conferences dealt predominantly with phonographical issues, and in particular with the alphabetical type of script (including the runes), the planned conference in Kristiansand will move into focus further types of script and writing systems. This will hopefully lead to a review of different constellations of language and script in geographical areas hitherto not taken into consideration (e.g., North and South America, China, India) as well as of different time lines (from the Linear Elamite writing around 2200 BC to the Cherokee syllabary in the 19th century AD).

The major aim of the conference is this: By including independently developed systems such as the Maya script, it will hopefully deepen our understanding of script typology and historico-cultural dimensions. For writing systems must be regarded as products of different cultures and contact situation, meaning that Historical Graphemics cannot ignore language, culture and communication.

The planned conference with its extraordinarily interdisciplinary circle of experts, not only on graphemics, but also on the diverse written languages, will constitute a further crucial step in the development of the field of Historical Graphemics. Here the specific constellation of scripts, writing systems and languages will be discussed in a joint forum.

Warming up

Opening and introduction to the LSS-5: Aim and focus

Michael Schulte, with Gunhild Kvåle, University of Agder

In a straightforward manner, the title of the conference expresses its broad orientation while at the same time highlighting its methodological focus: "From the Maya Script to the Germanic Runes – Case studies on the Typology of Scripts and Research on Writing Systems." Suffice it to mention the two following ties between the topic and the location of the conference in the largest town of southern Norway, Kristiansand.

First, it is worth emphasizing that the Maya script has been studied by the Kristiansand scholar Andreas Faye on his journey through Europe in 1831 (see Jahr 2021:234). It was the "Codex Dresdensis" in the Royal Library of Dresden which attracted Faye's special attention. The precious book is one of four to preserve the script and language of pre-Columbian Maya culture in Middle America, among other topics (see Jahr 2021:234–235, with illustration). The Codex Dresdensis contains various different parts, astronomical and lunar calculations among other things. The book is dated to the 11th/12th c. and the oldest one which is preserved fom the American continent; it predates the advent of the conquestadores who subdued the rich Maya culture. The Codex has played – and is still playing – a key-role in deciphering Maya hieroglyphs.

Another direct link is provided by the Celticist and runologist Carl Johan Sverdrup Marstrander, who was born in Kristiansand on November 26, 1883. Marstrander grew up in Kristiansand and took the examen artium at the Katedralsskolen in 1902 whence he went to the University of Kristiania to start his academic career (for further detail and references, see Rekdal 2022). Thus the choice of the location of the LSS-5 is by no means random. The opening and introduction to the LSS-5 will address further relevant aspects along these lines and not least it will bring to mind the aim and focus of the LSS-5.

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Plenary I

Grapholinguistics – an expanding research field

Christa Dürscheid & Dimitrios Meletis, University of Zurich

Grammatology, graphonomy, graphemics, writing systems research – there are many names for a discipline that became established in linguistics only towards the second half of the last century. However, they are by no means synonyms; indeed, the mentioned terms stem from different paradigms and research traditions and do not cover precisely the same areas. What they have in common is that they all address different facets of the topic of writing. These aspects are subsumed under the heading of *grapholinguistics* – a designation that is already well-established in German-language research (as 'Schriftlinguistik') and is now gaining ground in the English-speaking world as well. Grapholinguistics is defined as an interdisciplinary field of research that covers not only structural questions concerning writing but adopts also sociolinguistic, psycholinguistic, and several other perspectives as well as methodologies in order to do this complex and multifaceted phenomenon justice (cf. Meletis/Dürscheid 2022).

One of the aims of grapholinguistic research is the establishment of a framework for the systematic investigation of writing systems, including analytical subbranches and descriptive concepts. Notably, such a framework must be capable of accounting for all writing systems – and not just alphabets. Against this background, a trichotomy of areas has recently gained traction in an increasingly international and comparative grapholinguistics: (1) *graphetics*, studying all aspects concerning the materiality of writing; (2) *graphematics*, examining the linguistic and communicative functions of writing, and (3) *orthography*, dealing with the normative aspects of writing such as the regulation of written structures. With a combination of concepts and perspectives from these three subbranches, a thorough description of various writing systems can be achieved, allowing a comparison and typologization that moves beyond the mere question of which linguistic levels their basic units mainly correspond with (cf. Joyce/Meletis 2021). In complementing these fine-grained analyses with usage-based perspectives, scholars from diverse disciplines can gain a fuller picture of writing as a structural and communicative phenomenon.

In our talk, we will first trace the German grapholinguistic tradition and outline what distinguishes it from the work that has emerged in the Anglo-American world in the past two decades. Then we will address current developments and show exemplarily which areas have only recently been added to this broad field (e.g., research on handwriting, cf. Gredig 2021). The second part of the talk will illustrate how the systematic distinction between graphetics, graphematics, and orthography can be used in the description, classification, and comparison of diverse writing systems.

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Plenary II

Complex signs in Maya Writing

Nikolai Grube, University of Bonn

The hieroglyphic script of the Classic Maya (250-900 CE) is one of the most calligraphically sophisticated writing systems invented by humans. This is due not only to the large number of signs, but also to the unusually large wealth of sign variants (graphs). Maya scribes were able to animate signs and entire texts by representing them as animals or humans (personification). Morphograms and syllabic signs also provided them with alternatives for rendering texts.

However, calligraphic sophistication is also achieved through the use of complex signs that appear to be clusters of signs that, taken together, have a different reading than the sum of their individual readings. There are complex, multi-part morphograms, as well as complex syllabic signs. Complex syllabic signs often seem to share the same structure, suggesting that they represent late additions to the syllabary. In this presentation, these complex signs will be presented and their composition will be analyzed. In addition, the presentation will address the question of how the complex signs can help us better understand the origins of Maya writing in the Middle and Late Preclassic periods.

Plenary III

Ogham and Pictish Symbols. The origin and development of two unusual writing systems from the Celtic West

Katherine Forsyth, University of Glasgow

Celtic-speaking peoples of Ireland and Scotland first encountered the technology of writing through contact with the Roman world. A similar stimulus in the Germanic North led to the invention of the runic alphabet, but the result in the Celtic 'Far West' was two writing systems which reflect remarkable independence from their Mediterranean models. Interdisciplinary examination of the physical and social context in which ogham and Pictish symbol inscriptions are found throws new light on the origin and nature of literacy in the non-urbanized Celtic-speaking societies of the first millennium AD, and on the intellectual and cultural context of the invention of these unique writing systems, providing insight into their unusual form.

The ogham alphabet exhibits a number of distinctive characteristics: in its earliest forms it is a 3-D script, typically written across adjacent angled faces of an object. Traditionally, it is written vertically not horizontally with letters represented by bundles of identical parallel strokes, differing only in number (1-5) and relative position. Over 600 examples of ogham survive, mostly in Ireland, and, to a lesser extent, in Britain. The majority appear on inscribed stone pillars dating 5th-6th century AD, but there are also a smaller number on portable objects, on later stone monuments, graffiti, and manuscript marginalia. The script continued in some form of practical use until about the 12th century, with a scholarly pseudo-cryptic afterlife among learned professionals which continued until modern times.

In addition to the roman and ogham alphabets, the inhabitants of early medieval Scotland used a unique pictographic system ('Pictish symbols') which has defied full understanding. It occurs in a range of archaeological contexts which to a large extent mirror those of ogham in Ireland. The two are usefully studied alongside one another. A comparative grapholinguistic perspective helps clarify the nature of the Pictish graphic system and whether or not it should be considered 'writing'.

The paper incorporates work undertaken as part of the UK-Ireland collaborative research project 'OG(H)AM: Harnessing digital technologies to transform understanding of ogham writing, from the 4th century to the 21st' (funded by the UK Arts and Humanities Research Council and the Irish Research Council, 2021-2024).

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Paper I

Worttrennung und Übersetzungstechnik im altpreußischen *Enchiridion*

Daniel Petit, École Pratique des Hautes Études à Paris

Das altpreußische *Enchiridion* (1561) gilt allgemein als ein sehr fehlerhafter Text, der aus seiner deutschen Quelle – Martin Luthers *Enchiridion* (1543) – Wort für Wort übersetzt wurde. Die Schwächen des altpreußischen *Enchiridions* erklären sich in erster Linie dadurch, daß der Übersetzungsprozess auf einem mündlichen Austausch zwischen zwei Übersetzern beruht, dem deutschen Pfarrer Abel Will, der wahrscheinlich kein Altpreußisch sprach, und einem einfachen Bauer, Paul Megott, der zwar zweisprachig (Altpreußisch-Deutsch) war, aber ein niedriges Bildungsniveau besaß. Als Folge davon haben wir einen sehr fragmentierten Text, in welchem jedes Wort separat, d.h. ohne Rücksicht auf seine linguistische und textuelle Umgebung, übersetzt wurde. In diesem Kontext stellt die Graphematik, und insbesondere die Worttrennung, eine interessante Frage dar. Es ist keine Überraschung, daß die Verteilung der Leerzeichen im altpreußischen Text den deutschen Regeln sklavisch folgt, und zwar nach dem Prinzip ‚ein deutsches Wort = ein altpreußisches Wort', aber in vielen Fällen hat die Einhaltung dieses Grundsatzes Anstoß zu schwerwiegenden Problemen gegeben, insbesondere wenn der deutsche Text der inneren Logik der preußischen Sprache widersprach. Ziel des vorliegenden Vortrags ist es, einen Überblick über zwei solche Diskrepanzfälle zwischen dem Deutschen und dem Altpreußischen zu geben: die Übersetzung der deutschen Komposita und die Behandlung der altpreußischen Klitika. Während das Deutsche eine ausgeprägte Vorliebe für (zusammengeschriebene) Komposita aufweist, hat das Altpreußische weniger Komposita und verwendet dafür oft (separat geschriebene) Juxtaposita. Dieser Unterschied hat den Übersetzer bei der Endredaktion zu vielen Unschlüssigkeiten in Bezug auf die Verwendung von Leerzeichen geführt. Ähnliche Schwierigkeiten sind auch für die Behandlung der Klitika aufgetreten, die anscheinend regellos mit ihrem Stützwort zusammengeschrieben oder separat geschrieben sind, was in vielen Fällen auf den Druck des deutschen Textes zurückzuführen ist. Mit dem altpreußischen *Enchiridion* haben wir somit ein Paradebeispiel für die Komplexität der graphischen Entscheidungen, die sich in einem übersetzten Text getroffen werden müssen, und daher für das weit reichende Thema der kontaktbedingten Graphematik.

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Paper II

Graphematic value of 'spiritus asper':
Continuity and change in the tradition of Medieval manuscripts

Paola Cotticelli-Kurras & Francesca Cotugno, University of Verona

After the fifth century, the knowledge of Greek language and script became of lesser interest in the Latinized Western world. Nevertheless, traces of survival and penetration of the Greek culture in some European traditions, besides the '*Paternoster* tradition', are well known (Berschin 1980, 1982; Macalister 1945-1949; uses of Greek abbreviations for *nomina sacra*, (Lindsay 1915), or more in general the employ of Greek letters for emphasis or in metalinguistic contexts (e.g. grammatical terminology). The reduced knowledge of the Greek alphabet in the Western world leaves room for the tradition of writing systems to continue acquired practices of processing additional systems or parts of the graphematic inventory of some languages. In particular, the development of the Greek uncial system has provided a repertoire for Western cultures to be able to draw material to be reworked. In this context, our study aims at contributing to the transversal tracing of the history of the reuse of the Greek sign 'H' in Western alphabets. We will consider, among others, the Gothic alphabet, as a melting point between East and West, (Raschellà 2011), or the integration of H in the Irish writing system, (see Bischoff 1967, Moran 2011: 56; 2012: 30, as a suprasegmental sign for lenition). Alongside this, it should not be forgotten that even the oriental alphabets, for example the Syriac and Aramaic ones (Butts 2016: 30 on the *spiritus asper*; Wasserstein 1993), have integrated Greek signs in their various orthographic or graphematic phases. Furthermore, it confirms that different traditions (the older Attic one and the *koine*-pronunciation) including the phonetic preservation of the value of H as a (voiceless) glottal fricative were considered. More in general, such phenomena resuming the practice of reemployment of discarded letters (*letterae superflues* or *wandering letters*) could be a proof of the fact that in the writing doctrine the concept of the alphabet princeps (Pandolfini – Prosdocimi 1990) had probably kept its function.

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Paper III

Marstrander revisited: Early Celtic writing systems and the runic script

Corinna Salomon, University of Vienna

Since the 1980s, the derivation of the Runic script from one or more of the North Italic alphabets has lost in popularity, and tends today to be championed by scholars who are concerned with the alphabets of the Alpine area rather than by runologists. Still, since the Latin theory has as yet not been formulated in a way which is fully conclusive in all respects, it is worthwhile to keep an eye on developments in the study of North Italic literacy and how new findings may be relevant to the Runic origin question. In this, it is advisable to distinguish between separate writing systems for the different languages spoken in the North Italic area and their respective features which could qualify them as models for the Runic script, to avoid the randomness of a pick-and-mix approach or at least pave the way to convincingly argued source eclecticism (e.g. Salomon 2020 on the Raetic writing systems).

Though the majority of derivation models within the "North Italic theory" of Runic derivation work with more than one alphabet, the Lepontic alphabet, which was used to write Celtic languages in Iron Age Northern Italy and the Alpine region, was widely considered one of the most useful of the North Italic alphabets due to a number of promising letter shapes such as upright alpha ᚨ, whose similarity to Runic 'a' was noted as early as Weinhold 1856, and "butterfly" san ᛊ, first mentioned by Hempl 1896. In 1928, Carl Marstrander, a Celticist, also focused on the Lepontic alphabet to explain runes which could not be elegantly derived from Roman letters; he also brought in the Camunic alphabet as used in potentially linguistically Celtic inscriptions as well as Transalpine Gaulish writing, and reconstructed a Latinised Transalpine Celtic alphabet through which Germanic speakers came into contact with writing.

The paper will reconsider Marstrander's Lepontic derivations and those of scholars who followed in his footsteps (esp. Hammarström 1930, Rix 1992) from the perspective of our current understanding of Celtic literacy in and south of the Alps. It will focus specifically on graphical aspects, viz. letter forms and variants and their sound values as employed in different stages of the Lepontic alphabet's development, with a view to assessing the Lepontic alphabet's potential as a model for Runic writing in the 21st century.

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Paper IV

An 'alphabetic' cuneiform writing system: the case of Old Persian script

Adriano Valerio Rossi, Università degli Studi di Napoli "L'Orientale"

The term "cuneiform" in its broader sense also encompasses scripts that cannot be regarded as continuing the Akkadian cuneiform tradition and resemble it only superficially, owing to the wedge and angle forms of the single elements in the signs; one of these cuneiform scripts is that in which Old Persian was written, documented not earlier than the 6th century BCE. Old Persian cuneiform was confined to royal prestige purposes i.e. monumental inscriptions (mostly trilingual in Old Persian, Elamite, and Babylonian, rarely also including Egyptian Hieroglyphs), which in large part could not even have been intended to be read, for they were either engraved too high on rock faces or encased in foundation walls.

Old Persian cuneiform script was not a continuation of the Mesopotamian system; it was an independent creation, resembling Aramaic in many details and also in the general principle according to which it reflects a tendency to equate one sign with one sound.

In the paper the specific characteristics of the writing system used for Old Persian, as compared to e.g. Elamite cuneiform, are outlined and the contexts in which Old Persian was written are discussed.

Paper V

Two Scripts for One Language: Cuneiform and Linear Elamite in a Typological and Contrastive Perspective

Gian Pietro Basello, Università degli Studi di Napoli "L'Orientale", François Desset, Université Lyon & Gianni Marchesi, Università di Bologna

Linear Elamite is a script attested in southern Iran in the late 3rd / early 2nd millennium BCE (ca. 2300–1880 BCE). At that time, Mesopotamian cuneiform was already used to write the local language, Elamite. First discovered during the French excavations at Susa from 1903 onwards on monumental (stone) inscriptions associated with the Susian ruler Puzur-Sushinak, Linear Elamite remained undeciphered until recently. A full description and analysis of this writing, used to record the Elamite language in alternative to Mesopotamian cuneiform, has been provided by the speakers together with Kambiz Tabibzadeh and Matthieu Kervran in the last issue of *Zeitschrift für Assyriologie* (2022/1). In presenting the digraphia that characterizes the Elamite language in its earliest documented phases, here we also offer a methodological reflection on how and to which extent it is possible to reconstruct Elamite phonology by extrapolating and comparing data from the two different writing systems.

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Paper VI

Syntactic analysis of Indus sign sequences

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The Indus culture (ca. 2600 to 1700 BCE) developed a writing system that remains for the most part undeciphered. The inscriptions found on different artefacts like seals, tablets, pots, bangles, tags, and other types show a specific usage of Indus signs. A geographic-epigraphic database of Indus inscriptions, containing for today 5644 Indus texts on 4660 artefacts has been developed and is accessible through a web-interface. The signs are coded according to a sign list with 709 distinct signs. Several tools allow one to conduct the statistical and spatial analysis of inscribed artefacts and sign sequences as well as to take the archaeological context into consideration.

The analysis of numerical signs shows that there were two different numerical systems in the Indus culture: a decimal system and an octal one. A multivariate segmentation method is developed to compare typical sign pattern with linguistic features such as affixation and grammatical markers. Apart from the well known patterned texts with three main recurring groups of signs, one can observe a flexible syntactic position of certain sign sequences in other texts of Indus writing.

While the root language of Indus writing is highly disputed, the methods presented allow the analysis of linguistic structures independent of any language. The general aim is to detect certain linguistic features for a better understanding of Indus writing and its underlaying root language.

Paper VII

The Chinese writing system as seen through excavated texts on bamboo and silk (IV-I century BC)

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The discovery of a large number of manuscripts on bamboo, wood and silk dated between the IV and I centuries BC has shed new light on the nature of the Chinese writing system before the gradual process of standardization that began with the advent of the imperial era.

The present paper aims to focus on the most salient features of Chinese writing during such a crucial stage of its long process of development, with particular attention to the versatility of the scripts, the wide adoption of graphic variants, the relationships between graphic structure, pronunciation and meaning.

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Paper VIII

The Cherokee writing system. Its historical reception between practice and ideology

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Among the writing systems, the history of the Cherokee is of particular interest for its genesis, dissemination and reception, both within communities identifiable as Cherokee, and towards the outside, especially towards the educated circles of the European tradition.

From a historical point of view, a writing system is of interest for many and varied aspects. What kind of writing can it be attributed to; which material carrier it favors; what level of technical expertise implies; what kind of literacy it favors; what literary and communicative uses can it give impetus to, or even create; what individual values a literate person can aspire to and be recognized for; on which collective values a community can rely on in the dialectic with other communities, 'homographs' and 'allographs', that is, with the same or with other writing systems.

The Cherokee system is certainly a source of questions and problems for each of these areas. We know the Cherokee system as a glottographic type system, in particular syllabographic, as it reproduces syllabic structures of the Cherokee language.

Until recently the notions relating to this system went back to a sort of vulgate that does not have the guarantees to be accepted as an adequate description. The very genesis of the system has been dispensed with a few words that, typically, attribute its invention to an individual, a Cherokee named Sequoia (or George Guess), part Native American in ancestry, part European.

In what follows I will try to present a summary of the state of the art, in the light of a history of studies that reveals an attention to the Cherokee system perhaps not always constant, but already alive since the invention.

Schematically, this work moves between the following points: a description of the 'vulgate' relating to the Cherokee system; a history of the deconstruction of this 'vulgate'; the question of the relationship with the Latin alphabet; an analysis of the system under the auspices of the anthropology of scriptures and historical grammatology.

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Paper IX

Framing space and painting sounds in Aztec writing

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A longstanding literature labelled Aztec writing as merely "pictorial" (i.e. non-glottic), if valued in terms of "classical" typologies grounded on glotto-graphic criteria.

In my paper, I deliberately choose not to deal, at least initially, with any coded relation between written symbols of Aztec and nahuatl-as-spoken. Thus, instead of classifying Aztec script as a "primitive" form of "visible speech" (which of course it is not), I will provide alternative features to classify graphic systems. Two general visual features, both forming *continua* rather than discrete classes or types (Perri 2007; Marazzi, 2014), will be of use, to sketch a model working also for so-called "pictorial" and "emblematic" scripts (Fedorova, 2009).

First, the *graphic-figurative continuum* which, from a maximum of visual iconicity – as for single glyphs and clusters of units in Aztec pictography – goes to a maximum of abstraction and diagrammatic arrangement of units (often found in non-figurative or "abstract" notations).

Second – and more important – the *graphic-structural continuum*, concerning both ranks of graphic strokes and/or units assembled in single characters (a process which has been named *entaxis*, cf. Vaillant 1999), and broader, i.e. "syntactic", visual assemblages of characters. This continuum, in turn, goes from a maximum of *linearity* up to a maximum of *non-linear* or *multi-linear* topological articulation of contents. Such non-linear arrangement of graphic units in multi-ranked and semantically relevant patterns (sometimes alluded to as "multidimensional structuring images", cf. Antinucci, 2011) are best shown by the multiple strategies which *meaningfully frame* writing space in Aztec texts.

According to my view, then, Aztec pictorial writing has an internal structure which, while escaping the constraints of linguistic linearity (of vocal signifiers), is specifically designed to convey semantic (*and*, of course, linguistic, i.e. *also* possibly uttered) contents, through conventional (and sometimes also figurative-analogic) topological patterns of graphic units we can detect in extant post-Conquest texts (Perondi & Perri, 2018).

In this way, however, I have still to face the problem of a hypothetical "glottic" nature of Aztec writing I avoided to deal with – an issue among the most controversial. Indeed, since the Seventies of last century (cf. Nicholson, 1971; Soustelle, 1975) scholars admitted that there was a (small) amount of phoneticism in Aztec writing, albeit they saw it as a late development, induced by Spanish Conquest and the spread of Latin alphabet. At the end of Eighties, a new approach to Aztec pictographs arose, leaded by Joaquin Galarza (cf. Galarza, Maldonado Rojas 1986); while emphasizing the basic role of iconism and plastic arrangements of scriptorial units, this view argued for a broader and more encompassing definition of writing. This, in turn, expanded the very notion of "reading" the so-called "image-texts": indeed, for a proper and complete understanding of many formulas in the pictographic assemblages of glyphs receivers-interpreters were supposed to know (and utter) the corresponding Nahuatl rhetoric phrases. Consequently, pictorial systems where somehow repositioned in the "domain of writing" (cf. Elkins, 1999; Galarza, Perri, Cid Jurado 1998).

With the new century, such anthropological view has been mainly held by Elizabeth Hill Boone, who coined the fascinating but ambiguous formula of "writing without words" (cf. Boone and Mignolo ed., 1994; Boone 2000); and more recently by Gordon Whittaker, who criticizes the very idea of equating iconography and notation when dealing with Aztec writing, arguing that the latter shows an "essential relationship to language" (Whittaker, 2021).

Providing a detailed analysis of the linguistic content (and possible *nahuatl* readings) of a common glyphic unit – the well-known glyph of footprints in Codex Mendoza – I will argue that Aztec script can be ultimately said to *paint sounds*, while not exploiting the (ideally biunivocal) correspondence letter-sound writers under the tyranny of the alphabet are used to from millennia (Perri, 2003; Harris, 1986, 2000).

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Paper X

The graphematic representation of bound morphemes
in the Aztec writing system

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In 1849, Joseph Marius Alexis Aubin published a thorough analysis of the Aztec writing, concluding that that it was essentially a syllabic system and providing readings for more than one hundred glyphs. However, his analysis was not favourably received, and the high degree of phoneticism identified by him in a limited number of pictorial codices – strongly contrasting with other major codices only showing an occasional use of phonograms (e.g. the Codex Mendoza, the Codex Boturini, or the Matrícula de Tributos) – was regarded as the product of the influence of the Spanish writing system in the postconquest period. Thus, according to the most popular opinion, the original prehispanic Aztec writing was supposed to be a pictography, a proto-writing, or a "limited system" (Gelb 1963: 51–54).

Nevertheless, there were also some who called for the rehabilitation of the Aztec script as a true writing system, among which one should at least mention Dibble (1971), partly Nicholson (1973), and especially Galarza, whose approach to Aztec script and texts was followed by other scholars (see e.g. Galarza / Zemsz 1978, Perri 1994, de Finis / Galarza / Perri 1996). More recently, some scholars also undertook the task of a full decipherment of the Aztec writing, with a major focus on the explanation of the structure and function of its graphemic units. Thus, Alfonso Lacadena vindicated Aubin's analysis of the Aztec writing system and explained it as a true logosyllabic writing consisting of two typologies of signs: logograms, representing Nahuatl words or morphemes (i.e. meaningful elements), and syllabograms, only having phonetic value, without expressing a meaning *per se* (see Lacadena 2008a, Lacadena 2008c, Lacadena / Wichmann 2008, Zender 2008). He also offered a syllabary including more than 30 phonograms for (C)V syllables (Lacadena 2008b). Soon after Lacadena's analysis appeared, Gordon Whittaker (2009) challenged his interpretation, showing that syllabic signs did not only include CV signs, but a more complex set of CV, VC, CVC, and even CVCV syllabograms existed, and the system was much more creative.

In my contribution, after a brief account of the main interpretations and different views on the principles of the Aztec writing system, also taking into account the latest works on this topic (e.g. Velásquez García 2019, Davletshin 2021, Whittaker 2021), I will first address the issue of the representation of bound morphemes, which appears to be not entirely consistent. Afterwards, more generally, some observations will be made on the phonograms of the Aztec script, in order to attempt an overall evaluation of this writing system, also in comparison with other logosyllabic writings.

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Paper XI

Continuity and Change in Central Mexican Writing Systems: From Classic Teotihuacan to the Epiclassic City-States
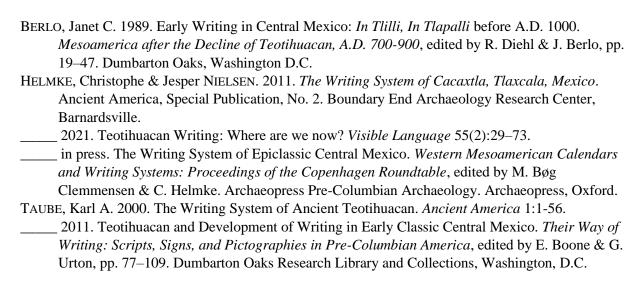
Christophe Helmke & Jesper Nielsen, University of Copenhagen

Rather than a disparate set of unrelated writing systems, there is now increasing evidence to suggest that the writing systems of the Central Mexican highlands represent distinct phases of a larger script tradition. The first real florescence of this Central Mexican Writing System is documented at Teotihuacan, during the Classic heyday of this great metropolis (c. AD 200 – 550). In the wake of the collapse and partial abandonment of Teotihuacan in the sixth century, the highlands witnessed a period of increasing balkanization known as the Epiclassic (c. AD 680 – 1000), with the advent of a series of independent and warring city-states (e.g. Cacaxtla and Xochicalco), each vying for control over territories, resources and trade networks.

In this presentation, we will characterize the main features and workings of Teotihuacan writing, at which point we witness the first complete manifestation of the Central Mexican Writing System. We will also highlight major points of continuity and discontinuity with the ensuing Epiclassic script, focusing on changes in the signary, commenting on paleographic trends and sign replacement. All of these features reveal something as to the relationship between language and writing. Likewise, we will also examine these changes spatially and outline the incipience of disparate regional scribal traditions during the Epiclassic, identifying distinctive eastern and western variants.

In terms of the bigger picture, we will also cast a look backwards to the incipience of writing in the Central Mexican Highlands during the Middle Preclassic (c. 900 BC), as well as a look forwards to the use of writing during the Postclassic (after AD 1000) both at the archaeological site of Tula and later among the Aztec.

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Paper XII

From Gotland to Greenland – On the typology and development of the short-twig runes

Magnus Källström, Riksantikvarieämbetet, Visby

The 16-character runic alphabet – the runes of the Viking Age – is known in two different versions, today normally called the long-branch and the short-twig runes, respectively. In earlier literature we meet also labels as Danish runes (danska runor) and Swedish-Norwegian runes (svensk-norska runor) due to their geographical distribution in the early Viking Age.

The earliest example of an inscription with long-branch runes, the rune-inscribed skull fragment from Ribe in Denmark, dates back to the first half of the 8th century, whereas the dating of the earliest inscriptions with short-twig runes is open for debate. The occurrence of these runes on some picture stones on Gotland indicate that they might also have emerged in the 8th century.

When Ingrid Sanness Johnsen wrote her dissertation on the short-twig runes in 1968 she divided this material into three groups (A, B, C) based on the shapes of the runes **ã**, **n**, **a** and **b**. In group A these runes has short single-sided branches which are normally placed on the right side of the vertical, whereas the same runes in group B are characterised by long crossing branches. In group C, finally, the branches are also short and single-sided, but arranged on different sides of the vertical in the pairs **ã** : **b**, **n** : **a**.

The inscriptions in group A, which includes the set of runes used on the famous Rök stone in Östergötland (Ög 136), were believed to represent the earliest stage and the runes of type B and C as later developments. In a review of Johnsen's work the Norwegian scholar Aslak Liestøl (1969) opposed to this conclusion and put forth weighty arguments for group B or a mixed system as the original set of short-twig runes.

In an article published a couple of years ago (Källström 2020), I followed Liestøl and argued on typological grounds for a successional development B–A–C, where I suggested that the arrangement of the branches in the last group could be the result of a reaction to some innovations in the preceding group A, which have affected the readability of the runes. This explanation offers a tidy picture of the changes in the short-twig system from a theoretical point of view, but how does this relate to the dating and the geographical distribution of the actual inscriptions?

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Paper XIII

A difference in spelling: the case of formulaic vs. non-formulaic words in Viking Age runic inscriptions in Scania

Julia-Sophie Heier, LMU University of Munich

Approximately at the beginning of the Viking Age (ca. 700) the runic writing system has been reshaped from a rune-row containing 24 characters to one of only 16 characters, which is called the Younger Futhark. At that point the decreased number of graphemes was used to render an increased number of phonemes, making the script somewhat phonetically inaccurate. The runestones from the Viking are written in the Younger Futhark and display a formulaic style reading "N.N. raised this stone (this monument) in memory of N.N.", mentioning the names of the commissioner(s) and the person(s) to be commemorated. Due to the reduced number of available graphemes, the spelling in the inscriptions is often diverse and does not follow a distinct orthography. This makes it more difficult to assess if the implementation of certain language change phenomena (e.g. East Nordic monophthongization) has already taken place. In some cases, the reading and interpretation of the inscriptions can get problematic, especially when it comes to personal names (cf. Williams 2010).

In this paper I will analyze the inscriptions of around 60 Viking Age runestones from the province Scania in southern Sweden. Most of them date from 970–1020, a time in which the language differentiation into West and East Norse took place, as the runic inscriptions show us.

The analysis is based on an idea by Salberger (2001: 83–84), who proposes that the spelling of formulaic words needs to be distinguished from non-formulaic words. The aim is to investigate the spelling of both groups using a graphemic approach, in order to detect possible differences in the distribution of language change markers in both lexical groups (cf. Palumbo 2020; Elmentaler 2003).

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Paper XIV

Writing in/with runes: graphetic phenomena in the runic inscriptions in the older futhark

Christiane Zimmermann, University of Kiel

The presentation will take its starting point from the concepts of "Grenzsignale" and "lineare/flächige Suprasegmente", which were introduced into graphemic research by Gallmann (1985) and Günther (1988). Both concepts refer to specific groups of graphic features and levels of the graphic design of a written text or 'communicate' (Adamzik 2002) that may support and direct its visual perception and interpretation: these features include specific graphic segments as well as features of graphic entities and other visual signals.

      Runic epigraphy, like any other graphic medium, is characterized by certain features of graphic design. The runic "separators", their form and function were the first to receive a great deal of research attention and have been widely discussed (cf. e.g. Jörgensen 1973). More recently, other graphic features that may trigger specific sociolinguistic interpretations have also aroused interest. In her study of the runic inscriptions of Monte Sant'Angelo, Waldispühl points out, for example, the serifs that characterize the runic characters in one of the inscriptions and assigns sociolinguistic functions to these and other features (cf. 2020, 143). In his study of the Viking Age rune stones from Södermanland, Marco Bianchi points to the use of different "script systems" – such as the staveless runes or the *samstavsrunor* – which, similar to the selection of a different font in a modern text, may be used to mark certain passages of a text (2010, 155ff. and 164). The overall arrangements of the runic characters on the artefact and their embedding into other elements of the visual design have most recently been examined and interpreted as *visuella textkonventioner* of the early Viking Age runic inscriptions by Hanna Åkerström (2020).

      Whereas most of these studies were focussed on the runic epigraphy of later periods, above all on the inscriptions of the Viking Age, this presentation will focus on the inscriptions in the older futhark, attempting to shed light on specific features of their graphic design.

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Paper XV

The Icelandic *Runica manuscripta*: Between tradition and adaptation

Alessia Bauer, École Pratique des Hautes Études à Paris

The Nordic *Runica manuscripta* are transmitted for over 1000 years attesting different kinds of reference systems (i.e., the Younger Fuþark, the medieval runes or even a mixture of runes and new invented signs). In particular, the added characters were meant to re-establish the 'perfect fit' and to adapt the writing system to the development of the Icelandic language.

In order to write single words or some short texts with runes, in early modern times the scribes decided freely to follow the older tradition and to use the Younger Fuþark with or without dotted (pointed) runes, following the 'runic orthography', or to improve the system with *ad hoc* introduced signs – hence oscillating between tradition, on the one hand, and innovation / adaptation, on the other.

Paper XVI

Jaccard-Index und Exponent G zur Berechnung der systematischen Ähnlichkeit von Schriftsystemen: Die Fallbeispiele Norditalisch und Elamisch

Michael Mäder, University of Bern

Wenn zwei Schriftsysteme im Verdacht stehen, genealogisch verwandt zu sein, wird deren grafische und systematische Ähnlichkeit oft intuitiv beurteilt. Vorgestellt wird hier eine Methode, die es erlaubt, Ähnlichkeit zu quantifizieren. In einem ersten Schritt wird unter Anwendung der «GEAS Methodology for statistical script comparison» die Ähnlichkeit einzelner Grapheme ermittelt, wobei a) die grafische Form und b) Artikulationsort und -art bestimmend sind. In einem zweiten Schritt wird die Ähnlichkeit des ganzen Graphem-Inventars mithilfe des aus der Mengenlehre bekannten Jaccard-Index berechnet. Ergänzend wird in einem dritten Schritt der Phonetisierungsgrad der Schriftsysteme gemäss der Exponent-G-Formel (Fuls 2019) ermittelt und verglichen. Angewandt auf die norditalischen Schriftsysteme zeigen sich wie erwartet hohe Ähnlichkeitswerte. Interessant ist hier der Einbezug der germanischen Runen: Ihr Jaccard-Wert mit norditalischen Alphabeten ist zum Teil höher als der Jaccard-Wert zwischen den norditalischen Alphabeten selbst, jedenfalls dann, wenn man alle Formvarianten einbezieht und nicht nur die Haupttypen betrachtet. Dies weist darauf hin, dass die Runenschrift genuin norditalisch ist. Angewandt auf die elamischen Schriften zeigt sich, dass von 99 linear-elamischen Graphemtypen deren 51 *identisch* und deren 17 *ähnlich* sind im Sinne der GEAS-Terminologie. Der Jaccard-Index ist mit J = 0.160 relativ hoch und lässt sich nur damit erklären, dass sich die Elamische Strichschrift aus dem Proto-Elamischen Zeicheninventar herausgebildet hat.

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Paper XVII

Ist die Phaistos-Scheibe in Luwisch geschrieben? Eine epigraphische und linguistische Analyse kretischer Hieroglyphentexte

Andreas Fuls, Technische Universität Berlin

Seit über 100 Jahren stellt die Scheibe von Phaistos mit ihren bildhaften Zeichen ein Rätsel dar. Sie war 1908 in einem eingestürzten Raum des Palastes von Phaistos auf Kreta ausgegraben worden und gilt seitdem, trotz dutzender Entzifferungs- oder Deutungsvorschläge, als nicht entzifferbar. Deswegen stellt sich die Frage: Geben die Zeichen eine Schrift wieder und wenn ja, in welcher Sprache? Oder stellen sie Symbole dar, die man direkt verstehen kann, wenn man sie nur richtig deutet?

Eine Analyse der Phaistos-Scheibe erfordert aufgrund der Kürze der Inschrift und damit des begrenzten Umfangs an überlieferten Zeichen intensive epigraphische Vorarbeiten. Dadurch sollen die spezifischen Eigenschaften des Schriftsystems auf der Phaistos-Scheibe herausgearbeitet werden, unabhängig von der Annahme einer Sprache. Nur wenn die epigraphischen Ergebnisse unabhängig von einer Sprache sind, dann können sie verwendet werden, um in einem zweiten Schritt die Hypothese einer zugrundeliegenden Sprache zu überprüfen.

Dazu wurde ein modifiziertes Potenzgesetz für Schriftsysteme verwendet, um darüber auf den Grad der Phonetisierung zu schließen. Eine weitere Methode ist die paradigmatische und syntagmatische Analyse von wiederkehrenden Zeichenketten zur Bestimmung von morphologischen Grenzen und damit von potenziellen Wortstämmen und Affixen. Die durch die Segmentierung berechnete mittlere Wortlänge erlaubt es außerdem den Sprachtyp auf der Phaistos-Scheibe als agglutinierend einzustufen.

Die Ergebnisse der Voruntersuchung sind in einem zweiten Schritt mit der Luwischen Hieroglyphenschrift verglichen worden. Luwisch ist eine agglutinierende Sprache. Durch den Vergleich von graphisch ähnlichen Zeichen konnten einige Lautwerte von Silben als auch die Bedeutung von einigen Logogrammen überprüft werden, unterstützt durch phonetische Komplemente. Als Ergebnis einer schrittweisen Entzifferung können 39 der 46 Zeichen der Phaistos-Scheibe mit einem unterschiedlichen Grad an Gewissheit gelesen werden, nur sehr seltene Zeichen bleiben vorerst unbekannt. Dabei entspricht das Verhältnis der Anzahl der entzifferten Silben zu Logogrammen bzw. Determinativen (60%:30%:10%) dem geschätzten Grad der Phonetisierung von ca. 62% Silben, wie sie die statistisch begründete epigraphische Analyse ergeben hatte. Außerdem spiegelt die Grammatik des Textes auf der Phaistos-Scheibe die grammatikalischen Regeln des Luwischen wieder (Nomen, Verben, spezielle luwische Partikelendungen).

Die Entzifferung der Phaistos-Scheibe kann über weitere bronzezeitliche Inschriften aus Kreta überprüft werden. Dazu zählen die Axt von Arkalochori, der Altarstein von Mallia, sowie Kretische Siegel und Siegelabdrücke, die durch den Vergleich mit den bereits entzifferten Schriftzeichen und weiteren luwischen Hieroglyphen in der Luwischen Sprache gelesen werden können. Die Phaistos-Scheibe und andere Kretische Hieroglyphentexte können deswegen einem einheitlichen Sprachraum des Luwischen von Kreta bis West-Anatolien während der Ägäischen Bronzezeit zugeordnet werden.

Paper XVIII

A grapholinguistic view on historical cryptographic writing and its automatic decryption

Michelle Waldispühl, University of Gothenburg

Encrypting messages to conceal information from third parties has been present throughout the history of writing and historical cryptography has been approached from different angles and in a range of disciplines such as history (e.g. Kahn 1996, Láng 2018), runology (Nordby 2018), computational linguistics and informatics (e.g. Knight et al. 2011, Chen et al. 2021, Lasry et al. 2021). However, systematic research on historical cryptography is still periphery and a scholarly field has developed only recently. The interdisciplinary research environment DECRYPT, financially supported by the Swedish Research Council and running from 2018–2024, aims at bringing scholars from various disciplines together in order to establish an international field of historical cryptography. Moreover, the project's goals are to systematically collect and digitize historical cryptographic sources and to provide computer-based tools for their transcription and semi-automatic decryption (Megyesi et al. 2020, www.de-crypt.org).

So far, a theory of historical cryptographic writing systems drawing on grapholinguistic insights is missing. In this presentation, first ideas on such a theoretical account will be presented on the empirical basis of data collected and experiments conducted within the DECRYPT project. The main focus will lie on three topics: 1) graphetic characteristics of cipher alphabets, 2) spelling variation in encrypted sources, and 3) script- and code-switching. These aspects will be discussed both from a theoretical angle and in the light of applied methods for automatic transcription, decryption and analysis of cryptographic manuscripts.

The work presented here bases partly on collaborations with Beáta Megyesi, Eva Pettersson and Justyna Sikora (Uppsala University), Nils Kopal and Vasily Mikhalev (University of Siegen), and Filip Fornmark (University of Gothenburg).

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Paper XIX

Is the *perfect fit* more perfect in runic writing in England?

Gaby Waxenberger, LMU University Munich

Runic writing follows the principle of the *perfect fit*, using one grapheme for one phoneme (Derolez 1952; 1954) with one exception however: it does not differentiate between short and long vowels (cf. Derolez 1990:406–407). Therefore, the *runic perfect fit* may be defined as one grapheme representing one phoneme, with the exception of monophthongs, where the principle is one grapheme for two phonemes.

In Pre-Old English the *perfect fit* seems to have been phonemic, that is, one rune was used for the phoneme and its allophones, since some developments were still in their allophonic phases: e.g., the *i*-umlaut of /o:/ in **-boki**. In the Watchfield Mount inscription the rune O **o** is used for [œ:]. In early Old English (mid-8th cent.) in the west of Northumbria, the rune-row was enlarged to 31 characters. The new characters were designed for the palatalization/assibilation processes in Old English. The question here is why a desire was felt to differentiate between the palatal and velar variants of the fricative /ɣ/ and the palatal and velar allophones of /k/. Whereas in the case of /k/ these new runes could be seen as evidence for the phonemic split, in the case of / ɣ/ this cannot be the case as the allophone [ɣ] of the early Old English phoneme /ɣ/ probably never reached phonemic status in Old English. This means we may here be dealing with a new grapheme for an allophone, which would be a further exception to the principle of one grapheme for one phoneme.

Paper XX

Attempting a typology of writing:
Script types, writing systems and written languages

Kerstin Kazzazi, Katholische Universität Eichstätt-Ingolstadt

The presentation will draw on the presentations of the conference, thus bringing together theoretical considerations on writing research as well as data-driven accounts of different languages and their scripts and writing systems, in order to move towards a more comprehensive diachronic picture of writing as a cultural technique. Topics touched on will include:

◦ Recent developments in writing research as a field and its potential for historical case studies.

◦ Delimitation of writing from non-writing: How is it possible to distinguish symbols as a medium of linguistic communication from the use of non-linguistic, but conceptually meaningful symbols and finally, purely ornamental marks and images?

◦ Decipherment of unknown scripts and/or the underlying, possibly unknown languages: The methods presented for achieving this goal include the use of biscriptal material and numerical calculations on shapes and occurrences of signs as well as the determination of syntagmatic recurrences.

◦ Development and adoption of scripts for a certain language: This includes questions of how to determine the origins and "inventors" of scripts and the historical contexts, e.g., points of contact, in which development and take-over of scripts may take place.

◦ Adaptation and modification of scripts and writing systems: Based on the finding that no script and no writing system remains the same through the time of its use, with new signs, new use of old signs, new sign-sound relations developing, the question is what the parameters of such changes are and what they may teach us not only about patterns of change in writing as such, but also about language change in particular cases.

◦ Sign-sound relations in a writing-comparative perspective: Special focus will finally be given to the concept of the 'perfect fit', originally developed by Derolez (e.g., 1990) for the Germanic runes. This leads to questions of what exactly 'perfect' may relate to in the context of writing, what the levels may be that are to be 'fitted' to one another, and whether, in a broader sense, what different communities writing different languages in different times and places chose to do may be regarded as their respective 'perfect fit'.

◦ Towards a typology of writing systems: The topics outlined above are intended as first steps towards the development of a typology of writing systems based on a broad diachronic and diatopic basis.

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