GRAPHEME SYSTEM

RESEARCH PAPER • VERSION 1

Contents

CHAPTER I

What is a grapheme system?

The Assignment. Defining a Grapheme system.

The collections of graphic symbols used for representing scripts are quite arbitrary. As soon as such a ‘grapheme system’ is set up, the further development (evolution) and consequently the related conditioning is defined by the applied structures themselves. What is considered to be optically correct is only purely relative to (the conventions of) the grapheme system. This module comprises the development of a complete new grapheme system for the Latin script. Would it be possible for you to ignore or circumvent current conventions when defining a new grapheme system and related typographic rules (conventions)?

Presentation:

A type specimen (on paper or digitally/animated) showing the grapheme system and an essay. Also the essence of the study has to be presented on three A2-sized panels.

Definition of a grapheme system

As a starting point to the following discussion, it is useful to take a brief look at the typology of writing systems. Most typologies of writing systems are based on the smallest unit of a system, i.e. its basic graphemes (Coulmas 1996: 1381; Rogers 2005: 269ff.). Different types arc distinguished according to what kind of linguistic unit the basic graphemes correspond to. 1 Following this principle, a first type recognized in the typology of writing systems are morphographic writing systems. The basic set of graphemes of morphographic systems correspond to morphemes, i.e. linguistic elements that have a meaning. A prototypical example of a morphographic writing system is Chinese. Each grapheme (i.e. character) of Chinese stands for a morpheme of the language.

The second main type of writing systems are phonographic writing systems. The basic units of these systems refer to elements of the sound structure of a language. Phonographic writing systems in turn fall into two main subtypes: syllabic writing systems and alphabetical writing systems. A prototypical example of a syllabic writing system is the Japanese Kana writing system. The graphemes of this system each refer to a syllable of the language. In alphabetical systems, the basic set of graphemes are letters that correspond (more or less directly) to the phonemes of the language. Well-known examples are the Greek and Latin writing systems.

Importantly, then, an orthography is defined as the conjunction of a set of graphemes, such as an alphabet, and a set of accompanying rules regulating their use. The third defining feature is that both the symbols and their usage are standardized and codified. The actual visual shape of the graphemes that a writing system uses, e.g. the Latin or the Arabic letters, is called its script.

Gippert, Jost, et al. Essentials of Language Documentation.
Mouton De Gruyter, 2006, p.277

The Latin alphabet

The Latin alphabet is the most widely used script of all time. Its simplicity and elegance as the writing system of the Latin language suggests universal applicability on the basis of the common principle of segmentation. More than any other script it is associated with the idea of the sound segment. However, it has never been the neutral tool it is sometimes thought to be but which its modern offspring, the IPA, still strive to be. All alphabetic writing system do not function in the same manner. Although the letter of the Latin alphabet are impressionistically interpreted as sound segments and are often considered the unit of phonemic writing, encoding phonemes is just one of several functions that letter fulfill as graphemes of particular orthographic systems. The phonetic interpretation of Latin letter is variable both within and, in greater measure, across languages. They typically operate on different level ranging between phonetic feature and phonemes and, being combined to form complex grapheme serve the encoding of syllables, morpheme and lexeme.

The distinctions recognized by alphabetic orthographies vary across languages as do their grapheme inventories. Phoneme-grapheme correspondence , which form a central part of alphabetic orthographies, are variously supplemented by higher-level graphic regularities, many of which have no correlates in speech. In various complex ways alphabetic writing allows for a phonetic interpretation and is thus related to speech, but at the same time fosters a segmentalist projection of it. The isolated letter bears a conceptual semblance to the phoneme and pushes the insight that distinctive features rather than whole sounds are the basic building block of speech into the background. ‘Linguistic notations like the International Phonetic Alphabet (IPA) and the Americanist phonetic alphabet, are obviously influenced by the modular principle of the standard typographic alphabet’ (Bigelow 1992: 197). Supporting a conception of language as consisting of segmental, unitary and distinct sounds, the Latin alphabet thus is a Janus-faced medium of linguistic expression, functioning as both model and image.

Questions for discussion:

(1) What is a letter?

(2) How does the number of the letter of the alphabet of a language relate to the number of the graphemes of its orthography?

(3) What is the difference between shallow orthographies and deep orthographies?

(4) Why has the Latin alphabet been supplemented by additional letter and diacritical marks?

(5) What distinction in alphabetic writing can you think of that have no correlate in speech?

Coulmas, Florian. Writing Systems: an Introduction to Their Linguistic Analysis. Cambridge Univ. Press, 2008, p.107

My understanding. The challenge.

What makes a grapheme system legible, consistent or just pretty? The counter shapes could be in harmony, but the width of the strokes could be off. Then perhaps these two are covered, but the spacing is not correct. At the end there are scripts that are pushing boundaries in many directions and they still look good.

Take this as an example:

What to do next:

- Compare the counter shape space of a sentence in several different alphabets, preferrebly in one font (Latin, Cyrillic, Chinese, Greek, Sanskrit, Inuktitut)
- Look at block-out compositions of paintings like Malevich (early and late periods)
- Isolate letters into blocks, and reorganise the pixels with some pixel sorting algorithm.

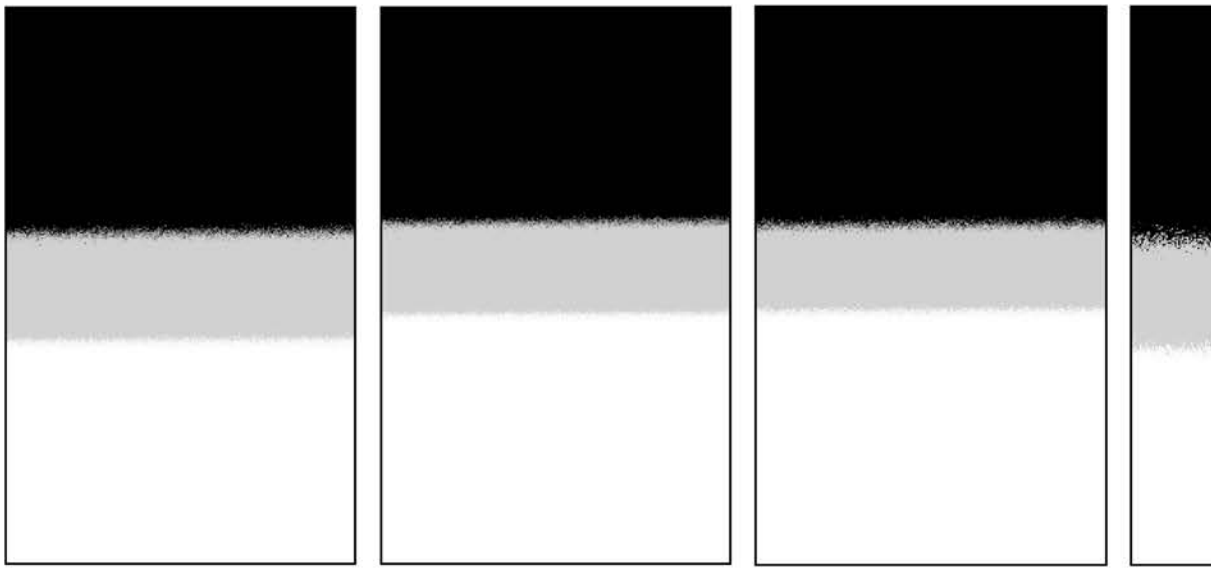
Jong, Cees de., and Jan Tholenaar. Type: a Visual History of Typefaces and Graphic Styles. Taschen, 2009.

Roger Excoffon's Calypso

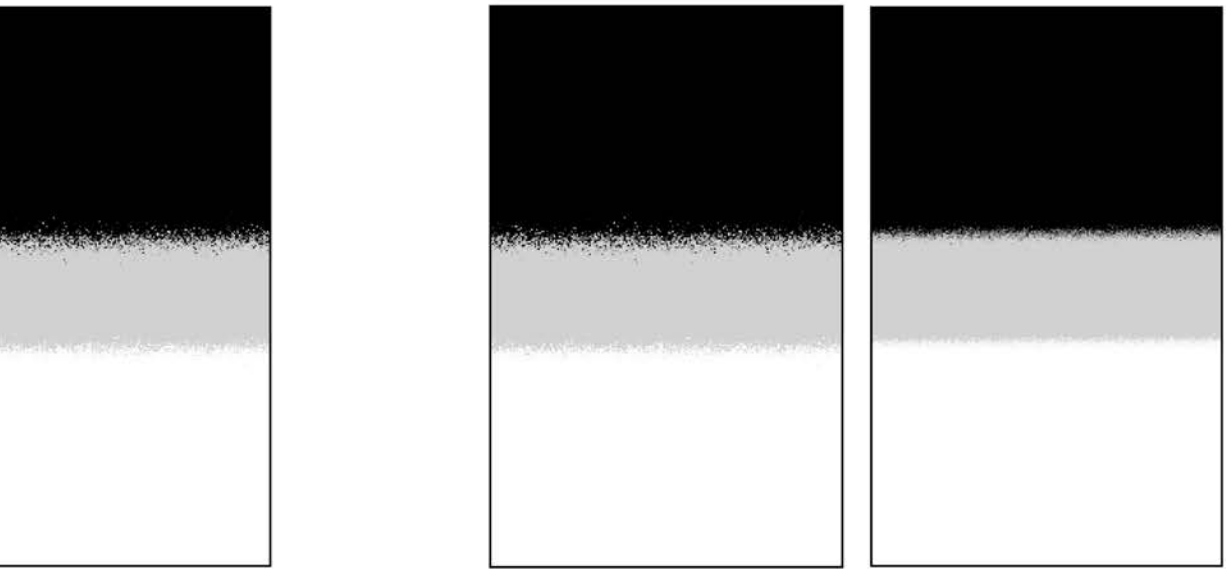
CHAPTER II

First analysis of weight, counter-shapes and balance of letter forms

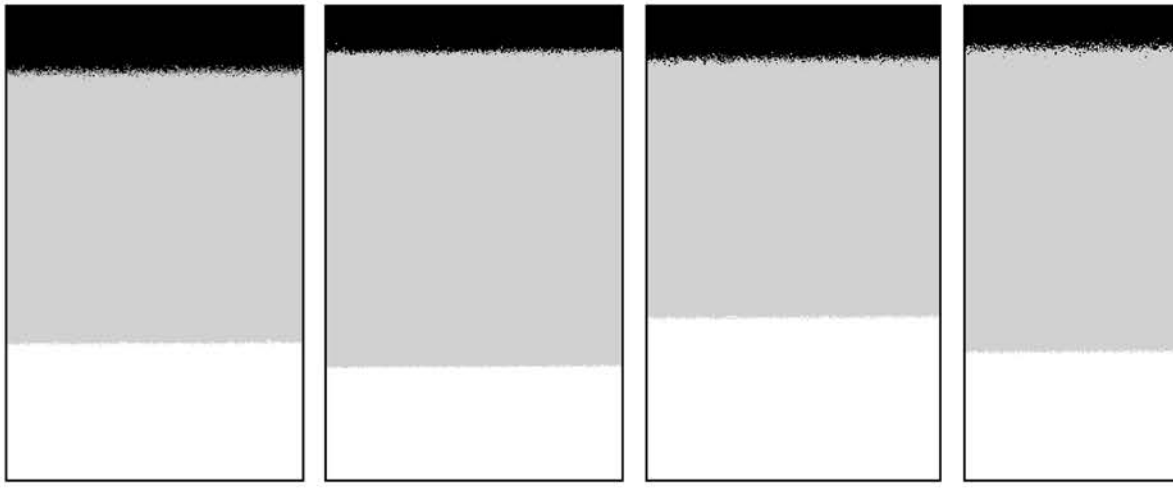
Calypso regular



Calypso pixels “sorted“
Sorted pixels of the glyph in order to show the space it occupies in the square.

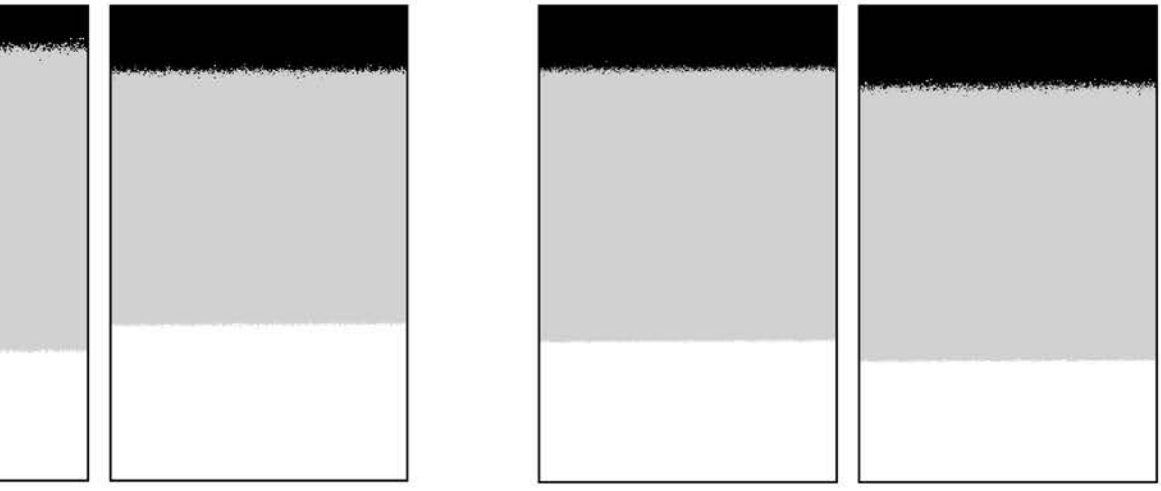


frac



IBM Plex Mono Regular “sorted“
Sorted pixels of the glyph in order to show the space it occupies in the square.

cb SW



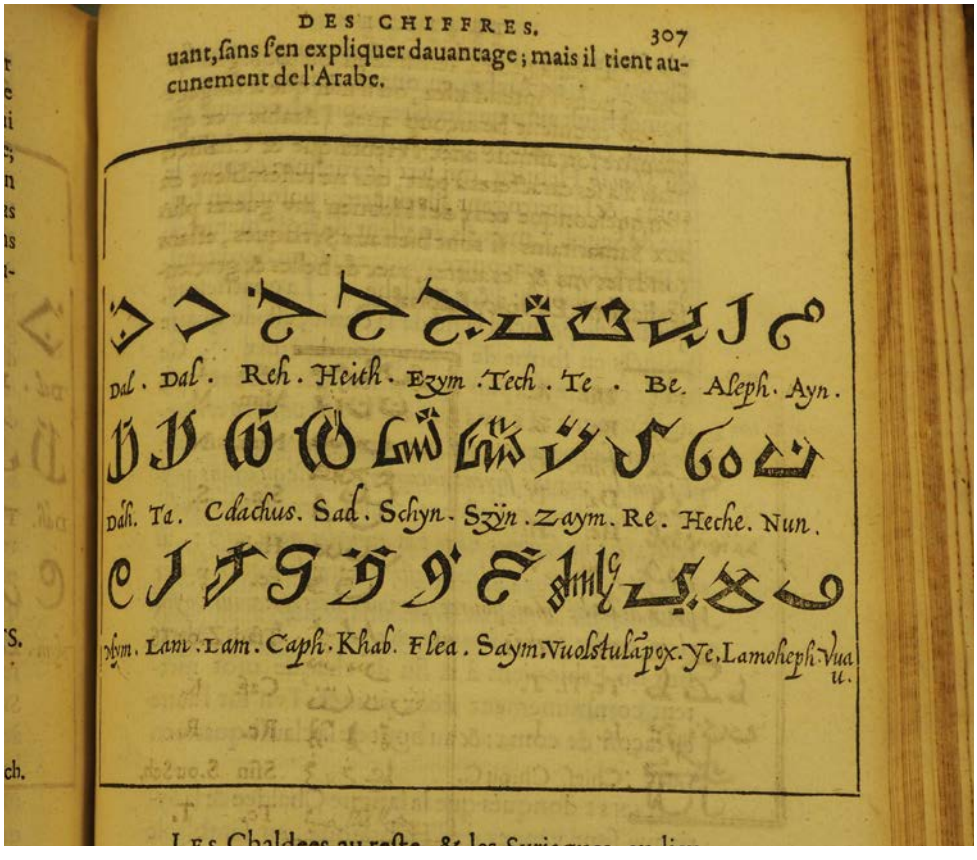
The Alphabet

Alphabets, or phonemic alphabets, are sets of letters, usually arranged in a fixed order, each of which represents one or more phonemes, both consonants and vowels, in the language they are used to write. In some case combinations of letters are used to represent single phonemes, as in the English sh, ch and th.

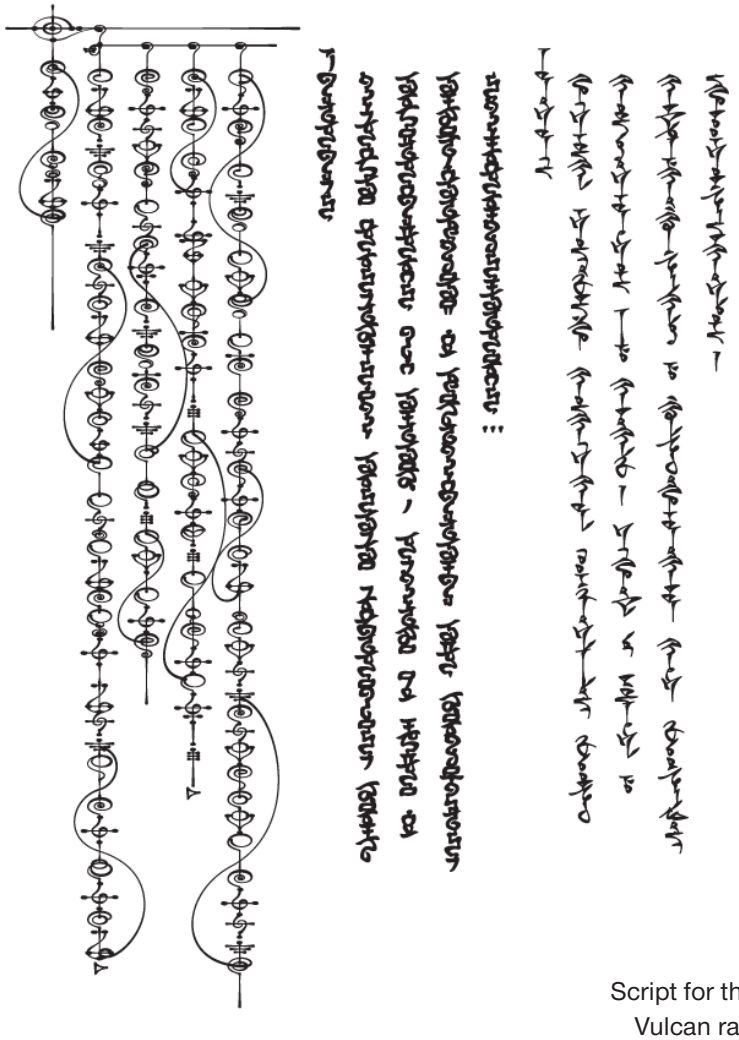
The Greeks created the first phonemic alphabet when they adapted the Phoenican alphabet to write Greek. They used a number of Phoenician letters that represented consonant sounds not present in Greek to write Greek vowels.

The word alphabet comes, via the Latin word alphabētum, from the Greek word αλφάβητος (alphabētos), which itself comes from the first two letters of the Greek alphabet, α (άλφα/alpha) and β (βήτα/beta). The names of the Greek letters were based on Phoenican letter names. The first two letters of the Phoenican alphabet are ‘āleph (ox) and bēth (house).

The best-known and most widely-used alphabets are the Latin or Roman alphabet and the Cyrillic alphabet, which have been adapted to write numerous languages. Most other alphabets are used for a single language or just a few languages.



Unusual writing system from an old French book



Script for the constructed language of the Vulcan race from the TV show Star Trek

The rounded shapes of the Tamil language are a product of the medium (delicate palm leaves)

Is there a language whose the writing is in 3D?

How would users of such language think compared to users of 2D or 1D writing systems?

Dimensions of what?

Language is naturally linear, following the single dimension of time. We express one sound after another, one word after another, one sentence after another and so forth.

After writing this technical answer, I took a less serious approach to the question and imagined what 3D letters would look like here: Daniel Ross's answer to What would the English alphabet look like in the third dimension? Not just prismatic, like in Microsoft Word's "Word Art", but actually unique shapes.

So, is it even possible then to have anything other than a one-dimensional language?

Yes, but it depends on what you mean.

An example of breaking linearity can be found in signed languages where they can be some simultaneity of gestures. For example, two hands can convey two different ideas (perhaps the actions of two different people) at the same time, as well as non-manual (facial expressions—including eyes, mouth, etc.— and head turns, shoulder shrugs, even in some signed languages gestures with the legs or feet). For more, see: Daniel Ross's answer to What are some special features of sign languages that spoken languages don't have? and Daniel Ross's answer to How is it that in sign language, there's a different way to move your hands for every single word? Wouldn't you run out of different hand formations?

But even signed languages are mostly linear. Simultaneity is the exception, and even then the additional dimension just allows some overlap of basically linear elements. So overall human languages have as a basic property linearity. There's no getting around that because we live in time and communicate over time. It's hard to even imagine something else that really takes advantage of two (or three!) dimensions.

So then how does writing fit into this? I discussed the linearization of language as writing in this answer: Daniel Ross's answer to If we existed as a species for so many millennia using mere vocal sounds to survive, why did we need to invent writing?

In short, we must separate the form of the letters themselves from the fact that they are arranged in an order. That order is preserving the linearity of spoken language. So all writing is one-dimensional, specifically in that it linearizes spoken language. There's no possibility for it to be anything other than that.

On the other hand, we can also look at writing in terms of the actual shapes/characters used, and then ask about how many dimensions there are graphically. That's a very different question, and one that is much less interesting from a cognitive perspective. As discussed in other answers linked above, this relates to what is called "duality of patterning" in languages—we combine meaningless units (sounds, shapes, etc.) into meaningful units that then themselves are combined to form sentences. Writing then has three components:

1. Characters/letters, with particular written shapes.
2. Combining those characters/letters to form words.
3. Combining those words to form sentences.

Spoken language also has some structure at the first level: sounds themselves have properties (in terms of where your tongue is in your mouth, or in terms of the acoustic signal, or in terms of how they relate in the grammatical system to other sounds in terms of contrastiveness, i.e. as phonemes). And of course levels 2 and 3 correspond to what I described above. So let's go through each of these levels individually to see how written languages might be more than one dimensional:

The characters have shapes, which are necessarily two-dimensional or more. One interesting exception mentioned in another answer is Morse code which is a series of beeps, each of which can be defined in a single dimension. But of course that's not writing per se (although it is a substitution code for spoken/written language, so it's relevant).

The other answers have addressed different types of writing that are physically three-dimensional. Some good examples include Ogham writing for Celtic which spanned across the corner/side of a stone, so that the writing was on two surfaces at the same time. In effect, we could still consider this to be informationally two dimensional (it's easy to write a line across a page and "flatten" the information into a two-dimensional, still readable drawing of the writing system), but it does exist in three dimensions. Similarly, other writing systems also physically exist in three dimensions. Cuneiform is one of the earliest writing systems and it involved pressing a reed into a clay tablet which resulted in angular ("cone-shaped" as in the name) indentations, so this was just like various types of stone carving, also three dimensional in its physical sense. But of course just like letters, cuneiform symbols can also be written with ink flat on a page and still be entirely legible, so that was just a medium, rather than an inherent property of the symbols in the system. In fact, from a physical perspective, any writing system has some depth to it due to the thickness (however small) of the ink on the page. In a few cases, such as with fancy calligraphy or the way that stroke-order is important in Chinese writing, the layering of the ink on a page might also help some readers to identify characters—but again it isn't necessarily and we can effectively consider all of these systems to be flat, which is to say two-dimensional. I'm not aware of any writing system that must be three-dimensional to still be understood. For example, we could make a two-dimensional computer font for these different systems, and that would be fine for all of them as far as I know. One exception is in a sense braille, used for a tactile representation of letters for blind readers. So of course it must be represented in three dimensions to be felt, but that is still an effect of the medium and the information could be conveyed in two dimensions visually (though not to the intended audience of blind readers of course). Braille is an arrangement of dots in squares, substituting for letters. Those dots happen to be three dimensional (for obvious practical reasons) but could be flat in theory. In short, these ideas about the physical medium of writing are the most likely way to answer "yes" to this question, even though it doesn't work out in an inherent/substantive way in terms of language structure or anything like that. (Related answer: Daniel Ross's answer to What are the most complex alphabets in the world?)

Now moving on to the linearization of those characters to form words and the linearization of those words to form sentences, we know that sentences in writing are all formed in a linear way, with one word following another in writing. So this is why writing is in effect still one-dimensional, replacing the dimension of time with the dimension of space, following a path on a page, which the reader knows to follow. (See also as linked above the detailed discussion in ...why did we need to invent writing?)

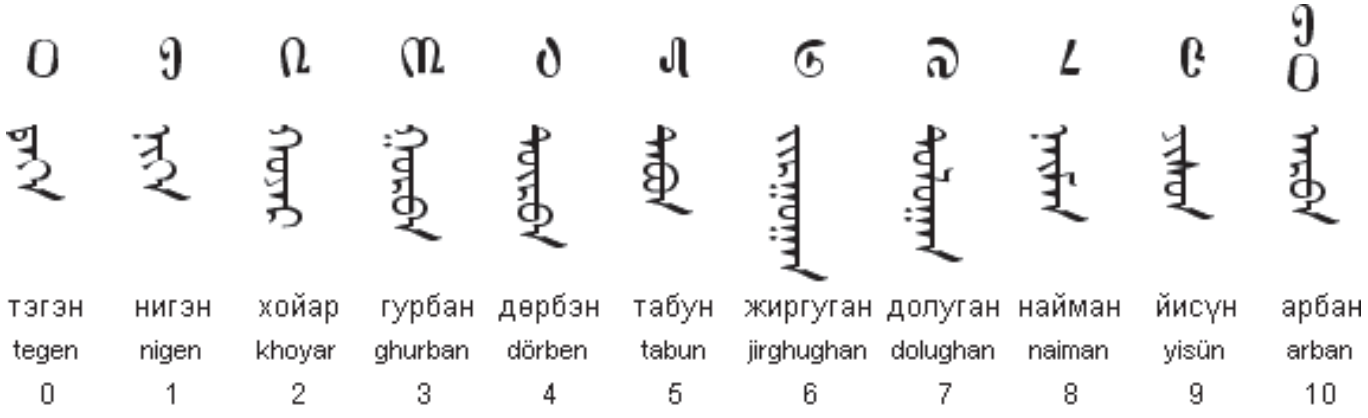
So then we're left with the question of how words are written. Are there any writing systems where the letters are not just in linear order, one after the other? Can written words be more than one-dimensional? Actually, yes, in a few cases. One is how some writing systems write vowels distinctly from consonants, using them as smaller, modifying 'letters', or as

diacritics (like accent marks). That is the case in Devanagari - Wikipedia for example. Arguably that type of modification is non-linear because a letter is 'modifier' rather than just adding a next letter. That is similar to what happens in signed languages with some overlap, although the effect is still more or less linear except that the reader's eyes might jump around a bit in a non-linear path on the page to figure out which symbol is to be read next.

Now, let's consider also Mongolian, which is a fascinating vertical script, as opposed to horizontal writing like in English. Here is a page from a thesis (about the grammar of the Mongolian language: Sarina 2008 'The Research for the Mongolian Double-verb Sentence Pattern') (On the right)

It's beautiful to look at, but it takes your eyes a moment to adjust to reading it that way (or in our case just following it visually). Start in the top left and go down, then go to the next column to the right, and continue across the page. Note that embedded English letters and numbers are rotated to fit on the same lines as the Mongolian text.

To make the system a little clearer, here's a simpler example of the numbers 0–10:



Mongolian is a very interesting writing system. But is it special in some way in terms of dimensions? No. Just like English written across the page in one dimension, Mongolian is written down the page in one dimension. Sentences are still linear. So why did I show this to you? Well, what if a script combined the two?

As it turns out, some scripts have vertical and horizontal components. One example I am aware of is the Tibetan script - Wikipedia. Letters generally combine one after the other horizontally, but sometimes stacking is allowed. This is like the way that vowels can be written as "modifier" letters (mentioned above), but much more extreme, including the consonants stacking. I'm not sure exactly what the limits are, but there is certainly some breaking of linearity in this, and there are clearly horizontal and vertical dimensions to it. Thus Tibetan writing is two-dimensional in its word structure. Here are some examples (just words for punctuation/grammatical terms taken from that Wikipedia page):

Монгол бичгийн үсгийн хэлбэр

Монгол бичгийн үсгийн хэлбэр нь үгийн эхэнд, дунд, төгсгөлд бичигдэхдээ өөр өөр хэлбэртэй байдаг. Жишээ нь: ᠠ (а) үгийн эхэнд ᠠᠪᠤ (абу), дунд ᠮᠠᠨᠠ (мана), төгсгөлд ᠪᠠᠭᠠ (бага) гэж бичигдэнэ. Мөн ᠨ (н) үсэг ᠨᠤᠭᠤᠳ (нугад), ᠪᠠᠨᠢ (бани), ᠬᠤᠨ (хун) гэсэн үгсэд янз бүрийн байрлалтай ирдэг.

Still, as you can see it seems that exceptions to linearity are still the exception (rather than the rule), even though Tibetan writing is fascinating because of that ‘stacking’. If anyone is aware of more extreme examples, please suggest them in the comments. I suppose Chinese and Japanese sometimes use mixed vertical and horizontal writing on a single page (for example, in a magazine) so in some sense you could say discourse structure is sometimes two-dimensional in written Chinese or Japanese, but I don’t believe that the two writing directions are ever normally mixed within a sentence (or single paragraph) for example, so it isn’t really part of the language itself. Regardless, I am entirely unaware of any sort of systematic usage in a writing system of three (or more) dimensions, such as stacking letters not just vertically but also physically on top of each other using some sort of clay or magnets or whatever. That just seems impractical from a materials viewpoint. But even if that happened, the result would be that the reader’s eyes would have to follow a very complex and winding but still one dimensional path through three-dimensional space in order to read the letters in a row. I just don’t see how any other system could apply to human languages (see also below).

Summary: written characters are necessarily three-dimensional in their physical representations. But in terms of linguistic structure, language is almost entirely linear (one-dimensional).

Finally, I want to emphasize that writing is secondary to spoken language. (Daniel Ross’s answer to What is the relationship between language and orthography?) There is no reason to believe that people who write a certain way would begin to think very differently, even if language does change how we think (a controversial and complicated topic). People are not ‘native writers’ of languages, but we are ‘native speakers’ of languages, meaning that our cognition is strongly linked to how we think and speak in language— which is linear, and not written. Some minor differences due to the habits of writing might vary. For example, Arabic, Hebrew and some other languages are written right to left on each line (and books open “backwards” from an English perspective), so speakers of those languages might more naturally look to the right side of something (a page, maybe even a room) to scan for information.

But that effect is more of a strategy of using writing to get information than actually an effect of the languages themselves. So I have trouble imagining how writing could affect things like the question suggests, but see for more related discussion this answer: Daniel Ross’s answer to If strong Sapir-Whorf hypothesis were true, what would you include in a designed language? In that answer I mention the writing system in the movie Arrival (small spoilers follow), which seems to be relevant to this question—but remember that the language in Arrival was apparently primarily visual/written rather than spoken (nor was it like signed languages). Human languages are not primarily like that— even if we can write, it’s secondary/after we speak. So that’s one missing ingredient that would be required (among others). Could aliens somewhere have a language like that? Maybe.

Daniel Ross

———————————

This is a very interesting question. The closest example for a three-dimensional script that comes to my mind are the early Ogham inscriptions from Ireland. Most surviving examples of this pseudo-three dimensional script are dated to the middle of the 1st millenium C.E. The language used was an archaic form of the Irish language - older even than the so-called Old Irish of the manuscripts.

The early or “Orthodox” Ogham script used one of the edges of a stone slab as a central

Ogham Stone, Dunloe, County Kerry, Ireland

line (functionally analogous to the śirorekhā or top line in certain Indian scripts like Bengali, Devanagari, Gurumukhi, etc.) and then drew sequences of short perpendicular or slanted lines sticking out from it in one side or the other or passing through it. Different arrangements of these short lines represented different letters. Note that the two different sides of this central line would lie on two different faces of the stone slab, providing the script a three-dimensional nature. However, I called it pseudo-three dimensional in the beginning because using a physical edge of the slab as the central line and thus using two different surfaces simultaneously for the writing is not really essential to the script. Theoretically, the same information could

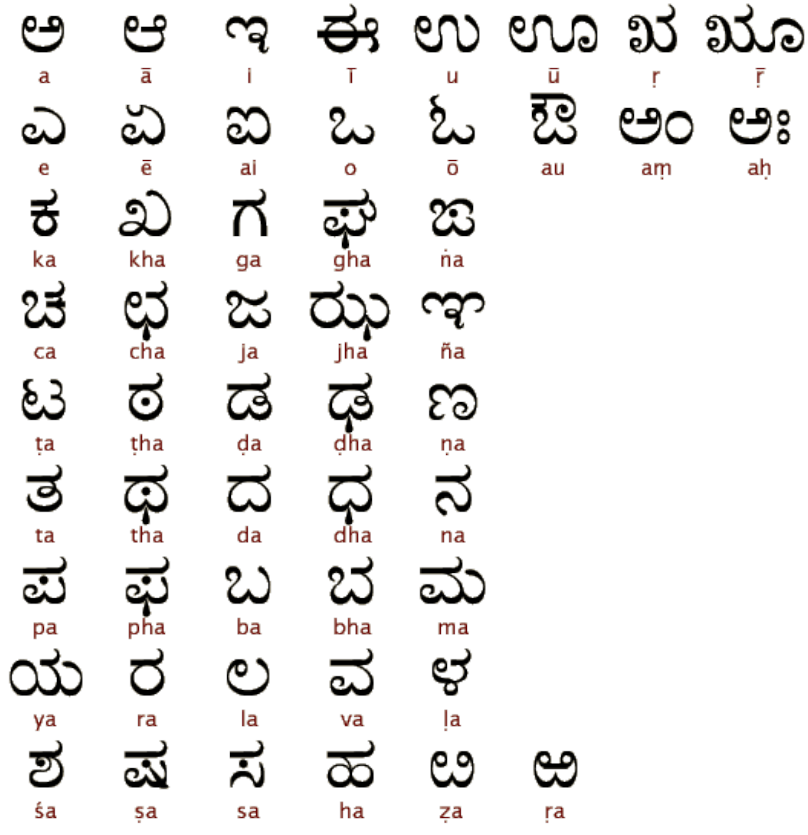
be provided by drawing the central line by hand on any one surface of the stone slab and then drawing the protruding short lines on both sides of that line on the same surface, effectively converting it into a usual two-dimensional format. In fact, later or “Scholastic” Ogham inscriptions themselves usually follow this convention. Occasionally, this form of the script has even been used in manuscripts.

As for a one-dimensional writing system, how about writing down the Morse code as a sequence of dots and dashes, as it used to be done?

As for the psychological effect of these different writing systems, I really have no idea. I suppose, there are still many people around who are fluent in Morse code, though they almost certainly know a usual two dimensional writing system as well. It would be interesting to see if they show any specific influence of the system on their thoughts. The Ogham script is now accessible only to some scholars, who might well be a bit cuckoo. But I don’t know whether that is the effect of studying Ogham, or the decision to study Ogham is the effect of the pre-existing cuckooness. :D

Dibyajyoti Jana (দিব্যজ্যোতি জানা)

Part I: Why there are no languages written in 3 spatial dimensions. Writing systems evolve to fit the writing medium. For example, the Kannada script is curvy because it was written on leaves. Angular movements would tear the leaves. Many other scripts of SE Aisa follow the same rules.



Script for the Dravidian language Kannada. Spoken mainly in India. Sri Lanka, Pakistan

The problem with a 3-D script is that we have neither the medium nor the inherent ability to use it. We humans developed writing on things like clay and wood. These are 2-dimensional surfaces, and there is no problem with us reading in this manner. Humans have depth perception, but we still see in a two dimensional “scan”. Light bounces off objects and makes it to our eye only when there’s nothing else in the way. That is why we can see a book but not the ball behind it.

Writing in stacked glass wouldn’t work. Because we have to look at everything in two dimensional slices, we couldn’t ignore everything behind and in front of what we were trying to read. Computers are a no as well. Computer screens also see things in 2-d slices. Holograms wouldn’t work because of our eyes’ functioning. Humans cant use a 3-D script because we couldn’t take in all the information needed. I’ve also been ignoring the inefficiencies of writing in 3-D, which presents obvious problems, though I will cover that lower.

Part II: 1 and 2 dimensional systems and thinking processes.

The main difference in thinking processes because of how a language is displayed would be time. A one dimensional system is what we have now. Theoretically, an entire book can be written out on a long strip of paper. Our sentences only stretch in one dimension. This is because our idea of time is linear, and humans can only make one sound at once (but we can add “color”, see Part III). These make linear systems more condusive to our species.

A two dimensional system is like what the Heptapods write in Arrival. Their system is based on a circular idea of time. Here is a sentence:

Circular writing from the film Arrival (2016)

Humans can write in a two dimensional system because our two dimensional scan can perceive everything we need to at once. I am unaware of any two dimensional systems in human language, at least naturally forming.

Part III: Three dimensional systems and thinking processes.

A three spatial dimension system is impossible for humans for the reasons I described above. Non-spatial dimensions could be used, though. In speech, pitch could add a dimension. In writing, color and or texture could be used to give another aspect to the symbols. Color, especially with computers, has been used in language before; Solresol, for example.

Imagine an alien species than could see and write in three spatial dimensions. What would they think like? Certainly not like us. Its a bit like trying to think in 4 spatial dimensions; it makes your brain hurt. My hypothesis is that time is simply a collection or blob of events to them. Your question is an interesting one.

Epilogue: Symbols in different dimensions.

It is important to note that there are systems with symbols that take up three dimensional space, like Ogham, tally stick notches, or Quipu. Their systems run linearly though. Most everyday symbols take up two spatial dimensions, like letters on a page.

As for one dimensional symbols, the field of steganography can help us here. Spies used to hide messages in Morse code by tying knots on string. The string would be knitted into a sweater or hat and mailed to the recipient. They would then unravel the knit and read the message. If you know a system or language with a non-linear idea of time please explain in the comments, I would be very interested.

Haley Kaufell

———————————

Here's one 3D writing system: Quipu

It's not clear whether the third dimension is semantic, or whether it's just a writing system that used the materials that were at hand.

The only 1D writing system I can think of is Morse code.

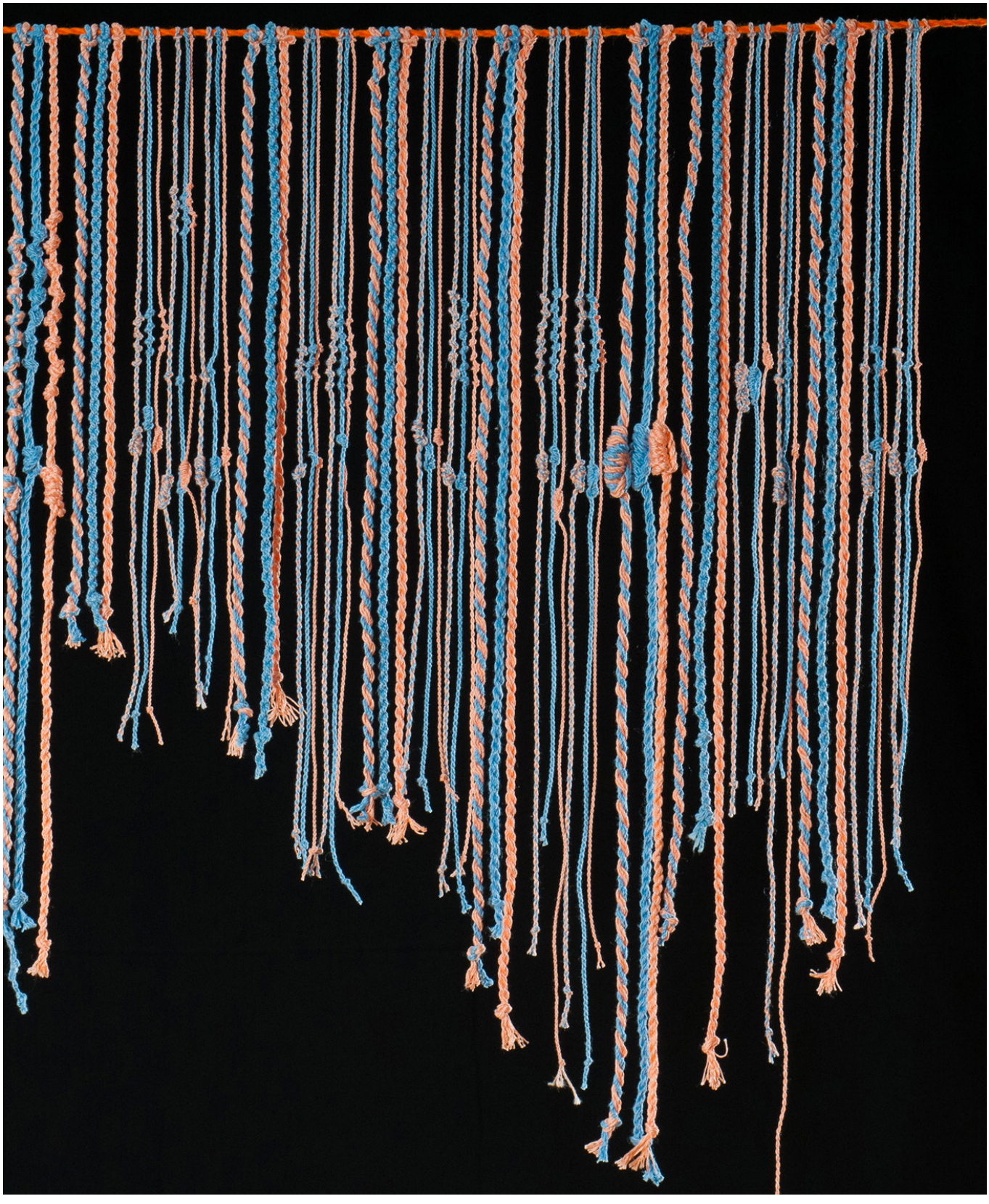
I believe that in the latter case, the writing system is mostly a conveyance for existing semiotic content and Morse code would only affect the thinking of its practitioners to the extent that there are words that only exist in Morse code—shorthands for often-used phrases, for example.

In the former case, although I don't know much about Andean cultures, I imagine that the idea of a "narrative thread" is more explicit for them, perhaps even today, than it is in cultures that use alphabets or ideograms. But that's more about the medium used, and less about the three-dimensionality itself.

Peter S. Conrad

———————————

The discussion above has been verbatim reproduced from this Quora thread: https://www.quora.com/Is-there-a-language-whose-writing-is-represented-in-3D-How-would-users-of-such-language-think-compared-to-users-of-2D-or-1D-writing-systems



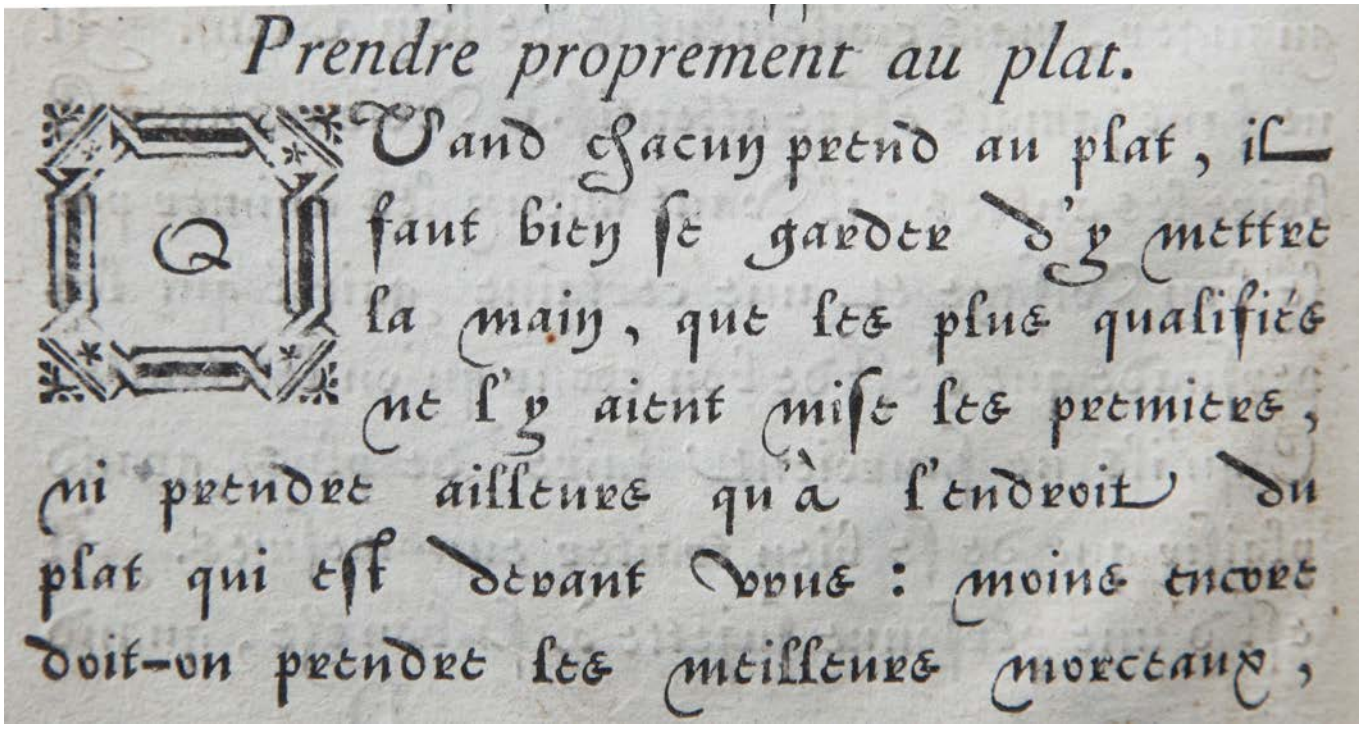
Quipu knots telling a story

What to do next?

- Research non-latin alphabets and study their rules
- Decide on the system I want to use
- Analyse what problems it has
- Sketch my own systems

CHAPTER III

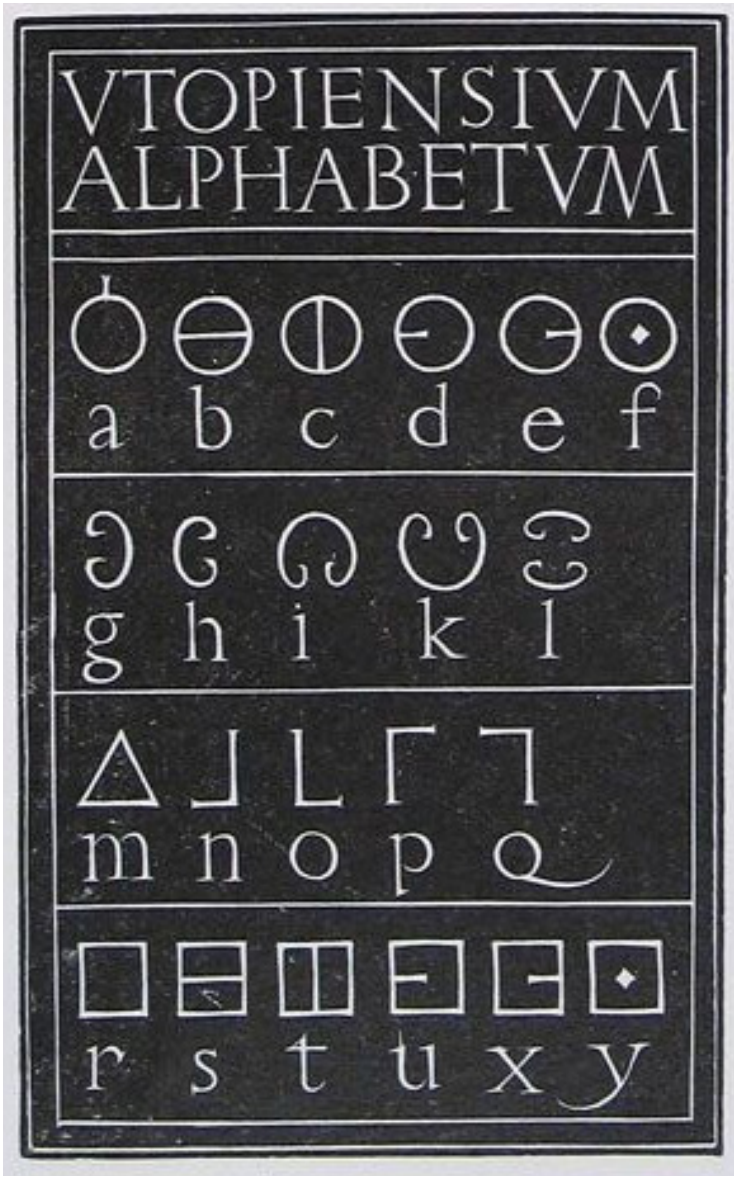
Further analysis of writing systems. In-depth insight into the Mayan writing system



Prendre proprement au plat.

QVand quelqu'un prend au plat, il faut bien se garder d'y mettre la main, que les plus qualifiés ne s'y aient mis les premiers, ni prendre ailleurs qu'à l'endroit du plat qui est devant vous : moins encore doit-on prendre les meilleurs morceaux,

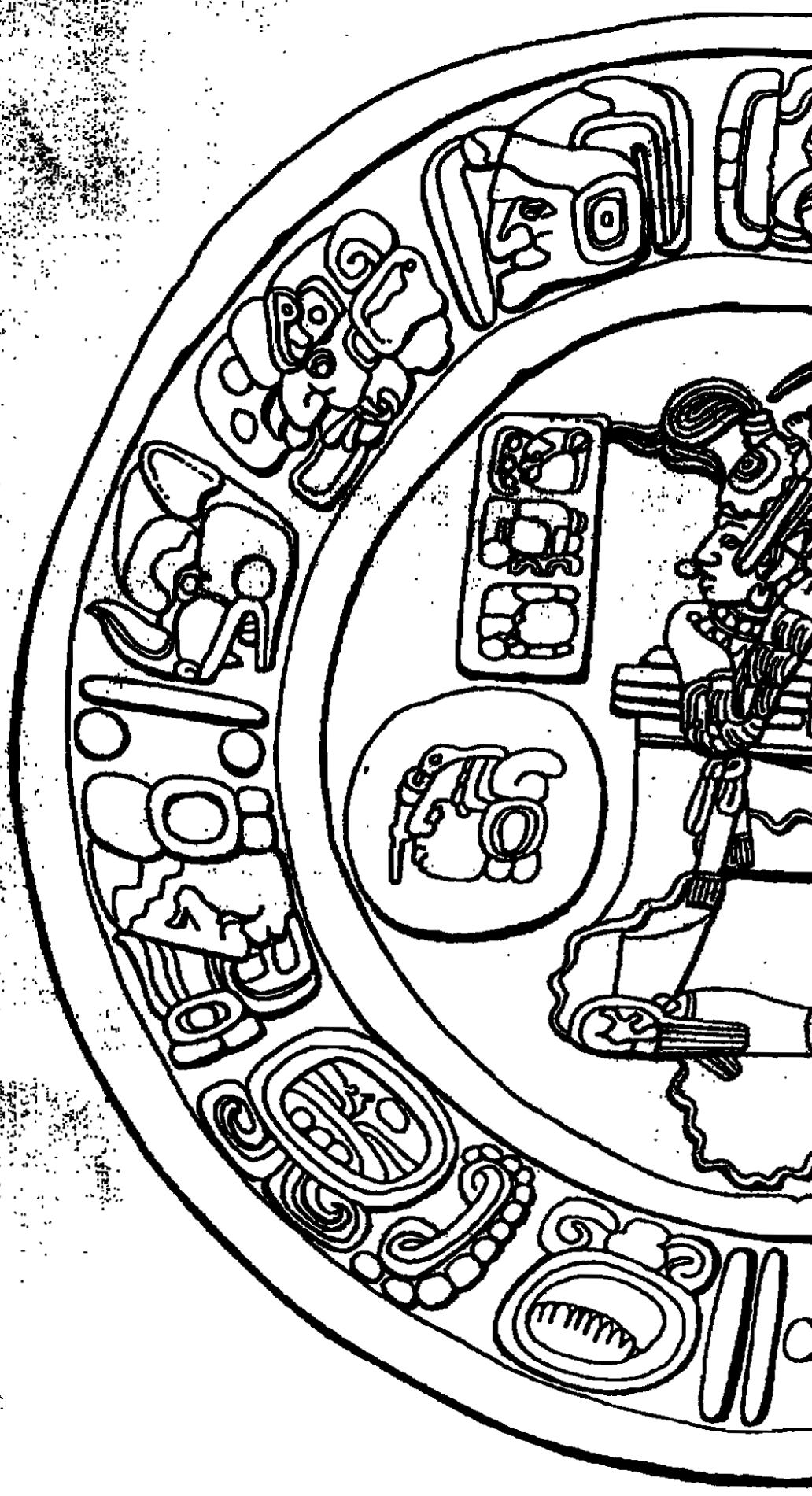
Civilité types used in a French courtesy book (1785)



! " # $ %&' ( ) * + , - . /
0 1 2 3 4 5 6 7 8 9 : ; < = > ?
@A B C D E ƯG H I ƠK L M N O
P Q R S T U V Ă X Y Đ Â Ô Ê ^ _
` a b c d e ư g h i ơ k l m n o
p q r s t u v ă x y đ â ô ê ~
Á á À Ả Ã ã Ạ Ắ Ằ Ẳ Ẵ Ặ Ấ Ầ Ẩ Ẫ
‘ ’ à ả “ ” ạ ắ ằ ẳ ẵ ặ ấ ầ ẩ ẫ
É È £ ¤ Ẽ Ẹ Ế Ề Ể Ễ Ệ Í - Ì Ỉ
Ậ é è Ẻ ẻ ẽ ẹ ế ề ể ễ ệ í ậ ì ỉ
Ĩ Ị Ó Ò Ỏ Õ Ọ Ố Ồ Ổ Ỗ Ộ Ớ Ờ Ở Ỡ
ĩ ị ó ò ỏ õ ọ ố ồ ổ ỗ ộ ớ ờ ở ỡ
Ợ Ú Ù Ủ Ũ Ụ Ứ Ừ Ử Ữ Ự Ý Ỳ Ỷ Ỹ Ỵ
ợ ú ù ủ ũ ụ ứ ừ ử ữ ự ý ỳ ỷ ỹ ỵ

Thomas More’s Utopian alphabet

Latin script used for Vietnamese language



The Mayan Script

The Mayan civilisation lasted from about 500 BC to 1200 AD, with a classical period from 300-900 AD. The earliest known writing in the Mayan script dates from about 250 BC, but the script is thought to have developed at an earlier date. Recent archeological finds indicate that the Mayan civilisation started much earlier: around 3,000 BC.

In about 1566, the first bishop of Yucatan, Diego de Landa, compiled a key to the Mayan syllabary consisting of 27 Spanish letters and the Mayan glyphs with similar sounds. This became known as the Landa Alphabet and helped with the decipherment of the script, even though it was based on the false premise that the script was alphabetic.

For a long time many scholars believed that the script did not represent a language at all, or that it wasn't a complete writing system. The first major breakthrough in decipherment came during the 1950s when a Russian ethnologist, Yuri Valentinovich Knorosov, proposed that the Mayan script was at least partly phonetic and represented the Yucatec Mayan language. His ideas were not welcomed by other Mayanists, but he was eventually proved correct.

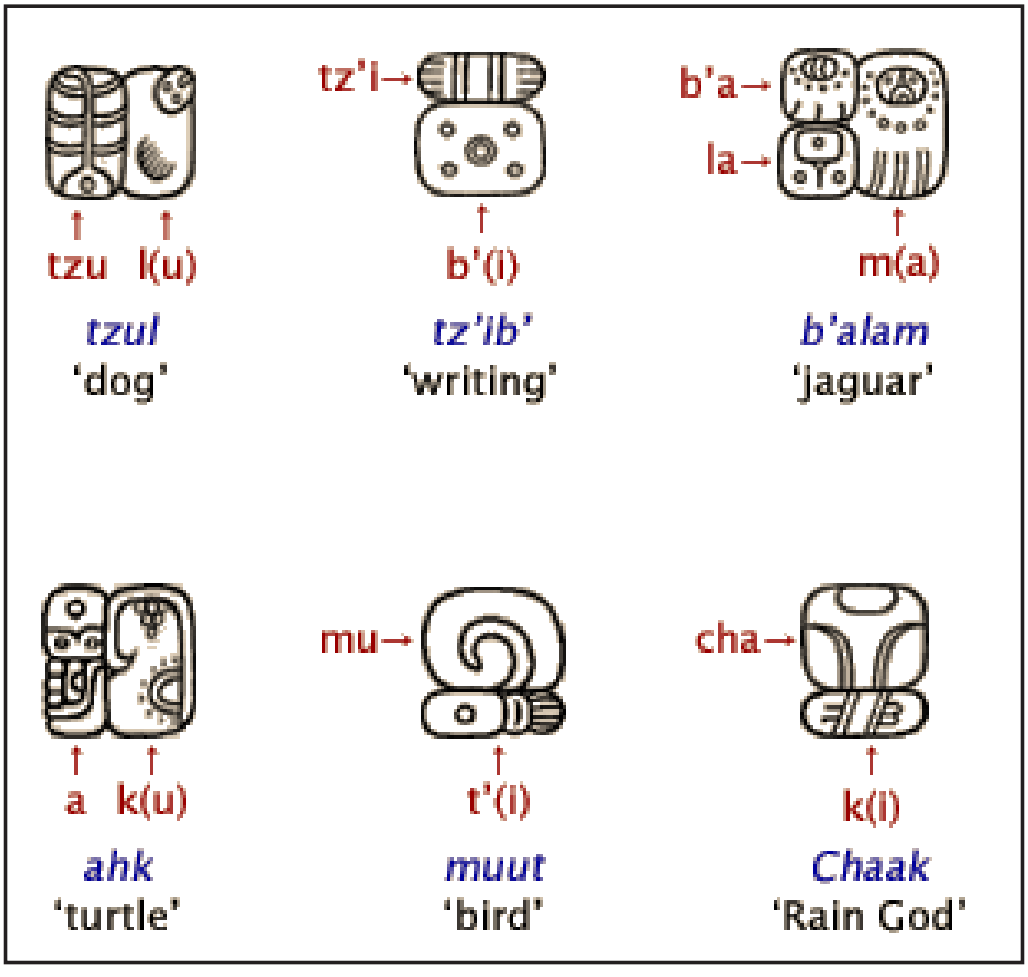
Further progress in the decipherment was made during the 1970s and 1980s when more linguistics began to take an interest in the script. Today most Mayan texts can be read, though there are still some unknown glyphs. A gripping account of the decipherment of the Mayan script can be found in Breaking the Maya Code, by Micheal D. Coe. The Yucatec Maya continued to use the Mayan script until at least the 16th century. Recently, their descendants have started to learn the script once again from the scholars who have deciphered it.

Notable features:

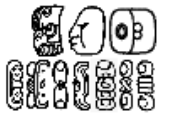
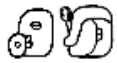
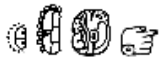
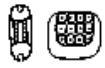
- The Mayan script is logosyllabic combining about 550 logograms (which represent whole words) and 150 syllabograms (which represent syllables). There were also about 100 glyphs representing place names and the names of gods. About 300 glyphs were commonly used.
- Examples of the script have been found carved in stone and written on bark, wood, jade, ceramics, and a few manuscripts in Mexico, Guatemala and northern Belize.
- Many syllables can be represented by more than one glyph
- The script was usually written in paired vertical columns reading from left to right and top to bottom in a zigzag pattern.
- The Mayans used to write with a brush. Being skillful calligraphers they would change the pressure used to create thin and thick lines. The consonants, which were the basic shape, were made out of the thick strokes and inside you would 'fill in' the vowels with thinner strokes.

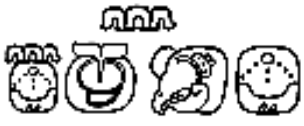
550 logograms (whole words)
150 syllabograms (syllables)
100 glyphs (names and places)

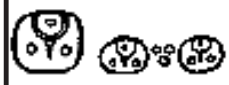
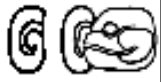
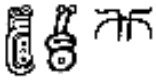
One glyph could be many syllables. Usually written in paired vertical columns reading from left to right and top to bottom in a zigzag pattern.

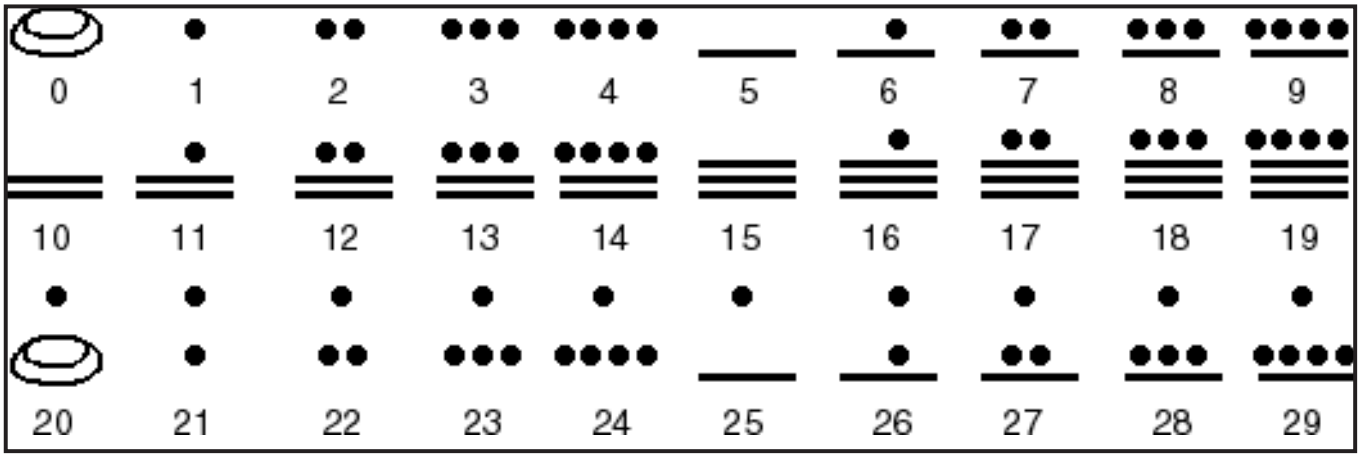


Formation of words through syllables in the Mayan script

 a	 e	 i	 o	 u
 ba	 be	 bi	 bo	 bu
 cha	 che	 chi	 cho	 chu
 ch'a			 ch'o	
 ha	 he	 hi	 ho	 hu
 ka	ke	 ki	 ko	 ku
 k'a			 k'o	 k'u

 tza	 tze	 tzi		 tzu
 tz'a		 tz'i		 tz'u
 wa		 wi	 wo	
xa	xe	xi	xo	xu
ya	ye	yi	yo	yu

 la	 le	 li	 lo	 lu
 ma	 me	 mi	 mo	 mu
 na	 ne	 ni		 nu
 pa	 pe	 pi	 po	 pu
	 p'e	 p'i		
 sa	 se	 si		 su
 ta	 te	 ti	 to	 tu
	 t'e			 t'u



Klingon alphabet

The Astra Image Corporation designed letters to represent Klingon writing for Star Trek: The Motion Picture and based them on symbols created by Matt Jefferies which appear on the Klingon battlecruiser in the film, and also on the Tibetan script. Random Klingon letters are used in the Star Trek films and TV series for effect, and Klingon enthusiasts have devised a way of writing Klingon with them, though Klingon is generally written with the Latin alphabet.

Klinkgon script from the TV Series Star Trek

KALMYK

Agglutination and vowel harmony. In an agglutinative language, words are formed by added suffixes to existing words, called stem words or root words.

Vowel harmony refers to the agreement between the vowels in the root of a word and the vowels in the word's suffix or suffixes.

Kalmyk is a member of the Kalmyk-Oirat branch of the Mongolian language family. It is spoken in the Kalmykia republic in the west of the Russian Federation, and in parts of western China and western Mongolia. In Kalmykia it is known as Kalmyk, while in China and Mongolia it is known as Oirat.

Others names for the language include Kalmyk-Oirat, European Oirat, Kalmack, Kalmuck, Kalmuk, Khalli, Qalmaq, Volga Oirat, Western Mongolian, 卫拉特语 (Wèilātè yǔ) or Xinjiang Mongolian.

In 2010 there were about 183,000 speakers of Kalmyk in Kalmykia, mainly in Astrakhan province. In 2007 there were 130,000 speakers of Kalmyk in western parts China, particularly in Gansu and Qinghai provinces, and in Inner Mongolia and Xinjiang Uyghur Autonomous Region. In 2016 there were about 221,000 speakers of Oirat in Mongolia in the provinces of Bayan-Ölgii, Uvs, Khovd, Khövsgöl, Zavkhan, Govi-Altai and Arkhangai.

Kalmyk was first written with the Uyghur script in the 11th century. Then in 1648 a Kalmyk Buddhist monk called Zaya Pandita Oktorguin Dalai created the Kalmyk alphabet or Todo Bichig (Clear Script) by adapting the Classical Mongolian script. The Clear script is still used by Kalmyks in China, but Between 1930 and 1938 Kalmyk was written with a version of the Latin alphabetModern written Kalmyk is based on the Torgut dialect.

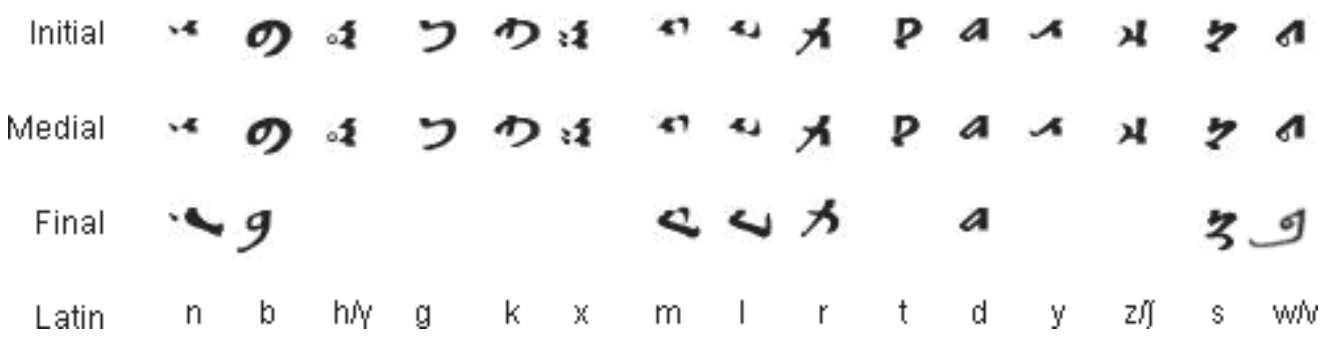
The Kalmyk-Oirat Clear Script is written in vertical columns running from top to bottom and left to right. Each letter has a different shape depending where it appears in a word, and special letters are used for combinations of some letters.

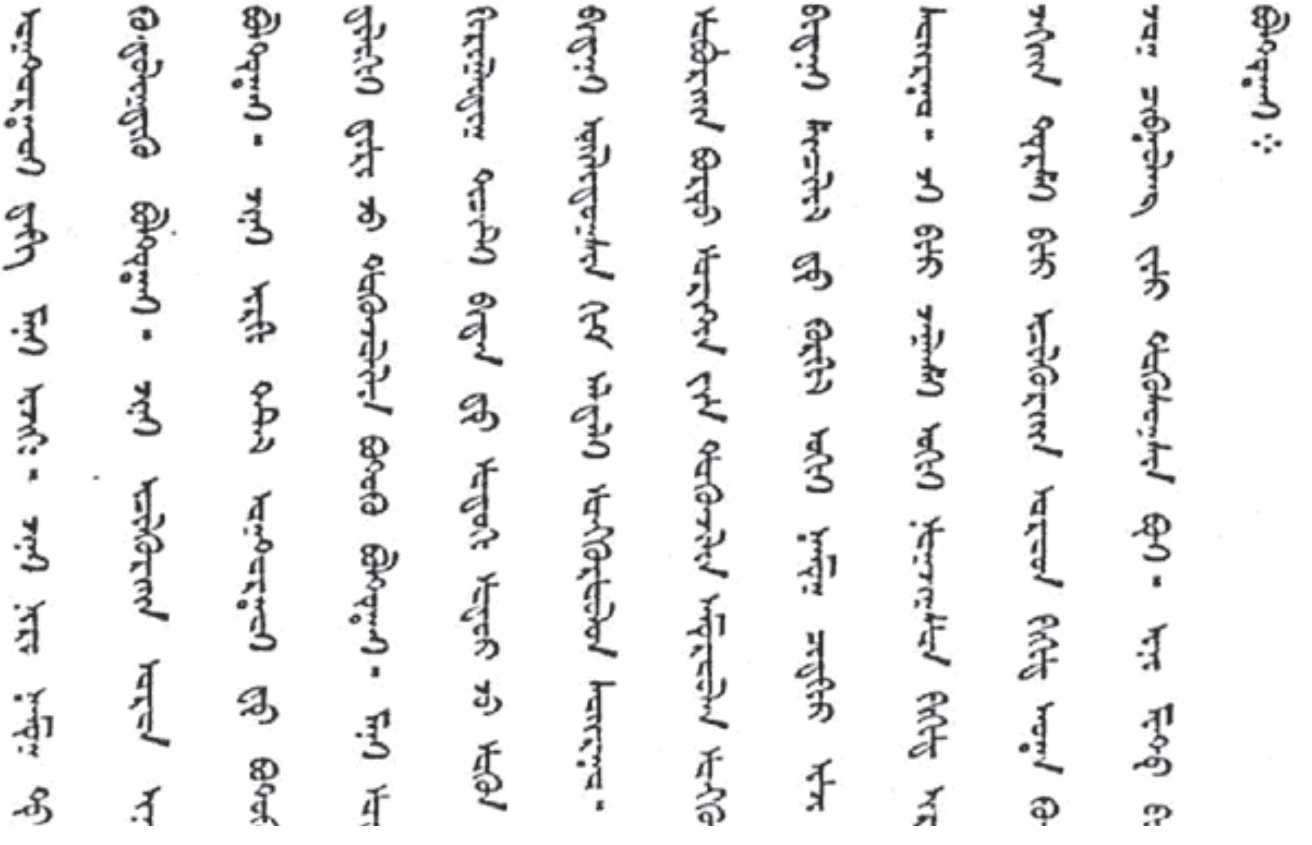
Cyrillic alphabet for Kalmyk

In Russia Kalmyk has been written with various versions of the Cyrillic alphabet since the end of the 19th century. A standard way of writing Kalmyk with the Cyrillic alphabet was adopted in 1924. This was revised several times after that, and replaced by the Latin alphabet between 1930 and 1938. A new version of the Cyrillic alphabet was used from 1938, and that was revivsed in the 1941, and again in the 1950s.

Vowels

Consonants

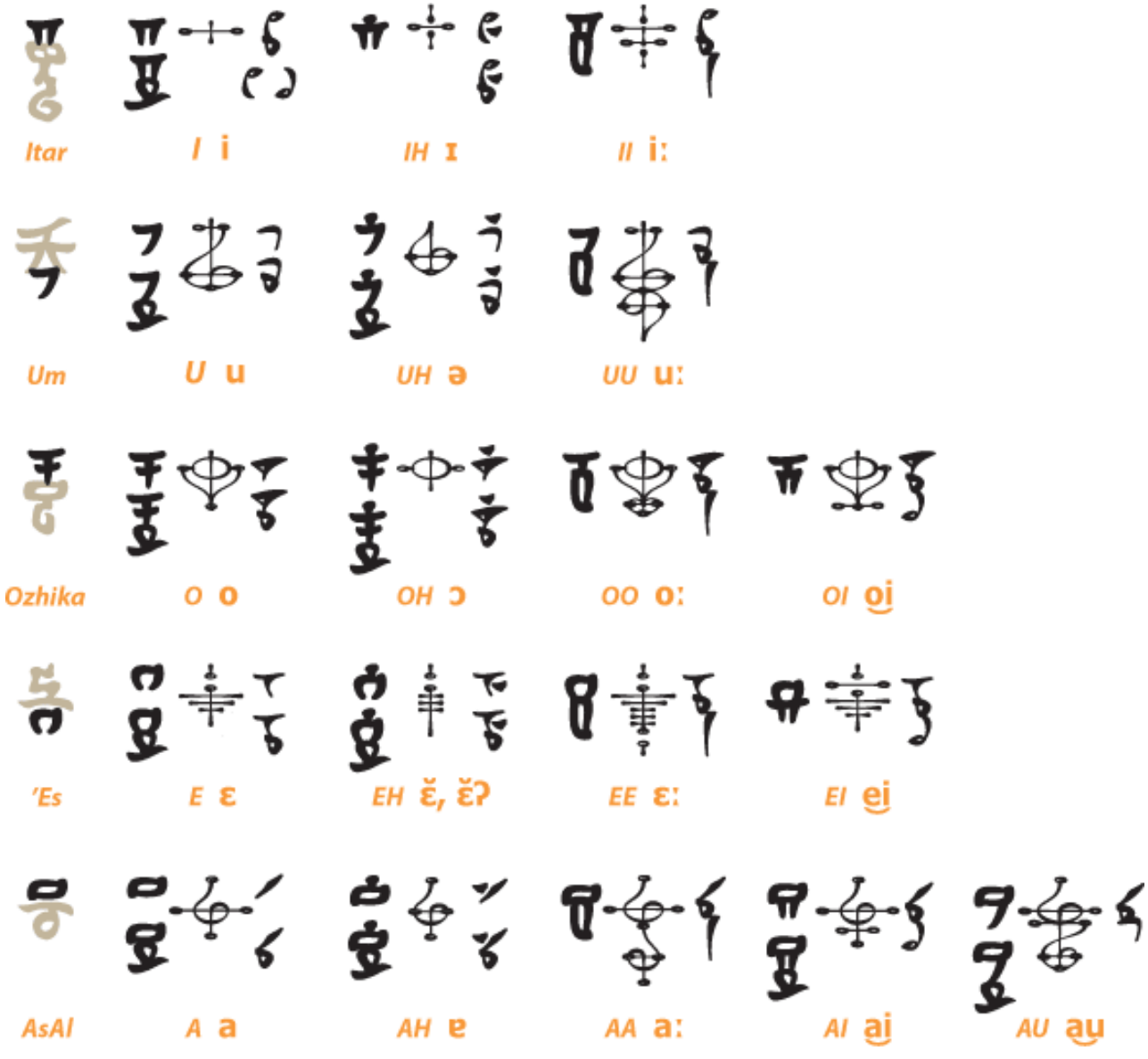




Golic Vulcan

Alphabetic (from logographic roots). Vowels are used more or less as inline letters with the exception of the /a/. The Standard script can rotate in the same manner if necessary in context.

Note that for the Traditional and Handwriting scripts it is most common to simply refer to the consonants as C+/o/, hence “M” is “Mo”. “N” is “No”, etc. Exceptions occur for “oNG” and the consonant clusters “KSo” vs. “oKS” (“X”).



Malat m

Nala n

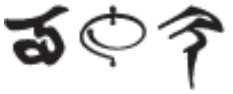
taNGu ŋ

taPan p

Buhf'es b

taFar f

Vanu v



Tan t

Dif d

La l

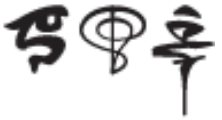
Rata r

Sa s

Zun z

THes θ

SHai ʃ



ZHerka ʒ

TSek ʦ

soCHya ʧ

TCHol ʧ͡

DZHarel ʤ

Ko k

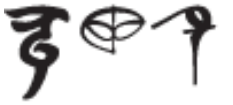
Gen g

KHaf x

Ha h

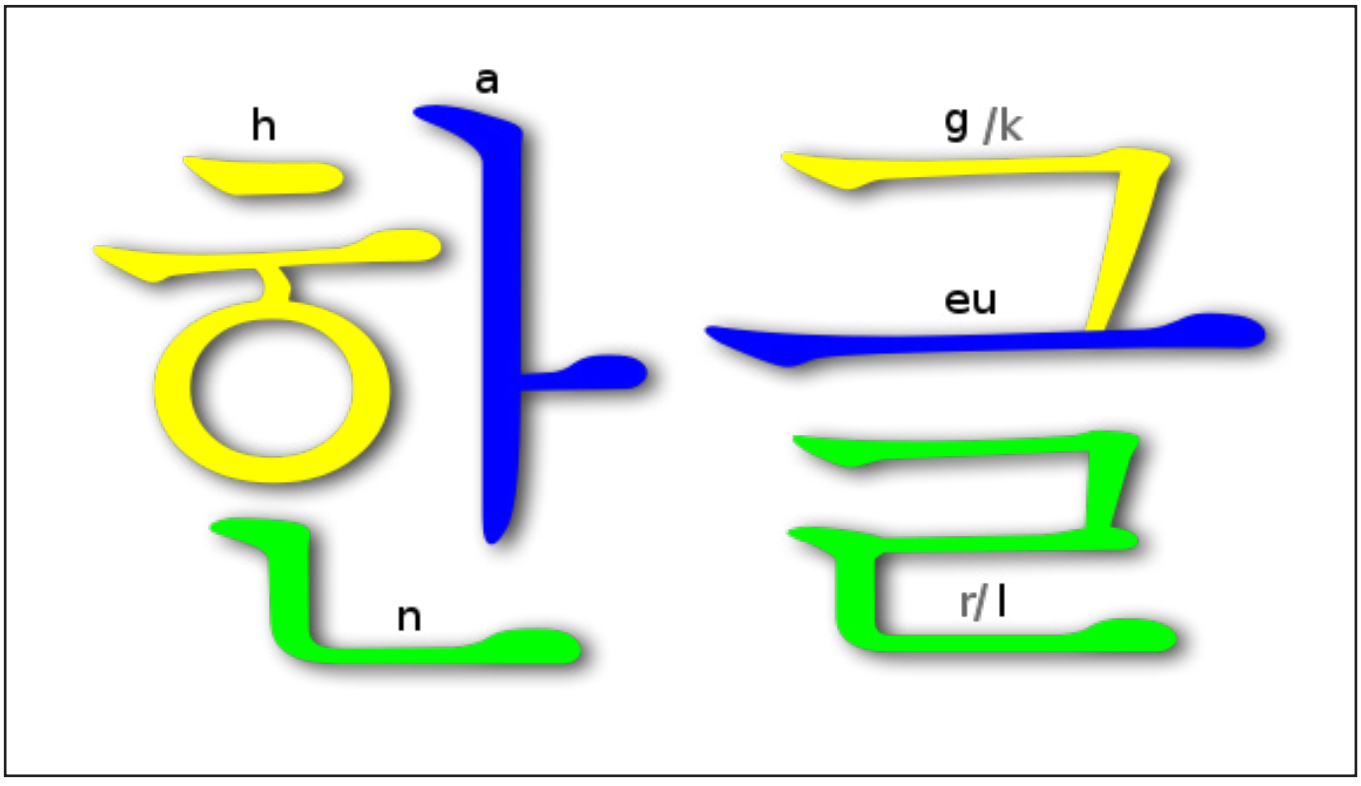
shaya-ralash

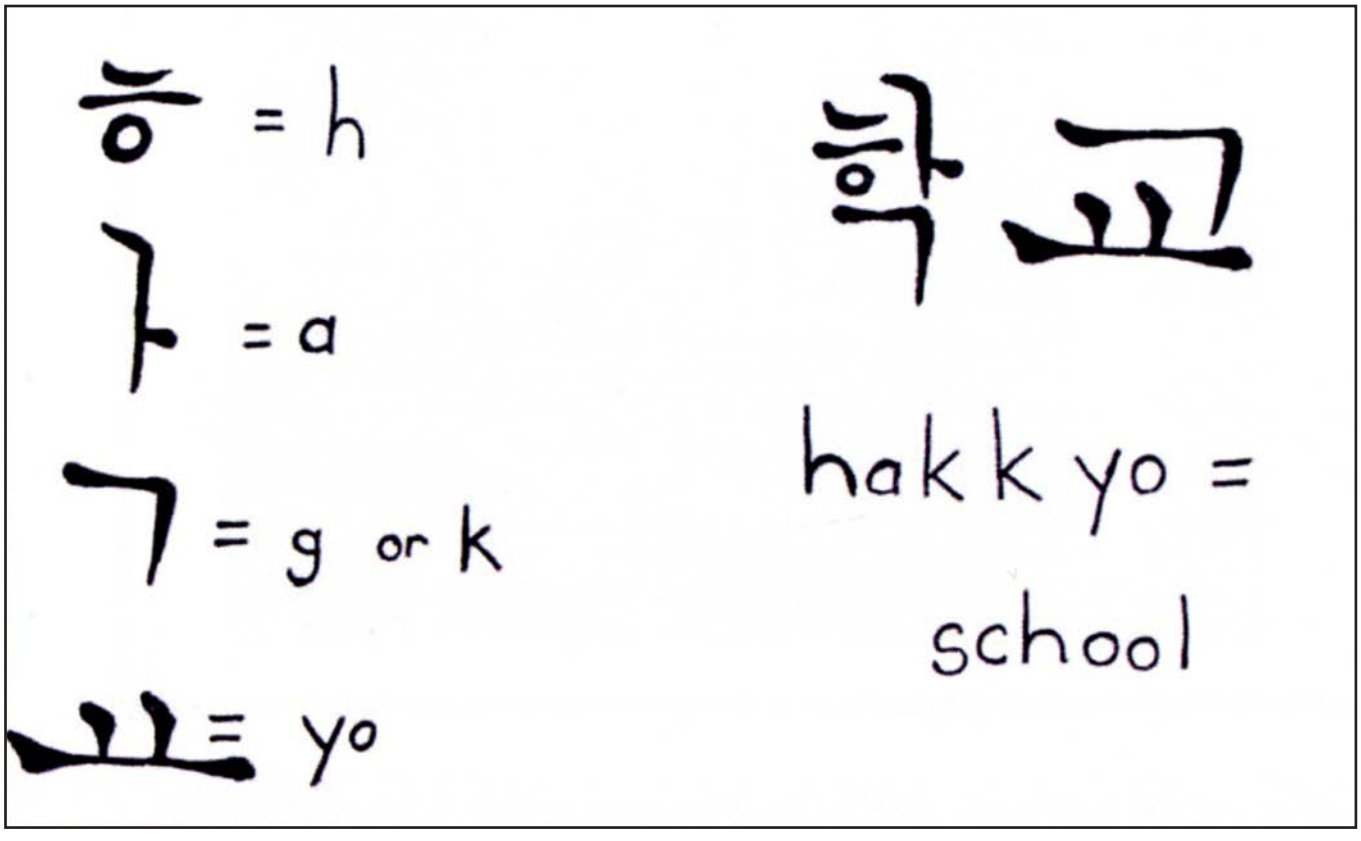
ʔ, Ø, ə̆



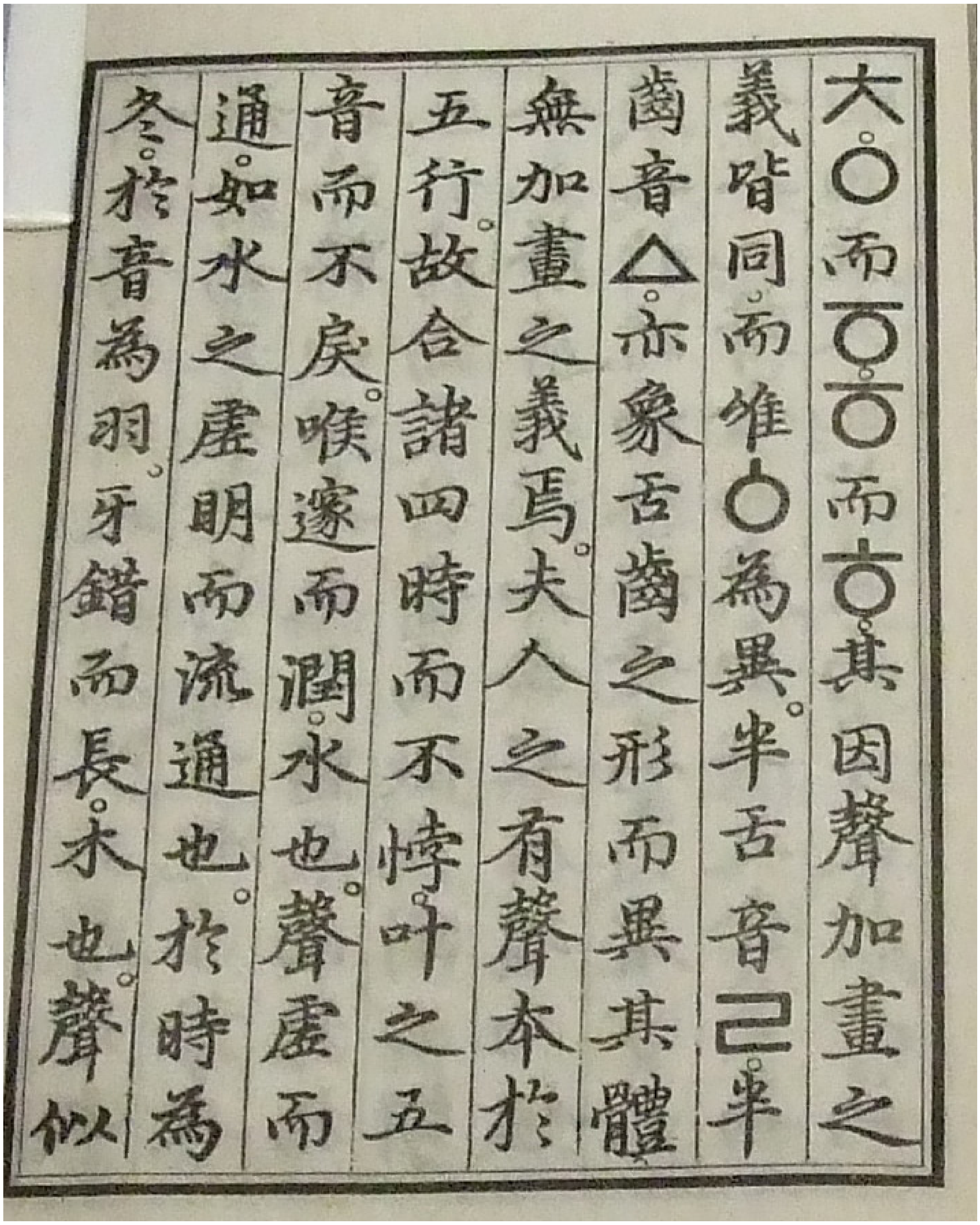
Yen j

Wak w





Modern Hangul script used to write Korean



大。ㅇ而ㆆ。ㆆ而ㅎ。其因聲加畫之
義皆同。而唯ㆁ爲異。半舌音ㄹ。半
齒音ㅿ。亦象舌齒之形而異其體
無加畫之義焉。夫人之有聲本於
五行。故合諸四時而不悖。叶之五
音而不戾。喉邃而潤。水也。聲虛而
通。如水之虛明而流通也。於時爲
冬。於音爲羽。牙錯而長。木也。聲似

Ancient Hangul transitioning from pure
Chinese ideograms to the modern syllabic form

What to do next?

How do I define the rules for harmony and rhythm?
Think about small sizes? What about bold weight? Or italic?
Should I use something like Mandombe that is very blocky, even boring, and being extremely different from what I am interested.
Look at how Hangul/Chinese works at small sizes.
Global font. The relation between my script and the Latin script. I don’t have to think in point size 9.

CHAPTER IV

Defining the requirements for my script. Sounds used in English and Bulgarian

Requirements

After delving in the sea of languages and their scripts, I quickly realised I need to know what I want from my constructed grapheme system. I wanted it to have certain features like vertical writing, but in general I let my intuition to lead the way. The various ‘requirements’ I set upon myself changed from week to week.

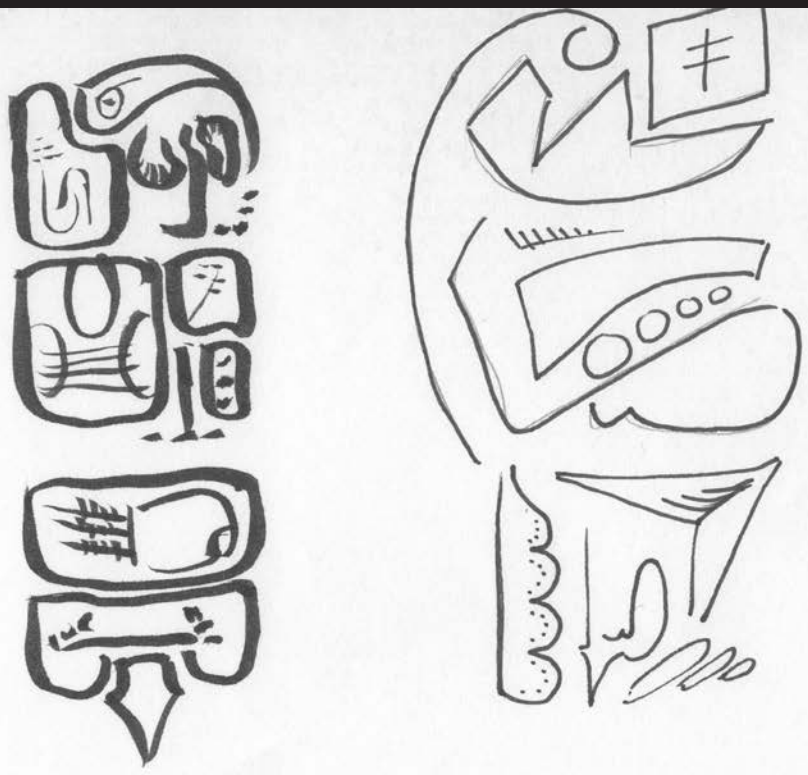
But from the beginning I wanted to satisfy only two languages:

- English, the language I use everyday, which utilises the Latin script
- Bulgarian, as my mother tongue, it would have been impractical not to use it, and it is even uses a non-Latin script, namely Cyrillic. They are connected but still it gave me some base to start my experiments.

I was particularly interested in the Mayan alphabet as it involves a lot of drawings and complexity, but this was a challenge to bring to the modern age. After all in such detail it is very hard to mechanically reproduce.

Another interest of mine were Mongolian languages. In the Soviet Era, all of them were forced to use Cyrillic as their alphabet, forgetting the existing script. I thought that the other way around should also work. If I created a non-Latin, non-Cyrillic alphabet it should not be a problem to write English and Bulgarian with it.

CHAPTER IV



Cyrillic:

| А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т

‖ Дж, Дз

Latin:

| A B C D E F G H I J K L M N O P Q R S T

‖ Ти, Ch, Dzh

уфхцчшщъьюя

TUVWXYZ

Sounds in Bulgarian:

Vowels

а (а:)

ъ

о

у

е

и

Consonants

Soft	Hard
д'	д
б'	б
з'	з
г'	г
—	ж
—	дж
з'	з
дз'	дз
к'	к
л'	л
м'	м
н'	м
н'	н
р'	р
с'	с
т'	т
дъ'	дъ
х'	х
ц'	ц
ч	ч
ш	ш

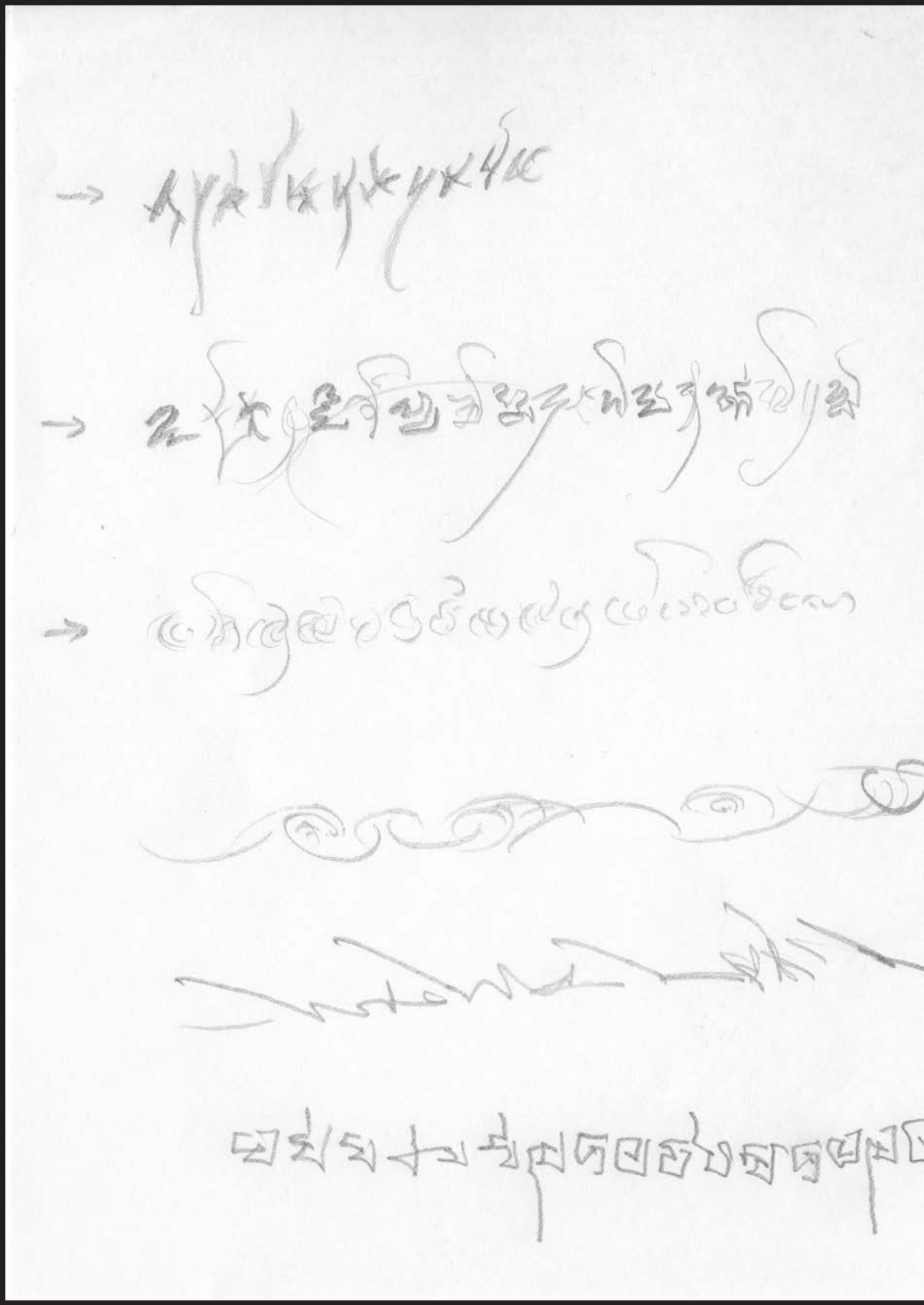
Sounds in English:

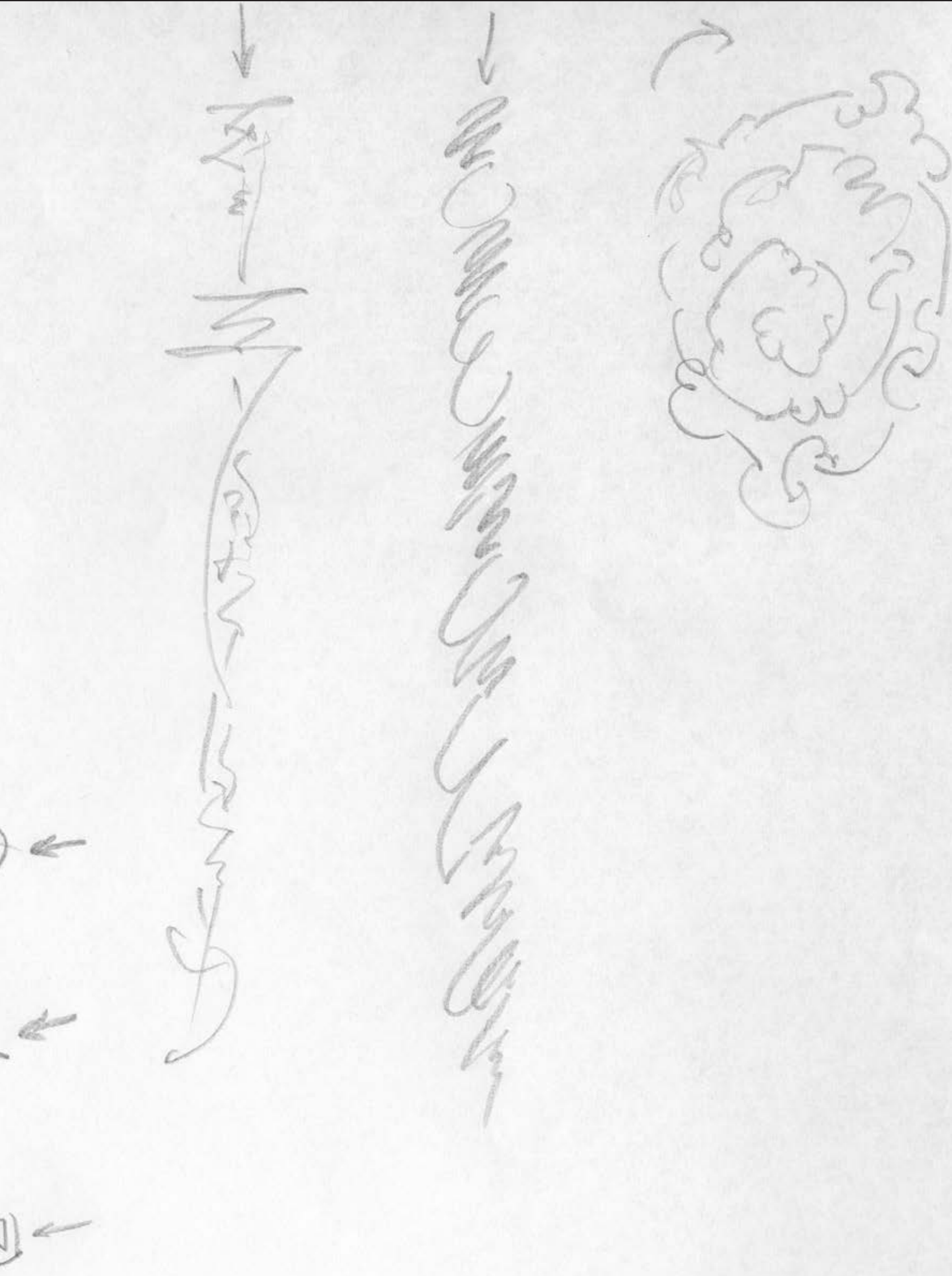
Vowels

ʌ
ɑ:
æ
ɛ
ə
ɜ:ʳ
ɪ
i:
ɒ
ɔ:
ʊ
u:
aɪ
aʊ
eɪ
oʊ
ɔɪ
eəʳ
ɪəʳ
ʊəʳ

Consonants

b
d
f
g
h
j
k
l
m
n
ŋ
p
r
s
ʃ
t
tʃ
θ
ð
v
w
z
ʒ
dʒ





CHAPTER V

Structure of the Chinese and Mayan characters. First test for my constructed script

Semanto-phonetic writing systems

The symbols used in these semanto-phonetic writing systems often represent both sound and meaning. As a result, these scripts generally include a large number of symbols. Anything from several hundred to tens of thousands. In fact there is no theoretical upper limit to the number of symbols in some scripts, such as Chinese. These scripts could also be called logophonetic, morphophonemic, logographic or logosyllabic.

Semanto-phonetic writing systems may include the following types of symbol:

Hieroglyphics

Chinese

Emoji

Sticker

Pictograms or pictographs resemble the things they represent. Logograms are symbols that represent parts of words or whole words. The image on the right shows some examples of pictograms from the Ancient Egyptian Hieroglyphic and Chinese scripts.
The Chinese characters used to look like the things they stand for, but have become increasingly stylized over the years.

Ideograms or ideographs are symbols which graphically represent abstract ideas. The image below shows a number of ideographic Chinese characters.

The majority of characters in the Chinese script are semanto-phonetic compounds: they include a semantic element, which represents or hints at their meaning, and a phonetic element, which shows or hints at their pronunciation. Below are a few such compound characters which all share a semantic element meaning ‘horse’.

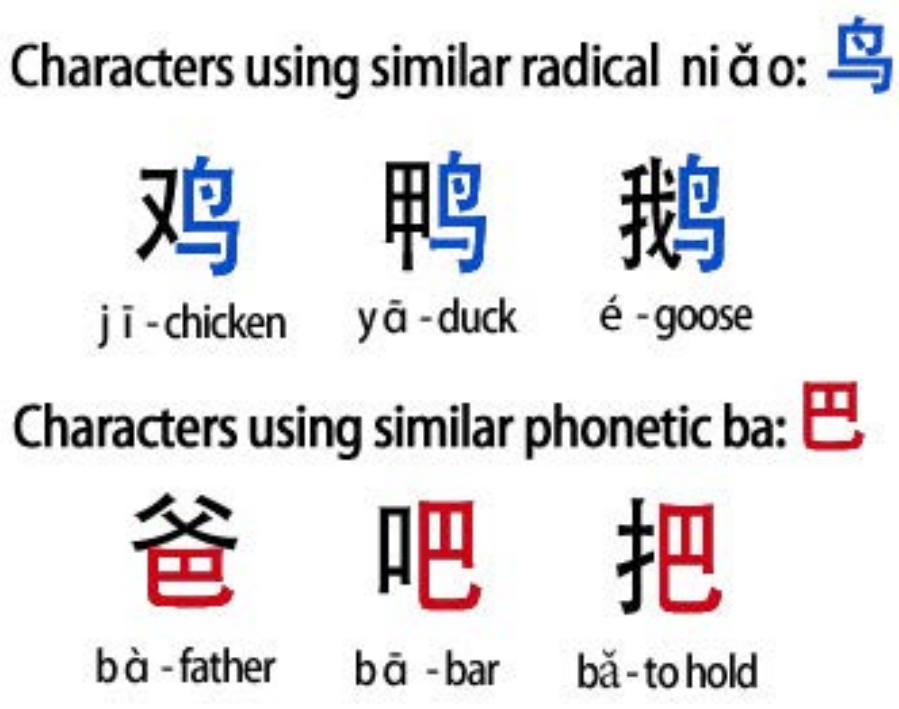
Sometimes symbols are used for their phonetic value alone, without regard for their meaning, for example when transliterating foreign names and loan words.

木 mù, ideogram alone means “Tree”.

林 lín, ideogram double means “Woods”.

森 sēn, ideogram triplicate means “Forest”.

Some examples of Chinese semanto-phonetic compound characters

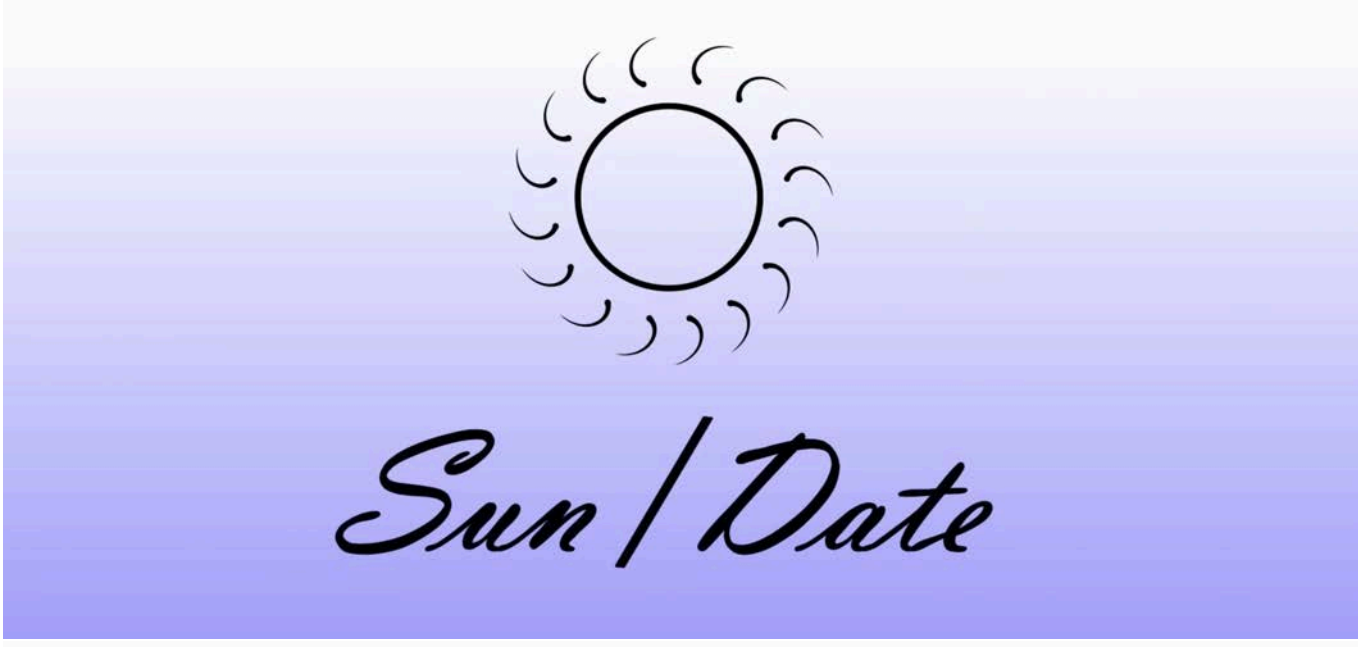


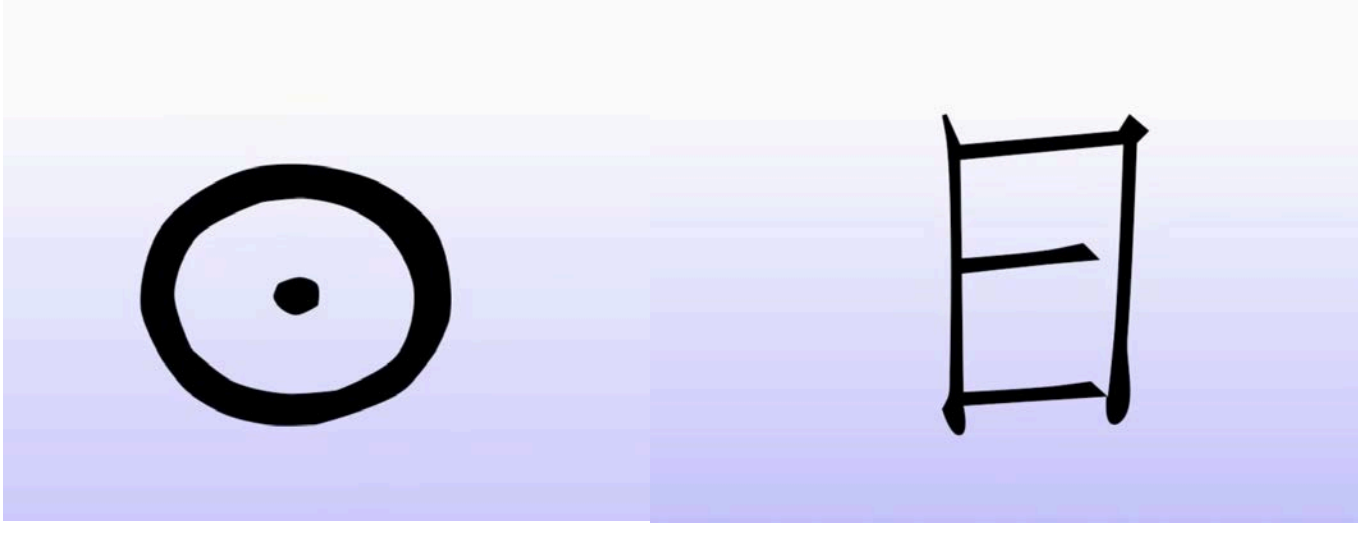
Some ideographic Chinese compound characters

Written Chinese (中文)

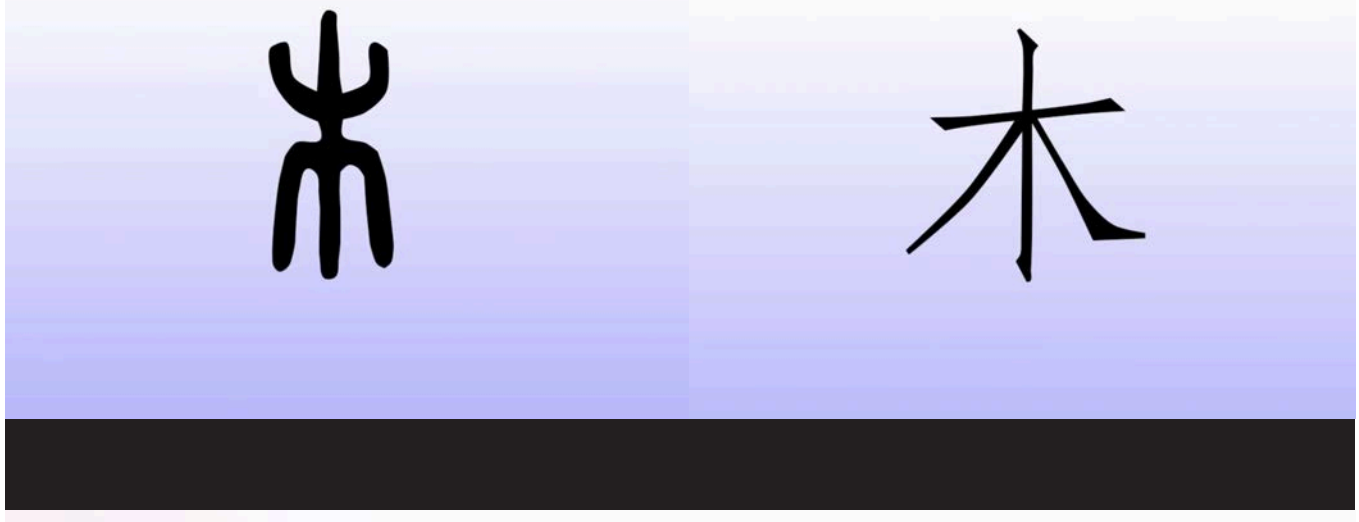
Cangjie (倉頡), an official historian of the Yellow Emperor, is traditionally credited with inventing the Chinese writing system. According to legend, he had four eyes and four pupils, and that when he invented Chinese characters, the demons cried and the sky rained millet. The Yellow Emperor, who reigned between 2697-2597 BC or 2696-2598 BC according to tradition, is regarded as the founder of Chinese civilization.

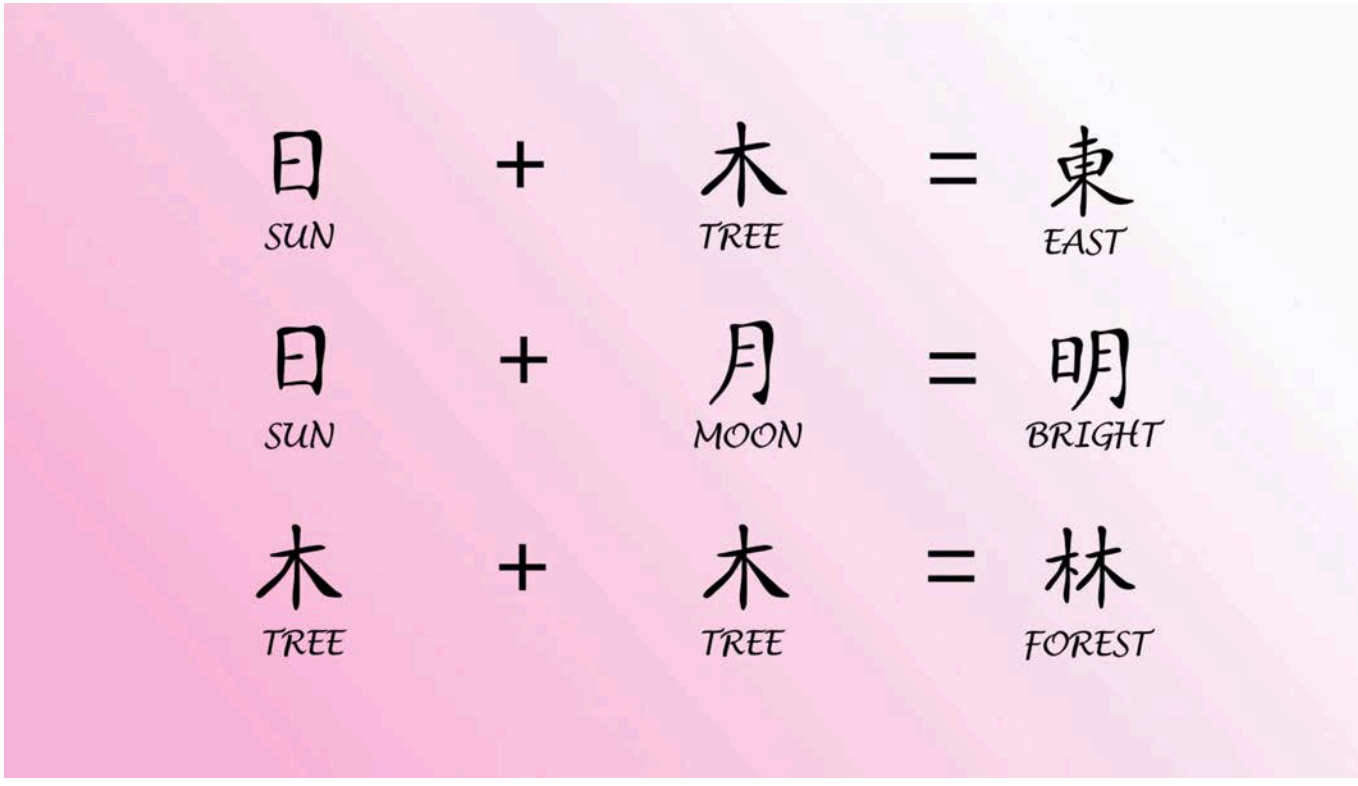
At the time of the Yellow Emperor, records were kept using knots on ropes. The emperor thought this system was unsatisfactory and charged Cangjie to create a writing system for Chinese. Cangjie did not know how to proceed at first, but was eventually decided to base characters on the special characteristics of animals, birds and other natural phonomena. The emperor was very pleased with the new script and had textbooks produced and sent to the different parts of his empire so that Cangjie could teach people his script.

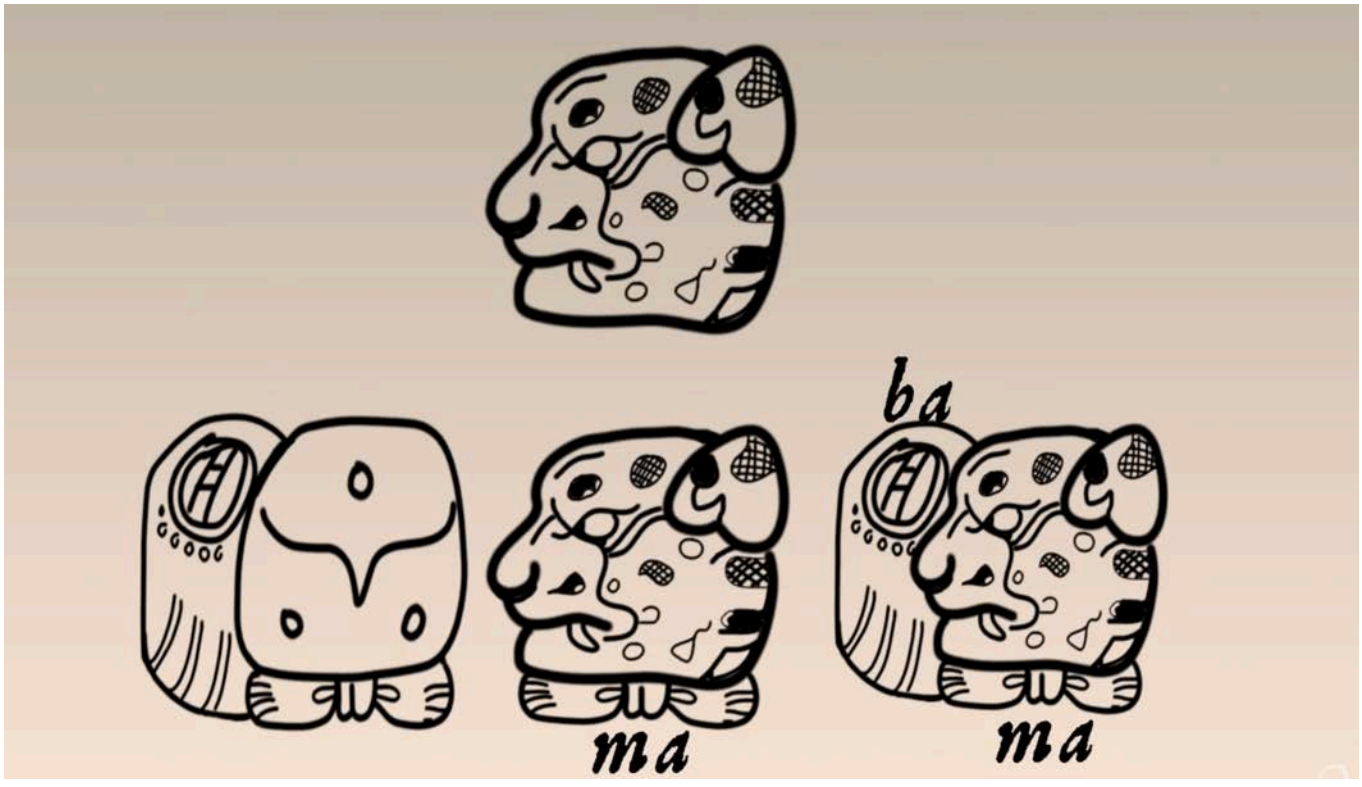


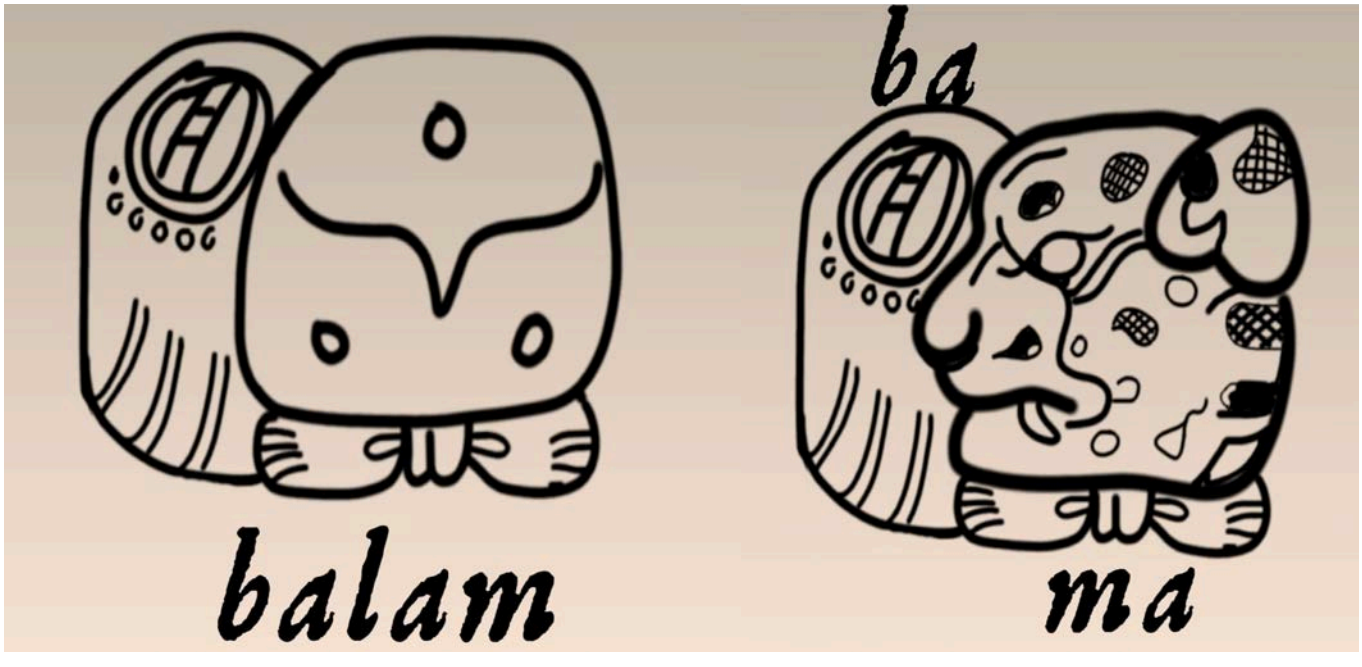


Tree / Wood




日 + 木 = 東
SUN TREE EAST
日 + 月 = 明
SUN MOON BRIGHT
木 + 木 = 林
TREE TREE FOREST

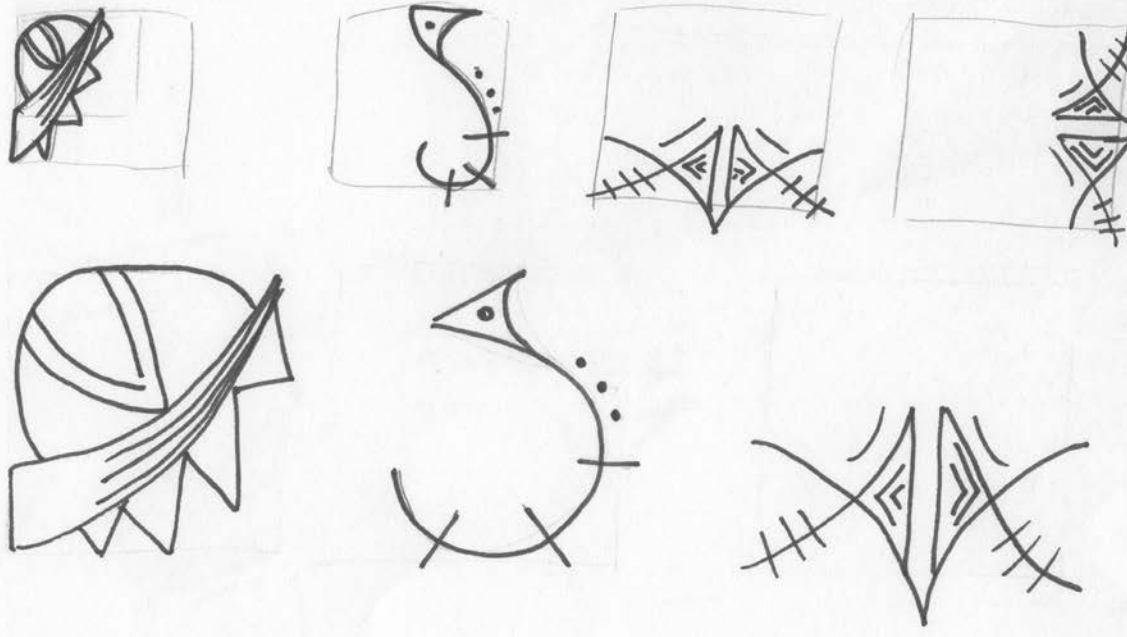

ba
ma
ma


ba
balam
ma

Ma (Ma) Ca (Sa) Ta (Ta)

Macan
Mac
mass -

Ma Ca Ta



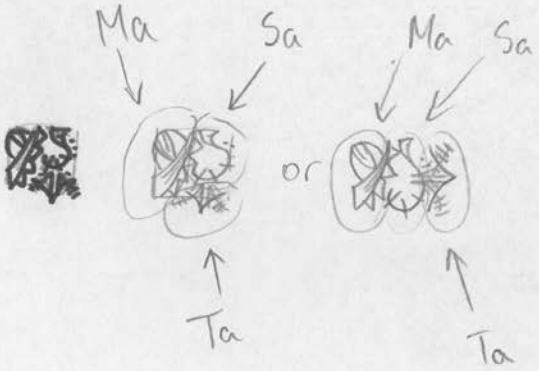
- look at Indik ~~fonts~~ scripts
- g-sub (ligatures)
- g-pose (the shape changes according to other shapes)

Simplify (according to
Original stone cut i

original script

- Make a list for w

na → the table
→ loin
→ Maca (physical)



Chitwan)

$\tilde{A}$

mages (simplification)

ize roughly

hat I want to achieve

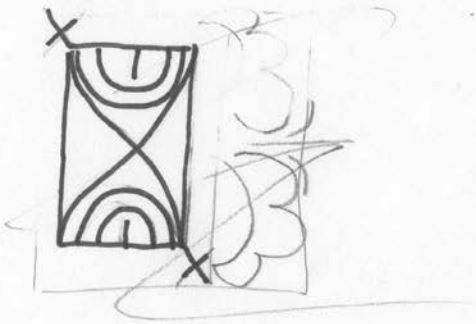
休林 林 亻 休

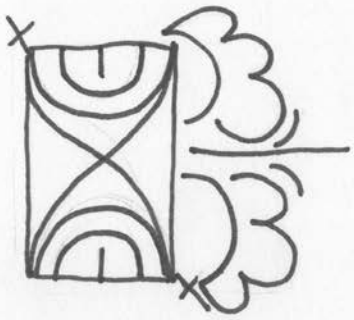
休林

Ma (Ma)

times 2

Ky (Ku)



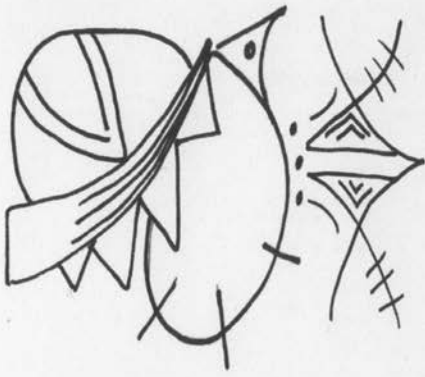


Hu

(Ni)

Кумани (Kumani)

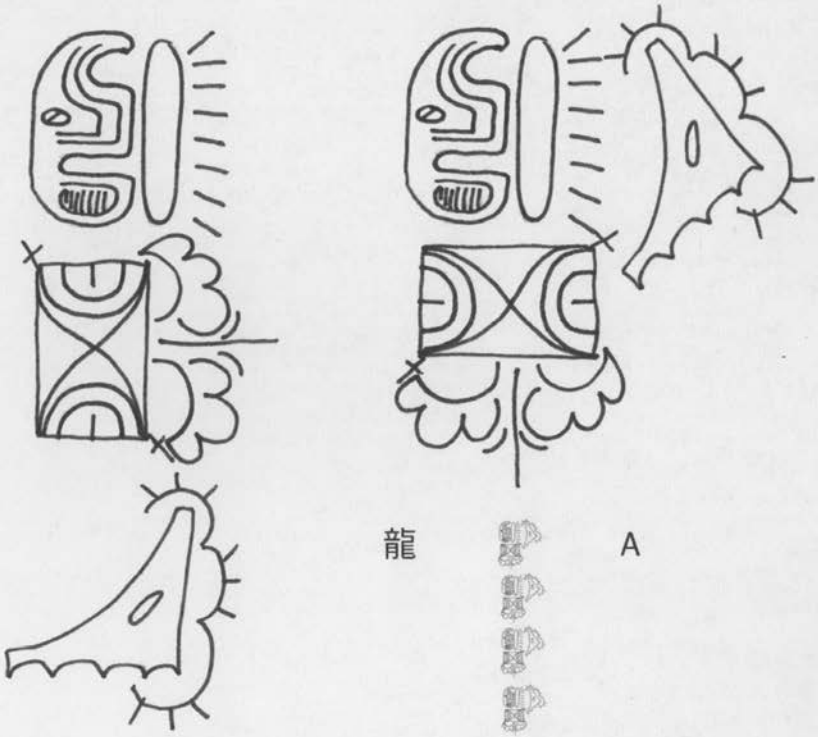
Alphabet 1 / 12pt



龍 A

龍 A

Alphabet 2 / 12pt



龍 A

Chapter VI

Research into conlangs (Elvish, Vulcan, generic sci-fi script) Research into tools (carving, Vanuatu sand drawing)

Designing an Alien Alphabet

A great way to enhance a gameworld's believability and atmosphere is to make a custom alphabet for it. The written word is all around us, and plays a major role in making our world look and feel the way it does. A unique alphabet helps make a unique gameworld.

Anyone who's ever tried designing a font knows how difficult it is. Our brain is very sensitive to disturbances in the flow of readability, and each tiny alteration to curvature or line thickness can mean the difference between elegance and awkwardness.

The good news is that the rules are much looser when designing a fictional alphabet, and it can be very fun. But there's more to it than just throwing down some random squiggles. I've recently designed a complete alphabet for Spryke, and I'll take you through my whole process.

Text says a lot even if you don't understand it. It conveys cultural and aesthetic cues, and can evoke familiarity, strangeness, simplicity, complexity, grace, order, and more.
The benefits of adding a custom alphabet to your game. First off, let's take a look at some reasons you might want to design a custom alphabet for your game.

- Written language is a key component of culture (even its absence in oral cultures is a key component of those). If you want your world to feel like it has its own living, breathing culture, then you need to think about its written language.
- If your game is set in a fantasy or sci-fi world, your characters probably don't speak/write English. Which begs the question: what do they speak/write?
- If your game is in a fictional present-day country, a bespoke alphabet shows that you've put some effort into making your country feel unique, rather than just lazily assembled a bunch of general racial stereotypes, à la the Just Cause and Far Cry series.
- You could use your alphabet as a sort of code and encourage players to try and decipher it. You could even base puzzles around it.
- A fictional alphabet means you can populate your world with billboards, signs, and slogans, without having to actually write catchy and convincing content for those billboards, signs and slogans.
- If you have a number of different cultures/races/species in your game, using multiple alphabets would be a good way to differentiate between them, even when the characters themselves aren't present. For instance, inscriptions in an ancient rune could indicate the presence of a long-gone foreign race, while text on an empty space ship could emphasise that it belongs to an enemy.
- Designing a bespoke alphabet is fun!

An alphabet's aesthetic and functional aspects reveal a lot about its creators, its forms naturally springing from the traits of the home culture.

Step 1: Consider your gameworld's culture

Comprised mainly of sturdy, masculine shapes, these glyphs have a uniformity of size and economy of form that makes them seem almost engineered, rather than merely written. They are solid, upright, efficient.

Judging by this alphabet, one could imagine that it was created by a pragmatic, rigid culture that prized order, strength, and structure. And actually, that's not a half-bad description of the ancient Romans.

Now look at these characters from another ancient alphabet:

These lack the frugality and symmetry of the Latin characters, and are much more complex, intricate, and floaty. One could suppose that the culture that created them was one that cherished sophistication, artisanship, and nuance.

These jagged, spiky shapes have neither the balance and structure of the Latin letters nor the grace and complexity of the Chinese ones. Instead, they evoke an aggressive, almost savage vibe. And so they should; they are the Dovahzul alphabet: the ancient language of Skyrim's dragons.

Your game's alphabet can and will inform your audience about your gameworld. If your alphabet looks interesting, boring, complex, or frivolous, your game's inhabitants will seem interesting, boring, complex, or frivolous. Use this to your advantage, and make sure that it's communicating the message you want it to convey.

Step 2: Consider your gameworld's technology

Apart from looking cool and a little bit hostile, there's another reason the dragon alphabet above is comprised mainly of long heavy slashes: It was carved by dragons. Dragons didn't have pens, brushes or chisels, but claws, and the clever designers at Bethesda took this into account. You may not have consciously thought about these logistics when looting Skyrim's tombs, but you probably noticed it unconsciously on some level. By considering not just the alphabet's personality, but also its logistics, the Bethesda crew designed an alphabet that feels right. There are various technological factors that can influence a successful alphabet. These Anglo-Saxon runes were usually carved into wood, so they avoid curves and horizontal lines (straight lines were easier to carve, and horizontal lines could have caught in the wood grain and split the wood).

Conversely, this gorgeous Sinhala alphabet from Sri Lanka avoids straight lines and corners. Sinhala was written on fragile palm leaf paper, and sharp corners would have caused tearing. As you can see, technological considerations can have a profound impact on the look of your glyphs. Paying attention to technological logistics won't just make your alphabet more believable, but may take it in an exciting aesthetic direction.

Some things to think about:

- What tools would the people/creatures in your game use to write with?
- What surfaces would they use?
- Do they have an abundant culture that would foster artisanship?
- Do they live in a dangerous world and use a minimalist alphabet that is easy to write in a hurry?

Spryke is set in a distant planet sci-fi setting, so my alphabet needed to look somewhat modern (as it would most often be rendered by precise machines, just like in our present-day world). It would also need to be alien and unfamiliar, while maintaining an element of fun to suit the cartoony vibe of the game.

Step 3: Research

There are loads of writing systems on Earth - possibly more than you think. Look through a few of them to get ideas about what your own will look like. So, do some research and get ideas. Don't forget to check out different fonts where possible, as they may employ different design solutions. After all, a traditional Japanese scroll will have a dramatically different aesthetic to downtown Tokyo neons. But if you're like me, inspiration is just a few centimetres away!

Step 4: Choose your elements

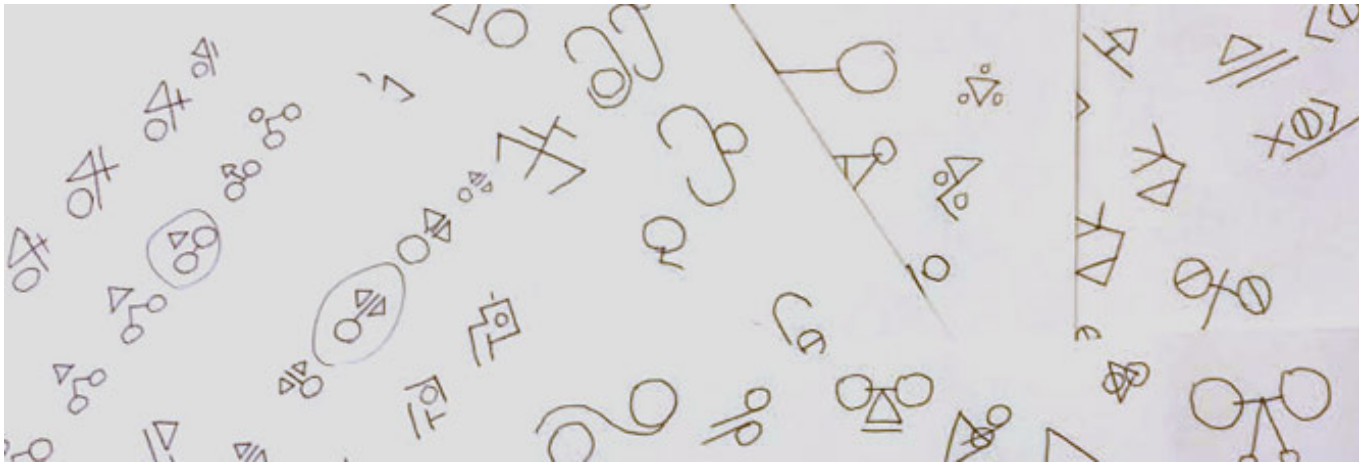
Both of my arms are tattooed with a prayer written in Glagolitic, an ancient Slavic alphabet. Convenient! Clearly, I have an affinity for this alphabet, and so this is the one I chose as my starting point. Most writing systems are constructed using just a few building blocks, in various combinations. It's a good idea to pick your building blocks before you start designing any characters. This will help you create a cohesive design while guarding you from relying too heavily on the shapes of your native alphabet.

Pick a few appropriate shapes that will form the backbone of your alphabet's aesthetic. Remember to peruse existing alphabets for inspiration if need be. Spryke's alphabet needs to look a bit cartoony, and like it belongs to an alien race. My starting point of Glagolitic is actually a pretty good choice, because it's unique looking and looks quite alien to modern eyes, having gone out of usage long ago. In addition, its hollow circle and equilateral triangle motifs lend it a certain geometric look that fits well with my desired cartoony vibe. To make my alphabet a bit more hi-tech looking, I focused on straight lines and precise angles.

I decided my core elements would be equilateral triangles (3 sizes), circles (2 sizes), and angles of 45, 60, 90, and 120 degrees.

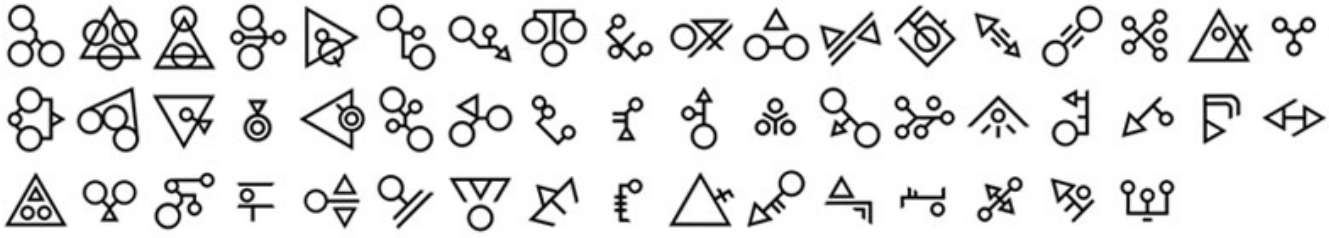
Step 5: Paper

Next, I used those elements to doodle several pages' worth of characters, referring to my Glagolitic alphabet (ie. looking down at my arms) as I went. Some characters looked good, others sucked, and most took several iterations to find their sweet spot.



Step 6: Vectorise and finalise

Once I had loads of characters on paper, I went back through them and circled the 40 or so that had the most promise. I ported these into Photoshop using the vector shape tools (You could of course use Illustrator or some other software). After plenty of fine tuning and iteration, my alphabet finally took shape. I'd created 52 finished characters in all:



Some things to consider while working on your characters:

- Keep line thickness as consistent as you can
- If a particular character calls for it, you can of course deviate from your core shapes, angles, and line thicknesses. Just don't deviate from them thoughtlessly or by accident.
- As with all design, the secret is in iteration, iteration, iteration.
- Try all of your designs flipped or rotated - they might look better that way
- Decide how the weight of your alphabet will feel. Will your characters be grounded downwards like Latin, pull toward the heavens like Hebrew, or float weightlessly like Chinese? I chose to centre mine weightlessly, as I felt that this made them feel more digital, spacey, and self-contained.
- Only do uppercase/lowercase if you have a really good reason for it, as it'll double your work. Many real-world alphabets only have one case.

Step 7: Punctuation

Forgot about punctuation, didn't ya? For our purposes, there are two types of punctuation, which I'll call structural and emphatic.

Structural punctuation - things like commas, dashes, and semicolons - helps read-ability by organising sentences correctly; we don't really need it here, since our fictional text won't be readable anyway. Though feel free to include it in your alphabet, as it may add: visual interest, authenticity, diversity.

Emphatic punctuation emphasises the context of a phrase by indicating that the words "came from somewhere else" or that they are important!! Could emphatic punctuation even be used to emphasise uncertainty? Or perhaps even.....silence?

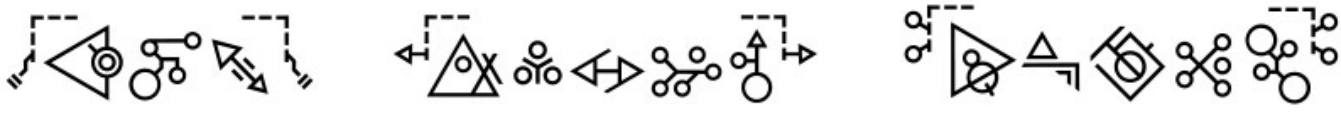
Whether or not you need punctuation at all is up to you, and the specifics of your game. I decided that Spryke won't need structural punctuation, but could benefit from some emphatic punctuation.

If you choose to use emphatic punctuation, you must make it somehow decipherable by your audience, even though the rest of your alphabet isn't. There's no point inventing a question mark symbol to replace "?" if people will think it's just another letter.

There are several ways to tackle this:

- If your game's inhabitants are modern day humans, it may be appropriate to just use English punctuation marks, since some modern-day non-Latin languages also use them.
- You could use creative variations of English punctuation marks that look some what original, yet still understandable.
- You could ditch punctuation marks altogether and rely on other methods to emphasise certain words, like colour, spacing, italics, bold, underlining, and size.
- You could make your punctuation marks look so different from your letters that there's no mistaking the two.

I went with the last option, and made three different punctuation marks. My players won't know what exactly they mean, but the marks should stand out enough to make it clear that they imply emphasis of some sort. Their unique design, raised position, and parenthesis-like clumping of other characters should all help with that.



Step 8: Numerals

As with emphatic punctuation, numerals need to be visually different from your letters. I achieved this in two ways. First, I made them smaller and more uniform in size. Second, I constructed them from different shapes. I exclusively used arcs (incomplete portions of circles), to give them a different appearance from the letters, which were made from complete circles, triangles, and straight lines.

Step 9: Fonts

I'm writing this in a small home office, yet I can see more than 20 different fonts without even getting off my chair: several across my computer screens, a different one on the logo of almost every appliance and piece of computer hardware in the room, and a few on an old bill on my desk. No matter where you are, I'll bet you'd find plenty of fonts around you too.

Our world is loaded with different fonts, and things would look weird if everything was suddenly written in just one. So your gameworld should probably have a few fonts too. Making new fonts won't be quite as time-consuming as inventing your characters was, but it will still take work. I suggest making a few fonts, with specific use-cases in mind.

I made four version of the typeface:

1. My original font, which works well at small sizes due to its thin,

uniform line weight.

2. A bolder one suitable for larger uses like building signs or machinery. I added slight curvature to various triangles and lines to give a softer, bolder look.
3. A rough, scrawled version for graffiti, cave paintings, etc. This was the only version in raster format.
4. A playful, stylised variant, for use on advertisements, neon signs, and the like. To give it a friendlier look, I all but eliminated sharp corners, and tweaked the configurations of various characters, ensuring that white space between the various elements was kept loose.

Putting it all together

Various in-game elements containing text, with various combinations of letters, numbers, punctuation and fonts. Done! I now have a unique, cohesive, and interesting alien alphabet comprised of 52 letters, 10 numerals, 3 punctuation marks, and 4 fonts (that's 260 characters in total). I can now pepper it throughout Spryke's gameworld as I continue to develop it, confident that I have glyphs to suit any context. I hope this helps someone, and if you've designed your own alphabet, I'd love to see it!

"Designing an Alien Alphabet." Volnaiskra, www.sprykegame.com/volblog/designing-an-alien-alphabet.

Planned, constructed, artificial

The terms “planned”, “constructed”, and “artificial” are used differently in some traditions. For example, few speakers of Interlingua consider their language artificial, since they assert that it has no invented content: Interlingua’s vocabulary is taken from a small set of natural languages, and its grammar is based closely on these source languages, even including some degree of irregularity; its proponents prefer to describe its vocabulary and grammar as standardized rather than artificial or constructed. Similarly, Latino sine flexione (LsF) is a simplification of Latin from which the inflections have been removed. As with Interlingua, some prefer to describe its development as “planning” rather than “constructing”. Some speakers of Esperanto and Esperantidos also avoid the term “artificial language” because they deny that there is anything “unnatural” about the use of their language in human communication.

By contrast, some philosophers have argued that all human languages are conventional or artificial. François Rabelais, for instance, stated: “C’est abus de dire que nous avons une langue naturelle; les langues sont par institution arbitraires et conventions des peuples.” (It’s a misuse of terms to say that we have a natural language; languages are arbitrary and conventions of peoples by institution.)

Furthermore, fictional and experimental languages can be naturalistic in that they are meant to sound natural and have realistic amounts of irregularity. If a naturalistic conlang is derived a posteriori from a real-world natural language, a real-world reconstructed proto-language (such as Vulgar Latin or Proto-Indo-European) or a fictional proto-language, it should imitate natural processes of phonological, lexical, and grammatical change. In contrast with Interlingua, they are not usually intended for easy learning or communication, and most artlangers do not consider Interlingua to be naturalistic in the sense in which this term is used in artlang criticism. Thus, a naturalistic fictional language tends to be more difficult and complex. While Interlingua has simpler grammar, syntax, and orthography than its source languages (though more complex and irregular than Esperanto or its descendants), naturalistic fictional languages typically mimic behaviors of natural languages like irregular verbs and nouns and complicated phonological processes.

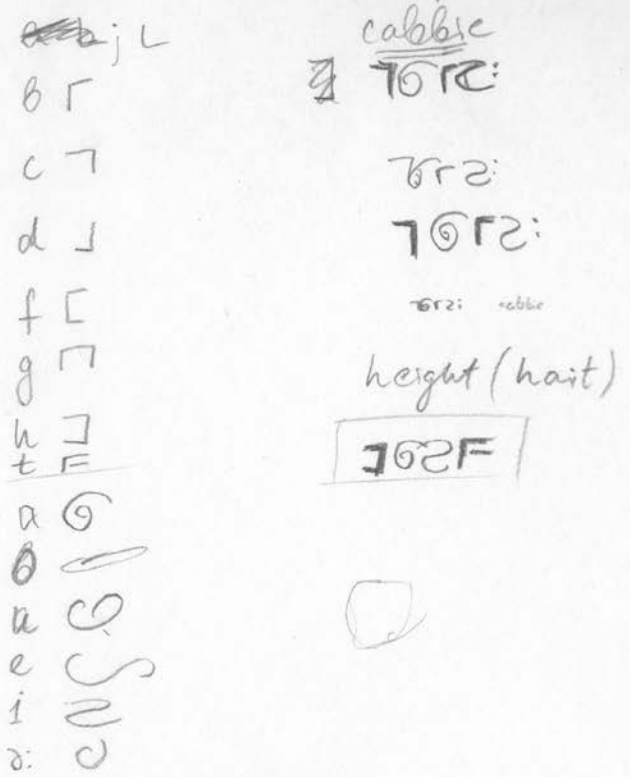
Artlangs (Artistic language)

Language can be artistic to the extent that artists use language as a source of creativity in art, poetry, calligraphy or as a metaphor to address themes as cultural diversity and the vulnerability of the individual in a globalizing world.

Some people prefer however to take pleasure in constructing, crafting a language by a conscious decision for reasons of literary enjoyment or aesthetic reasons without any claim of usefulness. Such artistic languages begin to appear in Early Modern literature (in Pantagruel, and in Utopian contexts), but they only seem to gain notability as serious projects beginning in the 20th century. A Princess of Mars (1912) by Edgar Rice Burroughs was possibly the first fiction of that century to feature a constructed language. J. R. R. Tolkien developed families of related fictional languages and discussed artistic languages publicly, giving a lecture entitled “A Secret Vice” in 1931 at a congress. (Orwell’s Newspeak is considered a satire of an IAL rather than an artistic language proper.)

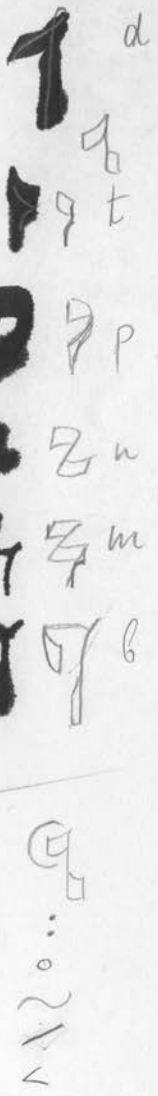
By the beginning of the first decade of the 21st century, it had become common for science-fiction and fantasy works set in other worlds to feature constructed languages, or more commonly, an extremely limited but defined vocabulary which suggests the existence of a complete language, and constructed languages are a regular part of the genre, appearing in Star Wars, Star Trek, Lord of the Rings (Elvish), Stargate SG-1, Atlantis: The Lost Empire, Game of Thrones (Dothraki language and Valyrian languages), Avatar, Dune and the Myst series of computer adventure games.

- consonants are angular, thicker strokes (nonsense)
- vowels are rounded, spirals



: elongate
—

Latin script has modules that combine
What is the smallest set of modules.
Skeleton (what is the logic)



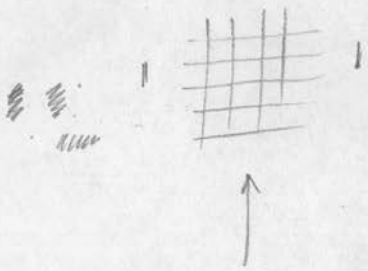
consonant are written like hebrew
(with a vertical broad nib strokes)
vowels are additive, distinct, could be written in any direction

data

mandate
(mandeit)

connections to indicate syllables

banana



Vowels are

Animalist

ka

ba

na

extension going from e → u
e, i, a, ə, o, u

- Most simplified version
- Patterning rhythm How can I deform the structure

tic qualities

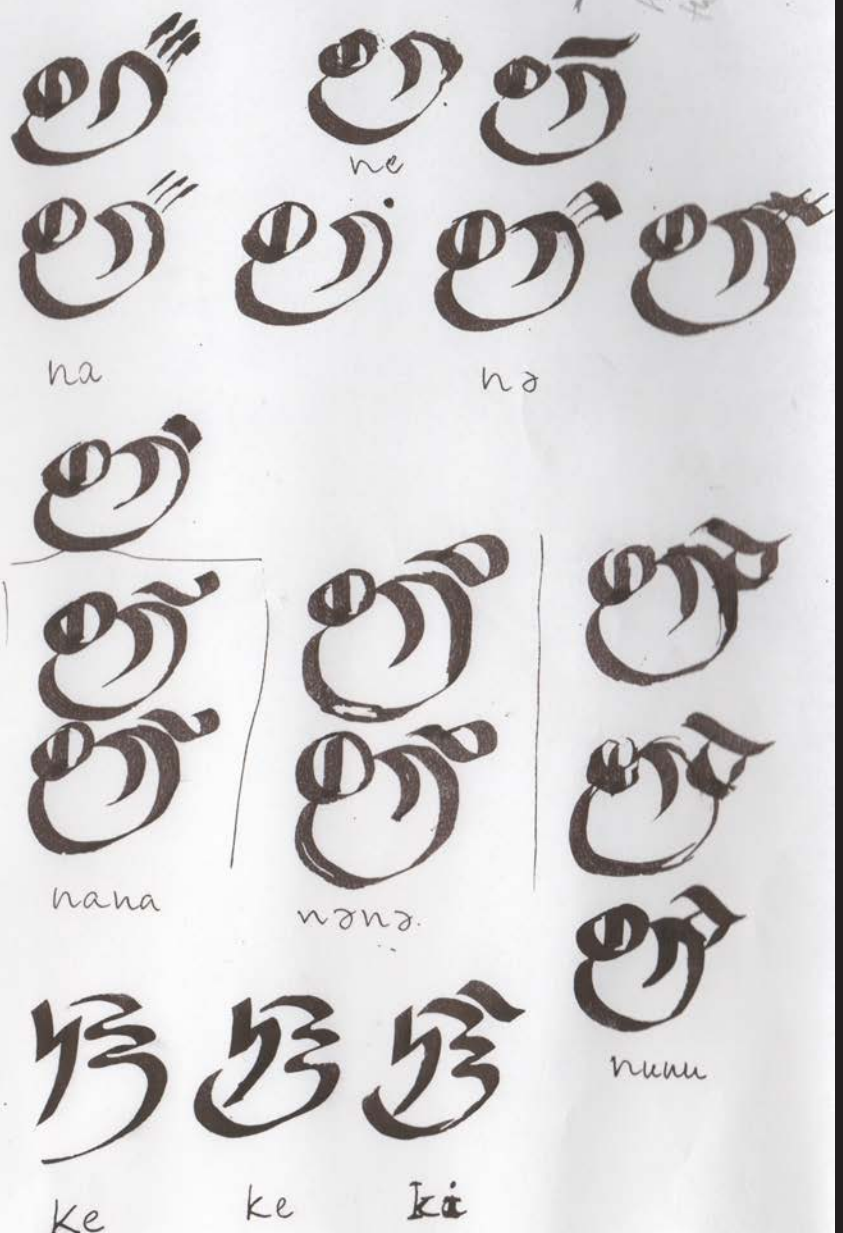
reptilian eye

fang

eggs

tails

nostrils



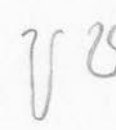
No long straight lines

a 

e 

i 

o 

u 

t 

t
m
n
k
b
s
a
o
u
e
i
ng

mantis

Kite
[kaɪt]

Back
[ba'k]

- Vowels can be written in one stroke need to be long
- Consonants use straight lines at the corners have open space

t
m
d
k
b
r

time
tasm

a
o
u
e
i
ə

φ -a
ɣ -ə
-o
-u
-e
-i

Tools and writing research in Elvish and Vanuatu

Quenya (Elvish)

Quenya is a language invented by J.R.R. Tolkien and used in his books, including The Hobbit and The Lord of the Rings. Quenya is also known as Qenya or High-Elven, and its grammar is similar to Finnish, with some similarities to Greek and Latin. The phonology is based on Finnish, with lesser influences from Latin, Italian and Spanish. Tolkien compiled the "Qenya Lexicon", his first list of Elvish words, in 1915 at the age of 23, and continued to refine the language throughout his life. Within Tolkien's Middle Earth, Quenya is the most prominent language of the Amanya branch of the Elvish language family.

Tengwar script

Tolkien also created a number of different alphabets to write his languages - Tengwar, or Feanorian letters, is the one which appears most frequently in his work, and is used to write Quenya, and other languages he invented, such as Sindarin and Black Speech. It has can also be used to write English and other languages.

Notable features:

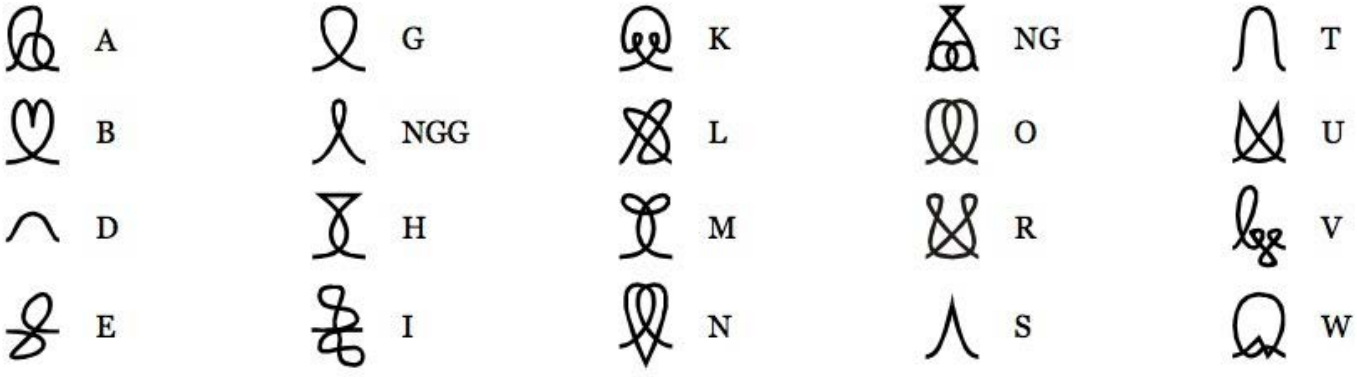
- Direction of writing: left to right in horizontal lines.
- Tengwar is written is a number of different ways known as "modes". For example there is a Quenya mode, a Sindarin mode and several English modes. The phonetic values of the consonants (tengwa) and the ways vowels are indicated varies from mode to mode.
- Vowels are indicated by diacritics (tehtar) which appear above the consonant which precedes them (in Quenya mode) or above the consonant which follows them (in Sindarin mode). When vowels stand on their own or come at the beginning of a word, the diacritics appear over a special vowel holder. Long vowels are always attached to a vowel holder.
- Consonants are doubled by adding a wavy line below them.
- When followed by a vowel, the letters /s/ /ss/ and /r/ are written with the tengwa silme nuquerna, esse nuquerna and rómen respectively. Otherwise these letters are written with the tengwa silme, esse and óre.
- When the letter /s/ follows another consonant it can be written with a little downward hook.

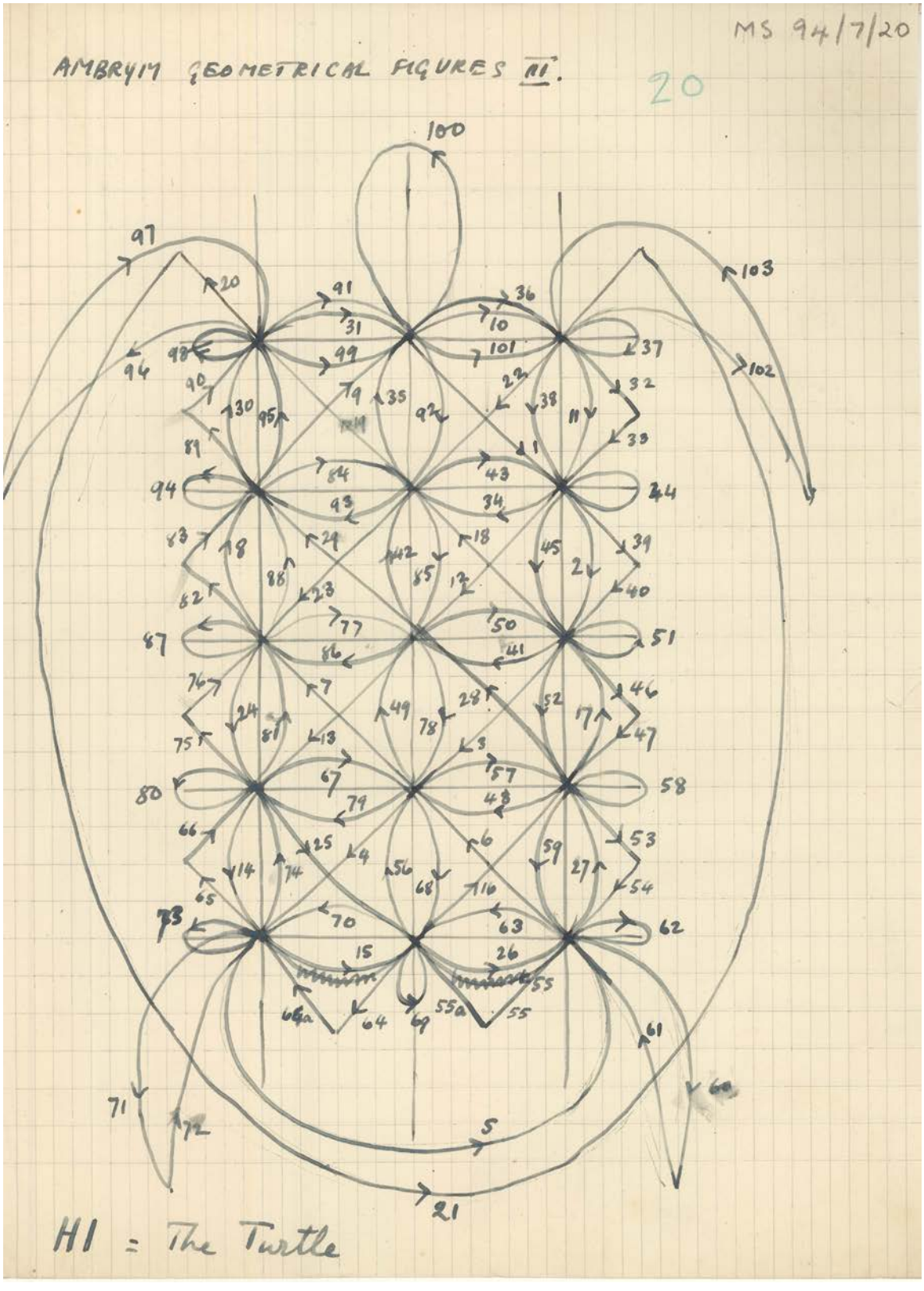
Avoiuli script

Members of the Turaga indigenous movement use a script known as Avoiuli, from the Raga words avoi (talk about) and uli (draw/paint), which was devised by Chief Viraleo Boborenvanua and based on traditional sand drawings. It is used as an alternative to the Latin alphabet for writing Raga, and can also be used for writing other Vanuatu languages, such as Apma and Bislama, and for English.

Avoiuli consists of letters, plus numerals and other symbols, and can be written from left to right or right to left. Words can be written with a single continuous stroke.

Avoiuli is taught at a school in Lavatmanggemu in north-eastern Pentecost, and is used for record keeping by the Tangbunia indigenous bank, which deals with traditional forms of wealth, such as mats, shells and boar tusks.





Vanuatu people draw these shapes
in sand without interrupting their line

Chapter VII

Distillation of models (Latin, Hindi, Mwangwego). Non-Latin type punches (Chinese, Hindi, arabic). Second test for my constructed script.

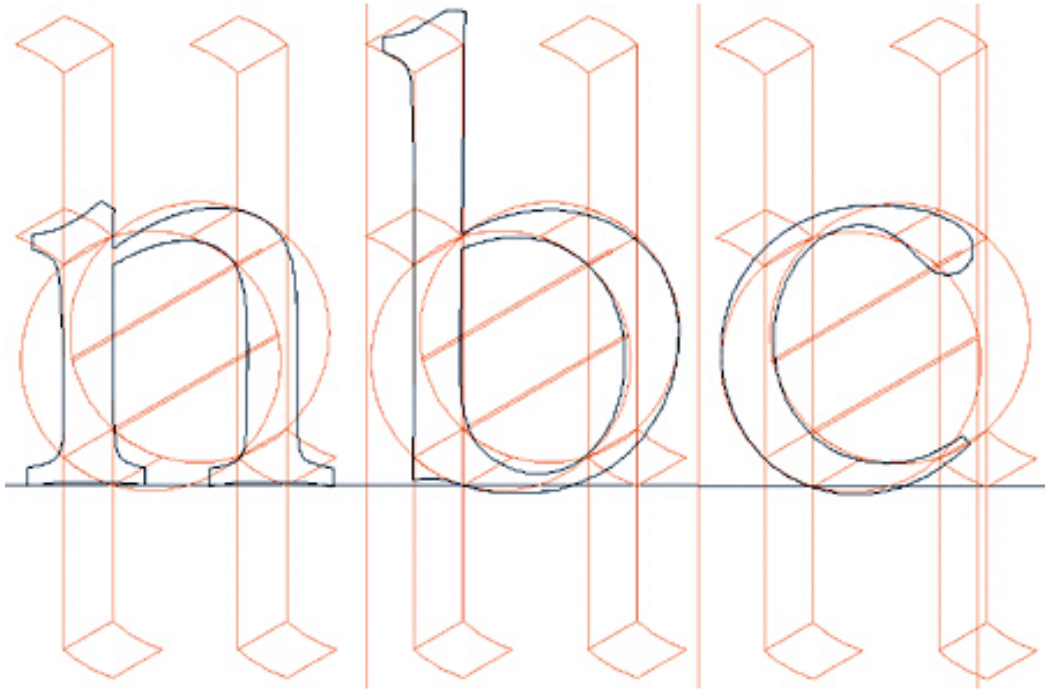
Analysing the Hindi script

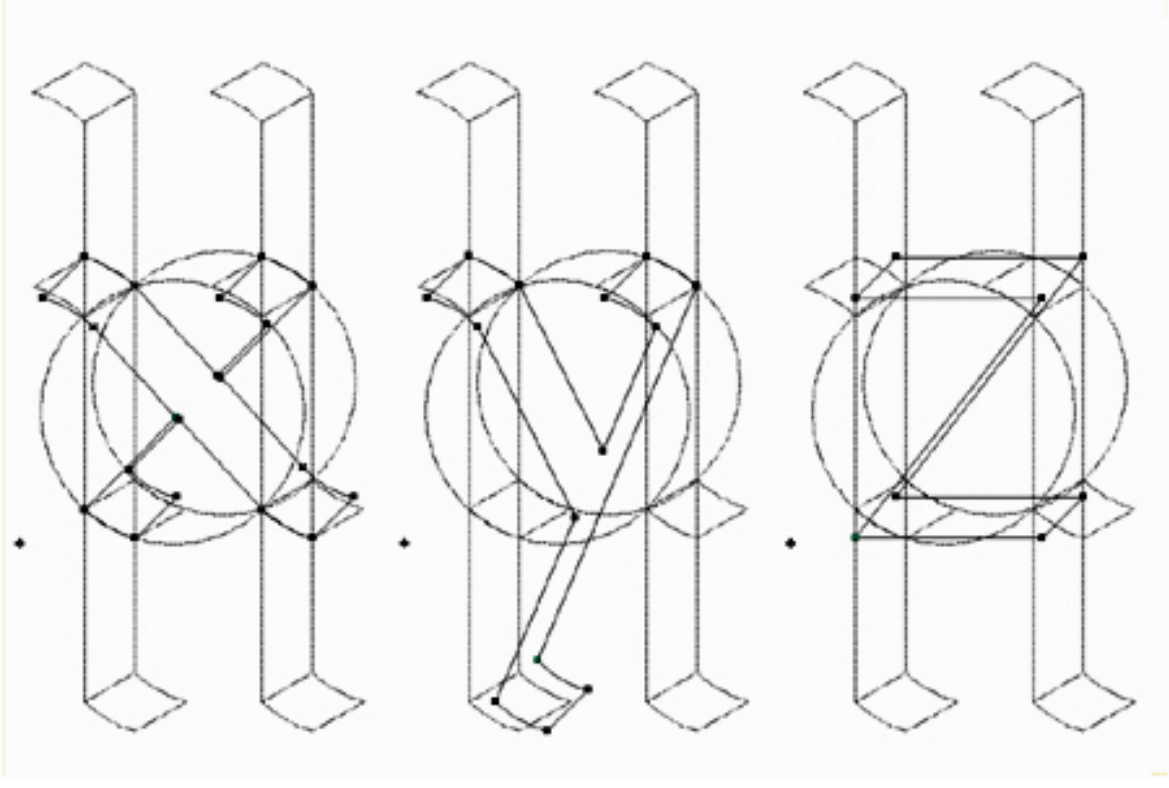
I was constantly trying to create something complicated. It didn't work. Even the most complicated shapes were composed from very simple elements. Straight strokes, curved strokes, circles. I needed to distill a model of construction from another script. Frank E. Blokland has showed me the model he did for the Latin script. The idea is that by following the 'modules' of it, you can build almost all letters. (Opposite page)

To build my own script, I focused on creating my model for the rest of my research. The final script is a product of a model. This way the letters have an inherent consistency that can be broken sometimes when you find the need to.

Of course, on the way I was fascinated by every script I encountered and drew heavily inspiration but sometimes I outright stole ideas. For example, I really liked the way Mwangwego uses extra lines to extend vowels in a way.

Mwangwego use of vowels is fascinating. I stole the idea.





Hindi analysis

अ आ इ ई उ ऊ ए ऐ ओ

औ अं अः

क ख ग घ ङ

च छ ज झ ञ

ट ठ ड ढ ण

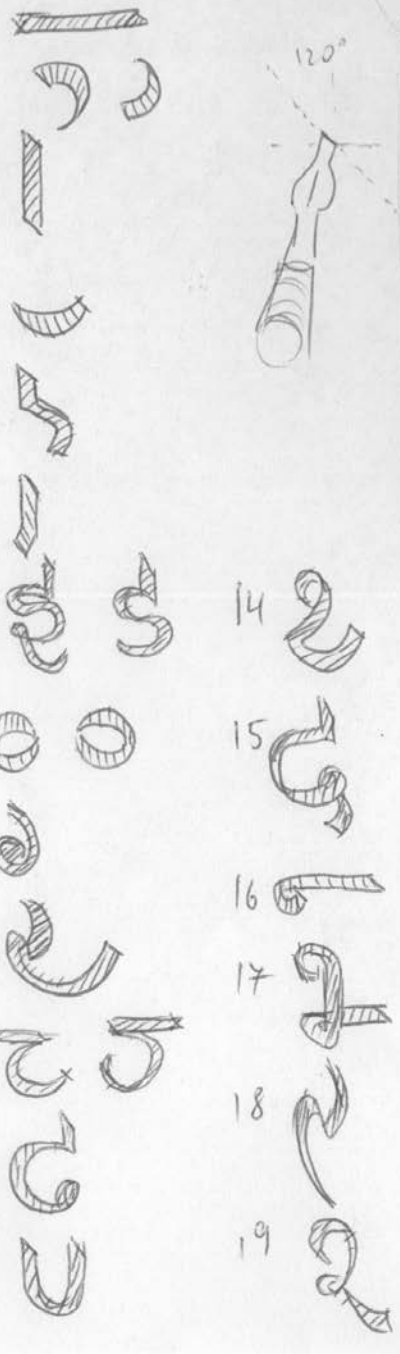
त थ द ध

न प फ ब

भ म य र ल

व श ष स

ह ळ क्ष ज्ञ



स्वर : (VOWELS)

अ आ इ ई उ ऊ

ए ऐ ओ औ अं अः

मूळाक्षरे : (ALPHABET)

क ख ग घ ङ

च छ ज झ ञ

ट ठ ड ढ ण

त थ द ध न

प फ ब भ म

य र ल व श

ष स ह ळ क्ष ज्ञ

श्री

ऋ

मुलांच्या माहितीसाठी:

अि अी अु अू अे अै

सूचना : प्रत्येक अक्षरांचे वळण कसे आहे, त्याची सुरुवात कोठे आहे, त्याचा क्रम कसा आहे, त्याचा शेवट कोठे होतो हे आपल्या लक्षात आले असेल. मुलांना अशाच क्रमाने अक्षर काढण्याची सवय लागण्यासाठी आपण जागरूक असले पाहिजे.

Simplifying non-Latin Scripts

Frank recognised my strife for complexity in the script I wanted to create, I could not work with illustrative nature of the Mayan script and I could not wrap my head around Hindi. Discouragement fell upon. How could I make something complex that is still possible to produce in metal type?

It turns out other type designers wondered. We, as Westerners, have long tradition of 'making better' what other cultures already have. This happened also when we wanted to fit Arabic and Devanagari scripts into what we thought makes sense. Thus their scripts had to fit our boxy rectangular Latin moulds.

Of course, it didn't work exactly right but people adapted. In fact, they adapted so well that they started making their own improvements to the system. Until we reach a point, where Westerners again say that they don't use the improvements correctly! Baffling. So to shed some more light on this dark subject and clear a few misconceptions, I read this text by Fiona Ross which talks exactly about this.

Non-Latin Type Design at Linotype

The Department of Typographic Development at Linotype-Paul Limited was established by Walter Tracy in the early 1970s at Kingsbury in London. Already at its inception, the typographic department focused on the design and development of non-Latin fonts, alongside work on developing such typefaces as Tracy's renowned Times Europa.

Linotype has a long history of involvement with Arabic typesetting. In 1911, Linotype shipped the first 15 of its machines to Cairo with matrices for Arabic fonts. Keyboards, character sets, as well as the design of non-Latin typefaces, have been of concern and of commercial interest to the Linotype group of companies for almost a century.

During the 1920s and 1930s the company also shipped typesetters to India with fonts for setting Indian vernacular scripts. A variety of writing systems was translated into type by Linotype, but it is the adaptation of the Arabic and Indian scripts to the new typesetting technologies of the latter part of twentieth century that characterises the work of the typographic department and exemplifies its changing nature.

In the 1950s, the Arabic typeface design Yakout was developed. It was produced in 1956 by Linotype & Machinery for hot-metal typesetting, being specifically intended to function as a newspaper text face (dispensing with diacriticals and ligatures). With the dual intention of fitting the Arabic script onto a Linotype linecasting machine for setting type for rotary printing, and of maximizing keying speeds in creating copy for daily newspapers, much effort was concentrated on reducing the normal Arabic character set of over 100 characters. Yakout was designed in a similar manner to Arabic typewriter fonts created during this period: used a limited range of letterforms to represent the full Arabic character set. The resultant style of type design became known as 'Simplified Arabic'. The number of characters was reduced to 56, which enabled the typeface to fit into one 90-channel magazine. A brochure at the time claimed that 'the output of work may be increased by as much as 30 per cent'. Yakout was manufactured in six different point sizes and became, indeed remains, one of the most popular Arabic typefaces.

When I joined Linotype in 1978 as research assistant, the typographic department, under the

management of Tony Bisley, was converting existing type designs such as Yakout, or implementing new designs like Badr, for film composition. New Arabic in-house designs, such as Lotus, were being developed under Walter Tracy's consultancy.

According to Timothy Holloway, a type designer who worked in the typographic department for about 18 months, the non-Latin fonts adapted for filmsetting were never wholesale conversions of existing metal designs. The policy of reshaping type designs to make best use of new technology continued throughout the department's life. In other words, improvements in the quality of non-Latin typography overrode concerns for maintaining compatibility with previous font formats.

Embracing technical developments in typesetting meant a high degree of experimentation by the department. My first task was to work on a scheme named High Speed Arabic for the V-I-P photo-typesetter. Traditional Arabic fonts needed four film strips to generate a full character repertoire. Setting Arabic was considerably slower than setting copy in English. The brief for High Speed Arabic was to rearrange the layouts of the V-I-P film fonts so that the most frequent characters occurred in the central positions of the first fonts. Faster setting speeds could be achieved due to fewer lens movements and less frequent font changes.

Specific software designed for setting Arabic was first developed by Linotype for the Linotron 505 typesetter. Innovative programming enabled the selection of contextual forms for Simplified or Traditional Arabic, the kerning of some characters (by setting them in the reverse direction) and the placement of diacritical marks above and below letterforms. It was used for the typeface Osman (subsequently renamed Badr) which was originally drawn and of which negatives (friskets) were made at Linotype & Machinery in Manchester.

The 505 Arabic software was enhanced for composing Arabic on the V-I-P. It allowed the setting of additional ligatures; bi-directional composition no longer presented a problem; improvements to kerning were introduced; and above all, additional Arabic script languages could be composed, Farsi, Jawi, Pashto, and Urdu (Naskh). A collection of Arabic script typefaces were designed for implementation on the V-I-P.

Bisley's management of the typographic department was brief, and in 1979 only two people remained. Although Walter Tracy had retired, he continued his weekly visits – even when the department relocated to Chelham House in Cheltenham, which became the head office of Linotype. After the relocation, the structure of the department changed. Graduates in fine arts, rather than apprentice letter-drawers, were employed in the design studio and other graduates were employed for research and development work. The staff grew to ten, most of whom remained for over 12 years.

This continuity of staff enabled the undertaking of large projects, and provided the opportunity to increase the overall responsibilities of the department. By 1980, the brief for the design studio, headed by Georgina Surman, was to produce finished artwork from in-house designs, or from commissioned designs, or for conversions to new formats. The studio was also to produce negatives (usually hand-cut friskets) and to proof the final fonts. The fonts were manufactured either in Germany by D Stempel (later absorbed into Linotype-Hell), or in America by Mergenthaler Linotype.

Meanwhile the responsibilities for the R & D section (staffed by three people including myself) had increased considerably. We did linguistic research and feasibility studies for potential projects. The artwork analysis and supervision became my responsibility; but the tasks of font layouts, keyboard layouts, font encodings, software specifications, screen fonts, font specification tables (for accent placements, character selection, etc.) were shared amongst us. This section, whose staff included Ros Coates and Gillian Barrett (and also for several years Sarah Morley) was also responsible for quality control and font testing, sample setting, and release documentation.

Assistance came in different forms. In the case of Arabic, the linguistic input and customer feedback came from Linotype's Middle East Liaison Office (MELO, located first in Beirut and then in Cyprus). This was staffed by 13 native Arabic speakers from different parts of the Middle East and Africa, who negotiated with clients and also conducted applications testing. Technical support was also available from the font manufacturers Stempel and Mergenthaler Linotype. In addition to the services of such consultants as Walter Tracy and Tim Holloway, both designers of Arabic type faces, good relationships were created with Arabic calligraphers and designers whose type designs were adapted and unitised (re-fitted) to work within the Linotype type design guidelines.

Vital assistance was provided by a team of programmers situated at Linotype in Cheltenham who were dedicated to non-Latin support work. Film composition was giving way to digital photocomposition and Arabic and South Asian software requirements were energetically discussed and incorporated into the new non-Latin programs for the next generation of typesetters.

Yakout was one of the first Arabic typefaces to be digitised. The design was revisited by the typographic department, and additional forms were introduced since the Light and Bold fonts no longer needed to be 'simplified' for the Linotron 606 machine. Perhaps this was the only design which was treated fairly conservatively in its initial adaptation to digital technology: the typeface was in daily use by major newspapers which did not want a significantly different appearance or word count to affect their columns.

However, the Linotron 202 typesetter led to a radical reassessment of all the Linotype non-Latin fonts and the adoption of a new approach to non-Latin type design that was particularly useful for Indian scripts. The popularity of Linotype's 202 machine in the world of Latin typesetting encouraged demand for its use in the Middle East and India for non-Latin composition. With hindsight it could be said that the Linotron 202 was essential to the company's success in the Middle East and also in India.

The history of Linotype's involvement in Indian writing systems does not date as far back as that in Arabic. But its implementation of Indian scripts on the Linotype linecaster was significant, not least by enfranchising part of the population (by enabling the printing of electoral registers and voting slips) and by making newspapers more accessible. However, the constraints of the Linotype hot-metal machines seriously compromised Indian vernacular typography. The severely restricted character sets, the lack of kerning, and the inability to position the subscribed or superscribed vowel signs when combined with poor quality Indian newsprint tended to produce barely readable text. The first step in redressing the effects of hot-metal composition was the design of a new Devanagari typeface for filmsetting by Matthew Carter. A well-designed text font was essential to regional newspaper setting: Devanagari is the script used for writing Hindi, Marathi, Rajasthani, Sanskrit, and other Indian languages.

The resulting V-I-P Devanagari fonts were able to kern characters and 'float' vowel signs fairly accurately. The character set, though larger than its hot-metal counterpart, was still limited and needed characters to be created from two or more components. However, the overlapping headline of this joining script and the separate character parts fused well. Above all, the design based on a Nirnaya Sagar Foundry font was far superior to its predecessors.
At this stage the Indian scripts had not benefited from the Arabic system of selecting contextual forms. The keyboard was large, and the compositor needed to combine different elements to form all the required characters. This also incurred a great deal of font changing, which rendered Devanagari slow to key and slow to process.

The dissatisfaction expressed by clients with current keyboarding practices in India, coupled with a strong desire by major Indian newspapers to use 202 machines for newspaper production, prompted us to do a new feasibility study for implementing Indian scripts on the 202 to improve both the quality of the typography and methods of composition. Experiences with Arabic

typesetting were encouraging.
The initial project for the typographic development of an Indian script for the 202 was by the newspaper group and book publisher Ananda Bazar Patrika. Its first requirement was for a Bengali text face in two weights for its daily newspaper; subsequently Devangari fonts would be required. Problems encountered and the skills learnt during projects for the V-I-P informed this project; and one of the first items that came under discussion was the keyboard layout.
We soon found that the concept of using software to select contextual forms could be used to an even greater extent for Indian scripts than for Arabic. This concept, and the notion of writing software to merge fonts, led to the invention of Linotype's phonetic keyboard for Indian scripts in 1978, which effectively revolutionised keyboarding practices for Indian scripts. Based on the Indian phonological system, the phonetic keyboard simplified the keying of texts whilst optimising keying speeds. It also enabled all Indian scripts to use standard keyboards. In other words, no special hardware was required.

The pioneering software for Indian scripts, devised by Mike Fellows, allowed the invention of the phonetic keyboard and also transformed the way in which Indian typefaces could be designed. Once the keyboard layout had been established, the artwork could begin. Knowing that the font could contain over 256 characters, and that character components (half-forms) were no longer a necessity, designs closer to Indian orthography could be drawn. The ability to kern characters to the left and to the right, and the remarkably accurate placement system by the use of X and Y co-ordinates, provided the design studio with the opportunity to work with an unprecedented degree of freedom. The anachronistic hot-metal Bengali designs were discarded. In the case of Devanagari, the typographic department worked with Matthew Carter to revise some of the letterforms and to extend the character set to around 300 characters per weight for the first digital Devanagari fonts.

As well as the continued and crucial support of the non-Latin software group at Linotype, the department had additional advice from the subsidiary company Linotype India Associates, and from the India Department, notably the late Dr Tarapada Mukherjee, of the School of Oriental and African Studies at London University.

The favourable reception of the new Linotype Bengali and Devanagari 202 fonts in 1982 led to a succession of other projects for Indian newspapers. It saw over the next four years the in-house design of fonts for a further ten Indian scripts alongside the development of Arabic typefaces. The design and typographic development of each writing system comprising two typestyles (usually a light and a bold weight) took around nine months. The success of the 202 machine stimulated the demand for extra typefaces in other areas: Sinhala, Thai, and Amharic fonts were also developed along with corresponding keyboard layouts, screen fonts, and appropriate software. It also laid the foundations for the development of a novel and successful system for composing Nasta'liq (a highly calligraphic Arabic script for writing Urdu, which possesses a multi-level baseline), for which Linotype obtained a patent (no GB2208556B).

According to a former marketing director of Linotype, the company's market share in the Middle East amounted to 95 per cent of Arabic script newspapers and an 80 per cent share of the Arabic commercial press. In India, Linotype had 90 per cent of the vernacular press market. The status of type design was raised to the extent that the fonts were no longer regarded as peripheral to machine sales; so the company invested in type development. The department grew and software support increased, and by the late 1980s it was ready to take on PostScript font development, and font production in Cheltenham.
Linotype had an early entry into PostScript (Adobe's page description language) for Latin and non-Latin scripts. By 1988 the production of Arabic and Indian PostScript fonts had begun. The phonetic keyboard enabled non-Latin scripts to participate in the DeskTop revolution, and

WYSIWYG was a tremendous boon to the editing of scripts that employed contextual forms and a large array of ligatures. Not only could an Arabic PostScript system set graphics and bi-directional text on the same page concurrently, but in the case of Indian scripts using the South Asian software it was now possible to mix several writing systems at the same time.
From 1988 onwards the Linotype non-Latin library, aside from Armenian, was converted to PostScript format. Again, the typographic department took advantage of the new font production techniques that provided increased flexibility in character design. Yakout and Linotype Devanagari were amongst the typefaces that were revised to exploit the new technology by the inclusion of additional characters, the improvement of spacing, character joins, and the like.
The typographic department continued to add new designs and scripts to its non-Latin Library. In-house font production facilitated and accelerated typeface development times.

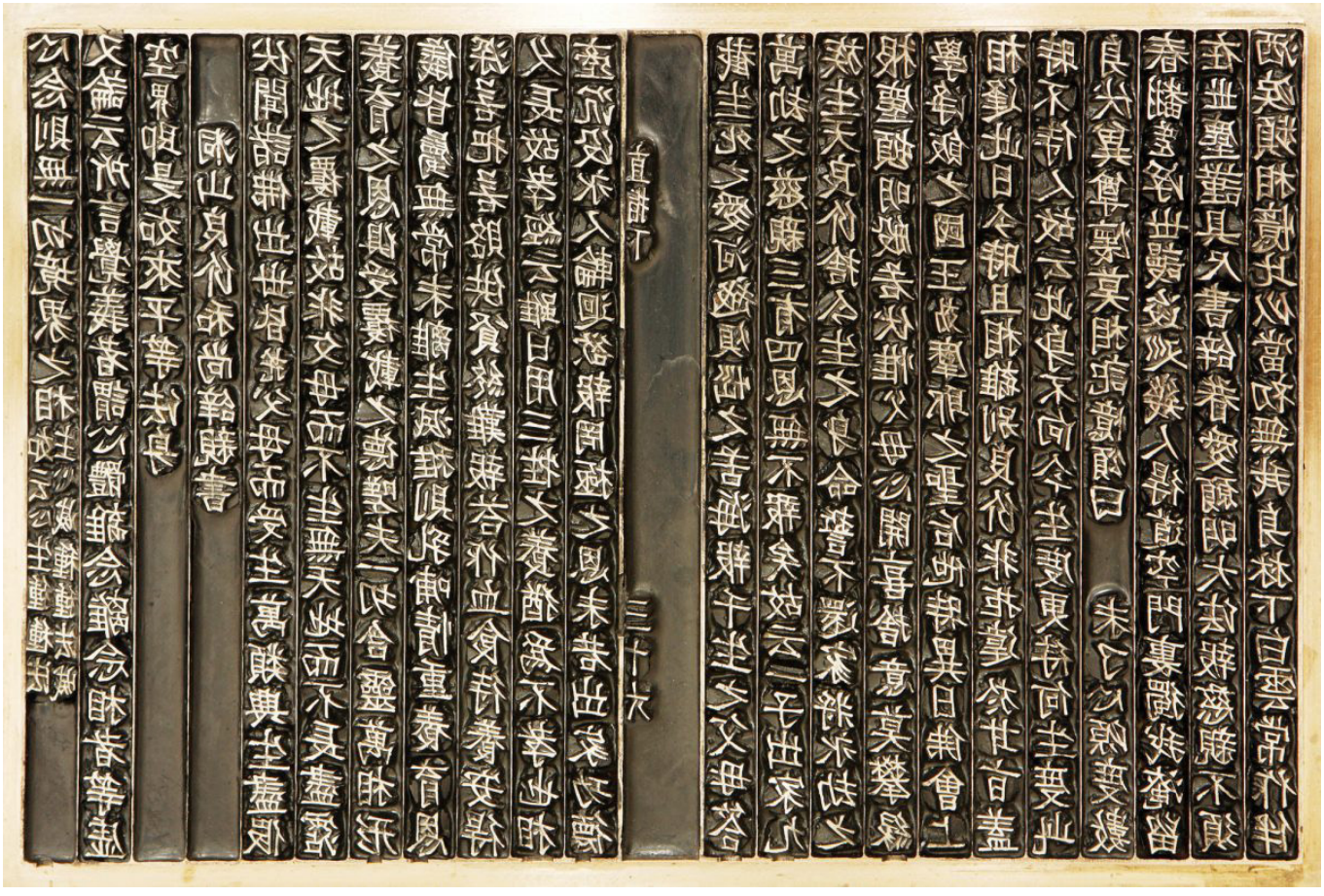
Much as the advent of PostScript and the consequent DeskTop revolution was welcomed, it precipitated the demise of typographic departments as that of Linotype's. In 1997 the non-Latin master fonts, drawing collection, extensive reference library, and archives were despatched to Linotype Library in Germany.

What of the type designs? During my time at Linotype, where since 1983 I was responsible for the design and development of the non-Latin digital fonts and typesetting schemes, the department produced a digital collection of 31 Arabic and 26 Indian typestyles in a variety of formats and languages. Additionally, Thai, Hebrew, Armenian, and Amharic digital fonts were developed. In order to create high-quality non-Latin type designs, the department worked as a team in conjunction with outside support. For the successful typographic rendition of all these scripts, the Linotype fonts depended on proprietary software designed in-house, software that is no longer supported. But as the quality of the Linotype designs is still appreciated, the fonts are enjoying another lease of life through OpenType technology.
Owing to the multi-disciplinary nature of non-Latin type design and development, a team approach to non-Latin typography, as initiated by Walter Tracy in 1974, still ensures the best result. However, in the 21st century the members of the team may be situated at very different parts of the globe, and communication is effected through the Internet rather than by walking into Linotype's design studio at Cheltenham, or by sending a telex to India or a fax to the Lebanon.

Fiona Ross works as a consultant, author and visiting lecturer, specialising in non-Latin type design and typography

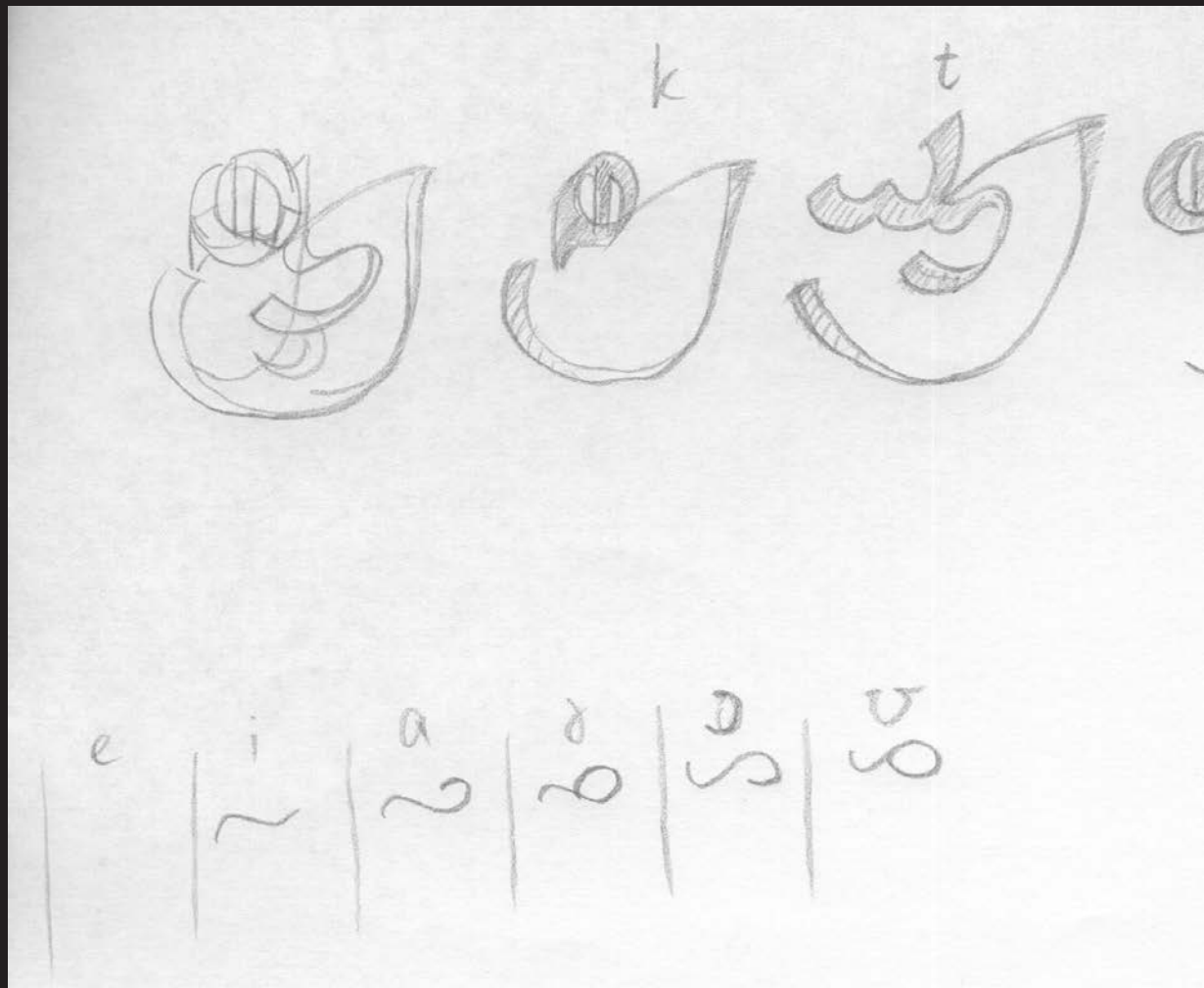
"Non-Latin Type Design at Linotype by Fiona Ross." Tntypography, tntypography.eu/resources-list/non-latin-type-design-linotype-fiona-ross/

CHAPTER VII



Metal punches in the Chinese script

Metal type punches in the Meetei script



is it different from any known systems?
What do we have today that people 10, 20, 10
years ago didn't have?

s

f

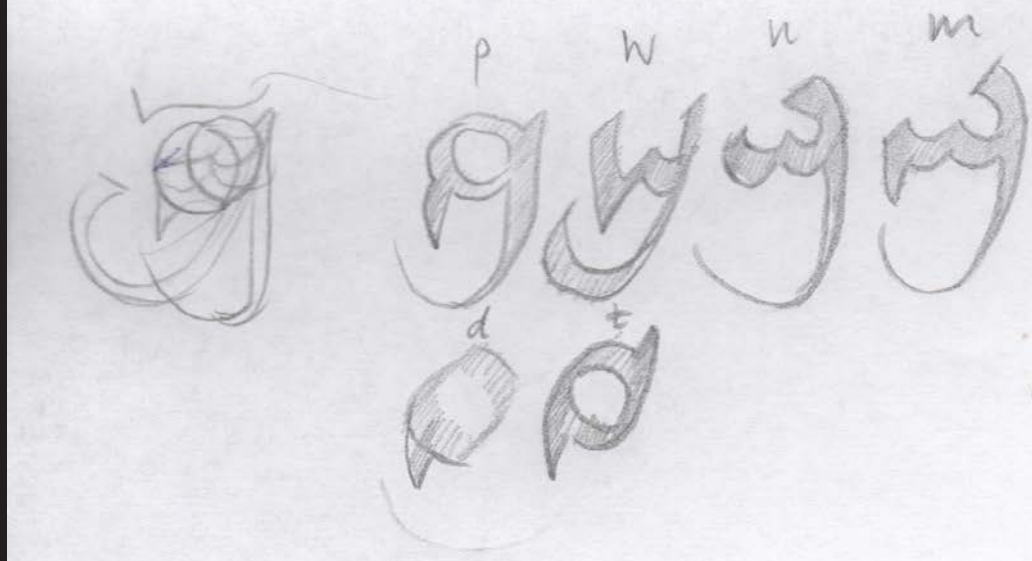
n

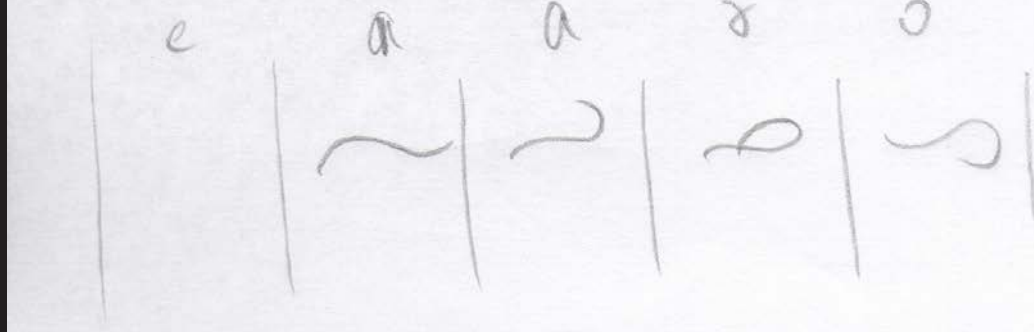
[k a i t]

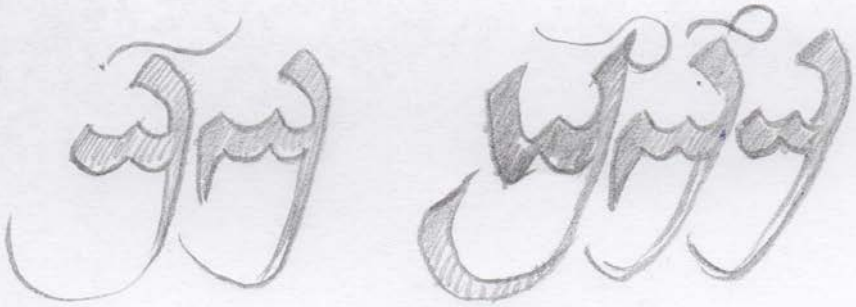
[i s]

[f u i n]

0,1000


p
w
n
m
d
t


e
ä
a
ɔ
ɔ
ə



[neim]
(name)

(~~wuman~~) [wu·mən]

woman

put a dot if the sound "e" needs to be combined

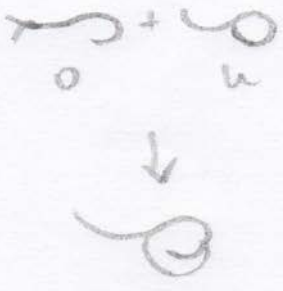
ei → ·~

[man·deit]
mandate

put a slash if the vowel is in the beginning of a sentence

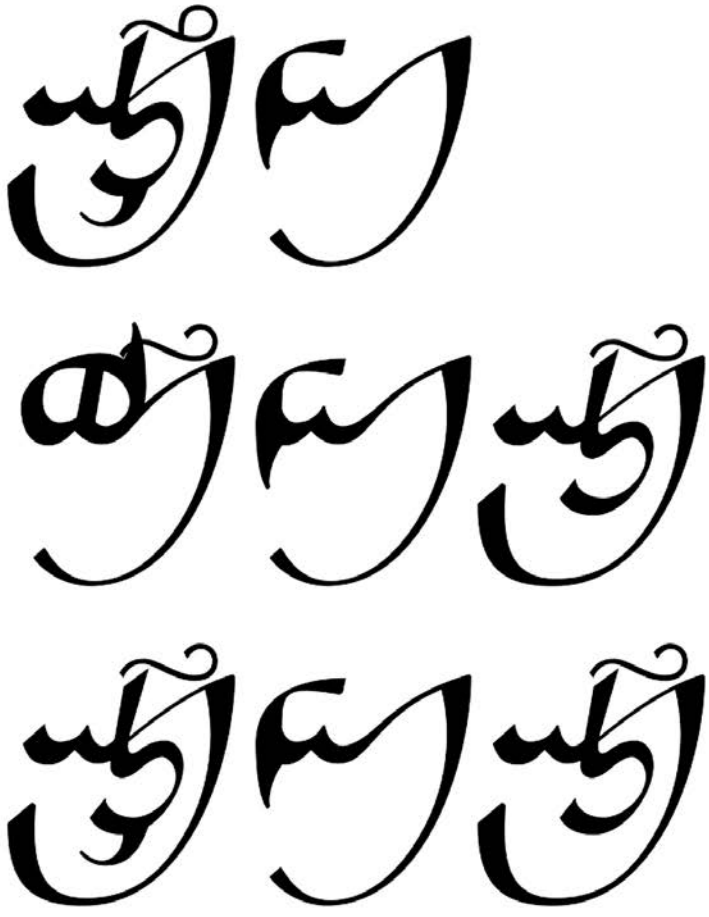
[an·ti·dəʊt]
(antidote)

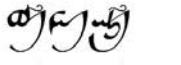
combine sound



o u

Type proof



 fun  santa

15pt

fun

santa

fanta

10pt

fanta

Chapter VIII

Research into the method of writing scripts. Combining characters into words and fast writing. Two new distilled models.

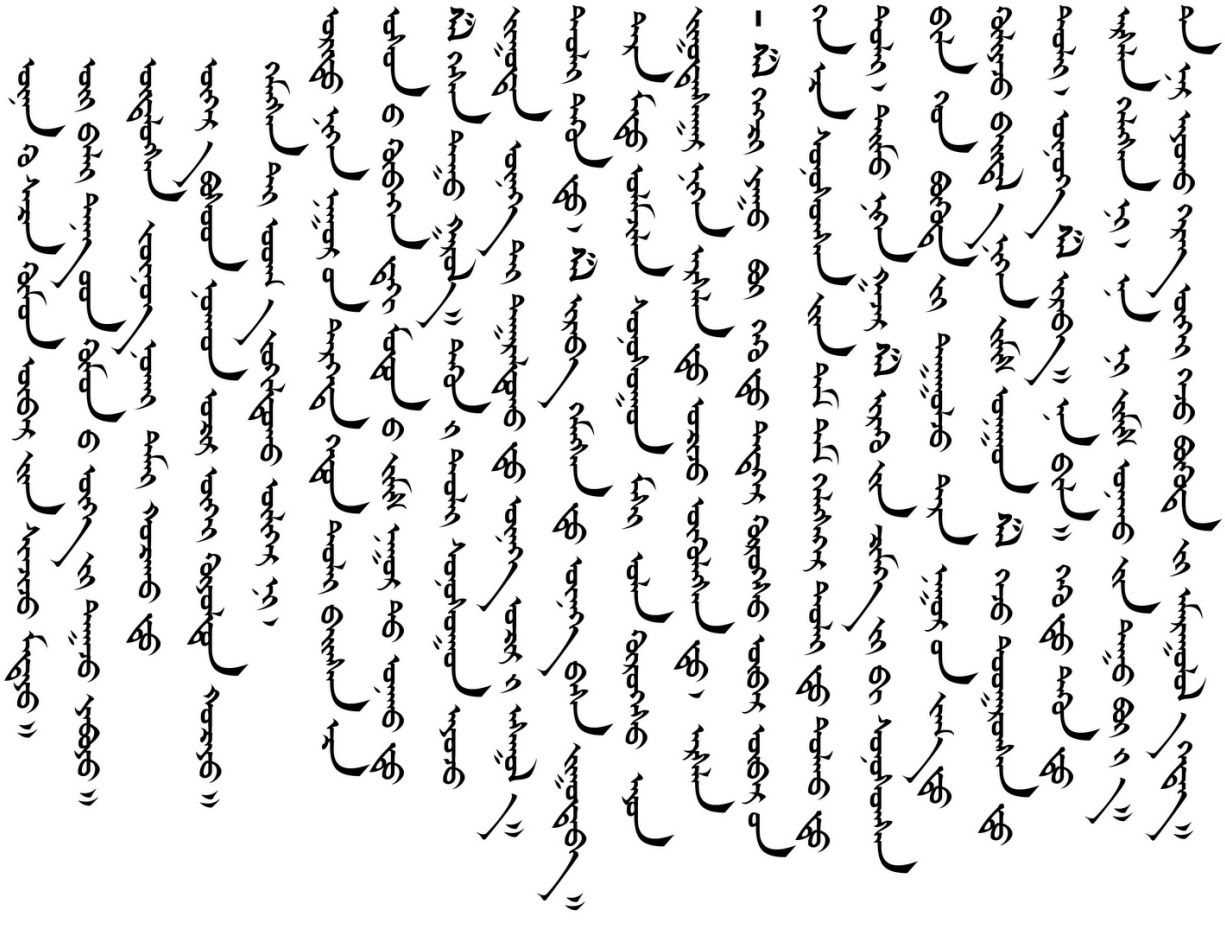
Methods of writing

Continuing my research into writing, I found two scripts that were particularly interesting:

- Ranjana script
- Mongolian script

Ranjana was very peculiar because it is connected to the Hindi I analysed earlier, but did not look like it. The direction of writing is vertical and separate characters get connected big blocks once you have a word. It looks mesmerising.

Mongolian script just came back as I was looking at it earlier. Apparently, it is one of the fastest language to write by hand. I guess, people should pick it up if they want to save time on everything nowadays.



Handwritten Mongolian script

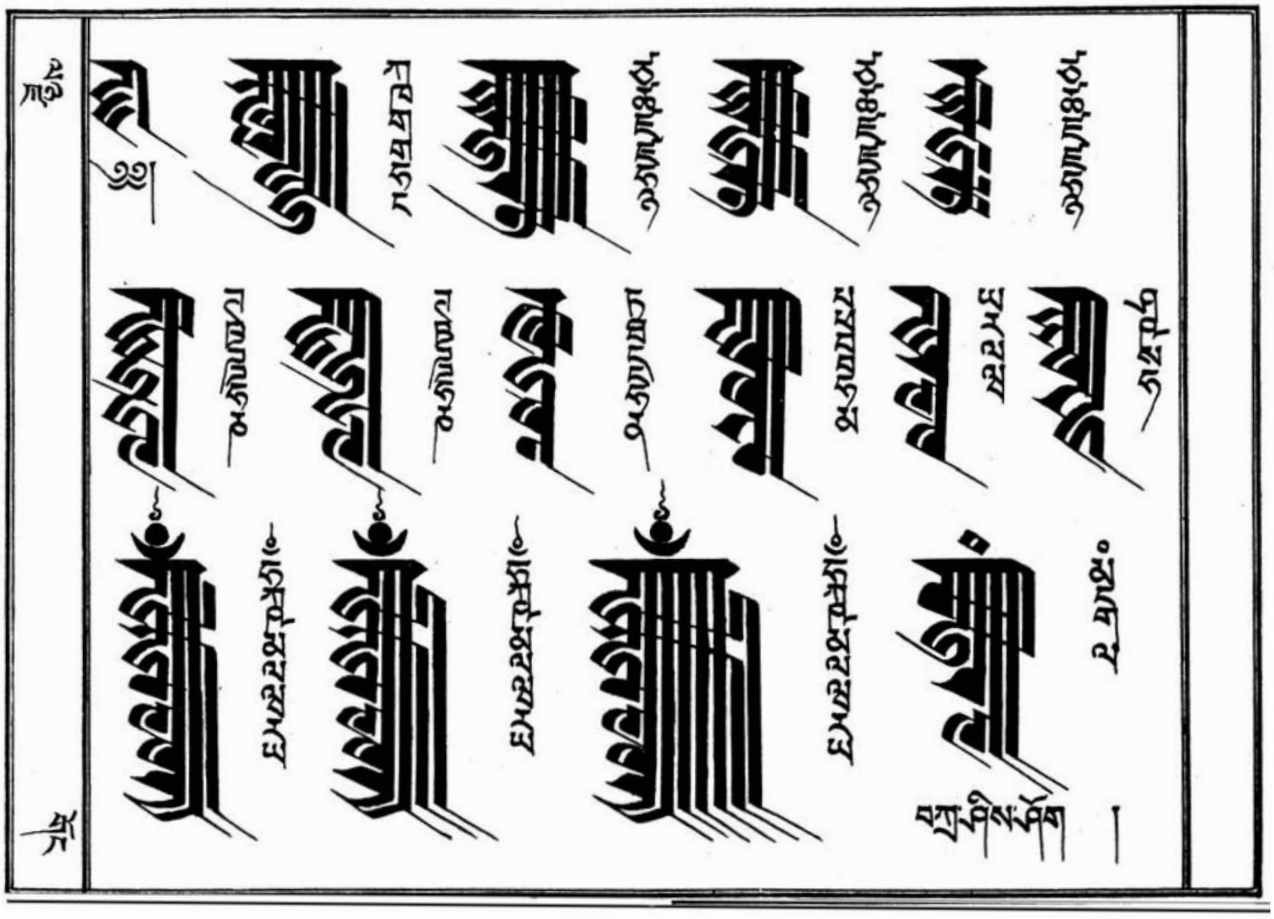
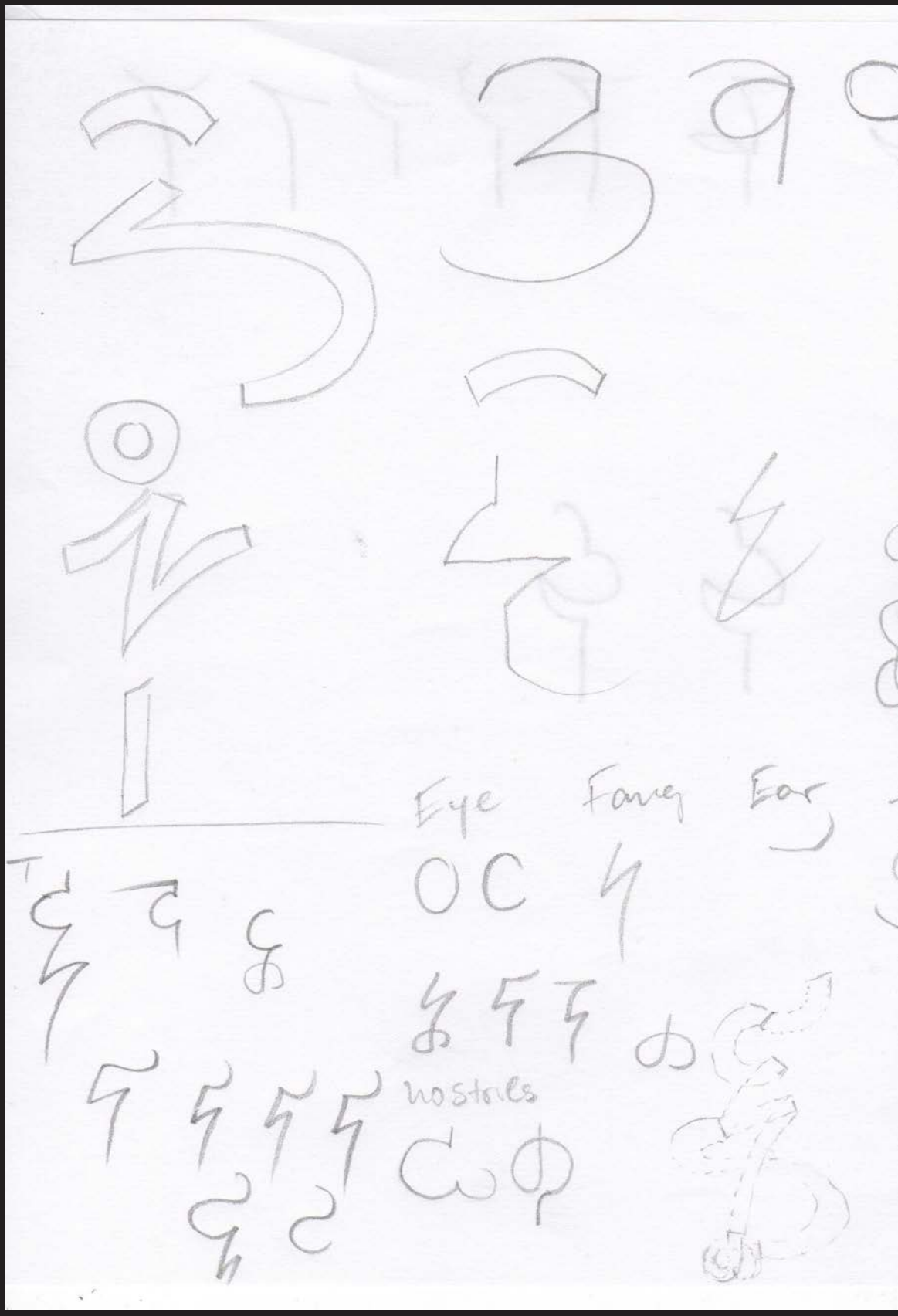


Figure 18. Example text in Rañjana script from Gu & Shi 1995.
These read in transliteration from left to right in rows as:
¶, kkhgghṅa, cchjjhña, cchjjhña, cchjjhña
ṭṭḍḍhṇa, ṭṭḍḍhṇa, tthddhna, pphbbhma, yrlva, śṣsha
hkṣmlwryaṁ (ha kṣa ma la va ra yaṁ), madagalaṁ ~ maṁdagala

Handwritten Ranjana script

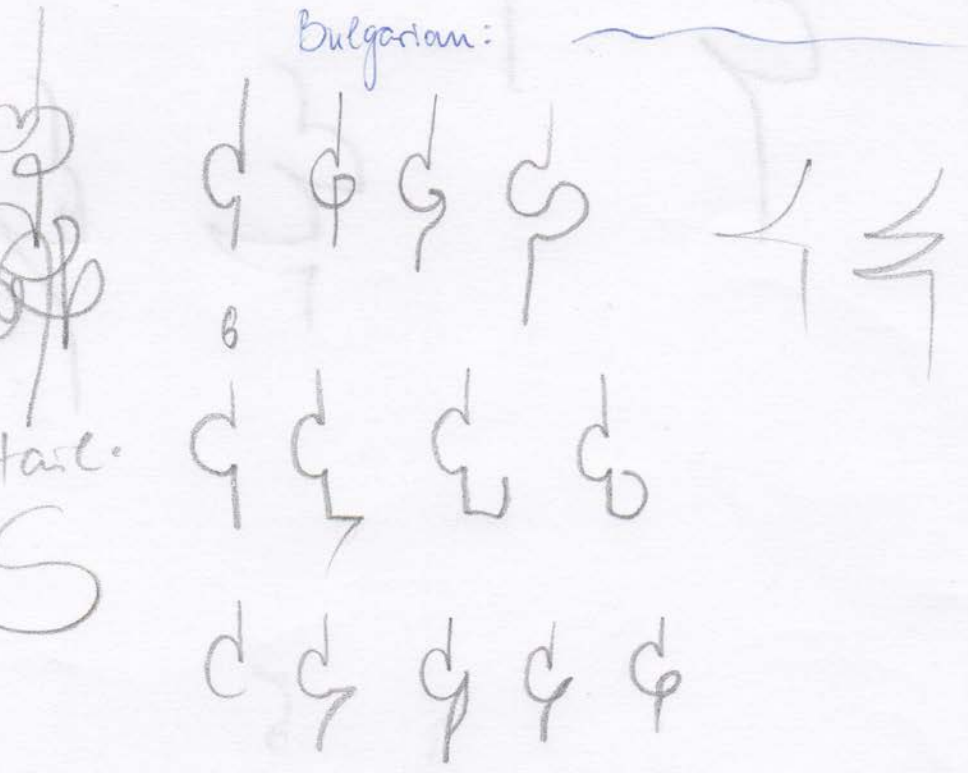

Eye
Face
Ear
nostrils

English: Most used consonants:

T, N, S, H, R, D, L, C, M, F,
G, P, B, V, K

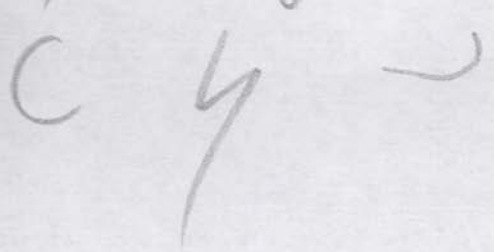
Most used vowels:
E, A, I, O, U

Bulgarian:

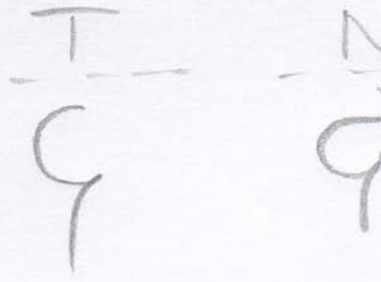


TNSH
E, A, I

Eye Fang Ear taste nostrils



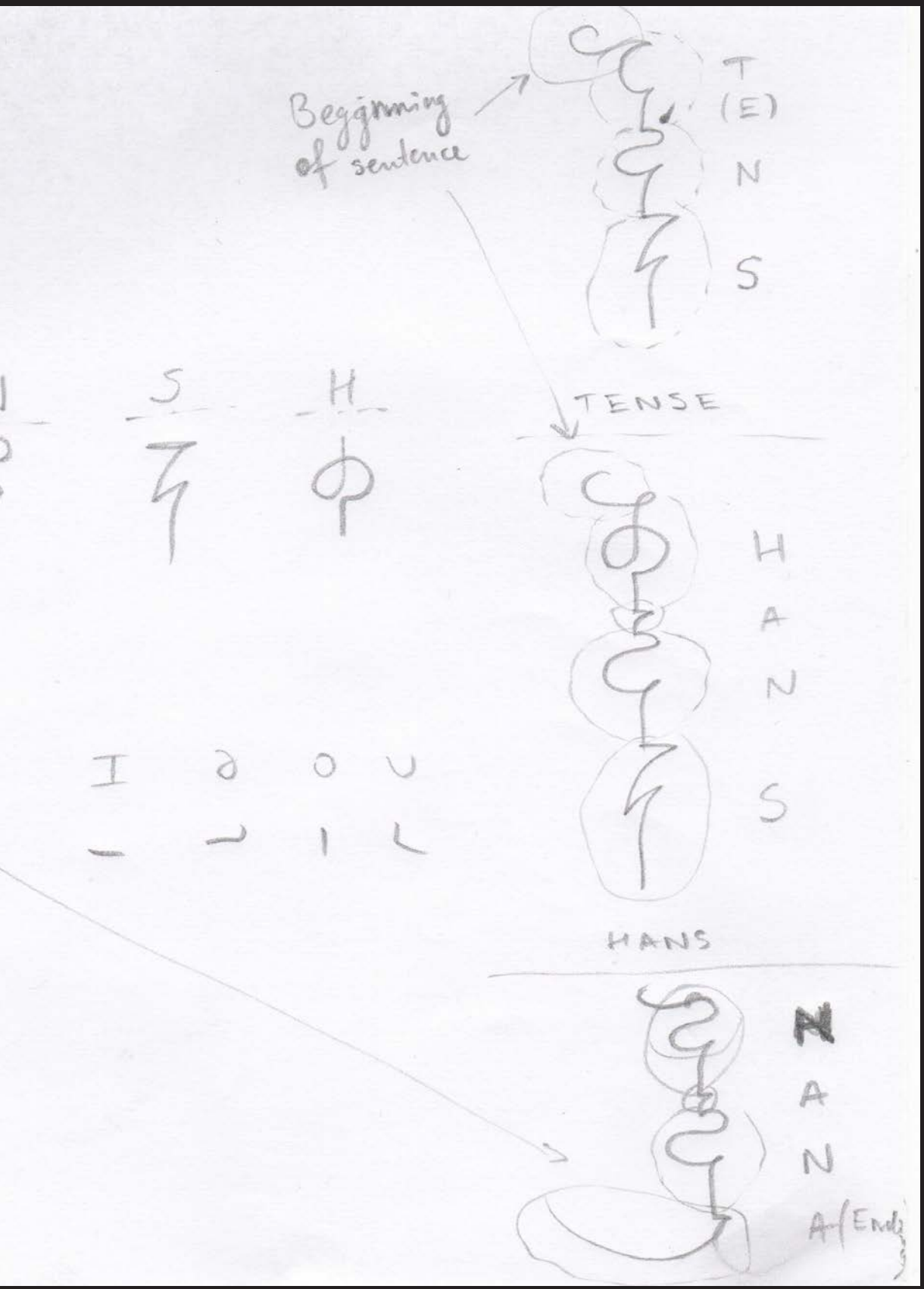
Model



Vowels

all have initial vowel as (E)

But it has to be indicated with a tick


Beggining of sentence
T
(E)
N
S
S
H
TENSE
H
A
N
S
I ə O U
HANS
N
A
N
A/(End)

Model

Eye Ear Fang

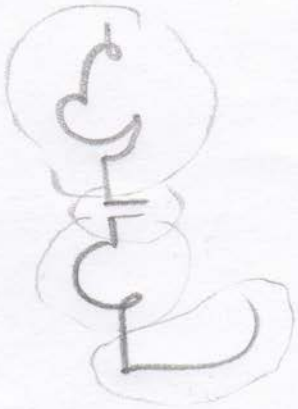
T N S H

A E I ə O U

Middle forms
End forms

tail nostril

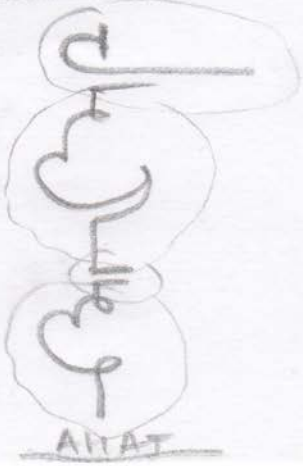
T
E
N
I
S



H
A
N
A (end form)

HANA

TENIS



A (initial)
H
A
T

AHAT

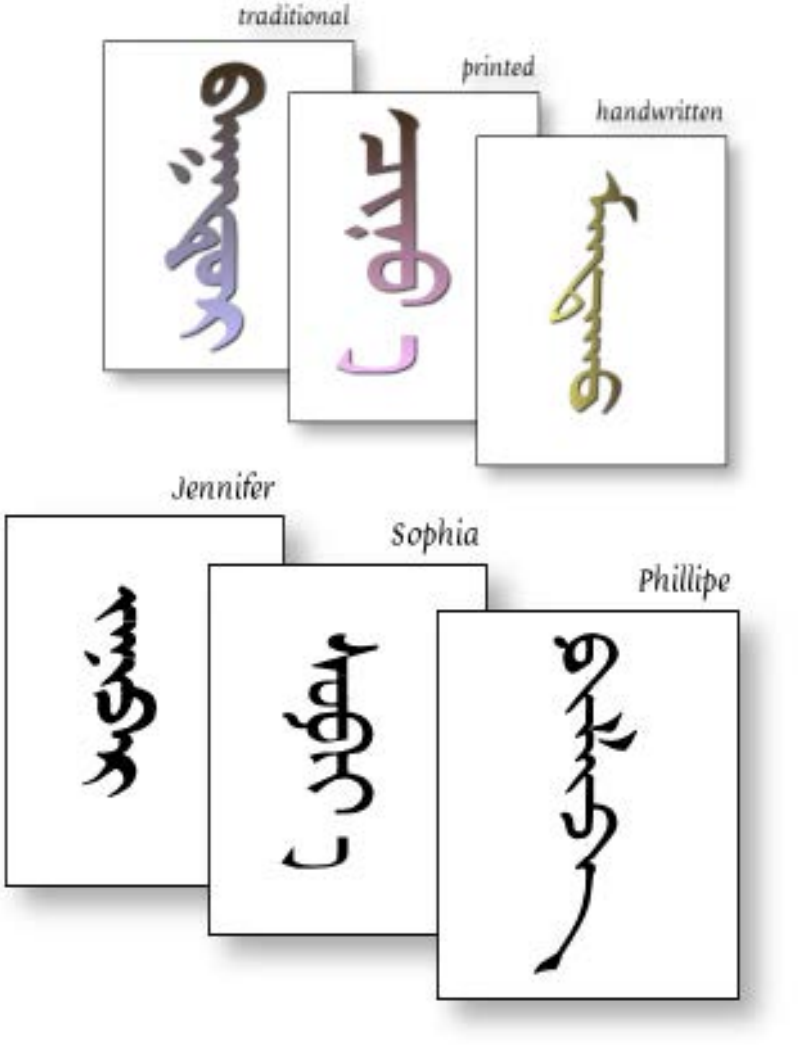
Chapter IX

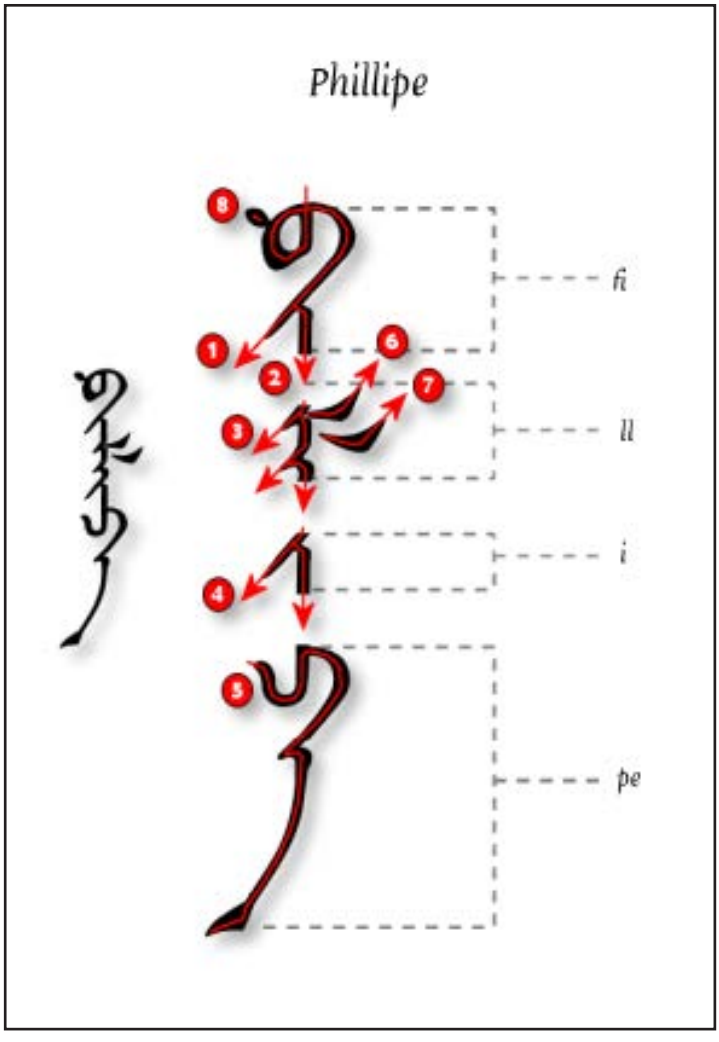
Extreme breakdown and simplification. Building new letter shapes

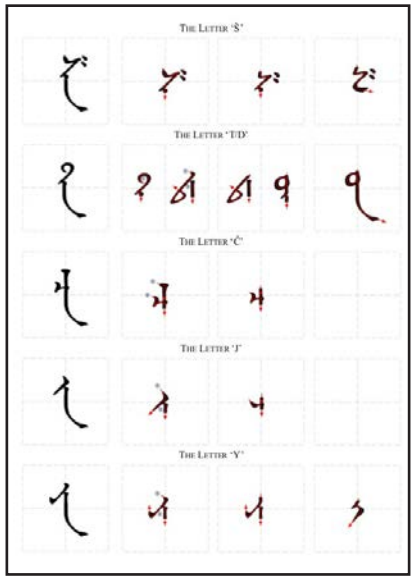
The Final lap

At the end of my project, I had to decide what to do. As Frank says “It never ends. It could be a life-long project”. Very true, however, I needed to make something at the end. I already had in mind what I wanted (vertical writing, alternate vowel forms, fitting Bulgarian and English sounds) so I just started to make it. It was heavily based on the Mongolian script but finally it is not the same and you can write English and Bulgarian words.

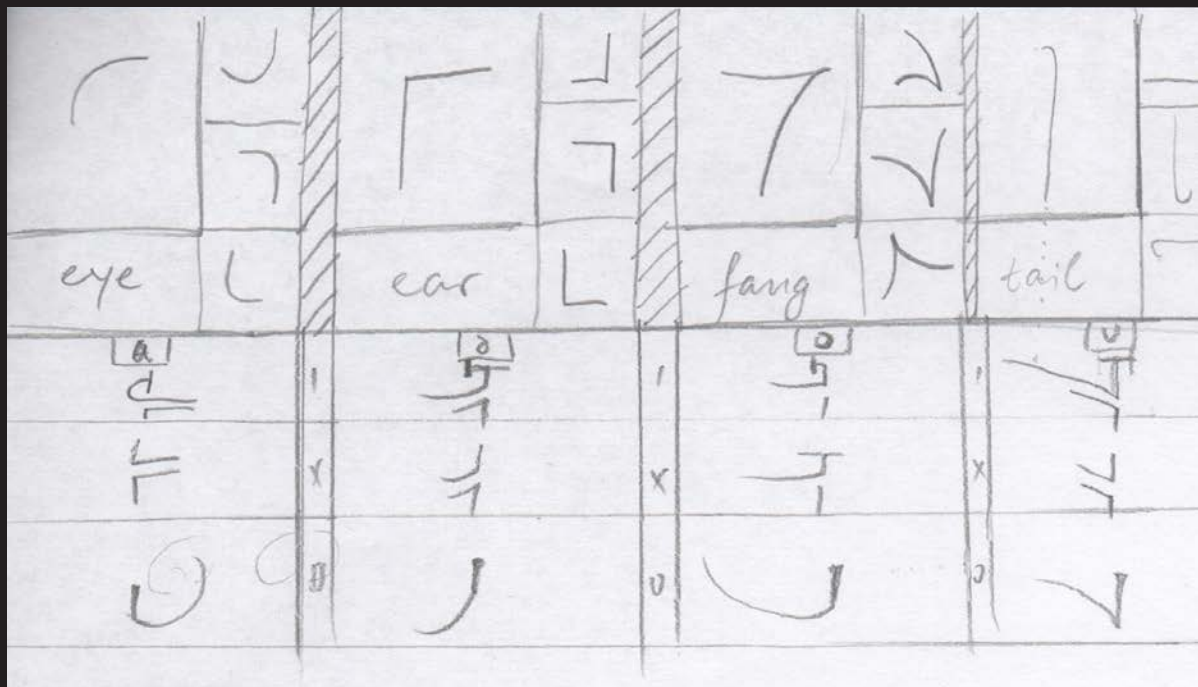
I simplified it as much as I can. Five shapes are synthesised: eye, ear, fang, tail and nostrils. It all goes back to the influence of the Mayan script and its reliability on illustration. On pages 88-89, you can see when I first wrote this down.

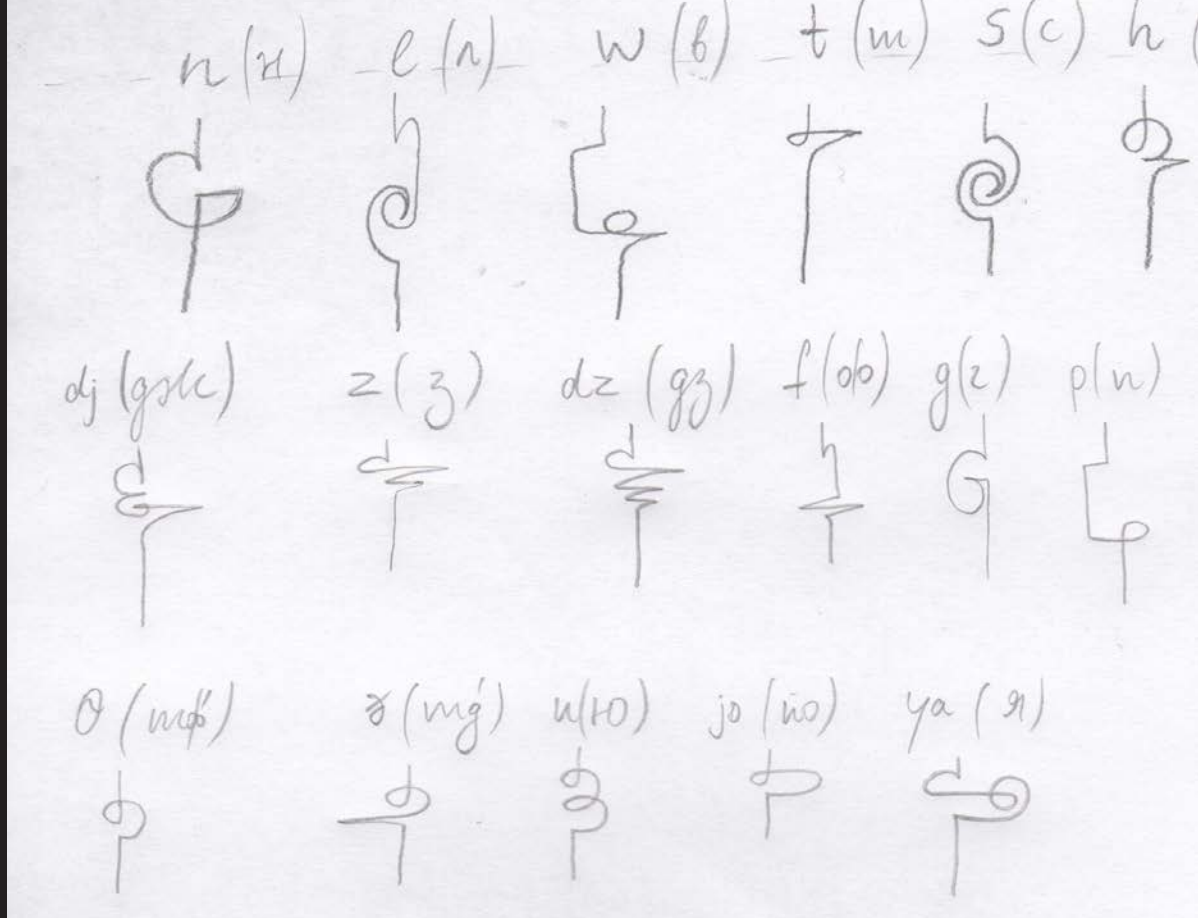






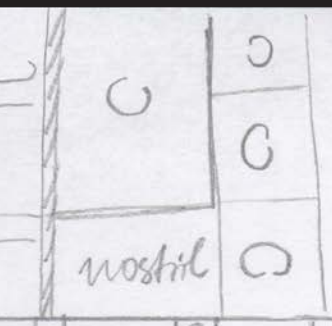
Various analysis and styles of the Mongolian script

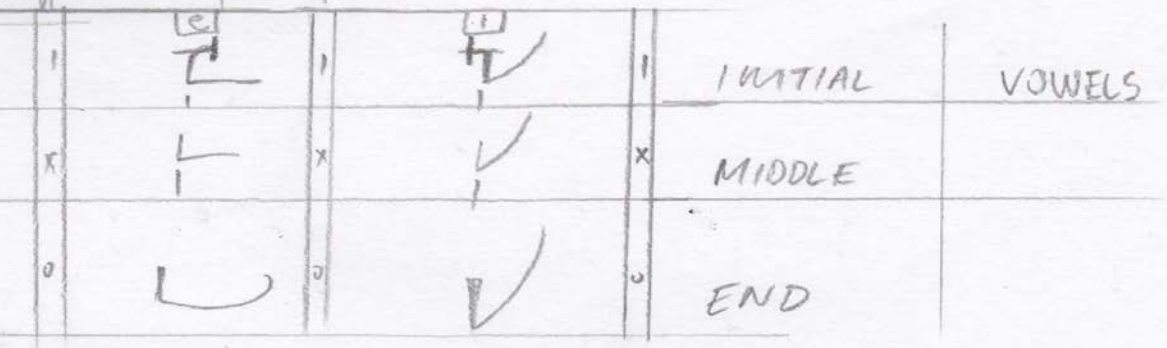

eye
ear
fang
tail

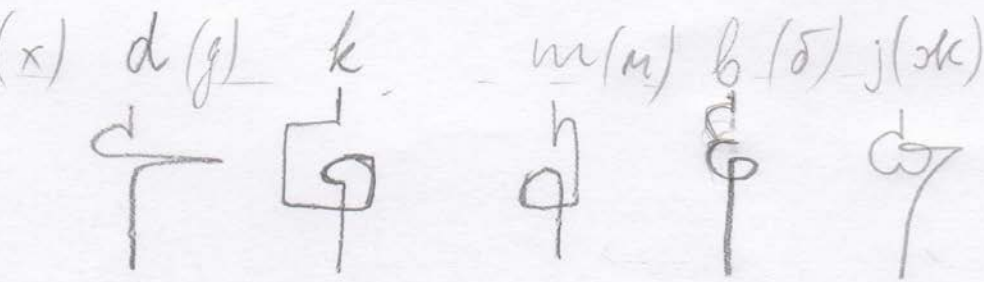

n (н)
l (л)
w (в)
t (т)
s (с)
dj (дзь)
z (з)
dz (дз)
f (ф)
g (г)
p (п)
θ (мф)
ʒ (мʒ)
u (ю)
jo (ё)
ya (я)

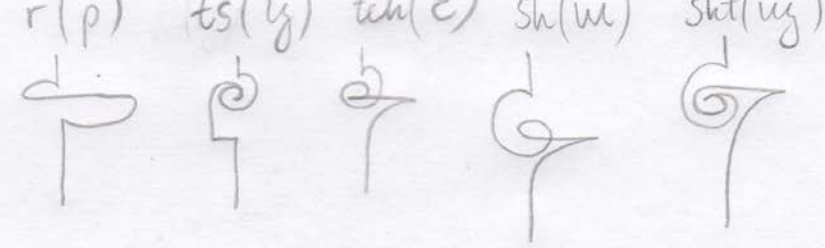
BASIC ELEMENTS OF CONSTRUCTION

CONSONANTS









Chapter X

Conclusion and all the open questions. Basis for further research

Conclusion

I am happy with my journey and everything I have learnt from this project. It goes to my teenage years where I went to study English in high-school. It was there where we went deeper into language meaning, etymology, construction and variations. It was at the same time I was reading fantasy books like Lord of the Rings and watched TV shows like Game of Thrones and Star Wars. Linguistics was a big part of my childhood interests but it was left behind when I started studying graphic design.

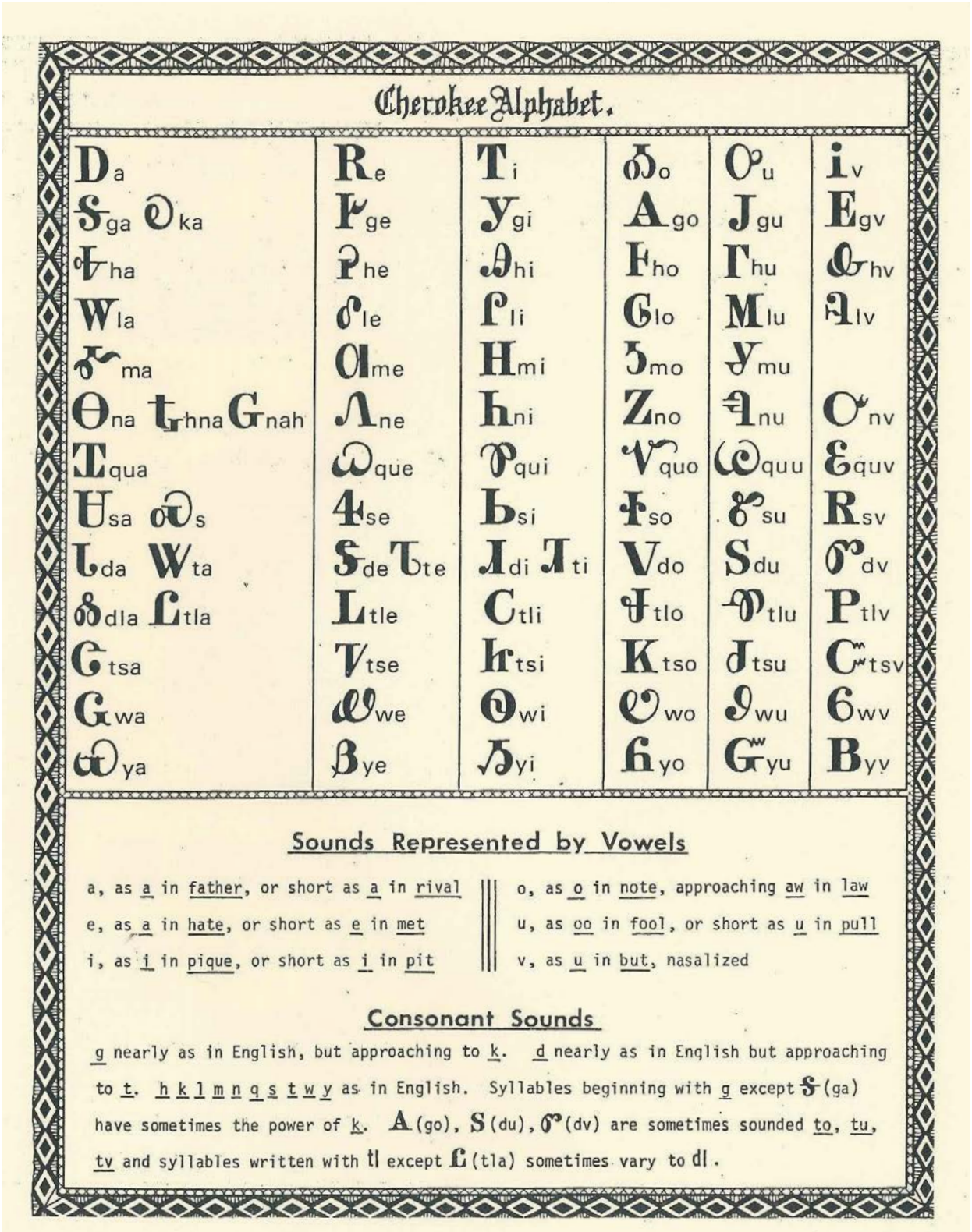
However, I realise they are not so different from each other. Graphic design is a conduit of language and it is such in a sense of 'visual language'. In this project I can satisfy my need for languages and writing systems while I design letters which is something different.

I gave Frank the example of the Cherokee alphabet which was created by the Native American Sequoyah when he saw how useful the writing system these 'white men' had was. He took the Latin alphabet and broke it to fit the Cherokee language. It is a great feat of ingenuity and engineering because it worked! People learnt to write with it and they still use it until this very day. However, from a type design perspective, it is very weird and it could be bettered in so many ways.

Does it matter? I guess not because writing systems and scripts evolve with the people and it takes centuries to reach something useful, beautiful and coherent.

That's why we discussed with Frank how long should a project like this last. Well, it go forever and it is beyond the abilities of one person. Language is a communal commodity, nobody owns it and we can collectively change it. There is no law, no ruler who can enforce a certain way of speaking and writing. At least not fully.

My grapheme system is clunky and it needs a lot of refinement and expansion. However, it does its job even as a font because you can type with it and the system knows how to arrange the characters for you. At the same time, it is time to continue with another project and what I have learnt here will never be lost.



Cherokee Alphabet.

Da	Re	Ti	Ꭴo	Ou	iv
Sga Oka	Fge	Ygi	Ago	Jgu	Egv
Tha	Phe	Ahi	Fho	Ghu	Ohv
Wla	Sle	Pli	Glo	Mlu	Alv
Yma	Ome	Hmi	Jmo	Ymu	
Ona tlhna Gnah	Lne	Lni	Zno	Tnu	Onv
Tqua	Qque	Pqui	Vquo	Qquu	Equv
Usa ꭶs	4se	Bsi	Fso	Ssu	Rsv
Lda Wta	Sde Tte	Jdi Jti	Vdo	Sdu	ᏽdv
ᏮdlaLtla	Ltle	Ctli	Jtlo	Ptlu	Ptlv
Gtsa	Vtse	Htsi	Ktso	Jtsu	Ctsv
Gwa	Wwe	Owi	Owo	Jwu	6wv
ᏫᏯya	Bye	Ayi	Lyo	Gyu	Byv

Sounds Represented by Vowels

a, as a in father, or short as a in rival

e, as a in hate, or short as e in met

i, as i in pique, or short as i in pit

o, as o in note, approaching aw in law

u, as oo in fool, or short as u in pull

v, as u in but, nasalized

Consonant Sounds

g nearly as in English, but approaching to k. d nearly as in English but approaching to t. h k l m n q s t w y as in English. Syllables beginning with g except S (ga) have sometimes the power of k. A (go), S (du), ᏽ (dv) are sometimes sounded to, tu, tv and syllables written with tl except L (tla) sometimes vary to dl.

The Cherokee alphabet modified from the Latin script

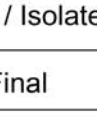
Grapheme System Chart—R

Conso

B	TS	D	DZ	Đ	F	G
						

R	S	T	V	Z	Θ	D
						

Vow

Forms	ɑ	ə	ɒ
Initial			
Medial / Isolated			
Final			

Phonetic Sound Explanation

nants

H	3	K	L	M	N	P

3	JU	Σ	ΣT	TΣ	T	YA

vels

O	ʊ	e	I

COLOPHON

Design and concept:
Nedislav Kamburov

Supervision:
Frank E. Blokland

Typefaces:
Nimbus Sans Medium 10 pt / 13.2 pt
Nimbus Sans Black 66 pt / 79.2 pt
Arial Unicode MS for the missing characters

Paper:
Ordinary copy paper 90gsm

Letter Studio, last semester <3
Royal Academy of Art—The Hague,
June 2019