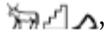
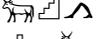
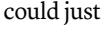


Appendix B: The Birth of the Alphabet from Egyptian Hieroglyphs in the Sinai Desert | Orly Goldwasser

The first alphabet in the world was invented at the dawn of the second millennium BCE by Canaanite miners in the Sinai Desert. This alphabet is the origin of all the scripts we still use today in Hebrew, Arabic, English, Russian, and most modern languages of the western world. The alphabetical system was invented only once, and all the alphabetical scripts we know today developed from this first system.

From the end of the fourth millennium BCE up to the invention of the alphabet, Ancient Near Eastern scribes used scripts that comprised hundreds of signs: cuneiform script was used in Mesopotamia, and hieroglyphic script – a pictorial script – in Egypt. A script is a set system of signs that is capable of transmitting linguistic messages. No clear evidence of the use of scripts dating prior to the second millennium BCE has been found outside the Ancient Near East.

In order to read and write the pre-alphabetic scripts of the Ancient Near East one had to memorize hundreds of characters. Furthermore, the manner in which these characters guided their readers from sign to word was often tortuous. Some Egyptian words were represented by hieroglyphs that depicted the word's meaning. For instance, the symbol for the word “ox” was , and the word for dais, or platform, was depicted thus: . But when a word's meaning could not be accurately conveyed by a single picture, as is the case for most words in any language, a series of symbols was enlisted for the task. However, these pictures no longer served their original function, as they now represented only a sound or a combination of sounds. To illustrate, if “exodus” were an Egyptian word, it might have been depicted as “ox-dais” –   – with the hieroglyphic characters functioning as a chain of consonants, since vowels were not represented in Egyptian script. To these two signs, the Egyptian scribe would have appended at least one more sign, which in our fictional example might have been . This is an unpronounced sign, which was not part of the phonetic chain comprising the word. Instead, it functioned as a classifier that indicated the semantic category of the word, in this

case signifying “movement.” Our word would thus have been written , but today we would write it with an asterisk to denote that this is a modern construct and not an authentic Egyptian word (*). Unlike many modern languages, Egyptian did not have a set writing direction. The word * (from left to right) could just as well have been written * (from right to left). The only rule was that texts were read “into” the symbols, meaning each hieroglyph faced the beginning of the line. This seems somewhat counterintuitive to modern readers (as it likely seemed to many ancient readers, as well).

Further complicating the Egyptian script, the hieroglyph depicting an ox () could function in an additional way: as an unpronounced semantic classifier denoting the category “cattle” following nouns such as cow or calf. A single symbol could thus have three distinct roles in the Egyptian writing system: as an ideogram of the depicted object; as a phonogram representing the sound or sounds of the word it depicted; and as an unpronounced classifier.

The new writing system invented by Canaanite workers in the Sinai Desert was a remarkable stroke of genius. Instead of using hundreds of signs, there were now fewer than thirty to memorize, and these served to indicate single sounds, and sounds only. This small number of characters sufficed to represent each and every word in the language. Furthermore, instead of applying a complex set of reading rules, the alphabet offered one, fixed method of reading.

Who Were the Inventors of the Alphabet?

Contrary to the prevailing scholarly consensus, according to which the alphabet was invented by members of the educated, social-cultural elite, I argue that the inventors were a group of illiterate expert miners. It was precisely their lack of prior knowledge of any of the reading and writing systems of their time, coupled with a life on the margins of the established cultural world of the Ancient

Near East, that freed them from the shackles of conventional wisdom and facilitated the creation of an utterly novel writing system, simpler and more accessible than the existing systems.

The inventors of the new script were Canaanites – people who spoke a variety of Canaanite dialects used across the Levant – who worked for the Egyptians in the turquoise and copper mines in southern Sinai, in an area known today as Serabit el-Khadim. It was there, around 1840 BCE, almost four millennia ago, that they invented the alphabet.

The Egyptian pharaohs sent large expeditions to the mountaintop at Serabit el-Khadim. These expeditions comprised not only miners but also Egyptian scribes, treasury officials, physicians, soldiers, and various craftsmen, such as stonemasons and builders, as well as interpreters, donkey-caravan drivers, and even scorpion charmers, who were probably responsible for preventing scorpion bites. Alongside the task of mining, this large and varied work force was charged with the duty of building a large temple on the mountaintop. The temple was dedicated to the Mistress of Turquoise (*Ba'alat Turqiz*) – the goddess Hathor whose blessings they sought.

Hundreds of hieroglyphic inscriptions telling the story of the various expeditions and the successes they enjoyed, thanks to the blessings of the gods, were found within the large temple precinct on the mountaintop. Numerous similar inscriptions were found near the mines on the cliffs surrounding the temple. This trove of inscriptions left by the Egyptians suggests that the workers at the mines were not slaves. Furthermore, they tell us that the expeditions included numerous Canaanites, who worked alongside the Egyptians in various capacities. They were not only miners but also caravan drivers, headmen, masons, and soldiers. We even know of one Canaanite prince named Khebeded, who is



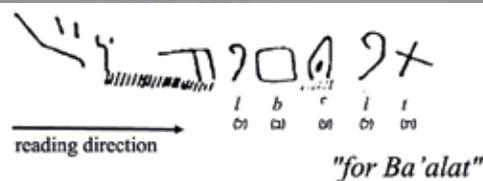
[Fig. 33] The Canaanite prince Khebeded on a stela from Serabit el-Khadim, Sinai

depicted with his donkey and assistants on a stela bearing Egyptian inscriptions found within the temple precinct (fig. 33).

However, the mountaintop was also the site of inscriptions that differed significantly from the hundreds of hieroglyphic inscriptions. These were first noticed when Hilda Petrie (wife of the renowned archaeologist Flinders Petrie, who excavated the site in 1905) accidentally stumbled upon several stone fragments bearing very crude, awkward signs near one of the mines. These signs looked like failed attempts at copying Egyptian hieroglyphs.

Petrie ingeniously identified these awkward signs as an alphabetic script, since they comprised a very small repertoire, yet he was unable to read them. The script was deciphered in 1916 by the famous English Egyptologist, Sir Alan Gardiner, who identified the language of the script as Canaanite.

Since then, approximately thirty inscriptions in this strange alphabetic script have been documented in and around the turquoise mines, in the temple precinct, and along the desert roads leading to them. The temple itself, however, yielded only a few inscriptions on four small votive items: a sphinx (fig. 34) and statuettes. Considering the location of the bulk of the inscriptions, it



[Fig. 34] Small votive sphinx bearing dedicatory inscriptions, one in hieroglyphs to Hathor and the other in the Proto-Sinaitic alphabet to Ba'alat, from the Hathor temple at Serabit el-Khadim, Sinai. The British Museum. EA 41748. Transcription: B. Sass 1988, 142

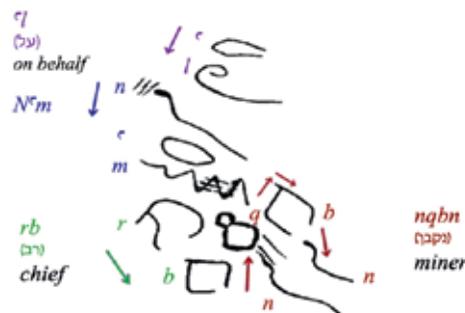
seems that they were etched by miners and not by scribes or other high officials of the temple, as many scholars have suggested.

Some of the signs in these inscriptions bear a remarkable resemblance to certain Egyptian hieroglyphic pictograms that appear in the temple of the Mistress of Turquoise, which are dated to the reign of Amenemhet III (ca. 1840 BCE). The striking similarities between the new signs and the hieroglyphs are, to my understanding, a good indication that the new alphabetic characters used by the Canaanites were modeled after the hieroglyphic repertoire of Egyptian inscriptions found in Sinai from the reign of this king. Hence, unlike most scholars, I follow Gardiner's lead and conclude that the alphabet was invented in the Sinai during this period. Moreover, the few early alphabetic inscriptions that were found in Egypt and in the Land of Israel, then Canaan, are all later in date. It should thus be concluded that the Sinai alphabet was the first alphabet in the world.

Despite the resemblance between the alphabetic characters of the new script and hieroglyphs, it is evident that the alphabet inventors could not read Egyptian. This conclusion is born out of their indiscriminate use of visually similar, but nevertheless distinct, Egyptian pictograms as models for a single Canaanite letter. For instance, two different snake hieroglyphs were used to represent the Semitic letter "N" (𐤍; *nun* for *nahash* [snake]): the cobra (𐤍) and the horned viper (𐤍). No educated reader of the Egyptian script would have considered these symbols interchangeable, as they have very different meanings and sounds. But for the Canaanites, a snake was simply a snake.

Furthermore, the Canaanites broke the cardinal rule of Egyptian character orientation by reversing the required direction when writing their inscriptions. As noted earlier, Egyptian hieroglyphs were always read "into" the symbols, meaning each hieroglyph faced the beginning of the line. But the Canaanites chose the reverse direction, which seems to be the "intuitive" one. Finally, unlike the Egyptian writing tradition, characterized by a strict adherence to typographic convention, most of the Canaanite inscriptions exhibit haphazard character size and lack of row/column alignment (fig. 35).

What, then, were the conditions that led these expert miners to invent the alphabet in the Sinai desert? The



[Fig. 35] Inscription on a block statue from Serabit el-Khadim dedicated to the goddess Ba'alat by No'am the Chief Miner ('l n'm rb nqbn). Transcription: Hamilton 2006, 335. Translation: B. Sass

Canaanites, whom I believe were illiterate, were surrounded by numerous Egyptian inscriptions. After all, the Egyptians among whom they lived and worked were almost obsessive in their predilection for writing. The Canaanite workers would have understood that the picture sequences they saw about them were used by the Egyptians to communicate with their gods and to tell of their successes. They may have even attributed Egypt's success to the effective communication Egyptians had with their gods through script and pictures. They obviously understood that by writing to the gods one could ask for their blessings. It seems that they were mostly drawn to the idea of etching their names into stone, thus eternalizing themselves and their prayers before their gods.

Work in the dark mines was obviously punishing and perilous. For these men, the belief in the presence of gods and the apprehension that the gods determined one's destiny must have been palpable and acute on the barren mountaintop, prey to merciless winds and scorching heat. Under such conditions, contacting the gods to seek their blessings was an existential need. The Canaanites sought to write to their own deities – *Ba'alat* (meaning "the Lady," the Canaanite appellation for the goddess of turquoise, Hathor) and the Canaanite pantheon's patriarch, El. Indeed, most of the Sinai inscriptions in the Canaanite alphabet consist of the names of deities alongside personal names.

The Canaanites adopted only some two dozen symbols out of the hundreds available in the Egyptian repertoire. The pictures they selected depicted objects that were meaningful to them, such as an ox head (𐤀; *aluf* in Canaanite for the letter "A" [*alef*]; the plural *alufim* is found in the Bible); an eye (𐤁; *'ayin* for the letter " ' " [*'ayin*]); a house (𐤂; *bayit* for the letter

“B” [*bet*]); water (; *mayim* for the letter “M” [*mem*]); a head (; *rosh* for the letter “R” [*resh*]); and an arm (; *yad* for the letter “I” [*yod*]). Thus, the Canaanites interpreted the hieroglyph pictograms according to their own understanding, in a manner that bore no relation to their meaning in Egyptian script. Unfamiliar as they were with the complex rules of Egyptian writing, the Canaanites put the hieroglyphs to use in an entirely original manner, as they invented a new script for their language: ancient Canaanite. Following are several examples:

Identifying the Egyptian hieroglyph  as connoting “head” in Canaanite (*rosh*), the Canaanites adopted it to represent the first consonant of the word (“R”). Thus, the character  in the new Canaanite script became a “free agent,” no longer bound by the meaning of the image. The sign could indicate the “R” sound in any word, regardless of its original meaning. The Egyptian word for “head” was pronounced something like “tep.” But this was either unknown to the Canaanite inventors or of no importance to them. They spoke a Canaanite dialect, and read the pictogram accordingly, since they sought to write to their own deities in their native language. As the inventors of the new Canaanite script were untrained in the discipline of Egyptian writing, they were incapable of drawing accurate hieroglyphs (the mastering of which would have required skill and a great deal of learning). This lack of formal education might help explain why some characters changed in appearance as they transitioned from Egyptian to Canaanite. This is apparent when looking at the Canaanite character for the letter “R” in comparison to the hieroglyph  on which it was based. In an inscription that was etched in Egypt in the Canaanite script several decades after those of Serabit el-Khadim, the Canaanite “head” character had evolved to reflect the fashionable Canaanite hairdo of the day – the “mushroom cut”: .

The Canaanites identified a box-shaped hieroglyph () as a schematic representation of a house. They named it *bet*, meaning “house.” And just as with the other symbols, this one represented only the first consonant of the word for house – *bayit* (“B”). Once again, the character was divorced from the real-world object it represented. In Egyptian, this symbol represented a stool, which was pronounced “p[oi].” The

Egyptian hieroglyph for house, on the other hand, was different () , but the Canaanites were probably unaware of this.

The hieroglyph , which represented the verb “to do” in Egyptian and was pronounced “Iri,” was identified by the Canaanites as an eye. Just like the other characters, they chose for their script to represent only the first consonant of the Canaanite word for eye – ‘*ayin*’ (‘).

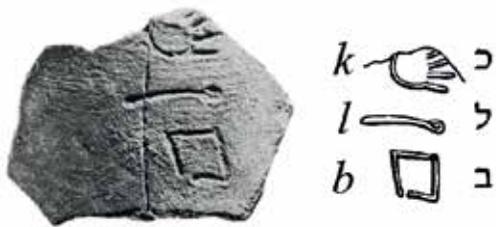
The hieroglyph , which is found in Sinai in numerous Egyptian inscriptions from this period, was probably interpreted by the Canaanites to be a man calling out “Hey!” – possibly as their foremen did when they yelled at them in the mines. They therefore called the letter  “*heh*” (“H”).

In several cases, the Canaanite inventors extended their system beyond the repertoire of Egyptian hieroglyphs, using simple and convenient pictures. A case in point is a character depicting the palm of a hand () – unknown in the Egyptian scripts – that marked the Canaanite letter “K,” the first consonant of the word *kaf* (palm of the hand). Similarly, the Canaanite letter “Q” () depicted a schematic monkey (*qof*), the letter “L” () depicted a shepherd’s staff (*malnad*; a term preserved in the Bible), derivative of the Semitic root *lmd*; and the letter “SH” (today’s *shin*) is probably derived from the ancient Canaanite word for “bow” (*qeshet* in modern Hebrew).

The names of the Canaanite characters reflected their shape at the time when they were first conceived. The names of most of the Hebrew letters still hark back to their ancient pictorial origins – either as an Egyptian hieroglyph or as an originally adopted picture – in the script invented by the Canaanite miners in Sinai, the Proto-Sinaitic script. Thus, *alef* () is an ox (*aluf*); *bet* () is a house (*bayit*); *vav* () is a toggle pin; *yod* () is a hand (*yad*); *kaf* () is the palm of the hand (*kaf*); *mem* () is water (*mayim*); ‘*ayin*’ () is an eye (‘*ayin*’); *resh* () is a head (*rosh*); and so on.

It is obvious that these letters’ names, which pointed to both their sound and their shape, allowed the Canaanite caravaneers, soldiers, miners, and tradesmen who used the new script and kept it alive for several hundred years (at least until the thirteenth century BCE) to instinctively recall their shapes. By using the first consonant of the name of the letters (a system termed “acrophony”), these unschooled Canaanites could write their names and the names of their gods!

Up until the thirteenth century BCE, this script was used almost exclusively in Canaan, except for two inscriptions found in Egypt. All these inscriptions are brief and adhere to a similar formula: private names (at times along with epithets) (fig. 36) or benedictions. This suggests that the new, alphabetic script was not used for administrative purposes, but rather continued to serve as a means for memorializing names and for communicating with the gods.



[Fig. 36] A Proto-Canaanite inscription from Tel Gezer bearing the name *klb*

This reconstruction of the invention of the alphabet offers several insights into this communication revolution within the discipline of the history of ideas. First, this invention, which changed the course of history, was borne of religious and emotional impulses. As such it differs from the invention of cuneiform script in Mesopotamia and of hieroglyphic script in Egypt at the end of the fourth millennium BCE, which answered administrative needs related to tax collection and efficient control over resources and production. Second, the alphabet is an example of a brilliant invention that emerged from a weak segment of society, far from the cultural and political centers of the day. These people managed to preserve their “technological” innovation for centuries, thanks to its inherent accessibility and simplicity. The innovation provided these marginal ethnic and social groups a means of communicating with their gods and of eternalizing their own names without the mediation of the scribal elite.

Technological revolutions do not necessarily bring about immediate and rapid cultural transformations. The advantages of the new writing system became apparent only when several of its users began to play a more significant role in the history of the Ancient Near East. At the end of the second millennium BCE, the central powers of the Ancient Near East declined, bringing down the major cities in Canaan, along with their

scribes, who cultivated the Egyptian and cuneiform writing traditions. The void left by the declining superpowers in Canaan was filled by local, Canaanite-speaking peoples from the periphery of society: nomads, farmers, and others, who coalesced into Israelites, Moabites, Phoenicians, and Arameans. These peoples established the new Canaanite kingdoms, which became the leading powers in the area. Naturally, these kingdoms made official use of their ancient Canaanite alphabet. From them it traveled to the Greeks, and later - to the entire western world. Today we write Hebrew in the Aramaic script, another outcome of the ancient alphabet invented in Sinai, even though the shape of the letters has changed considerably (fig. 37). Thus, despite the vast transformations that occurred in the Hebrew script since its exodus from Egypt, nearly every Hebrew letter used today conceals an ancient Egyptian hieroglyph.

References:
Goldwasser 2010; Naveh 1997; Sass 1988.

An Evolving Alphabet

Hieroglyphic	Proto-Sinaitic	Phoenician & Paleo-Hebrew	Early Greek	Greek	Latin	Modern Hebrew

[Fig. 37] The development of the alphabet. From left to right: hieroglyphs, Proto-Sinaitic, Phoenician and Paleo-Hebrew, Early Greek, Greek, Latin, and Modern Hebrew