

THE ARTICULATORY BASIS OF THE ALPHABET

Robin Allott

Summary

The origin of the alphabet has long been a subject for research, speculation and myths. How to explain its survival and effectiveness over thousands of years? One approach is in terms of the practical problems faced by the originator of the alphabet: another would examine the archaeological record; a third might focus on the perceptual process by which the alphabet makes rapid reading possible.

It is proposed that the alphabet originated in an intellectual sequence similar to that followed by Alexander Bell and Henry Sweet in constructing their Visible and Organic Alphabets. The originator of the alphabet used the same kind of introspective analysis of his own speech sounds and of the manner in which they were articulated. This was the vital step. The next step was to represent the articulatory differences in terms of visual patterns. One way to understand what might have been involved is to attempt to replicate the process oneself.

1. Introduction

In his entertaining account *Fifty Years in Phonetics* (1991) David Abercrombie includes a chapter about phonetic iconicity in writing systems. He quotes Bishop John Wilkins (one of the early members of the Royal Society) as saying (in 1668) that there should be "some kind of sutableness, or correspondency of the figures to the nature and kind of the Letters which they express". Abercrombie continues: "[phonetic iconicity of the articulatory kind] has fascinated people for many centuries... There are two theories involving the idea. The first theory, the weaker one, holds that writing systems ought to be iconic; while the second, a stronger one, holds that writing systems are iconic ... this second theory claims that most writing systems originate with articulatory iconic signs.... Various people have put forward the stronger theory in the past. Van Helmont made the claim for Hebrew writing in the seventeenth century. Sir William Jones said, in 1786, 'all the symbols of sound... at first, probably, were only rude outlines of different organs of speech'". (Abercrombie 1991: 93)

The account of the origin of the alphabet in this paper would have to be classified as a strong theory of phonetic iconicity. One may reasonably ask: why is any new theory of the origin of the alphabet needed? If palaeography and archaeology can provide a solid, plausible account of the development of the alphabet from earlier writing systems, then no new theory is needed. The first step then is to summarise more traditional theories about the origin of the alphabet and to assess how plausible, well-supported and generally agreed they are. If they are unconvincing or contentious, then it may be profitable to examine in a quite different way what the problems were that faced the inventor of the alphabet, the way in which he might have proceeded and how consistent with an articulatory theory the results have been.

Questions one needs to consider in theorising about the historical fact of the invention of the alphabet are, for example: how is an alphabet to be identified or defined as such? why do the letters have these shapes and not other shapes? why was the alphabet invented only once (if that is the case), why has the alphabet we now have been so long-lasting and so widely used? how would you set about creating an alphabet? why were early versions of the alphabet wholly consonantal (if they were)? what special problems were there in devising characters to represent vowels? In addition there are other more specifically historical questions such as: why did syllabaries not evolve directly into alphabets (in China or Japan as well as in Egypt and Mesopotamia)? why did the cuneiform and hieroglyphic systems fall into disuse? how does one explain deviant alphabets such as runes and the glagolitic alphabet (an alphabet like Cyrillic representing Slav speech-sounds used from the 9th century in the Slavonic liturgy) which may differ in the number of characters, in the form of the characters, in the alphabetic order or in the names of the characters)? It is impossible to attempt to cover these matters in one short paper but one should not overlook the existence of problems and queries such as these.

ALPHABETS

HEBREW		GREEK		ROMAN
'Aleph	א	Alpha	A	A
Beth	ב	Beta	B	B
Gimel	ג	Gamma	Γ	G
Daleth	ד	Delta	Δ	D
He	ה	Epsilon	E	E
Waw	ו	Digamma	Ϝ	F/V
Zayin	ז	Zeta	Z	Z
Heth	ח	Eta	H	E
Teth	ט	Theta	Θ	TH
Yodh	י	Iota	I	I
Kaph	כ	Kappa	K	K
Lamedh	ל	Lambda	Λ	L
Mem	מ	Mu	M	M
Nun	נ	Nu	N	N
Samekh	ס	Xi	Ξ	X
'Ayin	ע	Omicron	O	O
Pe	פ	Pi	Π	P
Sadhe	צ	San	Ϻ	S
Qoph	ק	Koppa	Ϟ	Q
Resh	ר	Rho	P	R
Sin	ש	Sigma	Σ	S
Taw	ת	Tau	T	T
		Upsilon	Υ	U
		Phi	Φ	PH
		Khi	X	KH
		Psi	Ψ	PS
		Omega	Ω	Ō

Figure 1

2. The origin of the alphabet

The origin of the alphabet is of course a quite separate issue from that of the origin of writing. Denise Schmandt-Besserat and Roy Harris have in their recent publications both emphasised this. Writing had a history for thousands of years before the invention of the alphabet (see Senner 1989 for a general survey). Schmandt-Besserat(1992) has suggested that writing was the culmination of an evolutionary process in which visual symbols had been used and manipulated in increasingly complex ways to convey increasingly abstract and complex information. She identified the Sumerian use of tokens as the turning point in the use of symbols for communication because it bridged the gap between the primitive visual symbolic systems and the development of writing; the token system was built on the foundation laid by the Palaeolithic tallies. Harris(1986) similarly pointed out that the development of the alphabet is a comparatively late event.

The two great writing systems before the alphabet appeared were the Sumerian and the Egyptian. These were in a number of respects similar in their origin and development, their major differences flowing from the different writing materials they used. Both initially contained a very substantial pictographic element; both evolved towards syllabaries. The oldest of the developed scripts was the cuneiform; the second oldest was the Egyptian hieroglyphic.

Both in the case of cuneiform and of hieroglyphs, only a limited circle understood the script, the scribes, officials, doctors, priests. The number and complexity of the symbols made any more general literacy improbable. In the classical period, the number of hieroglyphs totalled approximately 700 and the number of symbols increased to several thousand by about 500 BC. (Brunner 1976: 854-855). Similarly there were hundreds of cuneiform symbols, with ever-growing complexity as symbols might be interpreted in different languages, as words, as syllables or occasionally as single speech-sounds, producing what Doblhofer describes as "the terrifying polyphony of cuneiform...this obscure, impracticable, ambiguous writing" (1973: 144). In both the hieroglyphic and the cuneiform systems, an extensive system of determinatives developed to reduce ambiguity along with phonetic indications for the same purpose. One gets the impression of a very similar line of development to those of the Chinese and Japanese systems of writing.

The Egyptians never reduced their writing to an alphabet and the same was believed to be true for cuneiform, until comparatively recently. Both systems made some apparent progress towards an alphabet. The Egyptian scribes developed an acrophonic pseudo-alphabet and there was the cuneiform alphabet discovered at Ugarit. considered below. The Egyptian pseudo-alphabet consisted of twenty-four consonants; it was in use for near-alphabetic transcription of foreign names in the Middle Kingdom, that is during the early 2nd millennium BC. (Sass 1991: 1).

Much more importantly in the case of cuneiform was the discovery of Ugarit, from the excavations begun by the French in 1929 at Ras Shamra on the North Syrian coast. Ugarit was a capital city which was at the height of its prosperity from about 1450 to 1200 B.C. and was destroyed in the 12th century. When the large temple was excavated, the high priest's library produced a very considerable number of texts written on clay tablets. These were both in Babylonian cuneiform and in a hitherto unknown cuneiform script. Similarly to the north-west Semitic writing (found in much the same general area), the new script turned out to be purely alphabetic with no syllable signs, ideograms or determinatives. Several copies of a 30-character alphabet were found representing twenty seven consonants and three vowels. The texts found at Ras Shamra were remarkably diverse in script and language: four languages, Ugaritic, Akkadian, Sumerian and Hurrian, and seven different scripts, Egyptian and Hittite hieroglyphic, Cypro-Minoan, Sumerian, Akkadian, Hurrian and Ugaritic cuneiform.

The origin of the Ugaritic script remains a mystery. Driver interpreted it as an experimental attempt to adapt the cuneiform to the alphabetic system in the light of the Phoenician alphabet. Doblhofer notes that Jensen (described as the broadest alphabet scholar of the century) in 1935 considered that the problem of the origin of Ugaritic cuneiform had not been solved. No great advance has taken place since then. Investigators have variously considered Ugaritic forms as an imitation or development of the northern Semitic alphabet, as a derivation from so-called Sinaitic writing, or even as a simplification and reduction of the Babylonian syllabic signs. "All these attempts can be considered as failures. Another more plausible theory is... that the Ras Shamra cuneiform script is not an inherited and adapted system but a free creation, the autonomous invention of a man who, while knowing the north Semitic alphabet... was used to writing with the aid of a sharpened reed on wet clay tablets"(Doblhofer 1973: 216-217). Even this account is open to doubt since the relative dating of the Ugaritic and the Semitic alphabets presents a problem. The oldest inscriptions in the Phoenician alphabetic writing date from ca. 1000 B.C., the earliest Ugaritic script is thought to date from about 1500 B.C.

Origin of the Semitic/Phoenician alphabet

Neither the Egyptian pseudo-alphabet nor the Ugaritic cuneiform alphabet became widely used or appear to have survived for long. The successful alphabet was, of course, the Phoenician, ultimately adopted (with additions and variations) by the Greeks and Romans and which we use today. The debate over the centuries has been about the manner in which this alphabet originated and spread and, in particular, its relation to earlier writing systems. The traditionally accepted view has been that whilst syllabaries were developed independently in various parts of the world, alphabetic writing was invented only once, "a conscious and free creation by one man" (Jensen, following Bauer, 1970: 270). Diringer (1968: 435) also concludes that the alphabet has been invented only once, though whether this is correct depends on how one categorises the Ugaritic script (see Doblhofer 1973: 216-217).

The Greeks and Romans considered five different peoples as the possible inventors of the alphabet they used - the Phoenicians, Egyptians, Assyrians, Cretans and Hebrews. Modern views regarding the ultimate origin of the alphabet are almost as numerous. There still remain the Egyptian theory, the Cretan theory, the Sumerian, the 'geometric' theory (the theory that the alphabet developed from prehistoric geometric marks, probably for record-keeping, found throughout the Mediterranean area). The most favoured account sees the North Semitic alphabet as the earliest known form of alphabet and dates its appearance to the first half of the second millennium B.C. However, this leaves the further question whether the alphabet was an unheralded invention or in some way developed from a previous writing system, specifically from the Egyptian or the Sumerian. Martinet has recently commented: "on peut hésiter entre le

sumérien et l'égyptien" (Martinet 1993: 22).

The theory which has for many years commanded the greatest degree of support has been that the alphabet is one more step (though obviously a most important one) in a continuous process of refinement and conventionalisation of writing. The endeavour has been to discover evidence of the gradual steps by which scripts which initially were pictographic became formalised progressively and ultimately converted into the non-representational letters of the Roman alphabet. In the absence largely of any more likely source, the most strenuous efforts have been made to establish a connection between Egyptian hieroglyphs and the earliest Semitic forms.

Geoffrey Driver, who was Professor of Semitic Philology at Oxford, argued for an essentially Egyptian origin for the North Semitic alphabet. Nevertheless he concluded on the origin of the alphabet: "Who first took this step is and may always remain unknown; all that can be said is that he or they were sprung in all probability from one or other of the Semitic peoples who came into contact with the Egyptians c. 2500-1500 B.C.... the invention was developed in Palestine and perfected on the Phoenician coast. It survived to be carried by the Phoenicians overseas to Greece, whence it passed to the nations of the western hemisphere".(Driver, 1954: 196). The other main hypothesis, evolved after the discoveries at Ugarit, argued for development of the Semitic/Phoenician alphabet from the cuneiform system.

Here one has to make a distinction between two issues: the origination of the principle of the alphabet, that is, the production of a symbolic system which represents by single characters a limited number of distinct speech sounds (rather than words, ideas, or syllables) and, on the other hand, the origin of the particular forms and sound-values which ultimately went to form the alphabet as we know it. The Egyptian pseudo-alphabet, in effect and probably without any deliberate intention, constituted such a restricted set of characters (though without vowels). The Ugaritic cuneiform alphabet included some vowels as well as a full set of consonants and could more justifiably be thought to express the genuine alphabetic principle. Ugaritic characters, however, with the sound-values attached to them, apparently never gained wide acceptance any more than did the Egyptian pseudo-alphabet. If one compares the characters in these two scripts with the North Semitic set of characters, it seems pretty obvious that neither the Egyptian pseudo-alphabet nor the Ugaritic alphabet can plausibly be seen as precursors of the forms which the characters of the alphabet took, although there is more of a query about the relation between the order of the Ugaritic characters and the order of the North Semitic alphabet. The earliest evidenced abecedarium - that is, letters written in the fixed alphabetic order - undoubtedly comes from Ugarit and dates back to the 16th century B.C.(Naveh, 1982: 11)

Diringer suggests that the north-western Semitic inventor or inventors (Canaanites, Hebrews, or Phoenicians) of the alphabet were influenced by Egyptian writing; he thinks that they were probably also acquainted with most of the scripts current in the eastern Mediterranean. He suggests that the original letters were probably conventional signs and not pictures used as ideograms. "The great achievement in the creation of the alphabet was not the invention of signs but the inner working principle... each sound represented by one symbol and each symbol generally represents one sound"(Diringer 1976: 619 and also see Gelb 1976: 1086). This is arguable - the Egyptians and the Ugaritians had more or less achieved 'the alphabetic principle'. What made the alphabet ultimately successful was the selection of the forms of the characters and the limitation of the number of distinct sounds which the characters represented (omitting all the refinements of vowel and consonantal sounds which modern phonetics has identified). Driver, after comparing the Semitic, Egyptian and cuneiform characters, concluded that "the borrowing of the Phoenician alphabet can hardly have been immediate...the Egyptian signs ... show few, if any, close resemblances to the Phoenician letters... and [when there is resemblance of signs] the value of the signs does not generally agree."(Driver 1954: 139) This one can see for oneself.

Detailed speculation about the relationships of the alphabet has concentrated a great deal also on the names of the letters, on the relation between the names and the forms of the letters and on the variation in the forms of the letters in different places and cultures. Driver argued that the names must have come first; "if the signs had preceded the names, there would be no reason why the letters should take any particular forms; their forms therefore were based on their names... The names must be regarded as going back to the very beginnings of the alphabet." (Driver, 1954: 152, 160). In this he assumed that the forms must have been derived, not original inventions, but the relation between form and name in fact is highly speculative -- "the Aramaic and Arabic name for n is nun 'fish' ... but... the sign at no stage... resembles a fish. If then a fish is meant, it must have been an eel... [the sign for qop koppa] has been thought to be from the word for bird-trap but is generally supposed to be the Hebrew for monkey" (Driver 1954: 168). Diringer, on the other hand, contends that the principle governing the conventional names of the letters was acrophony; names were not derived from pictographic representations of the letters but were an artificial mnemonic device. Jensen concludes that the meanings brought forward up to now for the Semitic names of the alphabet "belong in the realm of pure concept-guessing".(Jensen 1970: 269)

There has been equally various speculation about the factors determining the order of the alphabet and argument about whether or not the order has any special significance. Driver has a useful discussion of this: "The order of the Phoenician alphabet is attested by the evidence of the Hebrew scriptures [acrostic Psalms] and confirmed by external authority.. [the step at Lachish]... The most fantastic reasons for the order of the letters have been suggested based, for example, on astral or lunar theories, even to the extent of using South-Semitic meanings of cognate words to explain the North-Semitic names. Another method has been to seek for mnemonic words which the successive letters when combined into words may spell out [ab gad father grandfather -from different language dialects]" (Driver, 1954: 181) "The order of the alphabet has recently been explained as representing a didactic poem.... The latest suggestion is that the order of the letters of the Semitic alphabet is based on the notation of the Sumerian musical scales". (Driver, 1954: 268) Diringer briefly remarks: "As to the order of the letters, various theories have been propounded, but here again [as for the names of the letters] it is highly probable that the matter has no particular significance...There is some appearance of phonetic grouping in the order of the letters of the North Semitic alphabet, but this may be accidental"(Diringer 1968: 169-170).

Finally, in this very compressed survey of debate about the alphabet, mention must be made of the inconclusive speculation about the source of variations in the forms of the alphabetic characters in different places and cultures -- so to say, errors in transmission. Herodotus (trans. by Rawlinson 1858: 25) says that the Phoenicians who came with Cadmus introduced into Greece upon their arrival a great variety of arts, among the rest that of writing "And originally they shaped their letters exactly like all the other Phoenicians, but afterwards, in course of time, they changed by degrees their language, and together with it the form likewise of their characters".

(Rawlinson 1858: 25) Individual signs in early Greek inscriptions frequently vary so much in form that it is clearly impossible to speak of a single Greek alphabet in this early period; the borrowing and adaptation of the Phoenician writing took place independently in the various areas of the Greek world (Gelb 1952: 180 and see also Bernal 1987; Powell 1991). Naveh says the fact that the archaic Greek alphabet had not one set of letters but various local forms also poses a problem; "we know that the Phoenician script was a uniform one, without regional variations" (Naveh 1982: 182)

And there are some more notorious and unexplained variations in supposedly descendant alphabets, particularly the runic and glagolitic alphabets. The order of the runes differs completely from the Semitic, Greek, Etruscan and Latin alphabets. Jensen comments "where do the strange names of the runes come from? And their special order? And the supplementary signs of the runic alphabet?" Speculation about the origin of the runic alphabet includes "another hypothesis, the native originality of the runes as primordial Germanic script" (Jensen 1970: 573-574) Diringer comments that the origin of the runes offers many difficult problems and speculates that it might be from a North Etruscan Alpine alphabet. (Diringer 1976: 625) The glagolitic alphabet is another puzzle: an alphabet with 40 letters, in form very unlike the Greek or Cyrillic letters.

3. An alternative approach?

What comments can one make on the debate about the history of the alphabet? First of all, despite the great effort of research, despite the scholarly firepower brought to bear, there is clearly no consensus, and indeed not a very high degree of confidence on the part of those espousing one or other theories about the history of the alphabet's development. Secondly, objectively there is not a great deal of plausibility in the accounts given of the origin of the shapes, order, values or names of the letters of the alphabet - a point on which I shortly invite the reader to form his own view. Each of the scholars puts forward his own ideas but which *ipse dixit* should we accept? Is the choice as Thom suggests only between an Egyptian or a Sumerian origin? The important point to note is that all of those who have taken part in the prolonged debate about the origin of the alphabet have pursued essentially the same academic/literary approach, that the 'invention' of the alphabet was not really an invention in the sense of something completely new but a modification of what already existed, in much the same way as one might trace a line of literary or artistic style throughout the centuries; what this academic approach involved was looking for a succession of documents, inscriptions, which would demonstrate a gradual transition from some earlier form of writing to the fully developed alphabet.

Given this failure to provide a convincing and at least generally agreed account of the origin of the alphabet, what should be our next step? As a preliminary, perhaps we might look directly at the evidence to see how plausible we judge the academic account of a gradual transition from hieroglyphs or cuneiform to the alphabet. The three tables inserted here (drawn from Geoffrey Driver's excellent study) show respectively the cuneiform material, the hieroglyphic material and the early Greek forms of the alphabet. I do not propose to attempt any extensive commentary on these tables -- only to comment that to me the attempts to relate hieroglyphic and alphabetic forms, or cuneiform and alphabetic forms are far from compelling. The reader can study them for himself to see whether he agrees.

Hieroglyph	EGYPTIAN			SEMITIC		
	Word	Meaning	Value	Phoenician Signs	Arabian Signs	Name Meaning Value
	id	'hand'	d	𐤃 𐤃𐤃	يد	yud 'hand' d
	ri, ri	'mouth'	r	𐤓 𐤓𐤓	ر	ra' 'mouth' r
	zbrt	'prop'	-	𐤕 𐤕𐤕	ع	uwr 'peg' u
	wt	'water'	w	𐤗 𐤗𐤗	م	mhm 'water' m
	(?)	(?)	-	𐤕 𐤕+	خ	tax 'mark' t
	qmt	'throw-stick'	-	𐤓 𐤓𐤕	ق	qhm 'throw-stick' s
	zun, zln	'arrow'	}	𐤓 𐤓𐤓	ك	zayn 'weapon (?)' z
	z	'lute'				
	z	'folded cloth'				
	sp	'head'	-	𐤓 𐤓𐤓	س	sll 'head' s
	brt	'eye'	-	𐤓	ع	'aym 'eye' (w)
	rs	'door'	-	𐤓 𐤓𐤓	د	dbr 'door' d
	ks	'ox'	-	𐤓 𐤓𐤓	ك	'akp 'ox' (k)
	hst	'rush'	-	𐤓 𐤓𐤓	ع	kap 'hand; bough' k
	brt	'hill-country'	-	𐤓 𐤓𐤓	س	lin 'swath; peak' t
	rwf	'peasant's crook'	}	𐤓 𐤓𐤓	س	lmd 'goat' l
	hgr	'crooked staff'				
	wt	'sceptre'				
	h	'courtyard'	h	𐤓 𐤓𐤓	ح	ht 'courtyard' s
	brt	'bath-fish'	-	𐤓 𐤓𐤓	ب	bm 'fish (?)' b
	wgrt	'cobra'	-	𐤓 𐤓𐤓	ب	{Aram. wbr 'fish' {Eth. wbr 'serpent'}
	grt	'high'	}	𐤓 𐤓𐤓	س	ht 'ht' s
	hr	'rejoiced'				
	hr	'mourner'				
	h	'twisted hank'	h	𐤓 𐤓𐤓	ح	ht - s
			-	𐤓	ح	ht - t
		'grasshopper'	-	𐤓 𐤓𐤓	ح	ht 'cricket' s
		'monkey'	-	𐤓 𐤓𐤓	ح	qap 'monkey (?)' s

* Taken only from inscriptions dated c. 1300-900 B.C.

* Chosen from the South-Arabian alphabets without regard to dialect with a view to comparison with the corresponding Phoenician letters.

Comparison of Egyptian and Semitic letters.

Figure 2

Figure 2 shows a selection of Egyptian hieroglyphs chosen because their meanings are the same as or believed to be related to the meanings of the names of the characters of the Semitic or Phoenician alphabets or the shapes of the hieroglyphs resemble the shapes of Semitic characters. For example, the Egyptian hieroglyph for 'mouth' is matched with the Semitic character named 'pe' which means 'mouth'. The forms of the characters resemble one another, though not very closely, but the sounds attached to them are completely different - the sound of 'pe' is P but the sound of the Egyptian hieroglyph is Rl. Similarly the Semitic 'aleph' which is taken to mean is matched with an Egyptian hieroglyph for an ox but the sound is 'kt', quite different from that of aleph. It is hardly surprising that where the names of Semitic characters are thought to have a specific meaning (based on their shape), Egyptian hieroglyphs chosen as having the same meaning should have somewhat similar shapes. In many cases the comparisons are very far-fetched and certainly not at all persuasive in demonstrating an Egyptian origin for the links between sounds and shapes in Semitic alphabets.

Accadian	Ugaritic	Phoenician	Accadian	Ugaritic	Phoenician

Ugaritic compared with Accadian and Phoenician signs.

Figure 3

Figure 3 is a parallel attempt to bring together evidence of a relation between cuneiform signs and Semitic characters. One needs the eye of faith to find these conjunctions any more convincing for a cuneiform origin of Semitic characters, despite Driver's comment reproduced in the figure.

	Athens	Crete	Thera	Naukratis	Corinth	Melos	Naxos	
α	Α Α Α Α Α Α Α Α Α Α	Α Α Α Α Α Α	Α Α Α Α Α	Α Α Α	Α Α Α Α Α Α Α Α	Α Α Α	Α Α Α Α	α
β	Β Β	β β β β β β	β β		β β	β β	β	β
γ	Γ Γ	Γ Γ Α Α	Γ Γ Γ Γ Γ		Γ Γ Γ	Γ	Γ	γ
δ	Δ	δ δ δ	Δ	Δ	Δ	Δ	Δ Δ Δ	δ
ε	Ε Ε Ε Ε Ε Ε Ε Ε	Ε Ε Ε Ε Ε Ε Ε Ε Α Α Α	Ε Ε Ε Ε Ε Ε Ε Ε Ε	Ε Ε	Ε Ε Ε Ε Ε Ε Ε Ε	Ε	Ε Ε Ε	ε
Ϝ		Ϝ Ϝ Ϝ Ϝ Ϝ Ϝ Ϝ Ϝ	Ϝ		Ϝ Ϝ Ϝ Ϝ			Ϝ
ζ	Ζ Ζ	Ζ			Ζ			ζ
η	Η Η	Η Η Η	Η	Θ		Η Η	Η Η Η	η
θ	Θ Θ Θ	Θ Θ Θ Θ	Θ Θ	Θ	Θ Θ	Θ	Θ	θ
ι	Ι Ι	Ι Σ Ι Σ Ι	Ι Σ Σ Σ Ι Σ Σ Ι	Ι	Ι Σ Ι	Ι	Ι	ι
κ	Κ Κ Κ Κ Κ Κ Κ Κ	Κ Κ Κ Κ Κ Κ Κ Κ	Κ Κ Κ Κ Κ Κ Κ	Κ	Κ Κ Κ Κ Κ	Κ Κ	Κ Κ	κ
λ	Λ Λ Λ Λ Λ	Λ Λ Λ Λ	Λ Λ Λ Λ	Λ	Λ Λ Λ	Λ Λ	Λ Λ	λ
μ	Μ Μ Μ Μ Μ	Μ Μ Μ Μ Μ Μ	Μ Μ Μ Μ	Μ	Μ Μ Μ	Μ Μ Μ Μ Μ Μ	Μ Μ	μ
ν	Ν Ν Ν Ν Ν Ν Ν Ν	Ν Ν Ν Ν Ν	Ν Ν Ν Ν	Ν	Ν Ν Ν Ν Ν	Ν Ν Ν Ν Ν	Ν Ν Ν	ν
ξ			Ξ		Ξ Ξ	Ξ	Ξ	ξ
ο	Ο Ο	Ο Ο Ο Ο	Ο Ο Ο Ο	Ο	Ο Ο Ο Ο		Ο	ο
π	Π Π Π Π Π	Π Π Π Π (Π Π Π Π)	Π Π Π Π Π Π Π	Π	Π Π Π Π Π	Π Π Π		π
ρ		Ρ	Ρ Ρ		Ρ Ρ	Ρ Ρ Ρ		ρ
σ	Σ Σ Σ Σ Σ	Σ Σ Σ	Σ Σ Σ		Σ		Σ Σ Σ Σ	σ
τ	Τ Τ	Τ Τ Τ	Τ	Τ	Τ	Τ Τ	Τ	τ
υ	Υ Υ Τ Υ Υ	Υ Υ Υ	Υ Υ Υ Υ		Υ Υ Υ Υ	Υ Υ		υ

Early Greek alphabets.

Figure 4

Figure 4 shows early Greek alphabets arranged in the order of the Hebrew alphabet. Though, according to Herodotus (Rawlinson 1958: 25), the characters originally in use in various parts of Greece differed, there is on the whole little variation except perhaps for some of the vowels and for the letters R and B. There is no indication that the shapes of the characters have any relation to the forms of the hieroglyphs or of the cuneiform signs shown in Figures 2 and 3.

Accordingly, if one judges that the evidential material does not lend strength to one's belief in the academic approach I have described that is, gradual modification of earlier forms of writing to produce the forms of the alphabet, then one is justified in considering whether any different approach to the origin of the alphabet is conceivable. Putting the academic approach on one side for now, in the remainder of the paper I explore whether a quite different view of the origin, the 'true invention' of the alphabet is conceivable, plausible and practicable.

What other approaches might be considered? One which has been suggested quite often in the past, most notably by Sir William Jones, the great Sanskrit scholar, is that, originally, the letters of the alphabet might have represented a picturing of the positions or movements of the mouth and other articulatory organs in producing the distinct sounds represented by the alphabet. As I have already mentioned, this is something which Bishop Wilkins in his 'Real Character' described as an ideal in developing a system of characters. An interesting attempt was made by Charles Davy in the 18th century (about which I will say more later) but apart from this, whilst the desirability of an iconic alphabet has of been suggested, very little of practical value has been achieved.

In modern times there have been several attempts to create an iconic alphabet (as well as separate attempts to create phonetically precise non-iconic alphabets e.g. the alphabet of the International Phonetic Association IPA). The most ambitious attempt in the 19th century was made by Alexander Bell (father of Alexander Graham Bell, the inventor with Edison, of the telephone). Alexander Bell's main concern was to facilitate the education of the deaf.

Figure 5 shows the characters devised by Bell for what he called 'Visible Speech' .

	1	2	3	4	5	6	7	8	9	0	
a	⊖	⊙	⊕	⊗	⊠	⊡	⊢	⊣	⊤	⊥	a
b	⊦	⊧	⊨	⊩	⊪	⊫	⊬	⊭	⊮	⊯	b
c	⊰	⊱	⊲	⊳	⊴	⊵	⊶	⊷	⊸	⊹	c
d	⊺	⊻	⊼	⊽	⊾	⊿	⊿	⊿	⊿	⊿	d
e	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	e
f	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	f
g	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	g
h	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	h
i	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	i
k	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	k
l	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	l
m	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	⊿	m
	1	2	3	4	5	6	7	8	9	0	

⊖. *Nasality*; pictorial of the pendulous soft-palate.

⊙. *Narrowness-definer*, as in [i].

⊕. *Hook*. *Wideness-definer*, as in [f i].

⊗. *Cross-stroke*. *Rounding*, as in [f y].

⊠. *Upright-stroke*. *Stopping*, as in [o k].

There are other elementary signs which are employed only as modifiers.

The *place* where each sound is formed is shown by the *direction* in which the symbol is turned. Thus a = k, o = p, u = t.

The following is the complete alphabet of types.

16 Consonants

o	o	c	c	c	*c	o	*o
x	e	c	c	e	*c	o	*o

Figure 5

The alphabet had many more characters than the traditional Roman alphabet and aimed at a precise representation of the articulatory positions and movements required to produce speech sounds correctly. Henry Sweet, perhaps the pre-eminent phonetician of the 19th century, subsequently revised Bell' s system and created his own system which he called the Organic Alphabet. Though Visible Speech had an astonishing success, Abercrombie comments: "I doubt if we shall ever have a better iconic notation than Bell' s, and alas as a notation it is not very good, even as improved by Sweet.... it seems inescapable that many of the signs in an iconic alphabet look much too much alike" (Abercrombie, 1990: 100)

Sweet' s discussion of Visible Speech and of the problems in creating an articulatory iconic alphabet is illuminating and can be applied retrospectively to understand the problems faced by the original inventor of the alphabet, as the following extracts show. They are from the collection of Sweet' s books and articles over the years edited by Eugenie Henderson(1971) under the title *The Indispensable Foundation* [Note particularly how Sweet in the later extracts moves from the original idea of indicating every separate sound by a

separate character to an approach much more resembling the broad brush approach of the traditional alphabet]:

"Choice of Letters. The object of an alphabet being to represent to the eye the sounds of a language by means of written symbols, it follows that in a rational alphabet -

(1) every simple sound must have a distinct symbol, and (2) there must be a definite relation between each sound and its symbol.

These principles are carried out in Mr. Bell' s ' Visible Speech' . In this alphabet each letter symbolizes the action of the vocal organ by which it is formed, according to certain fixed principles.... The Roman alphabet... evidently falls far short of this standard.... [It] supplies an utterly inadequate number of symbols for the sounds of most languages. (p. 205)

"[to avoid the multiplication of symbols that are difficult to remember] it is necessary to have an alphabet which indicates only those broader distinctions of sound which actually correspond to distinctions of meaning in language, and indicate them by letters which can be easily written and remembered. (p. 230)

The value for scientific purposes of an alphabet in which every letter would be practically a diagram of the actions by which the sound is produced would be incalculable... (p. 239)

"[against the objection that changes in knowledge of the physiology of articulation may make such an alphabet out of date] If we impartially survey the whole field of phonetic knowledge, we shall see that the great majority of the facts are really as firmly established as anything can well be. It is, for instance, absolutely certain that p, b, and m are all formed by the lips, and that k, g, and ng are all formed by the back of the tongue, also that p, b, k, g, are formed by complete stoppage, that m, and ng are nasal, and so on.... The vowels have always offered greater difficulty, but many of the main divisions of palatal, labial, high and low, etc., have been agreed on long ago." (p. 241)

"When we say ' alphabetic' , we mean only alphabetic basis. The maxim ' one single symbol for each sound' is all very well in theory, impossible to carry out in practice. (p. 244)

"Bell' s Visible Speech.... The complete alphabet of 119 single letters (p. 257)

"... a few remarks on the principles of sound-symbolization from a purely graphic point of view. It is evident that the two main requisites are distinctiveness and simplicity, which are to a certain extent opposed to one another, this opposition becoming more and more marked as the number of letters increases." (p. 270)

"The Roman alphabet has reached its present high standard of simplicity and clearness by a gradual process of wearing down and elimination extending over thousands of years, and it is interesting to note that Visible Speech, although an independent and a-priorily constructed system has many letters which are, as regards the elements of which they are composed, identical with Roman ones. (p. 271)

[Henry Sweet was the prototype of Shaw' s Henry Higgins in *Pygmalion* (My Fair Lady). He was not, in fact, a figure of fun. He and Otto Jespersen were the leading figures in the movement which ultimately led to the creation of the International Phonetic Alphabet.]

4. Replicating the invention

Though in practical terms both Bell' s Visible Speech and Sweet' s Organic Alphabet must be accounted as failures (despite the widespread acclaim Visible Speech received, it was never used much for ordinary purposes), the attempt to construct an alphabet which would represent the articulatory movements in producing speech sounds was in many ways instructive. It offers useful guidance in considering the problems to be resolved by the inventor of an articulatory alphabet or by someone trying to replicate the invention. From Sweet' s comments I would particularly pick out as relevant:

- 1) the need for a definite relation between each sound and the character representing it,
- 2) the need to limit the set of characters to speech sounds which correspond to distinctions of meaning (an anticipation by Sweet of the phonemic principle),
- 3) the aim of making each character a ' diagram' of the sound,
- 4) the impossibility of providing a different symbol for each minor difference of speech sound,
- 5) the characters should be easy to distinguish and remember.

These were excellent principles but it is doubtful whether Bell' s alphabet or the version devised by Sweet lived up to them. The number of characters in Visible Speech far exceeds the number of phonemes found in English or other languages. The characters are far too similar to each other. The forms of the characters do not have the clear diagrammatic relation to the mode of articulation of the sounds which Sweet thought necessary. The forms of the characters were very heavily and unfortunately influenced by the limitations of the

typefaces Bell and Sweet had available. Sweet and Bell also perhaps underestimated the difficulties involved in distinguishing and representing certain speech sounds, particularly the vowels.

It is a natural transition from consideration of the defects of Bell and Sweet's alphabets to reflect on the problems faced by the inventor of the Semitic/Phoenician alphabet. We have to attempt to put ourselves mentally in the situation of the original inventor, the circumstances which made the construction of an alphabet desirable and the decisions to be made in representing the articulation of speech sounds by visual patterns.

One can only speculate about the circumstances. What seems certain is that there must have been some strong incentive - some keen perception of the potential usefulness of an alphabet representing articulatory movements. In the case of Alexander Bell, there was the strong motivation of trying to construct an alphabet which would help the deaf to speak more normally by representing the ways in which they should shape their mouths. In the case of the Semitic alphabet, the inventor could have been someone involved in the sea-trade of the Syrian coast, dealing with traders speaking many languages, needing to keep records, to transmit orders to distant ports and so on. Or he could have been someone working with records in many languages and scripts as at Ugarit in the library of the high priest. If the inventor was a merchant, or working for a merchant, then there would be no guarantee that those he traded with would be able to understand cuneiform or hieroglyphic scripts. If the inventor was associated with the library at Ugarit, he would be very much aware of the multiplicity of scripts and languages and the usefulness of some medium which could be used regardless of differences of language or origin. I am inclined to prefer the idea of a clerk (an academic!) at Ugarit familiar with the Ugaritic cuneiform alphabet but who recognised that alphabet was only useful for people already familiar with cuneiform and to whom the necessary writing equipment was available, the clay tablets and implements needed to produce cuneiform characters. It seems much more probable that the medium used by the inventor to develop the new alphabet was not clay but sand, the most readily available and easily worked medium in the Levant. Sand was used for the earliest geometric diagrams and would be much more appropriate than clay for drawing rounded as well as angular characters.

The circumstances of the invention, trade or religious or record-keeping, or some combination of all three, fit well with other pointers to Syria as the origin of the alphabet, somewhere intermediate between Egypt and Mesopotamia, and not wholly committed either to the hieroglyphic or to the cuneiform tradition. The idea which might have sparked off the construction of the alphabet would simply be: Why should I not represent speech by a picture of someone's face as he produces a particular sound? A next stage might have been Why should I not limit the picture to the parts of the face which are used in speaking? And then if observing others speak resulted in diagrams which were not sufficiently distinct for the different sounds: Why not pay attention to my own way of speaking, and try to represent that?

The inventor of the alphabet would have to decide, perhaps over a lengthy period of trial and error, which were the separate speech sounds to be represented, how best to imitate each sound visually. He would have found that there are many different speech sounds, that different people speak differently (dialectal and register differences) and that different languages use different sets of sounds. He would have needed to settle on an order in which the sounds and shapes should be placed. There would have been a particular problem with continuous sounds - or varying sounds - or very similar sounds (vowels). Some way of remembering the order of the characters and the sounds associated with them would have been necessary. The shapes the characters took might have reminded him of some ordinary object, a hand, an ox's head, an eye. Perhaps the key step for the inventor would have been (as in the case of Bell and Sweet) observing himself as he prepared to utter one of the speech sounds, the birth of introspection.

Modern alphabet-builders start off with a much fuller knowledge of the variation of speech sounds and the complexities of articulation. It was perhaps too much knowledge which led to the weaknesses in the alphabets produced by Bell and Sweet, particularly their treatment of the vowels. The consonantal speech sounds are a relatively limited and straightforward collection of articulations. A main problem over the years for phoneticians has been the articulation of vowels. Ladefoged in *Three Areas of Experimental Phonetics* (1967) gives an illuminating account of the difficulties. Accepting that speaking is a series of controlled gestures of the vocal organs (and incidentally recognising that alphabetic writing represents an immense technical advance), Ladefoged observes that Sweet, in modifying and elaborating Bell's system, was able to specify 72 vowel qualities. He comments:

Bell's tabulation of tongue positions is obviously closely allied to many modern methods of classifying vowels. But we should note that this is not a measure of its validity.... we are apt to believe that this system of description is based on known facts. But our modern descriptions of vowels are not the result of experimental observation of articulations, but are largely a direct adaptation of Bell's two dimensional tabulation. .. [Bell] based his theory mainly on subjective impressions.... his knowledge of articulatory positions was in fact not much greater" [than earlier traditional accounts]. (Ladefoged, 1967: 66 ff.)

The modern situation according to Ladefoged is not a great deal more firmly based: "It is probably incorrect to consider that points on vowel diagrams [as originated by Daniel Jones] describe tongue positions for any speaker, even approximately" (Ladefoged, 1967: 70). The experiment which Ladefoged reported used a number of professional phoneticians as subjects. They found it difficult to produce descriptions of vowel sounds in ways which communicated the quality of the vowels to other professional phoneticians.

I have included this excursus on the problems of describing or representing vowels simply to explain why we should not be surprised that the early Semitic alphabets (or the Hebrew square alphabet and the Arabic alphabets devised many centuries later) contained no characters representing vowels. The problem of choosing which vowels to include, if any, and deciding how best they might be diagrammed, would have been even more difficult in the multilingual environment in which the alphabet probably originated.

In commenting above, I suggested that a good way to explore the problems of the inventor of the alphabet would be to attempt to replicate the process, to create an alphabet based on representation of articulatory positions and movements in producing the different speech sounds. This I have done and present the results in the next section of this paper. The stages in the process were much the same as those I suggested above were followed by the original inventor of the Semitic alphabet, a progress from a representation of faces, to

a diagramming of the articulatory organs, relying at first on how others speak and then on observation of one's own articulation.

However before discussing the illustrations of the stages, it may be convenient to give a description of the general approach, what might be called the theory of the articulatory basis of the alphabet. The basic idea is that, not necessarily in a fully systematic way, there is something approaching isomorphism between the shapes of the letters of the alphabet and the sounds of the letters they relate to i.e. that the shapes of the letters of the alphabet reflect a phonetic or phonological principle. The alphabet originally was not the result of a slow process of modification of an earlier pictographic or cuneiform script. Rather it was a genuinely new invention (perhaps made by more than one individual at different times) picturing the processes of articulation of speech sounds. The alphabet was a collection of diagrammatic signs which indicate in an economical and ingenious way the means by which a man can make any particular sound; the signs include those for the teeth, the lips, the tongue, the nose and the roof and back of the mouth and perhaps also the tension in producing stop consonants and the current of air in producing vowels. By observation of other speakers and by the unpopular but vital method of introspection used by all phoneticians, it is possible to form a view on the positions of the speech organs required to produce any particular sound. If a system can be devised by which these positions of the organs are shown, one man will be able to indicate to another, by means of a drawing, the kind of sound he wishes to convey.

It is not to be supposed that the early inventors of the alphabet were expert phoneticians or that they were invariably correct in their analysis of the way in which any particular sound was made; we would expect to find some errors, particularly where the sounds are exceptionally difficult to analyse and the differences in the characters and order of the Greek and Latin alphabets are of significance. The articulatory basis of the alphabet is not simply a matter of speculation about historical or prehistorical events. I would argue that one can perceive in the modern alphabet, and in the facility in reading which it offers, the astonishing speed at which the letter-patterns are translated into words whose meaning is understood, a peculiar appropriateness of the alphabet to the sounds of speech.

As a simple example of the way in which the signs are combined one can consider the letter B. The double-rounded shape of the letter indicates that the sound is made by pressing the two lips together. If B mirrors the sound produced in this way with the two lips, P surely equally clearly mirrors the different sound produced mainly with the top lip. In the modern alphabet the vertical line in B and P may indicate internal rigidity needed in the mouth to produce the sounds. Another simple example of the way in which a letter can be a diagram of the articulation is the letter O. This represents the rounded position of the lips when the sound is made. The two letters representing nasal sounds, M and N, are very similar. They resemble each other because the sounds they represent resemble each other and the ways in which they are produced are similar. The angular formation of the letters appears particularly appropriate for the manner of articulation.

5. The Re-invented Alphabet

Because in an articulatory alphabet the diagrams which constitute the characters are formed by combining representations of the various speech organs, it is possible to provide in tabular form a set of characters made up from a limited number of elements. This may be something the original inventor of the alphabet perceived, though he would probably have arrived at the systematisation by a process of trial and error, as I myself did in trying to replicate the process. The stages in the formation of the articulatory alphabet are shown in Figures 6 7 and 8.

Figures 6 and 7 show two preliminary stages. In these rough drawings I had in mind the order and set of speech sounds represented by our current alphabet. The inventor of the Semitic alphabet may have had in mind the order and set of speech sounds represented by the Ugaritic alphabet or, less probably, the set of sounds represented by the Egyptian pseudo-alphabet.



Figure 6

Figure 6 is a set of crude drawings of faces producing different speech sounds. In some cases these faces might have suggested how articulatory characters might be formed; in others the inventor (or myself as attempting to replicate the process) will have realised that these drawings of someone else speaking ought to be supplemented or replaced by drawings based on perception of one's own way of producing different speech sounds.

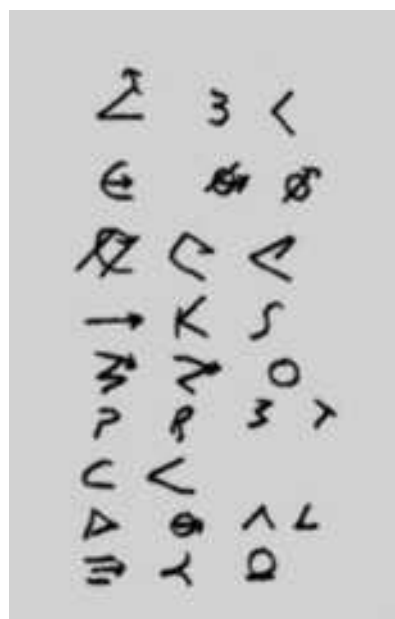


Figure 7

Figure 7 represents a next stage in which drawings of speaking faces would be reduced to drawings of the mouth and other organs of articulation, essentially the isolation of the significant parts, the changing parts, of the previous set of drawings. At this stage the characters become more diagrammatic. The diagrams concentrate on the mouth, the lips, the nose, the teeth, the throat, the tongue.

ARTICULATORY ALPHABET

							KEY Lips rounded Mouth open Jaw opening Throat Upper lip Lower lip Nose Tooth ridge Breath flow Tongue forms:
A	B	C	D	E	F	G	
G	H	H	I	K	L	L	
M	N	O	P	Q	R	S	
T	U	V	X	Y	TH	O	

Figure 8

Figure 8 shows the final stage. This is a systematic arrangement of the complete set of characters with the elements used to form them. Some explanation and comments are in order. In this section I refer to letters and characters and speech sounds which they represent - it would anachronistic in the context of the origin, invention or replication of the alphabet to use terms such as phonemes, labials, front vowels, etc..

The righthand side of the table shows the articulatory elements from which the characters on the lefthand side are formed. The elements include rounded lips, upper and lower lip separately, open mouth, open jaw, throat, nose, tooth ridge, tongue and breath flow. It might have been right to include as one of the primitive elements a vertical straight line, a very common feature of the characters in the Roman alphabet. This would have represented the stiffness or rigidity observed in the production of a number of consonants, for example, B P D.

The elements include four forms for the tongue. The tongue as the most mobile articulatory organ can assume a great variety of forms. In introspection of one's articulation, it is more difficult to be sure about the position and shape of the tongue. The tongue may be straight or curled, pressed up to the palate or retracted, turned to one side. In the table of characters, differing forms of the tongue element go to form the characters for R L and Y. Because of difficulty in deciding on the best way of diagramming the sound represented by L two forms of the character are included in the table. A variety of forms for characters representing the sound L are found in ancient alphabets.

The element for the breath shows the direction of the flow of air. The inclusion of this as a separate element may seem unusual but it is a noticeable component of a number of speech sounds and obviously of defining importance for vowels. In the character table, the element is a component of E and I where it represents a level flow directed forward. In the character for A, the flow is directed up and forward. The flow of air is a feature of articulation which the inventor of an alphabet will have observed for some consonants, as seen in the characters for F TH and X. Two other characters in which the element for breath flow is included are those representing M and N, where the direction of flow is shown as from above downwards.

In the table the characters are arranged in the order of the Roman alphabet with a few characters added to match sounds represented in the Greek alphabet viz: the characters for theta and omega. It will be seen that for the most part the characters resemble the Roman forms but some resemble Greek forms including those for D, F X and TH. The character for Q resembles the archaic Greek character koppa. Characters corresponding to W and J are not included; these are late forms produced by differentiation from U and I.

The characters in the table are in some cases differently aligned, that is with a different aspect, from the corresponding characters in the Roman alphabet. For example, this is the case for A L H M N Q. Semitic and early Greek alphabets had similar variations in the placing of characters, vertical or horizontal or vice versa. As the forms of the alphabet settled down and as any awareness of articulatory origin of the characters was lost, the alignment of the letter was systematised and perhaps in some cases adjusted to increase the distinctiveness of the characters, for example, between Greek lambda and gamma.

For several speech sounds it is difficult even with careful observation, to decide what is the most appropriate diagram to represent the mode of articulation. Two of the more difficult speech sounds in this respect are those represented by R and H. The speech sound represented by R has a varying quality in different languages and in different dialects. In the early Greek alphabets the characters for R and P often are alike and in Etruscan the sound was represented by a character very similar to the modern D. It seems plausible that the form of the Greek pi was adopted to establish distinctiveness from the character for R, a case where understandably the inventor's introspective analysis found the greatest difficulty.

H is another sound where it was, and is, difficult to decide on the most appropriate diagram for the mode of articulation. In the table two forms of character are shown for H. The Etruscan character for H was very like the first form in the table, constructed by combining the element for open mouth with that for rounded lips. The Greek alphabet used the character H for eta (long E) and used the rough breathing ' for the speech sound H; perhaps the rough breathing can be seen as a reduced form of the second diagram for H shown in the table. One of the difficulties with H is in distinguishing its articulation from those for G and K. In the table two forms of the character for the sound represented by G are included.

A few comments on the extent to which the characters in the table generally resemble characters in other familiar alphabets. I have already mentioned that many of the characters are similar to the Roman characters, apart from their direction of alignment, and that a few resemble classical Greek characters not found in the Roman alphabet. Most of the characters are similar to Etruscan forms; I have mentioned the character for H as a particular case but those for M and N are also very similar. Early Greek forms of the characters bring out the degree of variation in the alignment of characters, for example the characters gamma and kappa can be seen placed at many different angles; in Athens the alpha was placed on its side. In different locations there was a variety of forms for rho, some resembling the Roman R, others like the Roman D or P. Comparison can also be made with other alphabets such as the glagolitic and the runic alphabet. Little close similarity can be observed - they appear to be independent inventions. The only broad resemblance of the glagolitic alphabet that strikes me is, at some distance, to Alexander Bell's Visible Speech!

6. Parallel material

As I have mentioned earlier, the suggestion in this paper that the alphabet originated as a representation of articulation is not new, nor is it novel to propose that our present alphabet still manifests its iconic basis. I include here relevant extracts from several sources on the articulatory basis of the alphabet by various writers besides those referred to earlier. One of the most eminent and industrious in promoting the idea was Sir Richard Paget, a scientist well-known to those concerned with the origins of language as a supporter of a gestural theory, specifically the idea that mouth movements mimic the objects or actions to which words refer:

"I have recently found definite evidence that in Sumerian, and still more in Greco-Roman writing, the symbolism depended largely on the principle of unconscious imitation of mouth gestures. Thus in the case of the Greek alphabet: B represents an outline of the two lips facing to the right, E is a front view of a mouth showing the tongue between the teeth; Δ is a view of the tongue raised to the palate, as in articulating the consonant D; A is a similar gesture but made more lightly. Mr. H.B. Walters of the British Museum, whom I have consulted on the matter, agrees that nearly all the letters of the Greek alphabet show influence of mouth gestures. I may add that more than twenty of the letters of our own alphabet still show the same influence." (Paget, 1929: 224)

There is an interesting discussion in Roy Harris' recent book on the origin of writing. Though he leaves the question open, and indeed makes some dismissive remarks about the unlikelihood that there could have been primitive phoneticians able to anticipate the work of the IPA, his final view seems to be that it is the absence of any coherent account of the nature of the iconicity that makes it difficult to believe in an articulatory origin for the alphabet:

Articulatory iconicity seems much the more promising candidate, [than auditory mimesis] and has attracted a considerable amount of attention.... Charles Davy [*Conjectural Observations on the Origin and Progress of Alphabet Writing 1772*]... makes out a case which cannot be dismissed.... What emerges fairly clearly from a survey of claims about the (possible) iconicity of the alphabet is that they are all based, in one way or another, on reducing pronunciation to what can be seen or felt concerning the positions or movements of the articulatory organs ... No one doubts that, within the inherent limitations imposed by alphabetic notation, it is possible to devise a system which will 'make speech visible' in the sense claimed by Bell's title. It will give, in other words, a visible iconic analysis of articulatory postures involved in speaking. That is not the question however. The question is whether alphabetic writing in its original or any of its traditional forms was in fact designed to function as a system of 'visible speech' ... The doctrine that writing represents speech fudges the issue of exactly what represents what. Is it the form of the letter P which represents the outline of the closed lips... if it is not the shape of the closed lips what else could it be?... [Harris suggests other possibilities] The list of queries is not intended as an indirect reduction *ad absurdum*. On the contrary, it is perfectly possible to propose quite specific answers; the point is that such answers, or alternatives, must be proposed if the claim that writing represents speech is to be taken seriously." (Harris, 1986: 93 ff., 102)

Harris includes two illustrations drawn from Davy's account of the articulatory formation of the alphabetic characters (Harris, 1986: 95-96). Davy's account of the formation of A and E is very similar to mine.

Another line of comment relates to occasions on which children have been asked to produce their own alphabets. If a child can produce a set of alphabetic characters *de novo*, then the Semite of 3500 years ago could well have done the same. There is no reason to think that our ancestors were less resourceful or less creative in dealing with their current problems than modern phoneticians and linguists. Gelb (1952: 144) has referred to these experiments. He illustrates them with an excerpt from a writing invented by a school child for the purposes of secret communication showing resemblances to characters in many different forms of writing. Gelb also describes (1952: 146) an experiment reported by a Dutch scholar, Johannes de Groot: a nine-year-old girl was asked to compose an original alphabet and created twenty-six signs of which seven corresponded exactly to those of the Phoenician alphabet. Driver similarly referred to experiments with children which had shown what remarkable coincidences resulted from their efforts to create artificial

alphabets. (Driver, 1954: 150)

7. Concluding remarks

A few scattered remarks to conclude. If in fact, as I believe, the alphabet had from its beginning and still has an iconic articulatory basis, then this may be an important matter to explore in debate about the thorny subject of teaching children to read. There is a truly enormous volume of research into the best methods of teaching reading - a good number of years ago there were 744 column inches under the heading ' Reading' in the 1960 *Encyclopedia of Educational Research*, probably multiplied several times since then, and an estimate (by Pearson 1984) was that approximately 1000 pieces of published reading research were being added each year. The volume of research is matched by the intensity of the debate, or dispute, about the best teaching methods, the alphabetic, phonic, word, sentence, spelling, syllabic, ' look and say' , global, phrase, story, real books.

Children learning to read in England and the United States have traditionally suffered a good deal of grief. Winston Churchill recorded that his nurse produced a book called *Reading without Tears*: "It certainly did not justify its title in my case" (Diack, 1965:30). In France also there have been sharp disputes about the best methods. One report was that French supporters of the ' look and say' and phonics methods came to blows. The use of the alphabet as the first stage in learning to read in schools fell into disuse early in the century but in the English-speaking countries and in France it seems that the problem is not the alphabet but the vagaries of the spelling. In countries with rationalised orthography the problems are less, for example, reading has not been a great problem in Finnish schools.

If the alphabet in fact can be seen as a set of diagrams of how speech sounds should be formed, then it becomes a much more useful and interesting instrument for teaching reading. The case for believing that the alphabet is something considerably more than a set of arbitrary symbols is strengthened by the remarkable evidence that some handicapped or retarded children learn to read before they learn to speak. This apparently is so in the case of some autistic children (National Autistic Society, 1981: 5) and even more surprisingly a side effect is that in some instances learning to read helps these children to begin to speak. In her account of her autistic daughter, Elly, Clara Park says:

"I cannot explain the strange reversal of the natural order of events in which a child learns speech through the written word. ... The configuration of letters itself seems to crystallise the word for them, makes them able to hear its pronunciation, and renders its spelling an inseparable part of its identity.... The look of a word could be used to help correct the indistinctness of her pronunciation." (Park, 1972: 213 ff.)

Trevarthen records:

"Remarkably the same progress [as for speech] also appears when deaf, hearing-impaired or hearing children are given early instruction in reading, an apparently more artificial form of communication, that, nevertheless, can start as a natural language at the middle of the second year.... That is, as soon as a child can be expected to speak, or sign, single words, that same child, or one who is partially or profoundly deaf, can learn to read single words." (Trevarthen, 1990: 350)

In 1886 my grandmother received as the Queen's Prize from the Lords of the Committee of Council of Education a book on teaching methods (Blakiston 1883). It recommended that, in teaching children to read by the alphabetic method, the teacher should "induce them to imitate the movements of their instructor's lips and tongue, so as to repeat each sound correctly after her". If the alphabet is a representation of articulation, then this seems very sensible advice.

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