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ON WRITING SYLLABLES: THREE EPISODES OF SCRIPT TRANSFER

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Ten years after the initial presentation on the syllabic origin of writing, we may return to the writing of syllables, with examples from the Semitic-derived scripts of Asia. Of special interest are the development from the Aramaic abjad (consonantary) to the Indic abugida ('syllabary' with vowel inherent in the basic symbol), the migration of consonant symbols from a syllable to an adjacent *akṣara* in Indic and the refinement of this practice in Tibetan, and the Korean decomposition and recognition of the syllable in light of Chinese grammatical theory.

1. The syllabic origin of writing

In returning to syllables ten years after the syllabic origin of writing was announced at the Milwaukee Symposium on Linguistics and Literacy (Daniels 1992b),* I would like to take up three episodes of 'script transfer' that involve writing syllables.[1] I investigate the diversification of script types across Asia — Asia, where all the types (perhaps excepting the alphabet) had their origin. First is the transfer of Semitic writing to India. Second is the transfer of Indic writing to Tibet. And third is the invention of a distinctive type of writing in Korea, which perhaps involved Tibetan influence. When these episodes of transfer are compared with other examples of the spread of scripts across the continent, a new factor comes into view.

In order to clarify this new factor, I need to revisit the twin insights that led to my understanding of the syllabic origin of writing.

1.1 A typology of writing

The initial insight resulted from uneasiness with my teacher I. J. Gelb's 'principle of unidirectional development' (1952, etc.): the claim that script types succeed one another in a specific order of development, that no stage can be skipped, and that the sequence cannot be reversed. That is, logograms can only give rise to syllabograms, and syllabograms can only give rise to alphabets. My objections to that scenario were published in the *Journal of the American Oriental Society* in 1990. It is simply counterintuitive for the theory to require calling the Northwest Semitic scripts syllabaries, and it is counterintuitive to insist that Ethiopic writing is an alphabet (see also Daniels 2000).

The first insight, then, was to recognize that the traditional tripartite classification of scripts, going back at least to Isaac Taylor (1883), is not an adequate typology. The Northwest Semitic scripts are not syllabaries — but neither are they

alphabets (the only alternative in the tripartite view). The name I use for the consonant-only type is the Arabic term 'abjad'. Similarly, not all scripts that encode syllables are simply syllabaries. There are two entirely different kinds of scripts that do so: syllabaries proper (like Mesopotamian cuneiform, the Greek syllabaries [Linear B and Cypriote], and Japanese kana); and what I call 'abugidas' from an Ethiopic term: Abugidas encode syllables, but the graphic shapes of the characters explicitly indicate both the consonant and the vowel that constitute the syllable concerned. The basic shape for each set of syllables beginning with the same consonant reflects the original abjadic letter, and vowels are denoted by additions to the consonantal base; except that the basic shape itself denotes the syllable consisting of the consonant plus the unmarked vowel, usually /a/ (1).

(1) Ethiopic

	ä	u	i	a	e	Ø/ë	o
h	ሀ	ሁ	ሂ	ሃ	ሄ	ህ	ሆ
l	ለ	ሉ	ሊ	ላ	ሌ	ል	ሎ

The type is most familiar from the scripts of India, which derive from the ancestral Brahmi of the time of Aśoka (mid third century B.C.E.). (To state it using Gelb's approach, alphabets derive from abjads, and so do abugidas [2]. Since an abjad arose only once, we can't really state a rule as to where it must have come from.)

(2) logosyllabary → syllabary → abjad → alphabet → featural/Hangul
abjad → abugida → featural/Hangul

1.2 Unsophisticated and sophisticated grammatogeny

The second insight contributing to my Milwaukee presentation developed from the recognition of the two kinds of syllable-encoding scripts. Looking at all the examples of script invention in modern times, we find that both syllabaries and abugidas have been created. Thus Sequoyah's Cherokee script (3) is a syllabary, but Evans's Cree script (4) is an abugida.

(3) Cherokee

Ꭱ	Ꭰ	Ꮃ	Ꮵ	Ꮐ	Ꮽ	Ꮺ	Ꮅ	Ꮑ	Ꮍ	Ꭹ …
e	a	la	tsi	nah	wu	we	li	ne	mo	gi …

(4) Cree

	ē	i	ī	o	ō	a	ā
	ᐁ	ᐃ	ᐄ	ᐅ	ᐆ	ᐊ	ᐋ
p	ᐯ	ᐱ	ᐲ	ᐳ	ᐴ	ᐸ	ᐹ
t	ᑌ	ᑎ	ᑏ	ᑐ	ᑑ	ᑕ	ᑖ
k	ᑫ	ᑭ	ᑮ	ᑯ	ᑰ	ᑲ	ᑳ

From a dozen or so cases, we find that whenever someone invents a script who is not familiar with writing — beyond knowing that it exists — the result is a syllabary. (I call this 'unsophisticated' script creation or grammatogeny.) But when someone invents a script who does know how to read, the result is an abugida. (I call this 'sophisticated' grammatogeny.) Note the primacy of the syllable — it is not segmental scripts that arise from nothing, but syllabic ones.

1.3 Catastrophic script transfer

Let these two observations remain in the back of the reader's mind: the multiplicity of types, and the unsophisticated/syllabary, sophisticated/abugida contrast. The kind of script transfer that interests me at this point might be termed 'catastrophic' (in the somewhat passé mathematical sense) — usually when a previously unlettered people takes up writing from somewhere else, or when a major change happens in the course of script transmission. A specimen of the former is the beginning of Greek alphabetic literacy: The Phoenician script writes only consonants; the Greek script uses six of the Phoenician letters — which denoted consonants absent from the Greek language — for vowels. This seems to have happened by accident: The first Greek scribe didn't understand the Phoenician language, or how to write it, particularly well, misheard the names of those letters, and misinterpreted them as letters for what he (or she) heard as vowels beginning those names.

1.4 Gentle script transfer

Before turning to my first example of script transfer, I will mention some examples of less catastrophic script transmission. The spread of the roman alphabet across Europe with Western Christianity proceeded with little change to the script itself: rarely were letters added, but letters are frequently provided with diacritics. (The contrast with the situation in the Eastern churches, where languages received new scripts, is instructive but a matter for another occasion.)

Remaining within Asia, we can observe the progression of Aramaic scripts through successive stages of Iranian languages: Parthian, Middle Persian, Pahlavi (the script of the Middle Persian Psalter and Book Pahlavi are shown in [5]),[2] Sogdian, and several Christian usages. For centuries, the script remained abjadic, even though in Semitic scripts the importation of Greek and Iranian loanwords seems to have provided some impetus toward ever fuller notation of vowels and eventually toward the addition of optional vowel markings in Syriac, Arabic, and Hebrew sacred texts. Moreover, in Iranian scripts, lettershapes tended to merge so that the inventory of symbols grows ever smaller and texts harder to read.

(5) ʾ b g d h w z ḥ y k l m n s ʿ p ṣ q r š t

MidPers

Pahlavi

Nonetheless Aramaic script continued its journey eastward into the so-called Altaic languages — successively (originating from the Sogdian) Uyghur, Mongolian, and Manchu. Fortunately the phonemic inventories of the Turkic, Mongolic, and Tungusic languages are more limited than those of Iranian, and total crisis did not ensue; the original West Semitic inventory of letters can still be discerned (cf. Daniels 2001: 60–61, tables 3.13–3.14).

Two developments from Aramaic that do not follow this pattern remain to be accounted for, however: Avestan and Arabic. More on these anon.

2. Transfer to India

I now turn to my first case of script transfer, that of the origin of the Brahmi script of India that is ancestral to all the Indian scripts. Keeping in mind my distinction between 'sophisticated' and 'unsophisticated' grammatogeny, I would like, I think, to make a pun on the English word 'sophisticated'.

For what was the most sophisticated grammatogeny of all? Who had the most grammatical sophistication when a script was needed? Clearly, it was Indic society. Pāṇini and his initial commentators date several centuries before the bringing of writing to India. Brahmi is now dated no earlier than the earliest attestations in the reign of Aśoka, around 250 (all dates in this paragraph B.C.E.) (Falk 1993, cf. Salomon 1995). S. M. Katre (1987:xix) places him 'c. 6th century'; Paul Kiparsky (1994:2918) 'c. 350'; George Cardona (p.c.) cautiously says that IF writing existed in Pāṇini's time, it plays no role in his work. Writing seems to have first come to India in the far northwest a bit earlier, where users of Aramaic came into contact with South Asian civilization, and the Kharoṣṭhi script was built on the model of an Aramaic abjad. But even the earliest Indic inscriptions — the language is called Prakrit in general — are not written with consonants only. (The claim by some Indicists that vowel notation was adapted from Semitic vowel pointing some thousand or so years before the latter was invented has been sufficiently ridiculed that it need not be belabored.) Vowels are marked by strokes added to the consonantal shapes (6–9). Each of these basic consonant symbols plus the additions is called an *akṣara* — which is also the word for 'syllable' in Sanskrit grammar.

			a	ā	i	ī	u	ū	e	ai	o	au
(6)	Brahmi	k	𑀓	𑀓𑀸	𑀓𑀺	𑀓𑀻	𑀓𑀼	𑀓𑀽	𑀓𑁂	𑀓𑁃	𑀓𑁄	𑀓𑁅
		g	𑀕	𑀕𑀸	𑀕𑀺	𑀕𑀻	𑀕𑀼	𑀕𑀽	𑀕𑁂	𑀕𑁃	𑀕𑁄	𑀕𑁅
(7)	Devanagari	k	क	का	कि	की	कु	कू	के	कै	को	कौ
		g	ग	गा	गि	गी	गु	गू	गे	गै	गो	गौ
(8)	Oriya	k	କ	କା	କି	କୀ	କୁ	କୂ	କେ	କୈ	କୋ	କୌ
		g	ଗ	ଗା	ଗି	ଗୀ	ଗୁ	ଗୂ	ଗେ	ଗୈ	ଗୋ	ଗୌ
(9)	Javanese	k	ꦏ		ꦏꦶ		ꦏꦸ		ꦏꦺ		ꦏꦺꦴ	
		g	ꦒ		ꦒꦶ		ꦒꦸ		ꦒꦺ		ꦒꦺꦴ	

Colin Masica (1991:136) mentions that in the earliest surviving inscriptions, vowel notation is not yet fully consistent; but when James Prinsep set about deciphering the Brahmi script of the great Aśokan pillars, he was able to dress a virtually complete table of the characters, consonants versus vowels (1834, see Daniels, *WWS* 150, fig. 12). Some indication of the linguistic 'sophistication' of the script is the provision of separate indicators for short and long vowels — which is not often found in the world's scripts and indeed is not found in Kharoṣṭhi. Note also the rational order of the Brahmi-derived scripts, giving stops and nasals proceeding from the back to the front of the mouth, and so on, contrasted with the *arapacana* order associated with Kharoṣṭhi (10; Salomon 1990).

(10) a r p c n l d b ḍ ṣ v t y ṣṭ k s m g th
j śv dh śkh kṣ st jñ rth h bh ch sm hv ts gh
ṭh ṇ ph sk ys śc ṭ ḍh

The most interesting feature of the Indic group of scripts, though, is the treatment of vowelless consonants. In other syllabic notations, such as the Greek syllabaries, consonant clusters are handled either by omitting a member, or by writing a syllabic character repeating the preceding or following vowel: there is no possibility of notating adjacent consonants.

At first, Indic script did not need to deal with this problem, as clusters were 'untypical of' Prakrit, involving mainly geminates or homorganic nasals, and all words ended with a vowel (Masica 1991:148). But after some centuries, it became licit to write Sanskrit as well, and here consonant clusters did arise. In Indic, two devices are used for marking consonants as vowelless. A word-final consonant has its inherent /a/ 'killed' by a *virāma* (and becomes *halanta*). It might be interesting to explore the connection between this graphic device, which came into use in the 4th–8th c. (Dani 1963/1986:121), and the numeral zero, which may be of a similar age.

More interesting is the second method of indicating consonantal vowellessness: Any sequence of consonants within a word is written by adding a reduced version of the later consonant or consonants to the shape of the first consonant (11).

(11) Brahmi

Devanagari

क ka + र ra = क्र kra क ka + ल la = क्ल kla

ह ha + न na = ह्न hna

Oriya

Javanese

Such a combination still constitutes a single akṣara, and the practice is found already in the late 3rd c. B.C.E. (Dani, pls. IVb, Vb). As various authors have stressed (Bright, *WWS* 388, McCawley 1997:9), these graphic combinations need not correspond to phonological syllables (Katre mentions in the note to Pāṇini 1.1.7 that there can be clusters of up to five consonants: *kārtsnya-* 'totality'). Thus the phonological syllable, which we saw is somehow basic in unsophisticated linguistic consciousness, gives way to a graphic syllable. There are no graphic closed 'syllables' — as there are, uniquely or nearly so, in Mesopotamian cuneiform; in Indic, anything can be written with a combination of individual consonant signs.

3. Transfer to Tibet

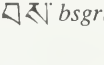
A second script transfer in this sequence ensued. The earliest Tibetan inscriptions date from the 8th or 9th century, and Tibetan writing is based in the Brahmi family. It preserves the abugidic nature of its forebears, using appendages for the vowels

e, *i*, *o*, and *u* but not for *a* (12).

(12) Tibetan ka ki ku ke ko

However, in crossing from India, with its Indo-Aryan and Dravidian languages, to Tibet, with its Sino-Tibetan language, we encounter a very different morphological type: instead of inflection, we find isolation; we find monosyllabic morphemes that end with consonants, where it would be disadvantageous for syllable-, that is morpheme-, final consonant letters to be combined with letters beginning succeeding syllables. Tibetan has overcome this problem by using full-size consonant letters following the vowel — and innovating an obligatory syllable-end mark, the dot at the right shoulder of the last letter of the syllable. There can even be a syllable-final cluster, ending with *s* (after voiced stops and nasals *g*, *ng*, *b*, *m*) or *d* (after continuants *n*, *r*, or *l*).

Syllable-initial clusters can include up to four letters: one is taken as the radical, which can have others before, above, and below it. Thus a Tibetan syllable can have as many as six letters plus a vowel mark, as in (13),

(13)  *bsgrubs* 'established'

where *ga* is the radical, accompanied by *b*(*a*) as both prescript and postscript, *s*(*a*) as both superscript and post-postscript, *r*(*a*) in its combining form — as subscript, and the vowel marker — for *u*. (An *a*-final syllable with an initial consonant cluster CC*a* ends with a dummy symbol to preclude the reading C*a*C.) Today's Colloquial Tibetan has changed so greatly — reducing clusters, innovating tone and rounded vowels — while orthography has remained fixed (R. A. Miller 1956) that the word in (13) is pronounced [ɖúb]. But the syllable-final dot is still used.

Tibetan writing may be taken as one example among many of the untruth of the assertion by P. G. Patel (and, following him, D. Gary Miller 1994:55) that Brahmi 'represents the Sanskrit sound system so well that it must have had a long developmental history' (1993:203); Patel attributes this assertion to A. L. Basham, but all Basham says is that 'its development must have been at least in part deliberate', and 'it was the most scientific script of the world' (1967:396 [not 394]). Basham actually takes no position at all regarding the date of invention of Brahmi. What comparison of early and late stages of the orthography of Tibetan, or for that matter of English, shows, is that a script that represents its language well is at the very beginning, not a late stage, of its development: language continually changes, while writing tends to remain the same.

4. Transfer to Korea

So far we have considered two ways of writing that turn on the representation of syllables. Additionally, earlier than Brahmi or Tibetan, in limited parts of the Greek world, two syllabic orthographies had been in use. Despite clever analyses

by generations of philologists and linguists, the very fact that they did not accompany Greek colonists to other parts of the Mediterranean indicates that they were more cumbersome than useful: their inadequacies must have outweighed their value. So Linear B went out of use, and the Cypriote syllabary yielded — eventually even in Cyprus — to the alphabet that had been taken from the Phoenicians.

Indic orthography employs graphic syllables that can contradict phonological syllables by combining all consonants in a cluster — tautosyllabic or heterosyllabic — into a single visual unit. Tibetan orthography uses both full and reduced forms of letters to notate all the segments, but strictly within a syllable, innovating a notation for syllable boundary.

We now reach a point where the script sequence briefly mentioned earlier, the progression of Aramaic letters across Asia to Mongolia and beyond, impinges on the more southerly sequence culminating in Tibetan. Kubla Khan, ruler of much of Inner Asia in the second half of the thirteenth century — perhaps literate in Mongolian, perhaps not, but presumably aware of the inadequacy of its much-borrowed script for representing the language — ordered up the creation of a script to record all the languages of the empire (including Tibetan, Uyghur, Chinese, and Mongolian, though in practice it seems to have been used primarily for Mongolian). The result was an abugida, known as the hPags pa script, where the lettershapes clearly come from Tibetan (14), but the indicators for vowels other than *a* are separate (smaller) letters and all follow their consonants (the letters run in columns, so all vowel letters are below their consonants, rather than in different positions relative to the consonants as in Indic generally and Tibetan particularly). There is no indication of syllable demarcation, but Mongolian seems fairly cluster-free.

(14)

	k	kh	g	ng	c	ch	j	t	th	d	n
Tibetan	ཀ	ཁ	ག	ང	ཅ	ཆ	ཇ	ཏ	ཐ	ད	ན
hPags pa	ꡀ	ꡁ	ꡂ	ꡃ	ꡄ	ꡅ	ꡆ	ꡇ	ꡈ	ꡉ	ꡊ
Korean?			ㄱ			ㅈ				ㄷ	ㄴ
(after Hope 1957)			k			č				t	n

	p	b	m	l	s	h	Ø	i	u	e	o
Ti	པ	ཕ	མ	ལ	ས	ཧ	ཨ	◌ི	◌ུ	◌ེ	◌ོ
hP	ꡐ	ꡑ	ꡒ	ꡓ	ꡔ	ꡕ	ꡖ	ꡗ	ꡘ	ꡙ	ꡚ
Ko		ㅂ	ㅁ	ㄹ	ㅅ	ㅎ	ㅇ				
	p		m	l	s	h	Ø				

This brings me, somewhat indirectly, to my last example of script transfer, what gathered us at this symposium: the Korean alphabet or Hangul. As is well known, Hangul comprises a full alphabet, and it is more than that: Geoffrey Sampson calls it a 'featural' script, because of the correspondence between lettershape and some distinctive features of the segments represented; moreover, the lettershapes themselves are said to be iconic, with the consonants representing positions of the articulators and vowels relating to 'heaven', 'earth', and 'man'. James D.

McCawley calls attention to the syllabic organization of Korean, suggesting that this keeps it from fitting into ANY of the 'types' that are appropriate for the rest of the world's scripts. (Sampson's 'featural' type is needed anyhow for sophisticated grammatogenies like Pitman or Gregg shorthand and Bell's Visible Speech.) To me it is important that all the elements of a syllable — initial consonant(s), vowels, final consonant(s) — are included within one Chinese character–like syllable block. The arrangement into blocks takes the place of a Tibetan-style syllable-dividing marker. It is interesting to note that over the centuries Korean spelling has grown more morphophonemic (15; King, *WWS* 223).

(15)	15th c.	16th c.	18th/19th c.
	님그미	님금미	님금이
nimkum-i 'lord-NOM'	⟨nim.ku.mi⟩	⟨nim.kum.mi⟩	⟨nim.kum.i⟩
	자바	잡바	잡아
cap-a 'catch-INF'	⟨ca.pa⟩	⟨cap.pa⟩	⟨cap.a⟩

Traditionally, Hangul is seen as a completely indigenous invention, with its visual aspect based on the prevailing Chinese esthetic. (Though this view seems to overlook the fact that the earliest shapes of the letters were not brush-based but geometric, designed to be cut in woodblocks.) When we take into account that the invention of Hangul is connected with the introduction of Buddhism to Korea, we must recognize that writing systems other than the Chinese probably came in along with it. As long ago as 1912, J. S. Gale compared various scripts — including Devanagari and Chinese phonetic notation — with Korean, but the one that has found most favor as the possible stimulus and model for Korean letters is hPags pa. The suggestion was set out by E. R. Hope in 1957 (see [14] above), with acknowledgments to several predecessors. Gari Ledyard (1966:336–49), in the most detailed study of the origin of Hangul, accepts Hope's suggestion and improves it considerably by comparing the original forms of the Korean letters rather than the modern brush-written forms.[3] Hope also compared some Tibetan letters where he considered the hPags pa too different from the Korean, but Ledyard discards these.

Perhaps, though, hPags pa is not the only possible candidate as inspiration and even model for the alphabetization of Korean. Lloyd Anderson (1992; p.c.) has suggested that the sidewise versus bottomward positioning of the two classes of Korean vowels might relate to the various positionings of the vowel marks in Indic scripts. In hPags pa, though, the vowels can only follow their consonants; in Tibetan they can only be above or below; but in earlier Indic scripts, vowel marks can go left, right, above, or below the consonant sign their vowels follow. Nowhere in Indic are the options simply right or below, nor is the spatial arrangement correlated with phonetic quality as in Korean, where nonrounded vowels go to the right and rounded vowels below.

Chinese characters have remained in use in Korea as Hangul gradually overcame various obstacles to its success and came into common use, and North Korean orthography shows that characters can be dispensed with and Korean can be effectively written with Hangul alone. I should mention two other scripts with or-

igins in Chinese writing: Japanese kana, and the Women's Script of southern Hunan. Both hiragana and katakana of Japan are syllabaries simplified from Chinese characters. Characters — kanji — have of course not been abandoned in Japan, and Japanese scholars insist that they cannot be.

The only somewhat detailed description of Women's Script in a Western language is by an anthropologist, William W. Chiang (1995 [pub. 1997]), and is frustratingly vague about the details. Graphic variants of some 719 standard Chinese characters (with 1,535 shapes overall) are used for their phonetic values only, representing 492 different syllables, or else not (Daniels forthcoming).

5. Transfers from Aramaic

At this odd-seeming juncture, I will return briefly to the two derivatives of Aramaic script I mentioned earlier: Avestan and Arabic. The Avestan alphabet was devised, apparently around the 5th century C.E., to record the Avestan scriptures which by then were already a thousand and more years old and had been preserved strictly by oral tradition. Many more sounds needed to be accounted for than could be written with the then-current Iranian scripts, Pahlavi and the Middle Persian Psalter script, and the Avestan alphabet includes consonants from both, as well as no less than 16 vowel letters, the inspiration for which seems to have been knowledge of Greek writing (16).

(16) Avestan Alphabet (after Skjærvø, *WWS* 527)

𐬀	a	𐬁	ā	𐬂	å	𐬃	ǟ	𐬄	ą	𐬅	ą̄
𐬆	i	𐬇	ī	𐬈	e	𐬉	ē	𐬊	ə	𐬋	ə̄
𐬌	u	𐬍	ū	𐬎	o	𐬏	ō				
𐬐	b	𐬑	β	𐬒	p	𐬓	f			𐬔, 𐬕	m, m̨
𐬖	d	𐬗	δ	𐬘	t	𐬙	θ	𐬚, 𐬛	ṭ	𐬜	n
𐬝, 𐬞	g, ġ	𐬟	γ	𐬠	k	𐬡	x	𐬢	h	𐬣	ŋ
𐬤	j			𐬥	c					𐬦, 𐬧	ń
𐬨	Y	𐬩	y			𐬪	x́			𐬫	ŋ́
𐬬	V					𐬭	x^{v}			𐬮	ŋ^{v}
𐬯	r									𐬰	ṇ
𐬱	s	𐬲, 𐬳	z	𐬴	š	𐬵	ž	𐬶	š́	𐬷	ṣ̌

The Arabic language preserves a larger complement of consonants from Proto-Semitic than the Aramaic language does. The scripts of the earliest Arabic inscriptions — in languages that go by names like Safaitic, Thamudic, and so on — include letters for all the consonants. But early in the Common Era, an Arab tribe called the Nabateans left a good-sized corpus of inscriptions and some papyri written in Nabatean Aramaic. There is a tiny handful of pre-Islamic attempts at writing Arabic with the Nabatean script, which can be seen to have developed into a distinctively Arabic form by the 6th century. Unfortunately this script was nearly as degenerate as the Pahlavi! With the dissemination of the Qurʾān in the 7th centu-

ry, but perhaps not exclusively because the Qurʾān needed to be written, letters whose shapes had merged in Arabic script came to be differentiated by patterns of dots (17). (These dots are found already in the earliest surviving secular papyri, from the Cairo Geniza, which as far as we know predate the first written Qurʾāns.)

(17) Arabic	b	t	n	r	z	ḥ	ǧ	s	š	f	q
	ب	ت	ن	ر	ز	ح	ج	س	ش	ف	ق

More interestingly, dots are used to differentiate the surplus of consonants preserved in Arabic over those used in Aramaic — and the modified letters are based on exactly those that had merged, centuries earlier, in the history of Aramaic (18).

(18)	*t	*t̲	*ḥ	*ḫ	*d	*d̲	*ṣ	*ṣ́	*ṭ	*ṯ	*ʿ	*ǵ
Aramaic	t		ḥ		d		ṣ		ṭ		ʿ	
Arabic	t	t̲	ḥ	ḫ	d	d̲	ṣ	ḍ	ṭ	ẓ	ʿ	ǵ
	ت	ث	ح	خ	د	ذ	ص	ض	ط	ظ	ع	غ

I think this needs to be explained. If it were simply a question of phonetic similarity, a /t̲/ letter could have been based on the /f/ letter, or /d̲/ on /z/; or the equivalences could have been arbitrary, or even new lettershapes could have been devised. (This was not unthinkable; in both Ethiopic script and one form of Syriac Aramaic, a letter was added for Greek-origin words with a distinct /p/ phoneme.) Rather, it seems as though some sort of grammatical knowledge was involved: perhaps someone very much at home in both Nabatean and Arabic, a proto-lexicographer, noticed a series of cognates between the two languages, where one Nabatean sound corresponded to both itself and a different sound in Arabic, and chose to add a mark to those letters in Arabic that consistently were pronounced differently from the Nabatean correspondent.

6. Grammatical traditions

And this brings me, at long last, to the point of my survey of script transfers and transmissions across Asia. Forever after the original transfer of Phoenician to Greek, it is grammatical awareness that resulted in improvements to scripts and even changes in script type.

There is no known grammatical tradition in the Iranian world or in the Mongolian world.[4] Accordingly, Aramaic script moved across the continent, being taken over almost thoughtlessly for language after language. Even the Mongolian adaptation from Tibetan to hPags pa gave up indication of the demarcation of syllables, whereas Avestan with its addition of vowels can be accounted for by its encounter with Greek alphabetic writing. (Similarly, Syriac, and following it Arabic and Hebrew, devised notations for vowels after familiarization with Greek Scriptures. The grammatical traditions of these languages — Syriac, Arabic, and Hebrew — are later.)

Contrast the other transfers I described: The Indic scripts developed the abugida type from the Aramaic abjad in the awareness of Pāṇinian grammatical

doctrine. And its rigor is visible even in comparison with the abugida of Ethiopia. The vocalization of Ethiopic script took place concurrently with the conversion of the Aksumite kingdom to Christianity. The missionaries are usually said to have been Syrian or Coptic or even Greek. But Syrian scribes could not have brought vowel notation, since it did not yet exist in Syriac script. Coptic or Greek scribes would have added vowel letters as in their own alphabets. The only reasonable explanation is that the missionaries who Christianized Ethiopia in the mid 4th century came with the well-attested traders who sailed between India and Ethiopia, from the well-known Martomite Christian community of the west coast of India, founded in legend by the Apostle Thomas himself (Daniels 1992a). They brought not the shapes of the vowel marks, but the idea of how to indicate vowels. Compare the vocalization of Brahmi in (6) with the vocalization of Ethiopic in (1), especially ⟨g⟩ in the former with similarly shaped ⟨l⟩ in the latter. Brahmi letters retain their shape beneath the vowel appendages; Ethiopic letters bend, and this is not a matter of cursivizing development, for we have inscriptions dated to nearly successive years, unvocalized and vocalized, showing that from the start, the consonants had their rather flexible forms.

Thus the invention of the abugida occurred in a grammatically savvy milieu. Roy Andrew Miller (1962/1976) shows that Tibetan linguistics incorporated Sanskrit phonological awareness, term for term: The equally well informed savants of Tibet created a script that preserved what was useful of the Indic system and added a treatment of final consonants and syllable structure that was better suited to the Tibetan type. This did not happen when, around the same time, Indic script came to the Tibeto-Burman language Burmese. Syllable-final consonants have a 'killer' mark as in Sanskrit (conjuncts are not needed in Burmese, but they are used in Indic words [19]; a complete inventory of them is found in Khmer or Cambodian [20]).

(19) Burmese: အဘယ်ကြောင့်ဆိုသော် abhaykroṅchuiso *but* ဗုဒ္ဓ buddha

(20) Khmer Consonants with Subscript Forms[a] (Schiller, *WWS* 470)

ក	k	ខ	kh	គ	g	ឃ	gh	ង	ṅ
ច	c	ឆ	ch	ជ	j	ឈ	jh	ញ	ñ
ដ	ṭ	ឋ	ṭh	ឌ	ḍ	ឍ	ḍh	ណ	ṇ
ត	t	ថ	th	ទ	d	ធ	dh	ន	n
ប	p	ផ	ph	ព	b	ភ	bh	ម	m
យ	y	រ	r	ល	l	វ	v		
ស	s	ហ	h	ឡ	ḷ	អ	ʔ		

a.The full forms of consonants are for identification only; most of the clusters represented here do not occur in the language.

Finally, the grammatical sophistication of the inventor of Korean script is clear in the founding document of 1446: it clearly knows the Chinese grammatical tradition and applied it to the very different phonology of Korean — as it was not involved in the development of the syllabaries of Japan and of Hunan, both of

which were writings of women, women who were denied the Chinese Classical education available to the best of the men.

I hope to have convinced the reader that while scripts can be passed on from language to language under many circumstances, with varying degrees of success and appropriateness, real innovation in script transfer must be informed by grammatical understanding of the language that is to be written — metalinguistic knowledge of one's language: the result of deep study, not simple copying. One cannot help learning to speak the language of one's surroundings. One must be taught to read. Many, like Charlemagne, can read but not write. But to create writing is one of the highest achievements of all. King Sejong, for your 600th birthday, I salute you!

NOTES

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[1] A fourth transfer, of Phoenician script to Greece, was discussed at the Champaign conference, but that topic was out of place in that context, and that portion has been published separately as Daniels 1999.

[2] The Iranian fonts used in (5) and (16) are courtesy P. Oktor Skjærvø, Harvard University.

[3] Cf. Ledyard 1997:56 for just criticism of Hope's approach. I am grateful to Young-Key Kim-Renaud for the gift of her edited volume *The Korean Alphabet.*

[4] Confirmed by Oktor Skjærvø and Denis Sinor, respectively (p.c. 7 April 1998).

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WWS = Daniels & Bright 1996.