

Segments and Syllables in Thaana and Han'göl: Comparing literate native- speaker inventions

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Goals

- ✍ Compare two unrelated writing systems that have received wildly different amounts of attention but are similar in their origins, designs, and effectiveness
- ✍ Speculate on causes of similarities in design and effectiveness
- ✍ Apply phonological analysis (Optimality Theory) to their representation of syllables
- ✍ Argue for the valid linguistic nature of writing systems





Han'gŭl (Hangeul, Hangul, Hankul)

 Used for Korean

 Invented by King Sejong the Great,
announced 1443/1444


 Intended to increase literacy rates

 Eventually replaced *idu* (Korean written
in *hanja* [characters])

 Widely praised by modern
philographers/grapholinguists
(Taylor & Taylor 2014, Kim-Cho 2001)



Han'gŭl's Reviews: Historical

 “To now separately make the Vernacular Script is to discard China and identify ourselves with the barbarians.”

(Choe Malli 1446, quoted in Ledyard 1966: 104)

 “women's script”

 “children's script”

 “morning script”



Han'gül's Reviews: Modern

- ✍️ “one of the most remarkable scripts in the world” (Ledyard 1966: 9)
- ✍️ “so consistent and systematically beautiful” (Coulmas 1989: 121)
- ✍️ “the most efficient and logical writing system in the world.... the true paragon of scripts.” (Gnanadesikan 2009: 191)
- ✍️ Han'gül Day: October 9/January 15








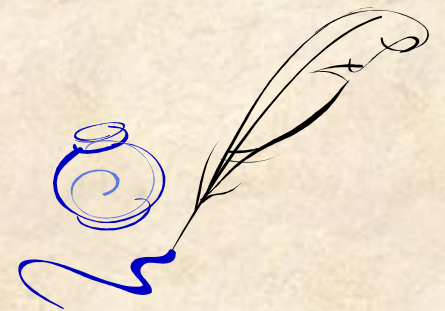
Han'gŭl's Design Features

- ✍ Alphabet/segmentary of 24 letters (originally 28); all segments are represented
- ✍ Cs and Vs are shaped differently: Vs are long lines and perpendicular short lines (dots): | † ‡ 卍 —
- ✍ Basic C shapes are iconic, based on articulation of the corresponding phonemes (unique design feature)



Iconic Shapes


-  ○ larynx/windpipe
-  ʔ tongue raised in back to velum
-  ɹ tongue with tip raised to dental/alveolar ridge
-  ʌ tooth (lower incisor)
-  □ lips/mouth



Han'gŭl's Design Features

 Similar phonemes have similar shapes:

ㄱ → ㅋ /k/ → /k^h/ , ㄷ → ㅌ /t/ → /t^h/

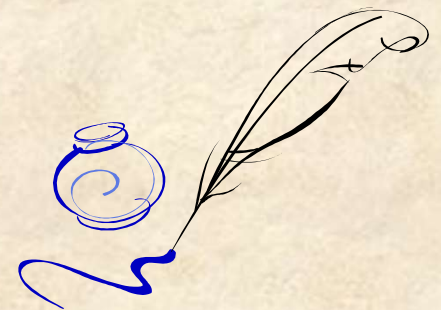
 Segmental letters are grouped into syllables; Cs and Vs placed differently;
LTR (or TTB)

한국말 ha k ma

 n u l

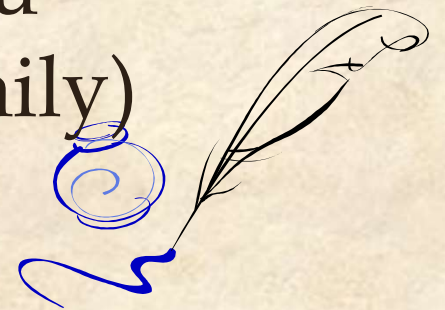
 k

<han.kuk.mal> 'Korean language'



Thaana (Tāna)

- ✍ Used for Dhivehi (Maldivian)
- ✍ Created by an unknown inventor sometime before 1705
- ✍ Possibly C16 Mohamed Thakurufaan, C16 Mohamed Jamaluddin or late-C17 Hassan Tajuddin
- ✍ Intended to allow use with Arabic script
- ✍ Eventually replaced Dives Akuru (akshara script of the Brahmi family)
(Mohamed 1999, Gnanadesikan 2012)





Thaana's Reviews

- ✍ Largely unknown outside Maldives
- ✍ “Tāna presents us with perhaps the most scientific alphabet in South Asia.”
(DeSilva 1969: 208)
- ✍ “the inventor displayed a fine grasp of Dhivehi phonology” (Gnanadesikan 2012: 92)
- ✍ Attempts to replace in the 1970s failed



Thaana's Design Features

 Alphabet/segmentary, with all segmental phonemes represented: 24 main (C) letters and 11 subsidiary (V) signs

 First 18 C-letter shapes are based on numerals (unique design feature)

ا, ب, ج, د, هـ, و, ز, ح, ط

١, ٢, ٣, ٤, ٥, ٦, ٧, ٨, ٩

 First 9 from (Eastern) Arabic, second 9 from Dives Akuru



Thaana's Design Features

✍ Arranged into CV clusters, Cs and Vs placed differently; RTL

←
a a: e
✍ ދިވެހި ދާނާ n t h v d ←
i i

<di.ve.hi ta:.na> 'Maldivian Thaana'



Intriguing Similarities


- ✍ Deliberate inventions in the early modern period by *literate native speakers*
- ✍ Inventors actually *biscriptal* (biliterate/biscriptal advantage, Bassetti 2013)
(H: Chinese & ‘Phags-pa [? Ledyard 1966, 1997]; T: Arabic & Dives Akuru)
- ✍ Represent all Cs and Vs, against areal graphical tradition
- ✍ Distinguish shapes and placement of Cs and Vs (“alphasyllabaries”)
- ✍ Unique sources for letter shapes

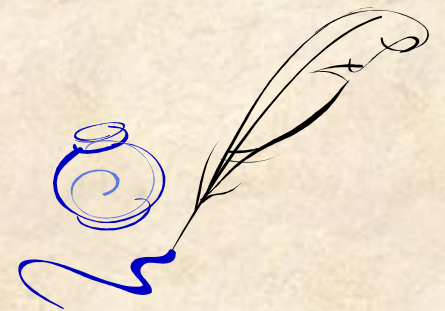


Similar Effects


- ✍ Very high literacy rates
- ✍ Korea 1945 illiteracy ~ 78%
- ✍ N. Korea: “illiteracy virtually eliminated by 1949”
- ✍ S. Korea: “everybody is to some degree literate” (Taylor & Taylor 2014: 251)
- ✍ Maldives: 97.7% literacy (World Factbook)
- ✍ “A prominent characteristic of Maldivian people is that most of them are literate” (UNESCO 1986: 10). Despite low educational achievement and LDN status until 2011.

Tentative Design Conclusion


-  An “alphasyllabic” design is particularly good
- at least for languages with relatively simple syllable structure,
 - and at least for the purposes of establishing literacy.



Graphic Syllables in Han'gŭl

 Syllables obviously part of the writing system...

한국말 <han.kuk.mal> /han.kuk.mal/ 'Korean language'

 ... but not exactly the same as spoken syllables (Song & Wiese 2010)



Graphic Syllables in Han'gŭl

 Obligatory onset

▶ **입** <Øip> /ip/ 'mouth'

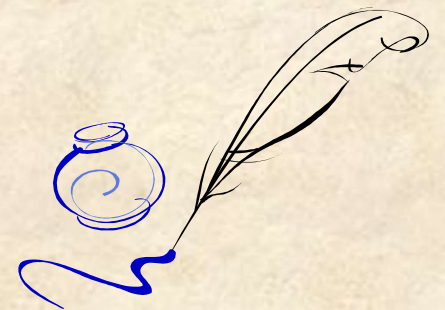
 Morpheme alignment adds syllables codas

▶ **먹어** <mΛk. ØΛ> vs. /mΛ.kΛ/ 'eat+suffix'

 But coda avoided if no morpheme boundary, as in spoken

▶ **하늘** <ha.nwul> /ha.nwul/ 'sky'

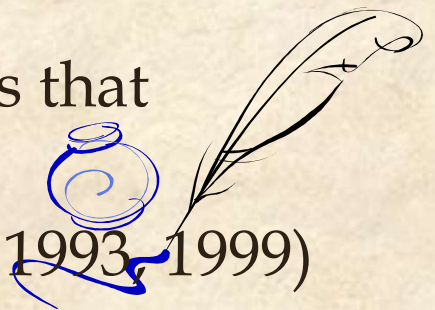
▶ ***한을** *<han.wul>



Syllable Structure in Optimality Theory (OT)

- ✍ Markedness: Unmarked structures are preferred (Least marked syllable = CV.)
 - ONSET: a syllable must have a consonantal onset
 - NOCODA: a syllable must not have a consonantal coda
- ✍ Faithfulness: Unchanged structures are preferred (P-G: Graphical form should reflect phonological form)
 - MAX: do not delete segments (between forms that stand in correspondence)
 - DEP: do not add segments (between forms that stand in correspondence.)

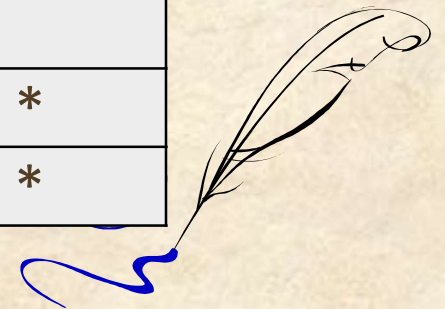
(Prince & Smolenksy 1993, McCarthy & Prince 1993, 1999)



Syllables in OT

/aban/	MAX	DEP	ONSET	NoCODA
☞ a.ban			*	*
ab.an			**!	**
ʔa.ban		*!		*
ban	*!			*
ʔa.ba	*!	*		

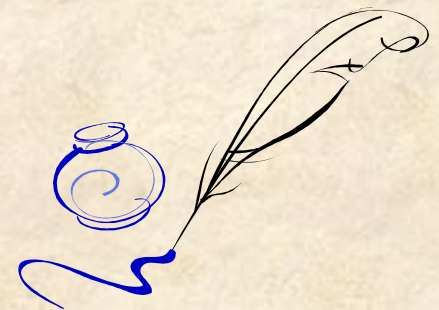
/aban/	NoCODA	ONSET	DEP	MAX
a.ban	*!	*		
ab.an	*!*	**		
ʔa.ban	*!		*	
ban	*!			*
☞ ʔa.ba			*	*



Han'gül Graphic Syllables – first pass

/aban/	MAX(P-G)	ONSET	DEP(P-G)	NoCODA
a.ban		*!		*
ab.an		*!*		**
☞ Øa.ban			*	*
ban	*!			*
Øa.ba	*!		*	

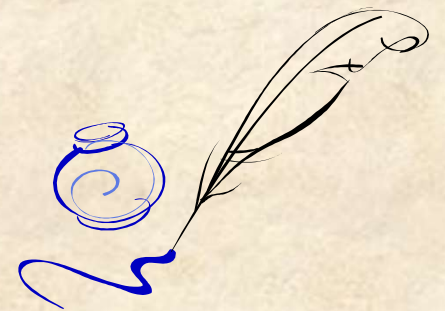
Ø = 'graphic consonant with null phonological value'



Alignment Constraints

 Enforce the alignment of the edge of one kind of linguistic unit with another

ALIGN(Morph, R, Syllable, R): The right (final) edge of a morpheme coincides with the right edge of a syllable



Han'gül Graphic Syllables


/ab+an/	MAX(P-G)	ONSET	ALIGN(M,R, σ ,R)	DEP (P-G)	NoCODA
a.ban		*!	*		*
ab.an		*!*			**
Øa.ban			*!	*	*
☞ Øab.Øan				**	**
ban	*!		*		*
Øa.ba	*!		*	*	

/aban/	MAX(P-G)	ONSET	ALIGN(M,R, σ ,R)	DEP (P-G)	NoCODA
a.ban		*!			*
ab.an		*!*			**
☞ Øa.ban				*	*
Øab.Øan				**!	**
ban	*!				*
Øa.ba	*!			*	

Graphic Syllables in Thaana

 Syllables or just CV groupings?

ᠠᠨᠠᠨᠠ <ta:.na> /ta:.na/ 'Thaana'

 CV grouping is imposed even in absence of C or V (? for dummy C [ᠠ]; ∅ for dummy V [ᠠ])

ᠠᠤᠬᠤᠷᠠᠢᠪᠠᠰᠤ <?a.ku.ra:?.i ba.s∅>

/akura:i bas/ 'script and language'

 Looks like unmarked syllables!

(Writing systems have a preference for unmarked syllables: Buckley 2018)



Graphic Syllables in Thaana

- ✍ Obligatory onset (Phonologically absent onset C → Graphic C)

𑊗𑊚𑊛𑊟 <ʔa.ku.ru> /a.ku.ru/ 'script'

- ✍ No coda (Phonologically absent vowel → Graphic V)

𑊗𑊚𑊛 <ba.s~~∅~~> /bas/ 'language'

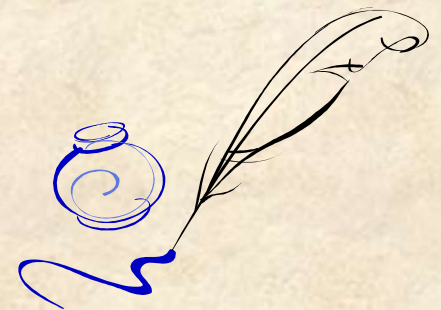
- ✍ No worries about morpheme alignment

𑊗𑊚𑊛𑊟𑊛𑊟 <ta.na.ki:> /tan+aki:/ 'the place is'





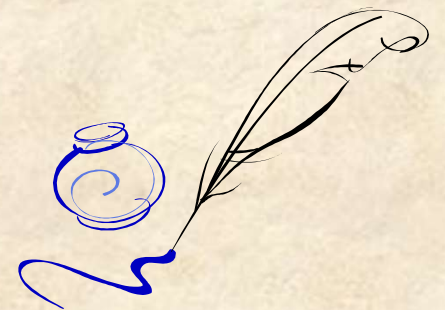
Thaana Graphic Syllables

/ab+an/	MAX (P-G)	ONSET	NoCODA	DEP (P-G)	ALIGN(M,R, σ ,R)
a.ban		*!	*		*
ab.an		*!*	**		
a.ba.n \emptyset		*!		*	*
ʔa.ban			*!	*	*
ʔa.ba.n \emptyset				**	*
ʔab.ʔan		*!	**	**	
ban	*!		*		*
ʔa.ba	*!			*	*



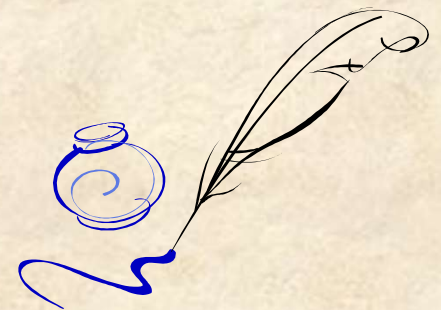
OT Summary

-  Thaana and Han'gül both use graphic syllables (GS) which differ the spoken, phonological syllables (PS)
-  Differences between scripts and between spoken and written forms can be derived with constraint ranking (cf Geilfuß-Wolfgang 2002, Song & Wiese 2010)



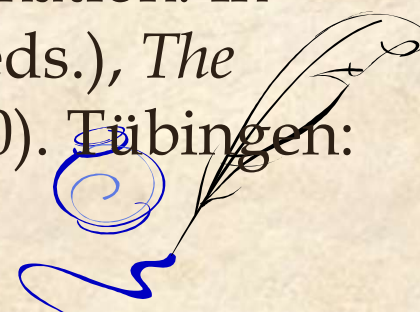
Summary & Conclusions

- ✍️ Thaana and Han'gūl invented with biscriptal advantage
- ✍️ Similar design features; all segments represented, arranged grapho-syllabically
- ✍️ Optimality Theory provides an analytical framework for the differences between GS and PS and between scripts.
- ✍️ Writing differs from spoken language but is analyzable in linguistic terms.
- Writing systems are **linguistic systems**.



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