

<Th>e Ubi<qu>ity of Polygra<ph>y and its Significance for <th>e Typology of <Wr>iti<ng> Systems

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outline

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polygraphy – an attempt at a definition

We speak of polygraphy when in the mapping between graphs and the linguistic units they represent (phonemes, syllables, morphemes etc.)

1+ linguistic unit(s) are mapped onto 2+ graphs forming a functional unit (a so-called *polygraph*) that is **not further divisible** into more fine-grained units that are in productive use in other contexts.

<pr> /pr/

→ div. into <p> /p/ + <r> /r/,
both productive

→ not a digraph

<ph> /f/

→ not div. into <p> /?/ + <h> /?/

→ a digraph

point of departure

the ideal of 1-to-1 correspondences

- it is commonly assumed that there is a 1-to-1 correspondence between graphs and linguistic units as a norm:

“In a purely phonemic system of writing, there is a one-to-one correspondence between phonemes and their written representation.”
(DeFrancis 1989: 185)

“[I]n an alphabetic system, *cut* would be written with three graphemes; in a moraic system, with two, and in a syllabic system, with one grapheme.” (Rogers 2005: 14)

the ideal of 1-to-1 correspondences

“When one speaks of alphabetic symbols it is taken for granted that there are symbols available to represent every phonemic segment of the language. So, the term syllabary ought to similarly imply that every syllable of the language has a graphemic symbol associated with it.”
(Sproat 2000: 140)

“[P]olygraphs are typically the minority in alphabetic systems, and there are many segmental systems that do not have polygraphs. In contrast, polygraphic representation of complex syllables in so-called syllabaries appears to be the norm.” (Sproat 2000: 140, n. 2)

the ideal of 1-to-1 correspondences

“Digraphs are found in many languages using the roman alphabet, and are used for some vowels in Greek, but are not favored in other scripts.” (Daniels 2006: 13)

“Alphabet: Assigns a segment (consonant or vowel) to each symbol”

“Syllabography: Assigns a syllable possible in the language to each symbol”

“Logography: Assigns a morpheme (usually a word) to each symbol”

(Daniels 1990: 730, table 1)

the ideal of 1-to-1 correspondences

“A segmental/syllabic/moraic writing system is one in which each segment/syllable/mora is represented by a distinct graph.”

(Poser 2004: 4–5; cf. already Poser 1992: 5)

we might be justified in positing in analogy to the above:

“A logographic/morphographic writing system is one in which each word/morpheme is represented by a distinct graph.”

the ideal of 1-to-1 correspondences

- conceptualizing writing systems along these lines has profound consequences for the application of typological categories to specific cases:
 - rejection of “logographic” / “morphographic” as labels for Chinese characters, as many characters cannot write words or morphemes in isolation (Matsunaga 1996)
 - syllabaries are increasingly reinterpreted as moraic systems, as they do not cover all possible syllables (Poser 1992/2004; cf. Sproat 2000)

the reality of writing systems

- in fact, however, polygraphy is fundamental to (not all but) a significant number of typologically diverse writing systems
- given that the size of the inventory generally increases the larger the unit (morphemes > syllables > phonemes), it is unsurprising that writing systems based on larger units resort to polygraphy on a regular basis if many monophonemic systems already do

<th>e ubi<qu>ity of polygra<ph>y

polygraphy in segmental writing systems

Examples from English

- single phoneme often represented by digraph, e.g.

<ch> /tʃ, k, ʃ/, <gh> /g, f/, <ph> /f/, <sh> /ʃ/, <th> /ð, θ/

<ng> /ŋ/, <sc> /s, ʃ/, <wh> /w, h/, <wr> /r/

<dd> /d/, <ff> /f/, <ll> /l/ etc., also <ck> /k/

<ea, ee, ie> /i:/, <eu (ew), oo, ue> /u:/ etc.

- rarely e.g. two phonemes represented by digraph: <qu> /kw/

polygraphy in segmental writing systems

Examples from German

- single phoneme, rarely two phonemes represented by clusters, e.g.
 - <ch> /x/, <ng> /ŋ/, also <qu> /kv/ (2:2) and <sch> = /ʃ/ (3:1)
 - <ff> /f/, <ss> /s/, <tt> /t/ etc., also <ck> /k/, <dt> /t/, <tz> /tʰ/
 - <aa, ah> /a:/, <ee, eh, äh> /e:/ etc., also <ie, ieh> /i:/ (3:1)
 - <ai, ei> / \widehat{ae} /, <au> / \widehat{ao} /, <äu, eu> / $\widehat{ɔ\emptyset}$ /

polygraphy in syllabic/moraic writing systems

Examples from Japanese *kana* (modern standard orthography)

- representation of syllables with palatalized initial consonants, e.g.

<ki.yo> きよ /kyo/

<ni.ya> にゃ /nya/

- representation of syllables with long vowels, e.g.

<ko.u> こう /ko:/

<ki.yo.u> きょう /kyo:/

- *kana* combinations for non-native syllable types in loanwords

<fu.a> ファ /fa/

<tsu.a> ツァ /ca/

polygraphy in syllabic/moraic writing systems

Examples from Japanese *kana* (“historical” orthography, pre-1946)

- digraphic representation of syllables with long vowels

<(C)a.u> / (C)o:/ e.g. <sa.u> さう /so:/'

<(C)e.u> / (C)yo:/ e.g. <e.u> えう /yo:/'

- trigraphic representation of syllables with long vowels

<Ci.ya.u> /Cyo:/ e.g. <ki.ya.u> きやう /kyo:/'

also <ku.wa.u> くわう /ko:/'

polygraphy in morphographic writing systems

Examples from Japanese *kanji*

- single morphemes often represented by di- or trigraphs, e.g.
 - keizai* 經濟 ‘economy’, *otona* 大人 ‘adult’ etc. (2:1)
 - fun’iki* 雰圀氣 ‘atmosphere’ (3:1)
- other quantitative relationships, e.g.
 - kami-sori* 剃刀 ‘razor’ (2:2)
 - shika=nomi=nar-azu* 加之 ‘moreover’ (2:4)

transparency of phonographic polygraphs

“To what extent (fully / partially / not at all) and on what level (phonology / semantics) is it apparent how the constituent graphs of a polygraph contribute to its *en bloc* value?”

- e.g. transparency of phonographic polygraphs (exx. from German)

<ee> /e:/ fully transparent

<ie> /i:/ partially transparent

<ch> /x/ not transparent

transparency of morphographic polygraphs

- 1) *sasuga* 流石 ‘as expected’ [-phon, -sem]
流 (*ryū/ru, naga(re)*- ‘to flow’ etc.) + 石 (*seki, ishi* ‘stone’ etc.)
- 2) *otona* 大人 ‘adult’ [-phon, +sem]
大 (*dai/tai, ō(ki)*- ‘big’ etc.) + 人 (*jin/nin, hito* ‘person’ etc.)
- 3) *keizai* 經濟 ‘economy’ [+phon, -sem]
經 (*kei/kyō, he*- ‘to pass’) + 濟 (*sai, su(m)*- ‘to finish’)
- 4) *zenkoku* 全国 ‘the entire county’ [+phon, +sem]
全 (*zen, subete* ‘all, the whole’) + 国 (*koku, kuni* ‘country’)

transparency of morphographic polygraphs

partially transparent

initial *shuttai* 出来 ‘occurrence’

final *kotoshi* 今年 ‘the present year’, *tokei* 時計 ‘watch’

initial & final *majime* 真面目 ‘serious’

partially transparent (+ graph)

kaze 風邪 ‘flu’

fully transparent (+ phoneme)

harusame 春雨 ‘spring rain’

the origins of polygraphs

1. deliberate creation when means to write a specific unit are lacking, e.g. in cases of script transfer / adaptation, or for non-native units

<ph, th, kh> in Latin, later <ch, sh, th> in English etc.

(cf. diacritics as another, competing option)

the origins of polygraphs

2. borrowings, e.g. in case of asymmetries in morphological makeup of words between donor and recipient

spelling of bimorphemic Chinese words ...

jīn(-)rì 今日 ‘today’

míng(-)rì 明日 ‘tomorrow’

used to write monomorphemic Japanese words

kyō 今日 ‘today’

asu 明日 ‘tomorrow’

the origins of polygraphs

3. due to diachronic developments, commonly e.g. 1 polygraph from 2+ monographs via sound change (or loss of morpheme boundary)

| | | |
|---------------------|--------------------------------------|--------------------|
| German | <ie> /i:/ | < /iə/ |
| Japanese (pre-1946) | <Ca.u> /Co:/ e.g. <ka.u> かう /ko:/ | < /Cau/ < /kau/ |
| Korean (pre-1933) | <sC> /C̥/ e.g. <st> 슣 = /t̥/ | < /sC/ < /st/ |

conclusion

- the typology of writing systems has to take polygraphy into due account, with definitions going beyond 1-to-1 correspondences (in various directions: polygraphy, polyphony, polyvalency)

“A segmental / moraic / syllabic / morphographic writing system is one in which the most fine-grained mapping possible is between 1+ segment(s) / mora(s) / syllable(s) / morpheme(s) and 1+ graph(s).”

conclusion

- more research needed on the different types as well as the internal makeup of polygraphs, e.g. in terms of their transparency
- an open question is the sometimes problematic demarcation from adjacent concepts, chiefly diacritics and ligatures (with consequences e.g. for the treatment of abugidas)

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