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Reconsidering the distinction between partial and full writing systems

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Overview

- Opening remarks
- Scope of writing systems typology (WST)
- Graphematic representation of lexical units
- Partial→full: Case of Japanese writing system (JWS)
- Closing remarks
0 Establishing some working definitions

**Writing system (WS):** Two common meanings;
(1) Narrow range of abstract relationships between lexical units + graphemes (Joyce & Borgwaldt, 2011; Joyce 2016);
(2) Specific grapheme inventory + use conventions for a particular language (Coulmas 2013; Joyce & Masuda 2019).
In Sections 1 + 2, sense (1) dominates, but shift to sense (2) in Section 3 taking case of Japanese writing system (JWS).

**Writing system typology (WST):** Enterprise of developing coherent frameworks for classifying diversity within WSs (Joyce 2016, in press; Joyce & Borgwaldt 2011; Joyce & Meletis 2021).

**Graphematic mapping:** Related to WS(1); refers to principles of graphematic representation by which graphemes map to lexical units.
Opening remarks 2: Core claim

1 Partial - full dichotomy of deep significance for WST

Certainly, discernible in Gelb (1952):

- **semasiography** (forerunners of writing) – **full writing** (phonography)

However, arguably, key prominence first in DeFrancis (1989: 3):

<table>
<thead>
<tr>
<th>Partial writing:</th>
<th>“a system of graphic symbols that can be used to convey only some thought …”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full writing:</td>
<td>“can be used to convey any and all thought.”</td>
</tr>
</tbody>
</table>

Immediately vital to note 2 key caveats: (more on both soon)

1. Dichotomy really about the potentiality to represent **language** (as medium of thought);
2. DeFrancis applied in differentiating **nonwriting** – **writing**.

(2) is valid, when treat as a sharp dichotomy; however, for issue of potentiality inherent in (1), more appropriate to regard as a continuum that is directly related to grapheme inventories.
Limit use of pleremic – cenemic terms to describing the graphematic mapping of lexical units [not whole WSs]

Terms proposed by Haas’ (1976, 1983) within his WST based on 3 binary choices: (1) derived - original, (2) informed - empty, and (3) motivated - arbitrary.

However, only (2) directly pertaining to WSs, which, based on Greek words, Haas also referred to as:

Pleremic: graphemes are ‘semantically-informed’ in denoting both sounds + meanings;
Cenemic: graphemes are ‘semantically-empty’ in only denoting sounds.

Having declared this talk’s core claim + core proposal at the very outset, I will next endeavor to both explicate + defend the two propositions.
Overview

- Opening remarks
- **Scope of writing systems typology (WST)**
- Graphematic mapping of lexical units
- Partial → full: Case of Japanese writing system (JWS)
- Closing remarks
3 Core challenge for WSTs in differentiating properties as more significant [i.e., mapping] vs. marginal [i.e. linearity]  
[Joyce 2016, in press; Joyce & Meletis 2021]

Various typology proposals have undoubtedly embodied different notions of writing + have employed alternative formats, ranging from inverted-tree figures (most common; Gelb 1952; Sampson, 1985; 2015, DeFrancis 1989, Faber 1992, Powell 2009), 1- or 2-dimensional arrays (Unger & DeFrancis 1995; Sproat 2000; Rogers 2005) to a decision-tree-like table (Gnanadesikan 2017).

4 WSTs have generated an abundance [perhaps a surplus?] of contrastive binaries [including both dichotomies + continuums]

Next 2 slides present a number of them, mostly grouped according to hierarchical level.
## Scope of WST 2: Binaries 1

**Upper-level: Most relevant to issue of WST scope (more soon)**

<table>
<thead>
<tr>
<th>Semasiography</th>
<th>- full writing</th>
<th>(Gelb 1952)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semasiography</td>
<td>- glottography</td>
<td>(Sampson 1985, 2015)</td>
</tr>
<tr>
<td>Semasiography</td>
<td>- lexigraphy</td>
<td>(Powell 2009)</td>
</tr>
<tr>
<td>Partial</td>
<td>- full writing</td>
<td>(DeFrancis 1989)</td>
</tr>
<tr>
<td>Logography</td>
<td>- morphography</td>
<td>(Joyce 2002; 2011; 2016)</td>
</tr>
</tbody>
</table>

**Mid-level: Typically [something] - phonography**

[Arguably most elusive contrast: Joyce, 2016; Joyce & Borgwaldt; Sampson 2016]

<table>
<thead>
<tr>
<th>Logography</th>
<th>- phonography</th>
<th>(Faber 1992; Powell 2009; Sampson 1985, 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pure logography</td>
<td>- pure phonography</td>
<td>(Unger &amp; DeFrancis 1995)</td>
</tr>
<tr>
<td>Morphography</td>
<td>- phonography</td>
<td>(Joyce 2002, 2011; Osterkamp &amp; Schreiber 2021)</td>
</tr>
<tr>
<td>Pleremic</td>
<td>- cenemic</td>
<td>(Haas 1976, 1983)</td>
</tr>
</tbody>
</table>
### Scope of WST 3: Binaries 2

**Lower-level: Some focusing more on grapheme structure**

<table>
<thead>
<tr>
<th>Syllabography</th>
<th>Grammatography</th>
<th>(Powell 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllabically linear</td>
<td>Segmentally linear</td>
<td>(Faber 1992)</td>
</tr>
<tr>
<td>Syllabically coded</td>
<td>Segmentally coded</td>
<td>(Faber 1992)</td>
</tr>
<tr>
<td>Other</td>
<td>Segmentary</td>
<td>(Gnanadesiken 2017)</td>
</tr>
<tr>
<td>Defective</td>
<td>Complete</td>
<td>(Faber 1992)</td>
</tr>
</tbody>
</table>

**Alternative binaries: Focusing on a single characteristic**

<table>
<thead>
<tr>
<th>Deep</th>
<th>Shallow</th>
<th>(Katz &amp; Frost 1992)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Closed</td>
<td>(Küster 2019)</td>
</tr>
</tbody>
</table>

Naturally, these binaries reflect classification goal of WSTs, but a serious challenge for terminology is to be both consistent + informative (Coulmas 1996; Hill 1967; Joyce 2016; in press).
Within WS research (WSR), it is possible to discern a positive trend toward more language-orientated WSTs. 

... every system of writing in relation to that which all systems represent, language (Hill, 1967).

... all writing systems represent elements of language—not ideas or something else ... (Sproat, 2010: 9).

... writing represents language ... (Daniels, 2018: 157).

That noted, regrettably, confused interpretations about the nature of language are still encountered too frequently outside of WSR. A fuller appreciation of the partial – full dichotomy is particularly germane in that regard (almost there...).
6 Language [abstract entity] can be materialized in three ways:

- Speaking (auditory)
- Writing
- Signing (vs. visual modalities)

Modified extract from Joyce (2011: 69) Fig. 1; schematic of the abstract entity view

7 Language = combination of words [lexicon] + rules [syntax] [Pinker 1999]

Setting aside syntactic influences, from a lexicalist perspective, WSTs concerned with just a 3-point triangle.
Scope of WST 6: Core triangle + linguistic labels

8 As lexicon is primarily concern of morphology, ideal labels are morphology, phonology + graphology.

For clarity of these correspondences alone, term graphology warrants reclaiming for WSR. Certainly, preferable to the semantics-phonology-orthography labels prevailing within psycholinguistic research on visual word recognition + reading.
Scope of WST 7: Linguistic levels of WSs

9 Pivoting triangle + positing linguistic levels of WSs on morphology-phonology dimension

<table>
<thead>
<tr>
<th>Core triangle</th>
<th>Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphology</td>
<td>Morphemes</td>
</tr>
<tr>
<td>Phonology</td>
<td>Syllables</td>
</tr>
<tr>
<td>WSs</td>
<td>Phonemes</td>
</tr>
</tbody>
</table>

*Comments: Daniels (2001)*
### Scope of WST 7: Linguistic levels of WSs 1

9 Pivoting triangle + positing linguistic levels of WSs on morphology-phonology dimension

<table>
<thead>
<tr>
<th>Core triangle</th>
<th>Levels</th>
<th>Daniels (2001)*</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphology</td>
<td>Words</td>
<td>Logography</td>
<td>Misleading term</td>
</tr>
<tr>
<td>Morphemes</td>
<td></td>
<td>†next slide</td>
<td>Morphography</td>
</tr>
<tr>
<td>WSs</td>
<td>Syllables</td>
<td>Syllabary</td>
<td>Separate signs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abjad</td>
<td>Unspecified vowel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abugida</td>
<td>Core-syllable signs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Featural*</td>
<td>Gestalt-sign</td>
</tr>
<tr>
<td></td>
<td>Phonemes</td>
<td>Alphabet</td>
<td>Segmentary</td>
</tr>
</tbody>
</table>

If one Aligns Daniels’ (2001) category terms on dimension, picture becomes highly muddled indeed.

*Acknowledge that featural category subsumed as alphabet in Daniels (2018)*
10 Upper-level binaries (i.e., semasiography – glottography) demarcate key boundary between semiotics + WSTs

At the heart of DeFrancis’ (1989) partial – full (sharp) dichotomy is the valid conviction that the graphemes of functional WSs map to linguistic units, at either morphemic, syllabic or phonemic levels.

Dichotomy is also key reason for not using logography term within WSTs (Joyce 2016; 2016; Joyce & Masuda 2019). As Daniels (2018: 156) explicitly admits, within WSTs, “Morphography” would actually be preferable to “logography” because it is simply untenable to have separate graphemes for every word and the notion of morphography covers both free (words) + bound morphemes anyway.
Overview

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- Closing remarks
Most WST proposals classify WSs according to single dominant principle [i.e., morphemic, syllabic or phonemic]

Sampson (1985, 2015)
Graphematic mapping of lexical units 2

12 WSTs seriously flawed as multiple mapping often co-exist; most WSs are, to varying degrees, mixed in nature


Undoubtedly, identifying dominant mapping greatly contributes to developing more coherent classification frameworks. However, basic strategy also yields problematic terms such as “alphabetic principle” + “logographic principle” that compound inappropriate labels with gross simplification.

13 Appreciate that partial – full binary as actually a continuum within glottographic WSs

Mapping inconsistencies mainly reflect:
(1) Deficits of grapheme inventories (Desbordes 1997) (most WSs adapted with mapping challenges from outset) and
(2) Propensity for mapping principles to become more lexically-distinctive over time (Sampson 2018).
Graphematic mapping of lexical units 3

14 Time to explicitly connect partial – full continuum + pleremic – cenemic contrast

Slide 6 (WST2: Binaries 1) listed 4 mid-level binaries (plus remarked on level as being most elusive; Joyce & Borgwaldt; Sampson 2016).

Uncluttered of inappropriate terms/ideas and with some rearranging, the connections are more plainly manifest here:

<table>
<thead>
<tr>
<th>WS category</th>
<th>Graphematic mapping</th>
<th>Potential continuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphography</td>
<td>Pleremic [informed]</td>
<td>Partial</td>
</tr>
<tr>
<td>Phonography</td>
<td>Cenemic [empty]</td>
<td>Full</td>
</tr>
</tbody>
</table>

**Morphography** (alone) can only materialize partial writing! **Pleremic** [i.e., semantically-informed] mapping [as a principle of graphematic representation] is simply not feasible for all morphemes of a language, due to their sheer numbers.
15 Morphographic WSs can only expand from partial→full writing as a component of a mixed WS

Moreover, only 2 possible expansion strategies available:
(1) Develop conventions for using existing signs for cenemic mappings [strategy adopted by Chinese writing system]; or
(2) Supplement morphographic grapheme inventory with separate phonographic sub-system to handle cenemic mappings [strategy that evolved for Japanese writing system].

16 Conversely, many phonographic WSs also require pleremic mapping strategies for lexical distinctions

Reflecting natural constraints on the phonological inventories of languages, even phonographic WSs need to deal with inventory gaps and lexical differentiation issues (homophones).
17 Given prevalence of mixed WSs, WSTs should abandon single term classification labels

In that respect, Gnanadesikan’s (2017) typology of phonemic scripts undoubtedly marks a significance advance.

<table>
<thead>
<tr>
<th>Script</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Han’gǔl</td>
<td>Fully vowelled syllabically arranged featural segmentary</td>
</tr>
<tr>
<td>Greek</td>
<td>Fully vowelled linear segmentary</td>
</tr>
<tr>
<td>Arabic (‘unvocalized’)</td>
<td>Partially vowelled linear segmentary</td>
</tr>
</tbody>
</table>

18 Still, to more fully elucidate mixed WSs, cenemic – pleremic terms most expedient for describing mappings

Succinct forms of expression are of immense value cognitively. “cenemic mapping” is a concise shorthand for long phrase such as “... the principle of graphematic representation of this lexical unit is phonemic in nature (i.e., a segmental)…”.
Overview

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- Partial→full: Case of Japanese writing system (JWS)
- Closing remarks
19 Contemporary JWS is well renowned for its complexity

[Coulmas 1989; Joyce 2002, 2011]

[Japanese people] … ended up with one of the worst overall systems of writing ever created. (DeFrancis 1989: 138)

Japanese is a complex system, certainly the most complex writing system in use today and a contender for the title of the most complex system ever. (Sproat 2010: 47)

The resulting syncretism of three scripts used simultaneously qualifies as the most complex writing system in modern use. (Gnanadesikan 2009: 113)

Although, as title of Gnanadesikan’s (2009) chapter on JWS also observes, multiple scripts may actually be better than one!
Partial→full: Case of Japanese writing system (JWS) 2

20 Mixed nature of modern JWS explicitly acknowledged in standard Japanese term 漢字仮名交じり文

/kан-и-ка-на-ма.じり.бун/* mixed kanji and kana writing [канji + kана + mixed + writing] */ gloss; small-caps = on-yomi; - = kanji-kanji split; . = kanji-kana split

漢字 /KAN-JI/ Kanji Morphography

2,136 kanji prescribed by 常用漢字表 jō-yō-kan-ji-hyō ‘Kanji for general use’ guidelines (2010), but 6,355 on devices.

平仮名 /HIRA-GA-NA/ Hiragana Syllabography

片仮名 /KATA-KA-NA/ Katakana Syllabography

107 hiragana; 168 katakana (more for loanword mappings)

ローマ字 /rōma.JI/ Latin letters Segmentary

Standard alphabet + macrons (Āā, Īī, Ūū, Ėē, Ōō) sufficient for Japanese phonology, but also all diacritics for loanwords.
Abridged outline of contemporary JWS’s evolution 1
(mainly from perspective of graphematic mapping)

All extant WSs trace ultimately back to just 2 independent inventions; **Sumerian cuneiform** + **Chinese characters**. Both emerged from pictorial representations; initially followed similar developmental trajectories but Chinese characters remained (predominately) morphographic WS with conventions for cenemic mappings (noting shortly).

Abridged outline 2: Allomorphemic kanji (more soon)

**Sino-Japanese (SJ) morphemes**: By-product lexical stratum of adopting Chinese characters. Predominately bound elements of compound words

**Native-Japanese (NJ) morphemes**: Chinese characters became associated with Japanese morphemes.
23 Abridged outline 3: Pictographic kanji

[表形文字 shō-kei mo-ji;/ 264 jōyō (12.4%)]

木  SJ /boku/, /moku/; NJ /ki/, /ko/  ‘tree’ [trunk + branches]

山  SJ /san/; NJ /yama/  ‘mountain’ [outline shape of 3 peaks]

其  *originally ‘winnowing basket’

→ not jōyō: SJ /ki/; NJ /sore/ /sono/  ‘that’

24 Abridged outline 4: ‘Ideographic kanji’ [*limited scope only]

[指示文字 /shi-ji mo-ji/; 10 jōyō (0.5%)]

一  SJ /ichi/, /itsu/; NJ /hito/, /hitotsu/  ‘one’ [simple tally mark]

本  SJ /hon/; NJ /moto/  ‘base; main; book’ [stroke indicating base]

Few jōyō kanji according to these principles, due to fundamental limitations on their representational potentiality. Something of profound significance for prevalent confusions about the potentiality of 绵文字 /e-mo-ji/ emoji!
As Robertson (2004) astutely observes, possibility of full writing emerges from the intersection between highly developed avenues of human perception – visual (iconic) and auditory (symbolic) perception. (Robertson, 2004: 19)

Namely, the rebus principle, which DeFrancis (1989) has stressed as key for partial-full writing transitions.

... a pictographic symbol was used not for its original meaning value but specifically to represent the sound evoked by the name of the symbol. (DeFrancis, 1989: 50).

That is, pleremic mapping (semantically-informed; pictogram-word) becomes a cenemic mapping (semantically-empty; grapheme-word).
26 Abridged outline 6: Basic cenemic mapping strategy

Original pleremic mapping to ‘winnowing basket’
\rightarrow cenemic mapping to stand for ‘that’

27 Abridged outline 7: Mapping intersection within the evolution of Chinese characters

Crucial significance of **phonetic compounds** [形声文字 /kei-sei mo-ji/; 1,312 (61.4%)]; a phonetic marker [音符 /on-pu/; i.e., a cenemic-element] is combined with a semantic marker [部首 /bu-shu/; i.e., a pleremic-element] creating new pleremic graphemes.

- 基 SJ /ki/; NJ /moto/, /motoi/ ‘foundation’ [土 ‘soil’ + cenemic /ki/]
- 棋 SJ /ki/ ‘chess piece’ [木 ‘wood + cenemic /ki/]
- 箕* SJ /ki/; NJ /mi/ ‘winnowing’ [竹 ‘bamboo’ + cenemic /ki/]

*Reflecting need to discriminate between pleremic + cenemic uses of 其
28 Abridged outline 8: Brief aside on additional forms of cenemic mapping within Chinese writing system (CWS)

Understandably, compounding (combing morphemes) is main process of word-formation for morphographic WSs (more soon). Also, although some loanwords can be rendered by pleremic mappings (semantic translations) (Sampson 2015: 201).

電気計算機 /tien⁴-tsɯ³ tʃi⁴-suan⁴ tʃi/ ‘computer’
[electric+ calculate+machine]

電脳 /tien⁴ nau³/ ‘computer’ (informal) [electric+brain]

Often necessary to resort to cenemic mappings;

涅槃 SJ /NEHAN/ Nirvana (from Sanskrit)
麒麟 SJ /KIRIN/ ‘qilin (Chinese unicorn)’; unicorn
博客 /po² kʰɤ⁴/ ‘blog’ (Sampson 2015; 201)
29 Abridged outline 9: Compounding as most productive process of word-formation with Japanese kanji

Most kanji are allomorphemic; associated with both NJ + SJ morphemes.

<table>
<thead>
<tr>
<th>NJ-morpheme</th>
<th>Meaning</th>
<th>SJ-morpheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>水 mizu</td>
<td>water</td>
<td>水 SUI</td>
</tr>
<tr>
<td>防ぐ fuse.gu</td>
<td>defend/ protect against</td>
<td>防 BŌ</td>
</tr>
</tbody>
</table>
30 Abridged outline 10: Examples of Japanese two-, three- and four-kanji compound words

SJ morphemes predominately bound elements of compound words, from two-, three-, four-kanji, etc. (Joyce & Masuda 2021).

防水 BŌ-SUI  waterproofing [protect against + water]
予防 YO-BŌ prevention; precaution [in advance + protect against]
防水性 BŌ-SUI-SEI  waterproofed [[waterproof] + nature]
癌予防 GAN-YO-BŌ cancer prevention [cancer + [prevention]]
防水加工 BŌ-SUI-KA-KŌ  waterproof finish
予防医学 YO-BŌ-I-GAKU preventative medicine

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予防医学 YO-BŌ-I-GAKU preventative medicine
31 Abridged outline 11: Japan’s partial→full solution; Emergence of two phonographic scripts (kana)

Similar to Chinese strategy of cenemic-mapping, Japanese also initially used kanji for cenemic mappings in 万葉集 /MAN-YŌ-SHŪ/, an anthology of Japanese verse (circa late 8C CE).

Katakana developed from scribal practices of Buddhist priests; tending to abbreviate graphemes by singling out element.

| Man’yōgana | 阿 依 宇 江 於 加 機 久 介 己 |
| Katakana   | ア イ ウ エ オ カ キ ク ケ コ |

Hiragana evolved through distinct stages of cursive writing.

| Man’yōgana | 安 以 宇 衣 於 加 機 久 計 己 |
| Hiragana   | あ い う え お か き く け こ |
JWS’s mix of graphematic mappings + scripts generally used together in largely separate + complementary ways.

<table>
<thead>
<tr>
<th>Script</th>
<th>Graphematic mapping</th>
<th>Lexical units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kanji</td>
<td>Pleremic</td>
<td>Both NJ + SJ content morphemes</td>
</tr>
<tr>
<td>Hiragana</td>
<td>Cenemic</td>
<td>NJ grammatical morphemes</td>
</tr>
<tr>
<td>Katakana</td>
<td>Cenemic</td>
<td>Foreign-Japanese (loanwords)</td>
</tr>
<tr>
<td>Rōmaji</td>
<td>Cenemic</td>
<td>Foreign words</td>
</tr>
</tbody>
</table>

However, it also warrants stressing that this unique mixing of potentialities (partial + full) of graphematic mappings + multiple scripts means that graphematic variation is a pervasive characteristic of JWS (Joyce & Masuda, 2019).
Overview

- Opening remarks
- Scope of writing systems typology (WST)
- Graphematic representation of lexical units
- Partial → full writing system (WS): Gap-filling
- Closing remarks
33 Core claim: Partial - full dichotomy of deep significance for WST

First section on scope of WSTs sought to illustrate how partial – full binary, as a sharp dichotomy, appropriately demarcates the key boundary between semiotics + WSTs. Certainly, the clear ramification that all forms of semasiography, such as emoji, only constitute forms of nonwriting warrants wider appreciation.
34 Core proposal: Call to utilize pleremic – cenemic as cognitively-succinct shorthand for graphematic mappings

More specifically, middle section advocated following points:

(1) **Partial – full** binary is continuum within glottographic WSs;

(2) **Partial – full** + **pleremic – cenemic** closely interconnected, as pleremic mapping alone cannot materialize full writing.

(3) WSTs should abandon single-term classification labels that fail to convey the mixed nature of most WSs.

(4) **Pleremic – cenemic** terms can greatly expediate greater attention to the graphematic mappings of lexical units.
Concluding remarks 3

35 JWS as a case study illustrating only options for realizing the shift from partial→full writing

Although CWS employed strategies for cenemic mappings (rebus), as applied to form phonetic compound characters, effectively created new pleremic graphemes. In contrast, JWS pursued alternative option of supplementing pleremic kanji with separate phonographic sub-systems (two kana scripts) for cenemic mappings, such as grammatical elements (hiragana) + coping with loanwords (katakana).

Growing consensus that morphography is the most appropriate term for alternative to phonography is a positive step. As partial→full section tried to illustrate, as morphography alone can only materialize partial writing (as both CWS + JWS testify), next (modest!) step is to gain wider recognition that reality.
Thank you for your kind attention

ご清聴ありがとうございます


