Modelling kanji as a subsignary of the current Japanese writing system

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Introduction

Aim

The current Japanese writing system (JWS) employs a large number of sinographs called kanji, together with two sets of siniforms and the Latin alphabet. This study presents a new, unifying model of kanji as a 'subsignary' of the JWS. In this model, individual kanji graphs are viewed as the formal building blocks of structurally simplex or complex signs, which denote the phonological exponents of Japanese morphemes.

Backgrounds

JWS is embodied by a mixture of multiple scripts or sets of graphs. They differ from each other in several respects, including historical origin, size, and formal characteristics. Besides, they are used to write different types of words and morphemes according to distinct sets of orthographic conventions. **Kanji** is used mainly to write lexical elements of native and Sino-Japanese origins. Each graph is associated with one or more sounds known as 'readings', which often, but not always, convey discernible meanings.

Views differ on how to describe these (semanto)phonetic values in linguistically appropriate terms.

Script name	Script type	No. of graphs	Associated values	Used to write
Kanji (漢字)	Sinographs	3,000-6,000	Sound (+ meaning)	Native lexical elements, Sino-Japanese loanwords
Hiragana (平仮名)	Siniforms	approx. 50	Syllable / mora	Grammatical elements, Some native words
Katakana (片仮名)	Siniforms	approx. 50	Syllable / mora	Non-Chinese loanwords, Onomatopoeia, other
Rōmaji (ローマ字)	Latin alphabet	26 + ā ī ū ē ō	Consonant / vowel	Non-Chinese loanwords, Other

Notational conventions

Abbreviations

F:	Form
G:	Graph
JWS:	Japanese writing system
LU:	Linguistic unit
S:	Sign
ST:	Semantic transparency
V:	Value

Symbols

——	constituency
⟺	correspondence
' '	meaning
/ /	phonological form
{ }	morpheme
+	morpheme boundary

Kanji as a subsignary of JWS

JWS is a graphical sign system that can be utilised to represent utterances in Japanese more or less accurately by means of visually perceived forms. Like any other writing system, it comprises two main components called signary and an orthography (Daniels & Bright 1996; Coulmas 2003).

Signary is a set of written signs used in a given writing system (Daniels & Bright 1996). In JWS, the signary contains distinct sets of signs with different formal and functional characteristics.

Kanji signs differ from all other elements of the signary in both form and function. Thus, they should be seen as constituting a distinct subpart of the signary (Honda 2011). The present study proposes to refer to such subpart as a '**subsignary**'.

Sign is the arbitrary association of a signifier and a signified (Saussure 1916). In writing systems research, the terms 'form' and 'value' are commonly used to refer to the signifier and signified in a written sign (e.g. Coulmas 2003).

Form is substantiated by one or more discrete graphical marks known individually as '**graphs**' and collectively as 'script' (Sampson 2015). In kanji, about 3,000 graphs are commonly used today.

Value is the linguistic interpretation associated with the form of a given sign. Regarding kanji signs, the value may be either semantophonetic or phonetic. See the other side of this section and the discussion below.

Linguistic unit refers to any type of phonological or morphological entity, here labelled with Greek letters. The values of individual signs correspond to the instances of a given linguistic unit, here denoted by lower-case Roman numerals.

N.B. It is an open question whether Saussure's (1916) dyadic sign model is in any way preferable to Peirce's (1931-1958) triadic sign model for a better account of JWS and kanji (Gerald Penn, personal communication).
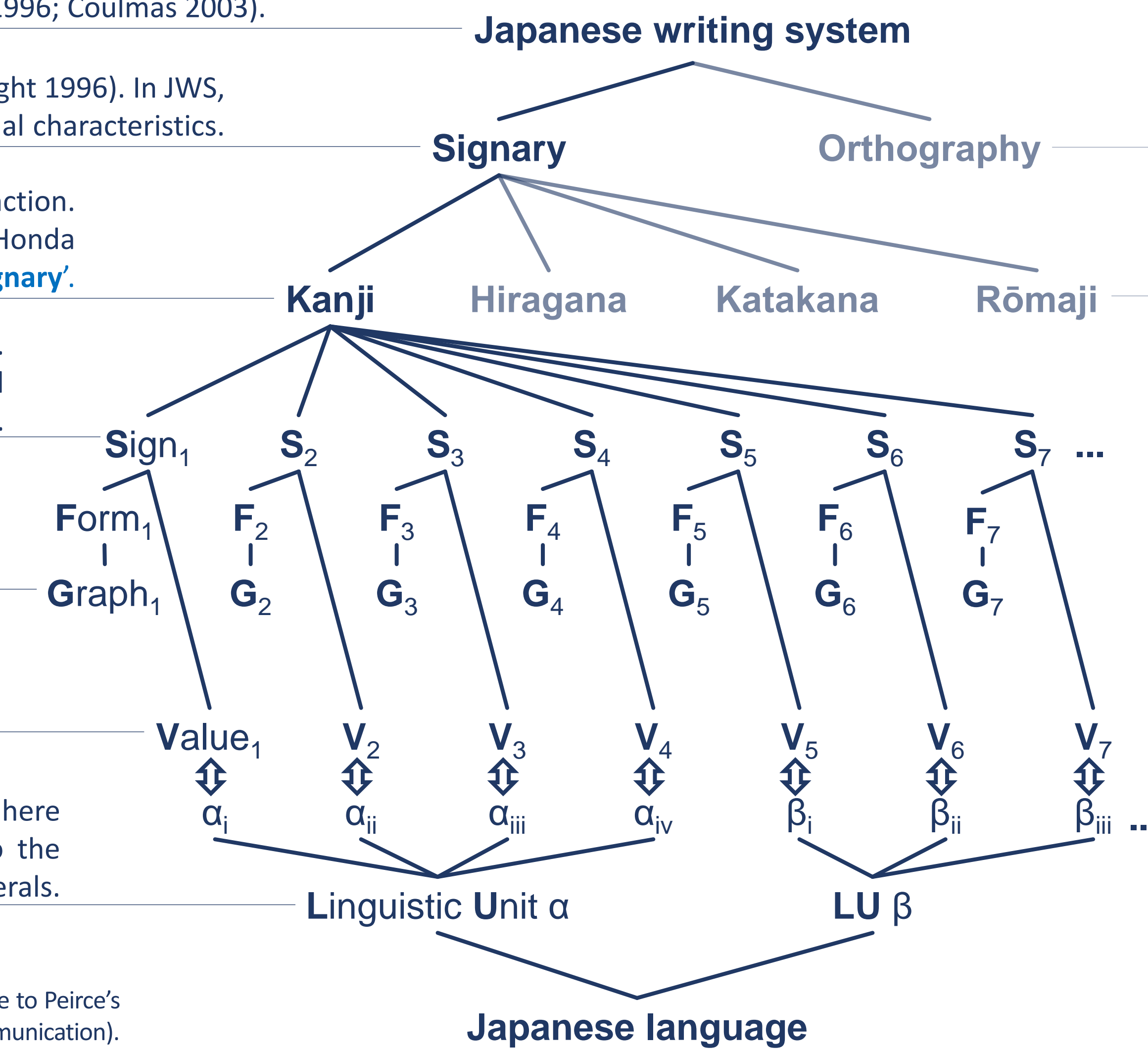
Orthography is a body of rules and constraints for using signs to write words and morphemes in a normative way. Although the present study has nothing to say about the orthographic aspects of the JWS, their relevance to kanji sign usage requires further research (e.g. Satake 2006).

Hiragana, katakana and rōmaji signs are used to write different types of lexical and grammatical elements (see above). Like kanji, they form separate subsignaries in JWS.

Plurality of linguistic units: No writing system is known to be based on a single linguistic unit (Gelb 1963). In other words, a writing system may have a mixed (sub)signary, where some signs are based on one unit (e.g. morphemes), while others are based on another unit (e.g. syllables).

Primary linguistic unit: At the same time, it is common to describe a given (sub)signary in terms of a single linguistic unit (e.g. 'morphemic', 'syllabic'). The underlying assumption is that one particular unit can be of primary importance compared to others within the (sub)signary.

Primary linguistic unit in kanji: The plurality of linguistic units is present in kanji; as detailed below, some kanji signs have semantophonetic values, while others have phonetic values. **An important question, then, is whether it is adequate to speak of a primary linguistic unit in kanji and, if so, how to describe it in linguistic terms.**

Kanji as signs of phonological exponents of morphemes

Morphographic theory

In kanji, many graphs are associated with **semantophonetic values**, which correspond to sounds conveying meanings. The received view is that they can be equated with **morphemes** (Hill 1967), i.e. the minimal linguistic forms carrying information about meaning or function. The **morphographic** theory of kanji claims that 'a vast majority' of kanji graphs have morphemic values, apart from some minor 'exceptions' (Joyce 2011). Hence, this theory sees the morpheme as the primary linguistic unit in kanji.

Morphophonic theory

In some cases, kanji graphs have **phonetic values** corresponding to sounds conveying no meanings. Some graphs function as word-specific syllabographs (e.g. 葡萄 /budō/ 'grape'), while others have semantophonetic values which may be used phonetically with no regard to meaning (e.g. 面倒 /mendō/ 'care'). Whereas the morphographic theory treats such cases as exceptions, the **morphophonic theory** sees them as indicative of the sound being the primary linguistic unit in kanji (Matsunaga 1996).

Problem of semantic transparency

Both existing theories stop short of addressing **semantic transparency (ST)**, i.e. the extent to which the meaning of a polymorphemic word can be inferred from the meanings of the morphemes it contains (Körtvélyessy, Štekauer & Zimmermann 2015). ST varies across kanji-written words, and morphography is untenable in kanji signs used to write the elements of highly opaque words because the presence of a clear meaning is a prerequisite for morphemehood in most morphological theories (Bauer 2003).
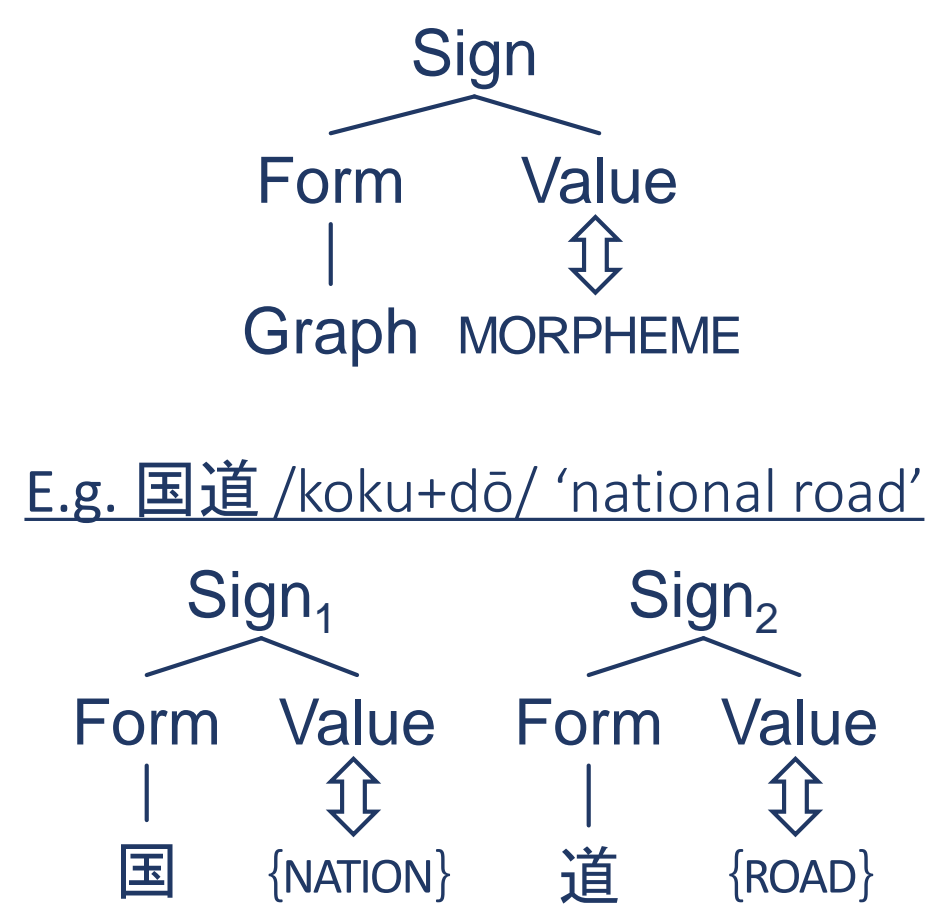
Proposal: Kanji as signs of the phonological exponents of morphemes

The morphographic theory excels in capturing the fact that many kanji signs have semantophonetic values, which are best described as being morphemic. However, it is open to question whether signs carrying non-morphemic values should indeed be treated as 'exceptions', especially in view of seman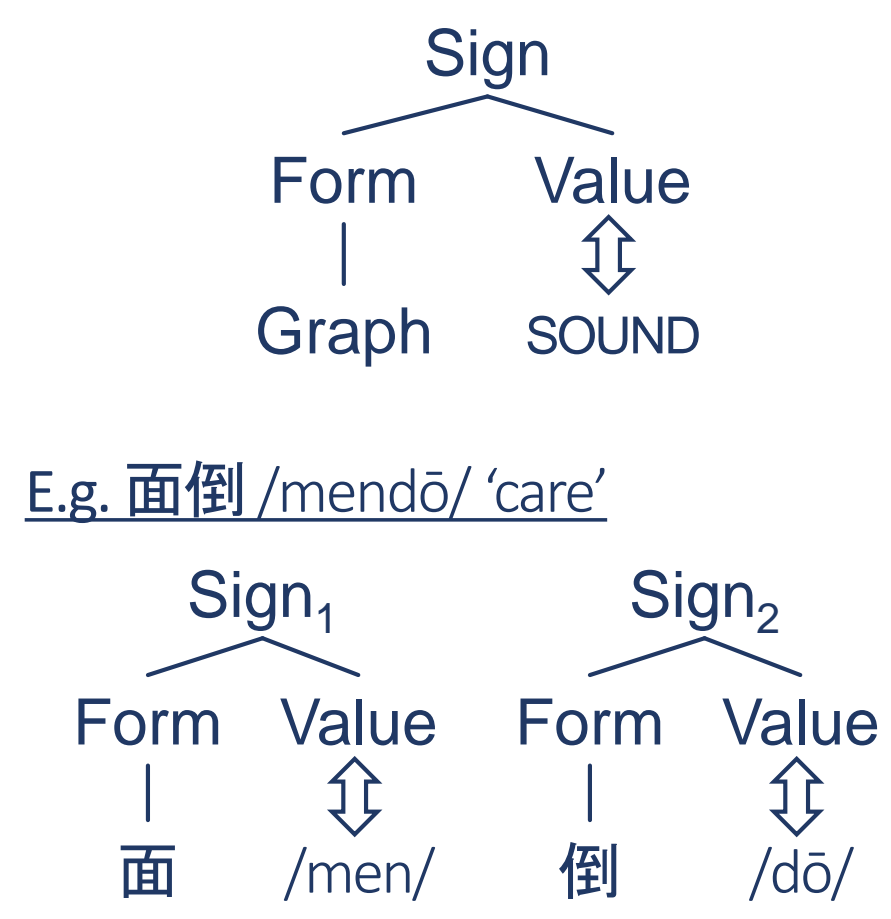tic transparency. On the other hand, the morphographic theory has the advantage of treating all kanji signs uniformly without saying what is exceptional and what is not. However, it does not explain in what way kanji signs differ from purely phonographic signs denoting sounds irrespective of the meaning of words and morphemes. Drawing on the benefits of both theories, the present study proposes to treat kanji graphs as the formal building blocks of structurally simplex or complex signs, which denote the **phonological exponents of individual morphemes**. As depicted below, this model provides a uniform treatment of all kanji signs, regardless of whether they have semantophonetic values or phonetic values. Further work is needed to reinforce the validity of this model.
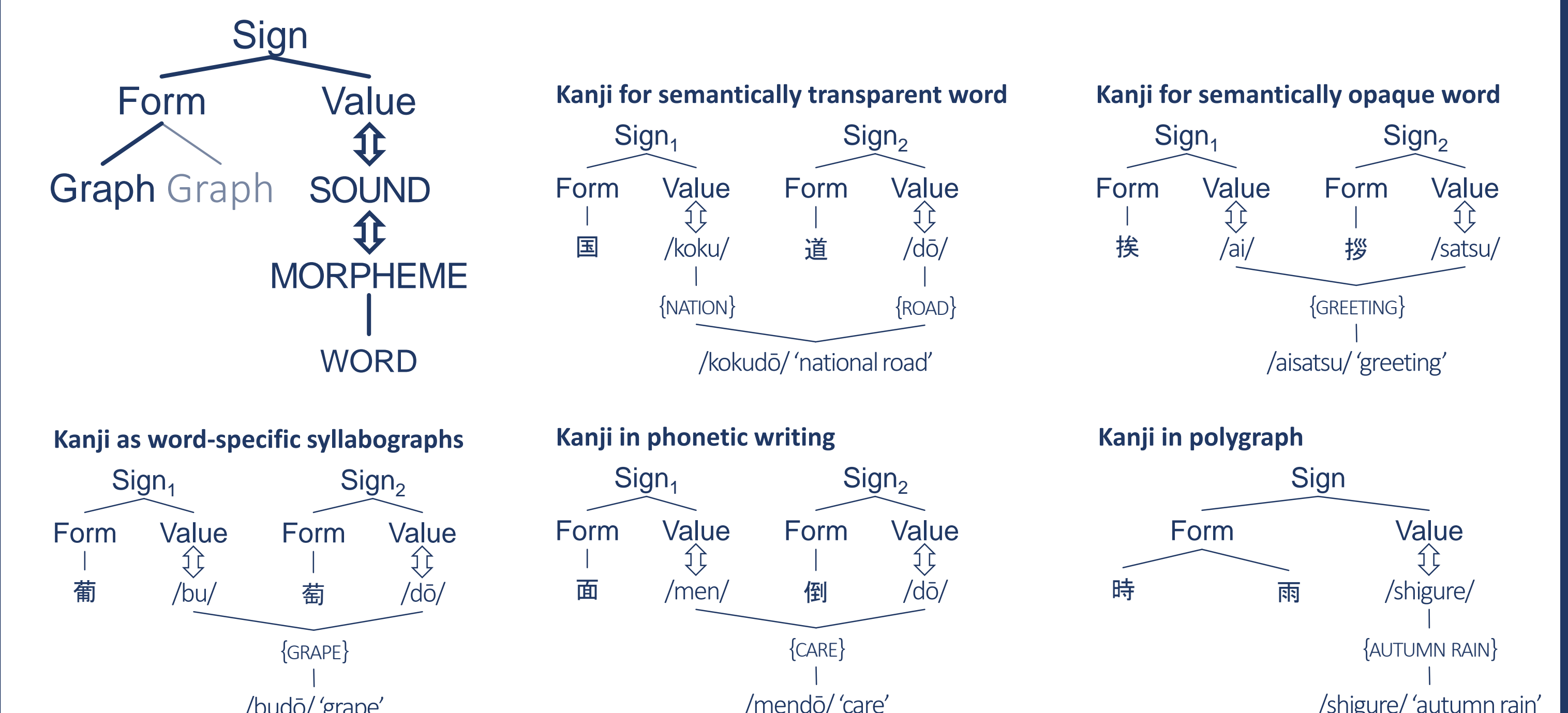
Morphographic theory

Sign → Form, Value; Form → Graph; Value = MORPHEME

E.g. 国道 /koku+dō/ 'national road'

Sign₁ → Form (国), Value ({NATION}); Sign₂ → Form (道), Value ({ROAD})

Morphophonic theory

Sign → Form, Value; Form → Graph; Value = SOUND

E.g. 面倒 /mendō/ 'care'

Sign₁ → Form (面), Value (/men/); Sign₂ → Form (倒), Value (/dō/)

ST across kanji-written words

TRANSPARENT

|		
国道 /koku+dō/ 'national road'	= {NATION} + {ROAD}
勉強 /ben+kyō/ 'study'	= {STRIVE} + {STRONG}
昆虫 /kon+chū/ 'insect'	= {?} + {BUG}
挨拶 /ai+satsu/ 'greeting'	= {?} + {?}

OPAQUE

Reasons for opacity (Honda 2018)
- Loss of compositionality
- Change in word's meaning
- Change in kanji sign value
- Word-specific syllabographs
- Orthographic variation

Proposal model:

Sign → Form, Value; Form → Graph Graph; Value ⟺ SOUND — MORPHEME — WORD

Kanji for semantically transparent word

Sign₁ → Form (国), Value (/koku/); Sign₂ → Form (道), Value (/dō/); {NATION} {ROAD} → /kokudō/ 'national road'

Kanji for semantically opaque word

Sign₁ → Form (挨), Value (/ai/); Sign₂ → Form (拶), Value (/satsu/); {GREETING} → /aisatsu/ 'greeting'

Kanji as word-specific syllabographs

Sign₁ → Form (葡), Value (/bu/); Sign₂ → Form (萄), Value (/dō/); {GRAPE} → /budō/ 'grape'

Kanji in phonetic writing

Sign₁ → Form (面), Value (/men/); Sign₂ → Form (倒), Value (/dō/); {CARE} → /mendō/ 'care'

Kanji in polygraph

Sign → Form, Value (/shigure/); 時 雨 {AUTUMN RAIN} → /shigure/ 'autumn rain'

Conclusion

This study has presented a new, unifying model of kanji as a subsignary of the Japanese writing system. Individual kanji graphs are seen as the formal building blocks of structurally simplex or complex signs, which assume phonological exponents of morphemes as the primary linguistic unit. Further research is needed to test this model through a strictly synchronic morphological analysis of kanji-written words, including less frequent words and proper names.
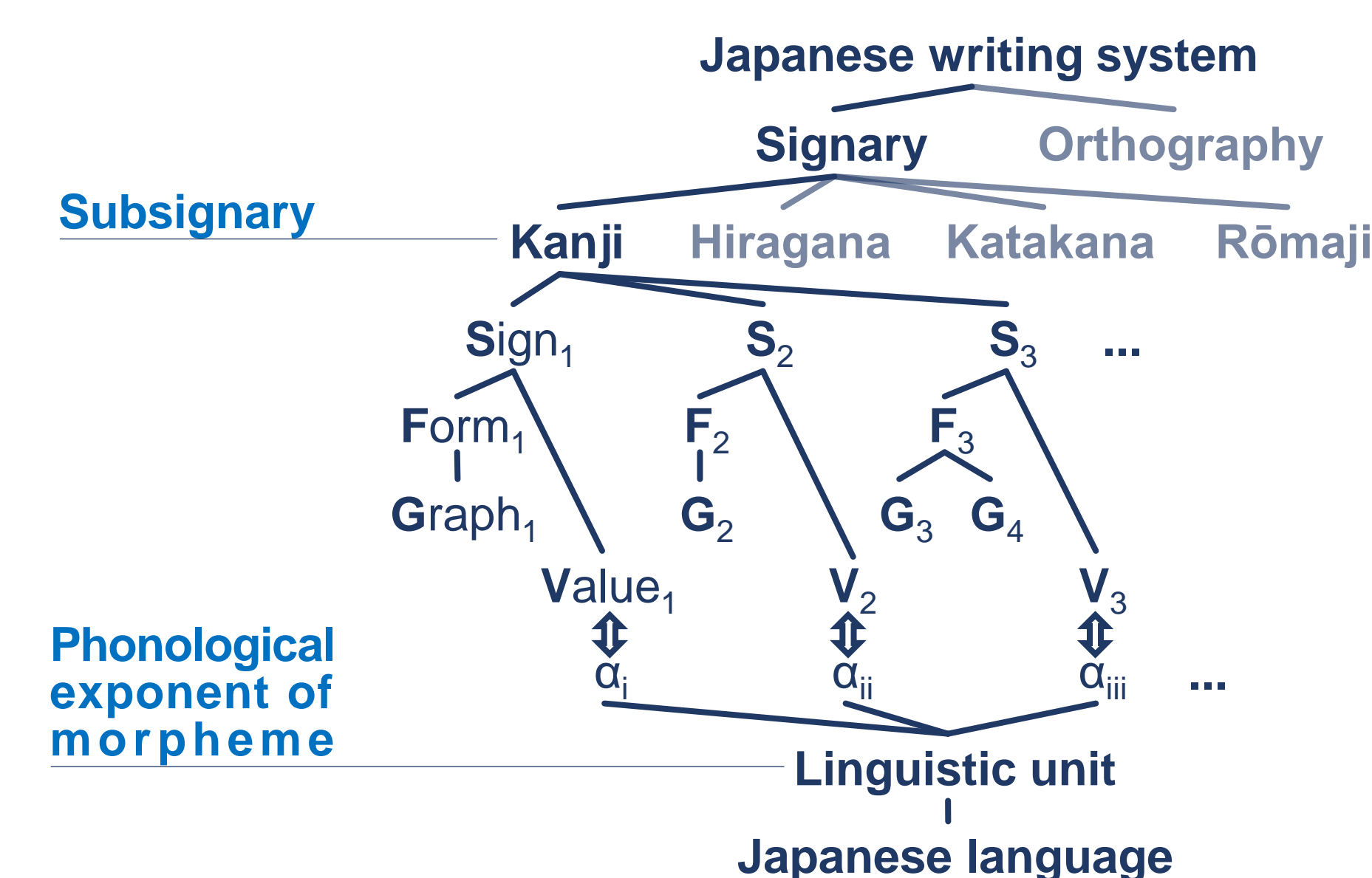
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