Multiple Occurrences of the Default Morpheme of Tense

1 Tense and Verb Morphemes in Western Saga Dialect and Standard Japanese

1.1 Identical Morphological Categories of Verbs

In western Saga dialect every verb is morphologically a member of one of four classes, similar to standard Japanese. The non-past, past and negative forms of fifty seven (57) verbs in western Saga dialect are given in Table 1.[1]

Table 1: Non-past, Past, and Negative Forms of Verbs
in Western Saga Dialect

	Standard 'Meaning'	[Non-past]	[Past]	[Negative]
001	/au/ 'meet'	aɯ	oːta	aɰaɴ
002	/tetsudau/ 'help'	tetsɯ̈daɯ	tetsɯ̈doːta	tetsɯ̈daɰaɴ[2]

003	/iu/ 'say'	juː	juːta	iɯɰaN/juɯɰaN
004	/kuu/ 'eat'	kɯː	kɯːta	kɯɯɰaN
005	/hirou/[3] 'pick up'	çiɾoɯ	çiɾoːta	çiɾoɯɰaN
006	/katu/ 'win'	katsɯ	katta	kataN
007	/saru/ 'leave'	saː	satta	saɾaN
008	/tariru/ 'suffice'	taː[4]	tatta	taɾaN
009	/iru/ 'need'	iː	itta	iɾaN
010	/kiru/ 'cut'	ciː	citta	ciɾaN
011	/kuru/ 'turn [pages]'	kɯː	kɯtta	kɯɾaN
012	/nuru/ 'paint'	nɯː	nɯtta	nɯɾaN
013	/suru/ 'scratch'	sɯ̈ː	sɯ̈tta	sɯ̈ɾaN
014	/eru/ 'select'	eː	etta	eɾaN
015	/kaeru/ 'go home'	kaeː	kaetta	kaeɾaN
016	/okoru/ 'get angry'	okoː	okotta	okoɾaN
017	/saboru/ 'be lazy'	saboː	sabotta	saboɾaN
018	/tabakoru/ 'smoke'	tabakoː	tabakotta	tabakoɾaN
019	/memoru/ 'take notes'	memoː	memotta	memoɾaN
020	/yomu/ 'read'	jomɯ	jonda	jomaN
021	/erabu/ 'select'	eɾabɯ	eɾanda	eɾabaN
022	/sinu/ 'die'	çiN	çinda	çinaN
023	/aku/ 'open'	akɯ	aita	akaN
024	/hiku/ 'pull'	çikɯ	çiːta	çikaN

025	/kiku/ 'hear'	ɕikɯ	ɕiːta	ɕikaɴ
026	/nugu/ 'take off'	nɯgɯ	nɯida	nɯgaɴ
027	/isogu/ 'hurry'	isogɯ	isoida	isogaɴ
028	/dasu/ 'submit'	dasɯ̈	daɕita	dasaɴ
029	/nakusu/ 'lose'	noːnakasɯ̈[5]	noːnakaɕita	noːnakasaɴ
030	/yakusuru/ 'translate'	jakɯsɯ̈ʔ	jakɯɕita	jakɯsaɴ
031	?/yakusu/ 'translate'	ʔjakɯsɯ̈	jak ɯɕita	jakɯsaɴ
032	/aisuru/ 'love'	aisɯ̈ʔ	aiɕita	aisaɴ
033	?/aisu/ 'love'	ʔaisɯ̈	aiɕita	aisaɴ
034	/ryakusuru/ 'abbreviate'	ɾʲakɯsɯ̈ʔ	ɾʲakɯɕita	ɾʲakɯsaɴ
035	?/ryakusu/ 'abbreviate'	ʔɾʲakɯsɯ̈	ɾʲakɯɕita	ɾʲakɯsaɴ
036	/kaeru/ 'change'	kajɯʔ	kaeta	kaeɴ
037	/kangaeru/ 'consider'	kaŋgajɯʔ	kaŋgaeta	kaŋgaeɴ
038	/oboeru/ 'learn'	obojɯʔ	oboeta	oboeɴ
039	/taberu/ 'eat'	tabɯʔ	tabeta	tabeɴ
040	/deru/ 'be out'	ʥɯ̈ʔ	deta	deɴ
041	/odoroku/ 'get surprised'	tamagɯʔ	tamageta	tamageɴ
042	/dekiru/ 'can do'	dekɯʔ[6]	deketa	dekeɴ
043	/neru/ 'sleep'	nɯʔ	neta	neɴ

044	/tataku/ 'hit'	kɯɾasɯ̈ʔ	kɯɾaɕeta	kɯɾaɕeɴ
045	/mataseru/ 'keep waiting'	matasɯ̈ʔ	mataɕeta	mataɕeɴ
046	/suteru/ 'throw away'	sɯ̈ttsɯ̈ʔ/ sɯ̈tsɯ̈ʔ[7]	sɯ̈tteta/sɯ̈teta	sɯ̈tteɴ/ sɯ̈teɴ
047	/okiru/ 'get up'	ociː	ocita	ociɾaɴ/ociɴ
048	/kiru/ 'wear'	ciː	cita	ciɾaɴ/ciɴ
049	/miru/ 'look'	mʲiː	mʲita	mʲiɾaɴ/mʲiɴ
050	/oriru/ 'get off'	oɾʲiː	oɾʲita	oɾʲiɾaɴ/oɾʲiɴ
051	/kuru/ 'come'	kɯʔ	cita	koɴ
052	/motte kuru/ 'bring'	motte kɯʔ	motte cita	motte koɴ
053	/suru/ 'do'	sɯ̈ʔ	ɕita	ɕeɴ
054	/enryo suru/ 'refrain'	enɾʲosɯ̈ʔ	enɾʲoɕita	enɾʲoɕeɴ
055	/syuuri suru/ 'repair'	ɕɯ̈ːɾʲisɯ̈ʔ	ɕɯ̈ːɾʲiɕita	ɕɯ̈ːɾʲiɕeɴ
056	/getto suru/ 'get'	gettosɯ̈ʔ	gettoɕita	gettoɕeɴ
057	/hirune o suru/ 'nap'	ɕiɾuneba sɯ̈ʔ	ɕiɾuneba ɕita	ɕɾuneba ɕeɴ

With any given verb, its negative form in western Saga dialect follows one of the following patterns: 1) [...aɴ] for the consonant-final base class corresponding to /...anai/ in the standard, as given in the table from #001 to #035, e.g., [akaɴ] 'open [not]' for /akanai/; 2) [...eɴ] for the /e/ vowel-final base class corresponding to /...enai/ in the standard, as given there from

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#036 to #046, e.g., [tabeɴ] 'eat [not]' for /tabenai/; 3) [...iɾaɴ] or [...iɴ] for the /i/ vowel-final base class corresponding to /...inai/ in the standard, as given there from #047 to #050, e.g., [ociɾaɴ] and [ociɴ] 'get up [not]' for /okinai/; 4) [....oɴ] for the strong /k/ base class corresponding to /...onai/ in the standard, as given there from #051 to #052, e.g., [koɴ] 'come [not]' for /konai/; 5) [...eɴ] for the strong /s/ base class corresponding to /...inai/ in the standard, as given there from #053 to #057, e.g., [ɕeɴ] 'do [not]' for /sinai/. Note that the verbs of one Chinese sound plus /s/ belong to the CONSONANT-FINAL BASE CLASS, as its negative forms end with [...aɴ], as given in the table from #030 to #035, e.g., [aisaɴ] (and /aisanai/ in the standard Japanese) for /aisuru/ 'love [NON-PAST]', and that all the shorter non-past forms of this kind, e.g., ?[aisɯ̈], sound classical, and are still grammatical, which is indicated by the question mark.

1.2   Phonological Differences

One difference between western Saga dialect and standard Japanese is as follows: The glottal stop ([ʔ]) occurs in the dialect IN PLACE OF THE FINAL /RU/ OF THE STANDARD 'NON-PAST' FORM only if the verb is one of the following:

- the /e/ vowel-final base verb with /e/ replaced with /u/,

- the strong /k/ or /s/ base verb, *or*

- the consonant-final base verb of one Chinese sound plus /s/.

The first pattern is seen from #036 to #046, e.g., [nɯʔ] (#043), but NOT *[neʔ], for the standard verb /neru/ 'sleep [NON-PAST]'. The second pattern

is indicated from #051 to #057, e.g., [motte kɯʔ] (#052) for the standard verb /motte kuru/ 'bring [NON-PAST]' and [getto sɰ̈ʔ] (#056) for the standard verb /getto suru/ 'get [NON-PAST]' (e.g., (Ono 1991)). Finally, the third pattern is demonstrated from #030 to #035, e.g., [aisɰ̈ʔ] (#032) for the standard verb /aisuru/ 'love [NON-PAST]', shown in the current study. Note that every verb-final glottal stop immediately follows the phoneme /u/.

Another difference found in the literature is that the vowel immediately preceding /ru/ is lengthened in the dialect in place of the final [ru] of 1) the standard /r/ consonant-final base verb, as given in Table 1 from #007 to #019, e.g., [nɯː] (#012) (but NOT *[nɯʔ]) for the standard verb /nuru/ 'paint [NON-PAST]', and 2) the standard /i/ vowel-final base verb, as given there from #047 to #050, e.g., [ociː] (#047) (but NOT *[ociʔ]) for the standard verb /okiru/ 'get up [NON-PAST]' (Ono 1991: 213).

2   A Previous Study

2.1   A Plausible Revision of Hayata (1998)

In this section, it will be shown that a plausible revision of Hayata's (1998) /r/-glottalization would not be adequate at the level of Chomsky's explanatory adequacy. Hayata's explanation is only relevant as a falsifiable or scientific analysis for the given glottal stop phenomenon in western Saga dialect. Yet, Hayata's study is an analysis of EASTERN Saga dialect. The glottal stop occurs IN EASTERN SAGA DIALECT in place of the final /ru/ of verbs in the non-past tense in standard Japanese, NO MATTER TO WHICH MORPHOLOGICAL CLASS IT BELONGS (FOR EXAMPLE, EVEN IF IT BELONGS

CLASS). The eastern Saga dialectal counterparts are given for some verbs of the western dialect in Table 2.

Morpho-class	Eastern Saga	Western Saga	Standard
...C[Jpns]	kɯʔ	kɯː	/kuru/ 'turn' (#011)
	süʔ	süː	/suru/ 'scratch'(#013)
	akɯ	akɯ	/aku/ 'open' (#023)
	dasü	dasü	/dasu/ 'submit' (#028)
...C[[Chns]s]	aisüʔ	aisüʔ	/aisuru/ 'love' (#032)
	ʔaisü	ʔaisü	ʔ/aisu/ 'love' (#033)
...V/e/	nɯʔ	nɯʔ	/neru/ 'sleep' (#043)
...V/i/	ociʔ	ociː	/okiru/ 'wake' (#047)
strong /k/	kɯʔ	kɯʔ	/kuru/ 'come'(#051)
strong /s/	süʔ	süʔ	/suru/ 'do' (#053)

Table 2: Non-past Forms of Verbs in Eastern and Western Saga Dialects

We could revise the context of Hayata's (1998) /r/-glottalization for the western dialect, as follows: the utterance-final /r/ glottalizes if it underlyingly occurs immediately after /u/, or [+ back, + high], and across a morpheme boundary, as formalized in Figure 1.[8]

$$\text{r} \quad \rightarrow \quad \text{ʔ} \quad / \quad \begin{bmatrix} +back \\ +high \end{bmatrix} \# - \#\#$$

Figure 1: Sentence Final /r/ Glottalization

In addition, it would be fair for us to assume that one Chinese sound plus /s/

FOLLOWED BY /ʊ/ is the base form and the /ru/ is the non-past morpheme, following Hayata's (1985) assumption of strong base verbs as analyzed in /ku#ru/ 'come#NON-PAST'. For example, the beginning part /aisu/ would be the base form, and the ending part /ru/ would be the 'non-past' morpheme for /aisuru/ 'love [NON-PAST]' (or for its dialectal counterpart [aisɯ̈ʔ]). Our revised analysis of Hayata (1998) in conjunction with his earlier study (or Hayata (1985)) would correctly predict some examples of the verb's final glottal stop in western Saga dialect as follows: The revised /r/ glottalization is not applicable to /sur#/ 'scratch', as given in Table 3, because there is no morpheme boundary between /u/ (or [+ back, + high]) and /r/, whereas it is applicable to /nu#r/ 'sleep#[r]' since there is a morpheme boundary between /u/ and /r/, and the vowel immediately before the morpheme boundary is /u/. Hayata's (1998) base final vowel change has replaced the vowel /e/ with /u/ since the vowel /e/ suffers the regressive assimilation by the vowel /u/ before an application of the sentence-final /r/ glottalization if the verb is the /e/ vowel-final base verb, as in the example /ne/ 'sleep' in Table 3.

/sur#ru/	/ne#ru/	
-	nu#r	Base Final Vowel Change
sur#u	-	Latter C Simplification of CC Cluster
sur#	nu#r	S Final /u/-Deletion
-	[nuʔ]	S Final /r/-Glottalization

Table 3: Predictions Made by My Revision of Hayata (1998)

(We ignore how the phoneme /u/ realizes as [ɯ] or [ɯ̈] since these are irrelevant to the current study.)

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2.2 Inadequacy

If we examine my revision of Hayata (1998) in conjunction with his earlier study (or Hayata (1985)) more closely, then it will turn out that Hayata's (1998) base final vowel change misses a suppletion phenomenon, and that our extension of Hayata (1985) is not well independently motivated.

2.2.1 A Problem with Hayata's (1998) Base Final Vowel Change

Hayata's (1998) base final vowel change makes an incorrect prediction in the following way. As can be seen with the past form of /e/ in (1a), and the past form of /he/ in (1b), the lexicon of western Saga dialect must include /e/ vowel-final base verbs /e/ 'receive' and /he/ '[time] pass' the same as standard Japanese, similar to the /e/ vowel-final base verb /ne/ 'sleep' in Hayata (1998).

(1) a. kodoɴ no   ço:saɴ ba   eta.
        child NOM praise ACC receive [PAST]
        'Children received praise.'

     b. ʥɯ͍:neɴ heta.
        10 years pass [PAST]
        'It has have passed ten years.'

Then, Hayata (1998) would predict that the non-past counterpart of [eta] 'receive [PAST]', /uʔ/ (or [ɯʔ]), and the non-past counterpart of [heta] 'passed', /huʔ/ (or [ɸɯʔ]), are grammatical in western Saga dialect, as given in Table 4.

The 'non-past' form /uʔ/ (and the /(r)eba/ conditional form /u#reba/) for the verb /e/ 'receive' and the 'non-past' form /huʔ/ (and the /(r)eba/

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/e#ru/	/he#ru/	
u#ru	hu#ru	Base Final Vowel Change
-	-	Latter C Simplification of CC Cluster
u#r	hu#r	S Final /u/-Deletion
[uʔ]	[huʔ]	S Final /r/-Glottalization

Table 4: Applications of Hayata (1998)

conditional form /hu#reba/) for /he/ '[time] pass' are actually absent in the dialect, as (2a) and (2b) are ungrammatical, in contrast with the grammatical non-past form [nɯʔ] 'sleep [NON-PAST]' for its past counterpart [neta] 'sleep [PAST]'.

(2) a. * kodoɴ no ɕoːsaɴ ba ɯʔ.   [= uru]
        ...   . obtain [NON-PAST] [= clssclJpns]

    b. * dʑɯ̈ːneɴ ɸɯʔ.   [= huru]
        ...   pass [NON-PAST] [= clssclJpns]

Without Hayata's (1998) vowel change, this incorrect prediction would not have been made. The discussions here suggest that the paradigm of the /e/ vowel-final base verb in western Saga dialect is a complex of two different verbs /u/ and /e/ similar to the English complex paradigm of *go*, *went*, and *gone* as the past form suppleted from that of *wend*, *went*, *went*, which has the same meaning as *go*.

2.2.2 No Motivation for Our Extension of Hayata (1985)

If one Chinese sound plus /s/ and /u/ of the consonant-final base of (e.g., /aisu/ 'love') were a verb base as well, as suggested in Hayata (1985), it could not explain why those are verb in the non-past tense as well (even if they

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sound classical), as given in #031, #033, and #035 in Table 1.[9]

In addition, there should be many morpheme combinations that use one Chinese sound plus /s/ and /u/ of the consonant-final base verbs, e.g., /aisu/ 'love'. Actually, this is not the case, as supported by one example of many morpheme combinations, in regard to the passive forms. What the passive morpheme /(r)are/ takes as the complement is one with the last /u/ eliminated, as in /ais#are/ 'love#PASSIVE' similarly to /kak#are/ 'write#PASSIVE' and /oki#rare/ 'get up#PASSIVE' in contrast with the ungrammatical one */aisu#rare/ as indicated in Table 5.

[Non-past]	[Passive]	[Conditional]	
kur#u (#011)	kur#are#ru	kur#eba	*kur#u#reba
sur#u (#013)	sur#are#ru	sur#eba	*sur#u#reba
aisu#ru (#032)	*aisu#rare#ru	aisu#reba	*aisu#ru#reba
?ais#u (#033)	ais#are#ru	ais#eba	ais#u#reba
ne#ru (#043)	ne#rare#ru	ne#reba	*ne#ru#reba
oki#ru (#047)	oki#rare#ru	oki#reba	*oki#ru#reba
k#u#ru (#051)	*k#are#ru	*k#eba	k#u#reba
s#u#ru (#053)	s#are#ru	*s#eba	s#u#reba

Table 5: Passive and Conditional /(r)eba/ Forms in Standard Japanese

Only one apparently exceptional morpheme combination, inconsistent with typical non-past forms, can be seen in the conditional /(r)eba/ connective forms. What the conditional connective morpheme /(r)eba/ takes as the complement can be the consonant-final base of one Chinese sound plus /s/ plus /u/, as in /aisu#reba/ shown in Table 5. However, one with the last

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/u/ absent can be the complement of the conditional connective morpheme /(r)eba/ as well, as in /ais#eba/ 'love#if' similar to /kak#eba/ 'write#if' and /oki#reba/ 'get up#if' in Table 5. The fact that the conditional forms of one Chinese sound plus /s/ of the consonant-final base verb can be longer is not decisive since they can be analyzed as in /ais#u#reba/, which contains the verb base form /ais/, as indicated in the table. The phoneme /u/ in the example may be the 'non-past' morpheme. The discussions here suggest that the base forms of one Chinese sound plus /s/ of the consonant-final base verbs apply up to the phoneme /s/.

2.3   'Redundant' Occurrences of the 'Non-past' Morpheme

If the base forms of one Chinese sound plus /s/ of the consonant-final base verbs are analyzed as applying up to the phoneme /s/, as suggested in the end of Section 2.2.2, is correct, then /u/ will be the non-past morpheme. This is because the sequence of the base form of one Chinese sound plus /s/ (of the consonant-final base verbs) plus the morpheme /u/ is the short form in the non-past tense, as /aisu/ analyzed as /ais#u/ 'love#NON-PAST' similarly to /ak#u/ 'open#NON-PAST', /ne#ru/ 'sleep#NON-PAST', and /oki#ru/ 'get up#NON-PAST', as indicated in Table 5.

2.3.1   In Case of Usual Non-past Tense Sentences

If /(r)u/ were the non-past morpheme, then it would follow that the LONGER FORMS of the consonant-final base verbs of one Chinese sound plus /s/ in the non-past tense contain TWO 'NON-PAST' MORPHEMES CONSECUTIVELY,

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as seen on the left of Table 6.

ais#u#ru (#032) 'love#NON-PAST#NON-PAST' ?ais#u (#033) '...#NON-PAST'	*ais#ita#ta[10] '...#PAST#PAST' ais#ita '...#PAST'
k#u#ru (#051) 'come#NON-PAST#NON-PAST' *k#u '...#NON-PAST'	*k#ita#ta '...#PAST#PAST' k#ita '...#PAST'
s#u#ru (#053) 'do#NON-PAST#NON-PAST' *s#u '...#NON-PAST'	*s#ita#ta '...#PAST#PAST' s#ita '...#PAST'

Table 6: Longer and Shorter Forms of Verbs in the Non-past Tense and in Past Tenses

Based on this assumption, the forms of the strong base verbs /k/ and /s/ in the non-past tense would also contain two 'non-past' morphemes, and NOT only one 'non-past' morpheme, as given in Table 6. Furthermore, in contrast with the 'non-past' morpheme /(r)u/, no verb base of any morphological class can combine with the past form /(i)ta/ consecutively, as witnessed on the right of Table 6. The longer forms of one Chinese sound plus /s/ of the consonant-final base verbs and the strong base verbs /k/ and /s/ in the non-past tense would be grammatical even if they contained two 'non-past' morphemes consecutively. In addition, they are interpreted as RECEIVING THE MEANING OF THE NON-PAST TENSE WITHOUT ANY RE-

DUNDANCY. The non-redundancy in the interpretation would not follow if the morpheme /(r)u/ inherently received the complementary meaning of the past tense /ita/ in the following way: Suppose that the morpheme /(r)u/ inherently received the meaning of the non-past tense, i.e., were interpreted as meaning $\lambda X \lambda e \exists t[X(e)(t)\ \&\ t \in T_{NON-PAST}]$, as assumed in the literature like Enç (1997). Then, more than one morpheme /(r)u/ for one verb would lead to a vacuous quantification. For example, /aisuru/ 'love [NON-PAST]', which contains two occurrences of the morpheme /(r)u/, would be interpreted as meaning that THE EVENT OF SOMEONE'S LOVING OF SOMETHING OCCURS IN THE NON-PAST, OR IN OTHER WORDS, IN THE PRESENT OR FUTURE, MUST OCCUR IN THE PRESENT OR FUTURE, MEANING NONSENSE, as formalized as follows:

(3) $\lambda X \lambda e \exists t[X(e)(t)\ \&\ t \in T_{NON-PAST}]$
$\Big(\lambda X \lambda e \exists t[X(e)(t)\ \&\ t \in T_{NON-PAST}](\lambda e \lambda t[love'(e)(t)]) \Big),$

which is equivalent to:

(4) $\lambda X \lambda e \exists t[X(e)(t)\ \&\ t \in T_{NON-PAST}](\lambda e \exists t[love'(e)(t)\ \&\ t \in T_{NON-PAST}]),$

which is equivalent to:

(5) $\lambda e \exists t[(\lambda e \exists t[love'(e)(t)\ \&\ t \in T_{NON-PAST}])(e)(t)\ \&\ t \in T_{NON-PAST}],$

which cannot go through λ-conversion any more, and is not well-formed in semantics. The less deeply embedded non-past tense needs a free event time variable to specify as the present or future, and yet, the tense of the event predicate **love'** has already been existentially quantified by the meaning of the more deeply embedded non-past tense. Actually, native speakers do not

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feel that there is any redundancy, or vacuous quantification in the interpretation. The conventional assumption that the morpheme /(r)u/ INHERENTLY receives the meaning of the non-past tense, as in Enç (1997) and Muraki (1991), is thus rejected.

2.3.2 In Case of /(R)eba/ Conditional Clauses

If /(r)u/ were the 'non-past' morpheme, then either the optional occurrence, obligatory occurrence, or obligatory absence of the 'non-past' morpheme depending on the morphological type of the verb in question in the /(r)eba/ conditional clauses would NOT follow. The 'non-past' morpheme is:

- 1) optionally present if the verb is one Chinese sound plus /s/ of the consonant-final base verb. It is:

as in /ais#u#reba/ 'love#NON-PAST#if' and /ais#eba/ 'love#if' in Table 5. The 'non-past' morpheme is:

- 2) obligatorily present if the verb is the strong base verb /k/ or /s/,

as in /k#u#reba/ 'come#NON-PAST#if' in contrast with the ungrammatical form of */k#eba/ 'come#if'. The 'non-past' morpheme is:

- 3) obligatorily absent otherwise, notably if the verb is either an /e/ vowel-final base verb, an /i/ vowel-final base verb, or a consonant-final base verb,

as in /ne#reba/ 'sleep#if' in contrast with the ungrammatical form of */ne#ru#reba/, and /oki#reba/ 'get up#if' in contrast with the ungrammatical form of */oki#ru#reba/ and /kak#eba/ 'write#if' in contrast with the ungrammatical form of */kak#u#reba/.

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The conditional connective /(r)eba/ must be interpreted as MEANING BOTH *if* AND THE NON-PAST TENSE since, for example, /ne#reba/, /oki#reba/, /ak#eba/ are grammatical, as analyzed as 'sleep#if ... [NON-PAST]', 'get up#if ... [NON-PAST]', and 'open#if ... [NON-PAST]' in this order, in contrast with their ungrammatical counterparts with the 'non-past' morpheme /(r)u/ intervened, as in Table 5. Here if the morpheme /(r)u/ inherently received the complementary meaning of the past tense /(i)ta/, then we would have again a vacuous quantification in, for example, /ais#u#reba/ 'love#NON-PAST#if ... [NON-PAST]', /k#u#reba/ 'come#NON-PAST#if ... [NON-PAST]'. The morpheme /u/ thus DOES NOT INHERENTLY receive the complementary meaning of the past tense, contrary to the conventional assumption, as in Enç (1997) and Muraki (1991). One solution might be that the morpheme /(r)u/ is actually the default one of tense the inherent meaning of which is the identity function, and the morphemes /(r)u/ and /u#ru/ receive the meaning of the non-past tense in pragmatics.

3 A Proposal

A grammar performing a division of labor among phonology, phonology-syntax interface analysis, morphology, syntax, semantics, and pragmatics is proposed, and is stated as generally as possible. The current study is responsible only for the grammar of the tense and verb morphemes, and the other parts of the grammar are as simplest as possible to have that of the tense and verb morphemes in focus. The main thesis is that each base form of 1) one Chinese sound plus /s/ of the consonant-final base verbs, 2) the strong base verbs /k/ 'come' and /s/ 'do', and 3) the '/e/ vowel-final' base

verbs combines with the morpheme /u/, or the default morpheme of tense, MORE THAN ONCE AS ITS SEMANTICS AS THE IDENTITY FUNCTION MAKES THIS POSSIBLE.

The architecture of components demonstrated in Figure 2 clarifies the assumption as usual in constraint-based grammars. For example, the phonology-syntax interface associates the sequence of the phones or phonemes, on one hand, and a sequence of words WITH ITS SYNTACTIC STRUCTURE, or an output of syntax plus the syntactic structure, on the other. If both a phonological constraint and a phonology-syntax interface constraint have their applying contexts in an output of syntax, then the phonology-syntax interface constraint will work prior to the phonological constraint. There is inherent meaning of a sequence, on one hand, and its 'pragmatic-associated' meaning, on the other.

3.1 Phonology

Two constraints are proposed in the phonology. First, the zero phoneme $\emptyset$, or no sound, and the phoneme /u/ are associable in the context of immediately after /r/ and of the sentence final, or at the end of a tensed clause (TC), as formalized as $\emptyset \overset{assoc}{=} u \ / \ r \ \# \ \text{---}_{TC}]$, similar to Hayata's (1998) sentence final /u/ deletion. The symbol # indicates a morpheme boundary. Secondly, a sequence of phones with the final vowel lengthened at the end of a tensed clause (TC), on one hand, and exactly the same sequence except for /r/ replacing the latter part of the lengthened vowel, on the other, are associable, whether or not there is a morpheme boundary immediately before the target, (either the phoneme /r/ or the lengthened part of the vowel,) as formalized
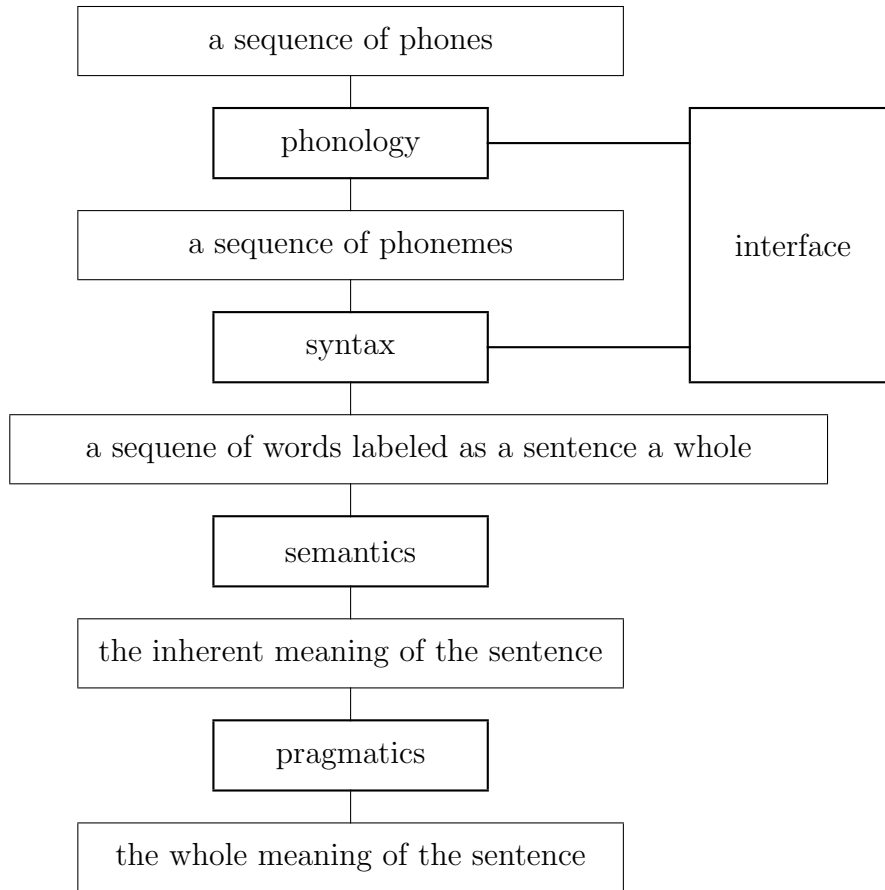
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```
┌─────────────────────────────────────────┐
│            a sequence of phones          │
└─────────────────────────────────────────┘
              ┌──────────────────┐        ┌─────────────────┐
              │    phonology     │────────│                 │
              └──────────────────┘        │                 │
┌─────────────────────────────────────┐   │                 │
│        a sequence of phonemes       │   │    interface    │
└─────────────────────────────────────┘   │                 │
              ┌──────────────────┐        │                 │
              │      syntax      │────────│                 │
              └──────────────────┘        └─────────────────┘
┌────────────────────────────────────────────────┐
│  a sequene of words labeled as a sentence a whole │
└────────────────────────────────────────────────┘
              ┌──────────────────┐
              │    semantics     │
              └──────────────────┘
      ┌────────────────────────────────┐
      │ the inherent meaning of the sentence │
      └────────────────────────────────┘
              ┌──────────────────┐
              │    pragmatics    │
              └──────────────────┘
      ┌────────────────────────────────┐
      │  the whole meaning of the sentence │
      └────────────────────────────────┘
```

Figure 2: The Assumed Architecture of the Proposed Grammar

in Figure 3.

$$V_i \overset{assoc}{=} r \ \Big/ \ V_i \ (\#) \ \text{---}$$
$$\cdots TC$$

Figure 3: Association Between Lengthened Vowel and Final /R/

Note that this phonological association is shown to be indifferent to mor-
pheme boundaries before /r/ or the latter part of the lengthened vowel; one

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example will be given in the next section.

3.2   Phonology-Syntax Interface

Our proposal in the phonology-syntax interface is that the glottal stop and the phoneme /r/ are associable in the context where the phoneme that precedes the target is ASSOCIATED WITH THE CATEGORY OF THE DEFAULT MORPHEME OF TENSE (DFLTMT), as formalized in Figure 4.[11]

$$\text{ʔ} \overset{assoc}{=} \text{r} \quad \diagup \underset{\diagup}{\big|} \; \# - \#\# $$

$$\text{DfltMT}$$

Figure 4: Association Between Glottal Stop and /R/

Note that the constraint has the context immediately before the target specified AS A CATEGORY, and so, stands across phonology and syntax, or in the interface between phonology and syntax. The category of DfltMT (= the default morpheme of tense) will be explicated in Section 3.3.

For example, the glottal stop and /r/ association in conjunction with the zero and /u/ association correctly predicts that the sequence /suʔ/ (or [süʔ] for its phonetic realization), on one hand, and /s#u#r#u/ 'do#DfltMT ...', on the other, are associated, in the following way. Here we assume for Japanese that forms and meanings are associated if and only if a form produces a meaning and the meaning produces the form. See Lee (2004) for various conditions for associations between meaning and forms. In one direction, (6a) /suʔ/ is associable with (6b) /s#u#r/ '...#DfltMT#...', as in (6). The sequence (6b) /s#u#r/ '...#DfltMT#...' is further associable

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with (6c) /s#u#r#u/ '... DfltMT# ... $_{TC}$]', as in (6). Each sequence has
the final /r/ or ʔ at the end preceded by the default morpheme of tense /u/.

(6) a. s# u#   ʔ
         ... DfltMT# ...$_{TC}$]

     b. s# u#   r#   by Association between Glottal Stop and /r/
         ... DfltMT# ...$_{TC}$]

     c. s# u#   r# u#   by the Zero and /U/ Association
         ... DfltMT# ... ...$_{TC}$]

In the other direction, (6c) /s#u#r#u/ is associable with (6b) /s#u#r/,
which is further associable with (6a) /s#u#ʔ/. The sequence (6b) has the
phoneme /u/ immeidately before the phoneme /r/ specified as DfltMT. Note
that the association between the lengthened vowel and final /r/ cannot apply
to the sequence (6b) /s#u#r/ since phonology-syntax interface associations
work prior to phonological associations (although the phonological associa-
tion has a context with which to apply).

For another example, the given three constraints in the phonology and the
phonology-syntax interface make a correct prediction regarding the sequence
[suː] (7a) (which realizes as [süː] phonetically) in case the sequence has
the former part of the lengthened vowel /u/ NOT specified as the default
morpheme of tense (= DfltMT), in the following way. In one direction, the
sequence (7a) [suː] is associable to (7b) /sur/ 'scratch', as in (7), which is
further associable to (7c) /sur#u/ 'scratch#NON-PAST', as in (7).

(7) a. suː
         ...$_{TC}$]

     b. sur   by Association between Lengthened Vowel and /r/
         ...$_{TC}$]

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c. sur# u#   by ∅ and /u/ Association
   ...   ...$_{TC}$]

In the other direction, (7c) /sur#u/ is associable with (7b) /sur/, as in (7), which is further associable to (7a) /suː/, as in (7). Note that the constraint in the phonology-syntax interface, or the association between the glottal stop and /r/, does not apply to (7b) since the phoneme /u/ immediately before /r/ in the sequence is NOT the default morpheme of tense.

The proposed constraints in phonology and the phonology-syntax interface correctly predict that the sequence /suː/ (which phonetically realizes as [süː]) that has the phoneme /u/ specified as the default morpheme of tense (= DfltMT) is ungrammatical, and that it is never interpreted as meaning 'do [NON-PAST]' in western Saga dialect, in the following way. In one direction, (8a) [suː], which has the phoneme /u/ specified as DfltMT, is associable to (8b) /su#r/, which is further associable to (8c) /s#u#r#u/ '... #DfltMT ...'

(8) a. s u   ː
        ... DfltMT ...$_{TC}$]

     b. s# u#   r   by Lengthened Vowel and /r/ Association
        ... DfltMT ...$_{TC}$]

     c. s# u#   r# u#   by ∅ and /u/ Association
        ... DfltMT ... ...$_{TC}$]

On the other hand, in the other direction, /s#u#r#u/ (8c), which has the phoneme /u/ in the middle specified as the default morpheme of tense, is associable with (8b) /s#u#r/, which is additionally associable NOT with (8a) /s#u#ː/ BUT with /s#u#ʔ/, similar to (6) from (6b) to (6a). It is thus predicted that there is no association between /s#u#ː/ (or [süː]) and

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/s#u#r#u/ (8c) if the phoneme /u/ preceding the phoneme /r/ or the latter part of the lengthened vowel is specified as the default morpheme of tense.

It will be shown immediately below that the association in the phonology-syntax interface between the glottal stop and /r/ in Figure 4 is more desirable than such a plausible constraint in phonology as given in Figure 5.

$$ ʔ \overset{assoc}{=} r \quad / \quad \begin{bmatrix} +back \\ +high \end{bmatrix} (\#) - \#\# $$

Figure 5: Phonological Association between Glottal Stop and /R/

The context immediately before the target is a phoneme of [+ back] and [+ high] in Figure 5, which is equivalent to /u/, (in place of the category of the default morpheme of tense in Figure 4). Then, we would need an ordering constraint in phonology: the glottal stop and /r/ association (that in Figure 5) precedes the lengthened vowel and /r/ association (that in Figure 3). Without this, the lengthened vowel and /r/ association incorrectly associates, for example, /s#u#ʔ/ (which phonetically realizes as [sʉːː]) with /su#r/, which is further associated with /su#r#u/, which can even further be associated with /s#u#r#u/. That is, the sequence [sʉːː] must be interpreted as meaning 'do [NON-PAST]' as one possibility. This is an incorrect prediction. The sequence /suʔ/ (or [sʉːː]) can never be interpreted as meaning 'do [NON-PAST]' in western Saga dialect. The association in the phonology-syntax is thus more desirable than the constraint in Figure 5 simply because the phonology-syntax interface does not necessitate such an ordering constraint in the phonology as in the previous paragraph. And yet, the discussion here is only a theoretical preference with no evidence.

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3.3   Morphology, Syntax, and Semantics

In this section, we will first clarify conventional assumptions regarding tense and formalize Arimoto's (2007) verb base final morpheme, and then propose analyses in order to explain consecutive occurrences of the default morpheme of tense.

The morpheme /u/ is the default morpheme of tense ((9a)). The verb base final morpheme (= VBFnl) plus the default morpheme of tense (= DfltMT) is again the default morpheme of tense (= DfltMT), as in (9b).

(9)   a. Tense → DfltMT

DfltMT → u

b. **DfltMT → VBFnl DfltMT**

VBFnl → r

The morpho-phonemic analysis (9b) explains a fact that the morpheme /r/ occurs immediately before the default morpheme of tense only to satisfy the morpho-phonemic C(onsonant)-V(owel) requirement in Japanese if the verb immediately preceding the default morpheme of tense ends with a vowel. The verb base final morpheme (VBFnl) /r/ may be relevant to, for example, the /(u)(r)eba/ conditional forms of verbs, which were given in the section 2.3.2, and the /(r)(a)n/ negative forms of verbs in western Saga dialect, which were given in Table 1. A morpheme of tense, either the default morpheme of tense or the past tense, combines with the base form of *either* a verb phrase (either VP-bse or VI-bse) *or* a verb (either VT-bse or VI-bse) to produce its finite form, as usual in linguistics, as formalized in (10).

(10) Complement Specification of Tense:

- VP-fn → VP-bse Tense

- VI-fn → VI-bse Tense

- VT-fn → VT-bse Tense

CONTENT OF VERB BASE FINAL MORPHEME: We propose the meaning of the verb base final morpheme as in (11).

(11) Meaning of VBFnl: $\lambda\mathbf{X}\lambda\mathbf{e}\lambda\mathbf{t}[\mathbf{X}(\mathbf{e})(\mathbf{t})]$

The content of the verb base final morpheme is analyzed as the IDENTITY FUNCTION WITH THE MEANING OF ITS COMPLEMENT AS BOTH ITS DOMAIN AND ITS RANGE. Specifically, the content takes a set of events e such that a set of points in time t such that the event predicate e holds at the point in time t TO RETURN THE SAME.

RECURSION OF DEFAULT MORPHEME OF TENSE (= DFLTMT) AND CONTENT OF DEFAULT MORPHEME OF TENSE (DFLTMT): We propose a constraint on recursion of the default morpheme of tense as (12a), and the inherent meaning of the default morpheme of tense as (12b).

(12) a. **DfltMT → DfltMT DfltMT**

b. Meaning of DfltMT: $\lambda\mathbf{X}\lambda\mathbf{e}\lambda\mathbf{t}[\mathbf{X}(\mathbf{e})(\mathbf{t})]$

The constraint (12a) means that two occurrences of the default morpheme of tense are again the default morpheme of tense. For example, /u# r# u/ '[Non-past]' is analyzed as $[_{Tense} [_{DfltMT} [_{DfltMT} u] [_{DfltMT} [_{VBFnl} r] [_{DfltMT} u]]]]$ by (12a), (9a) and (9b). The recursion of the default morpheme of tense is semantically made possible by the analysis of the inherent meaning of the default morpheme of tense as (12b): the INHERENT content of the default

morpheme of tense is the IDENTITY FUNCTION WITH THE MEANING OF ITS COMPLEMENT AS BOTH ITS DOMAIN AND ITS RANGE, which is the same as that of the verb base final morpheme (11). (In contrast, the inherent content of the past morpheme /ta/ is a function from a set of predicates of events to a set of the events in which the event time is a point in time in the past as usual, as formalized as follows:

(13) **PAST'** $= \lambda X \lambda e \exists t[X(e)(t) \ \& \ t \in T_{PAST}]$,

where T_{PAST} is an interval of time of which each point is earlier than the speech time, or $\{t \mid t \ \lneqq \ t_{Speech \ Time}\}$, and X is the variable of a predicate quantifying over events.

See Abusch (2004) for an analysis of the semantics of the past tense.)

BASE FORMS OF SO-CALLED '/E/ VOWEL-FINAL' BASE VERBS: Each of the /e/ vowel-final base verbs has TWO BASE FORMS, ONE WITH THE FINAL VOWEL /E/ PRESENT, AND THE OTHER THE SAME AS THAT EXCEPT FOR THE VOWEL /E/ ABSENT, except for the verbs lacking the suppletion paradigm. See the end of Section 2.2.1 for the suppletion paradigm of the /e/ vowel-final base verbs. For example, the base forms meaning 'sleep' are /ne/ and /n/, and the base forms meaning 'remember' are /obo(y)e/ and /oboy/, whereas the base form meaning 'receive' is only /e/, and that meaning '[time] pass' are only /he/ since they lack the suppletion paradigm. The base form meaning 'love' is /ais/ only. The base form of the strong base verb /k/, which means 'come', is /k/ only and that of the strong base verb /s/, which means 'do', is /s/ only.[12] Each verb base form is associated with its own inherent meaning in semantics as usual, as will be given in the Appendix. See Parsons (1990) for the analysis of every verb implicitly

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containing an event argument, e.g., an analysis of *Brutus stabs Caesar* as $\exists e[Stabbing(e)$ & $Cul[minate](e)$ & $Subj(e, B)$ & $Obj(e, C)]$, and a motivation for the analysis.

The lexical specifications of verb base forms in conjunction with the analysis of the default morpheme of tense correctly predict the shorter forms of one Chinese sound plus /s/ of the consonant-final base class, for example, analyzes /ais#u/ as $[_{VT-fn}[_{VT-bse}$ ais$]$ $[_{DfltMT}$ u$]]$, and yet, INCORRECTLY predict that the shorter forms of the strong base verbs and the /e/ vowel-final base verbs, e.g., */k#u/ 'come#DfltMT', */s#u/ 'do#DfltMT', and */tab#u/ 'eat#DfltMT', are grammatical. See the endnote 9. The morphology, syntax and semantics of the default morpheme of tense (DfltMT) and the verb base final (VBFnl) incorrectly predict that */ak#u#r#u/ 'open#NON-PAST#VBFnl#NON-PAST', for example, which contain two occurrences of the default morpheme of tense for one verb, are grammatical.[13]

3.4 Pragmatics

We propose in pragmatics, which is another component of grammar:

(14) $\lambda \mathbf{X} \lambda \mathbf{e} \lambda \mathbf{t}[\mathbf{X(e)(t)}$ & $\mathbf{t} \in \mathbf{T}_{NON-PAST}]$ is free in pragmatics, where $T_{NON-PAST}$ is an interval of time of which each point is equal to or later than the speech time, or $\{t \mid t_{Speech\ Time} \leq t\}$.

The event time of the form of TC (= a tensed clause) whose tense form is not the past form but the default morpheme of tense is specified by this interpretive rule. This pragmatic constraint is independently motivated in specifying the tense of copula-absent sentences in western Saga dialect like

/umak#a/ 'being tasty-exist', which is interpreted as receiving the non-past tense as in 'am/is/are tasty', even if the 'non-past' morpheme is absent.

4   Prediction

The proposed grammar makes a correct prediction regarding the sequence of phones [kodoɴ no nɯ?], which is associable with the sequence (15a). The interface constraint in Figure 4 in conjunction with the zero and /u/ association associates the sequence (15a) and the sequence of phonemes with some categorical specifications given (15b).

(15) a. /kodon no   nu?/.   [=   neru]
         child   NOM sleep [NON-PAST] [stndrd Jpns]
         'Children will sleep.'

     b. /kodon# no# n# u#   r# u#/
        ...   .   DfltMT ... ...$_{TC}$]

See (6), which contains the association between /s#u#?/ and /s#u#r#u/ 'do [NON-PAST]', for how the phonology-syntax interface constraint in conjunction with the zero and /u/ association associates (15a) and (15b). The proposed grammar predicts that the sequence of phonemes (15b) is a tensed clause (TC), analyzing it as in Figure 6.

The semantics of the proposed grammar in conjunction with the pragmatics specifies the meaning of /kodon no n u r u/ with the given syntactic analysis in Figure 6 as 'some child will sleep' in the following way. The meaning of /n/ 'sleep' is specified as (16a) in the lexical entry of /n/ 'sleep'. Since the meaning of the default morpheme of tense (= DfltMT) and that of the verb base final morpheme (= VBFnl) are the identity function, $\lambda X \lambda e \lambda t[X(e)(t)]$,
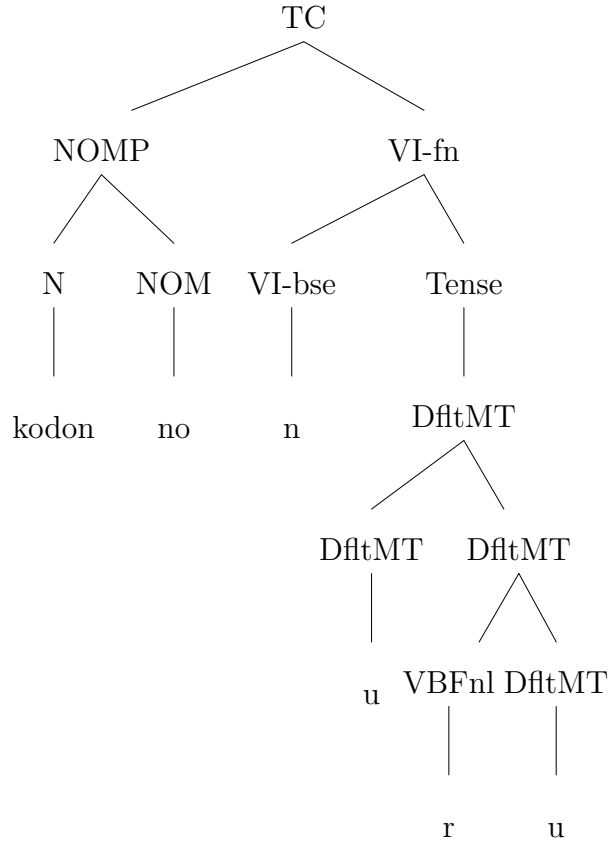
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Figure 6: An Analysis of 'kodon no n u r u' by Koga's 2008

as specified in (12b) and (11), the meaning of $[_{DfltMT} [_{VBFnl} \; r] \; [_{DfltMT} \; u]]$ is computed as the first logical formula in (16b), by the functional application between the meaning of /r/ 'VBFnl' and that of /u/ 'DfltMT'. Here the functional application is that given a syntactic concatenation of two forms, the content of one is a member of that of the other holds, as usual in semantics. For example, $John' \in run'$ holds, i.e., $John' \in \lambda x[run'(x)]$ holds, (or $\lambda X[X(John')] \in \lambda x[run'(x)]$ holds if possibly higher-ordered if needed), i.e., run'(John') holds, by λ-conversions, in semantics, with a syntactic analysis of $[_S [_{NP} \; John] \; [_{VP} \; runs]]$ given for *John runs*. The first logical formula in

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(16b) is equivalent to the second there, which is actually the same as that of $[_{VBFnl}\ r]$ or $[_{DfltMT}\ u]$. The meaning of $[_{DfltMT}\ [_{DfltMT}\ u]\ [_{DfltMT}\ r\ u]]$ is computed as the same as that of $[_{DfltMT}\ r\ u]$, or (16b). The meaning of $[_{VI-fn}\ [_{VI-bse}\ n]\ [_{Tense}\ [_{DfltMT}\ u\ r\ u]]]$ is computed as the same as that of $[_{VI-bse}\ n]$, which is equivalent to (16a). The meaning of [NOMP [N *kodon*] [NOM *no*]] is computed as (16g) by the functional application between the content of /kodon/ (16e) and that of /no/ (16f).

(16) a. n' $= \lambda e \lambda t[sleep'(e)(t)]$

b. r u'

$= \lambda X \lambda e \lambda t[X(e)(t)](\lambda X \lambda e \lambda t[X(e)(t)])$

$= \lambda X \lambda e \lambda t[X(e)(t)]$

c. u r u' $=$ (16b)

d. n u r u'

$= \lambda X \lambda e \lambda t[X(e)(t)](\lambda e \lambda t[sleep'(e)(t)])$

$= \lambda e \lambda t[sleep'(e)(t)]$

$=$ (16a)

e. kodon' $= \lambda Y[\exists x[child'(x)\ \&\ Y(x)]]$

f. no' $= \lambda Y \lambda X \lambda e \lambda t[Y(\lambda x[X(e)(t)\ \&\ Subject(e,x)])]$ (Koga 2000)

g. kodon no' $= \lambda X \lambda e \lambda t[\exists x[child'(x)\ \&\ X(e)(t)\ \&\ Subject(e,x)]]$

h. kodon no n u r u'

$= \lambda X \lambda e \lambda t[\exists x[child'(x)\ \&\ X(e)(t)\ \&\ Subject(e,x)]](\lambda e \lambda t[sleep'(e)(t)])$

$= \lambda e \lambda t[\exists x[child'(x)\ \&\ [\lambda e \lambda t[sleep'(e)(t)]](e)(t)\ \&\ Subject(e,x)]]$

$= \lambda e \lambda t[\exists x[child'(x)\ \&\ sleep'(e)(t)\ \&\ Subject(e,x)]]$

Thus, the content of the sentence as a whole /kodon no n u r u/ is computed as (16h). This is the inherent meaning of /kodon no n u r u/ with the aforementioned syntactic analysis. The tense value of the inherent meaning of /kodon no n u r u/ with the syntactic analysis is not specified in semantics.

Since the non-past tense is free in pragmatics, as proposed in (14), the meaning of $[_{TC}$ *kodon no n u r u*$]$ is further interpreted as (17a) in pragmatics, which is computed as (17b), which is still further computed as (17c) by the existential closures of the set of events and set of points in time.

(17) a. $\lambda X \lambda e \lambda t[X(e)(t) \& t \in T_{NON-PAST}]$

   $(\lambda e \lambda t[\exists x[child'(x) \& sleep'(e)(t) \& Subject(e, x)]])$

   b. $\lambda e \lambda t[\exists x[child'(x) \& sleep'(e)(t) \& Subject(e, x)] \& t \in T_{NON-PAST}]$

   c. $\exists e \exists t[\exists x[child'(x) \& sleep'(e)(t) \& Subject(e, x)] \& t \in T_{NON-PAST}]$

The sequence /kodon no n u r u/ with the syntactic analysis given in Figure 6 receives the interpretation 'some child will sleep' (or 'the event of some child's sleeping culminates at some point in time of the present or the future') finally in pragmatics.[14]

The prediction in the previous paragraphs by the proposed grammar regarding (15a) /kodon no nuʔ/ has clarified two points: The sequence of morphemes /r#u/, or the sequence of the verb base final (VBFnl) plus the default morpheme of tense (DfltMT), can be recursively added to a sequence of either $[_{DfltMT} \; u]$ or $[_{DfltMT} \; r \; u]$ because the combination of two occurrences of the identity function is again the identity function, as shown in (16b) and (16c). For an economical and semantic reason, the last sequence of the morpheme $[_{DfltMT} \; r \; u]$ added to the sequence of either $[_{DfltMT} \; u]$ or $[_{DfltMT} \; r \; u]$ may be associated with a reduced sound, the glottal stop.

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Metaphorically, we could see an ADDITION to a sequence, which could have some morphological cause, and A PARTIAL REDUCTION of the same sequence, which could have some semantic and economical cause.

5 Summary and Implications

SUMMARY: We observed the phenomenon of the glottal stop at the end of verb in western Saga dialect in Section 1.2. Our plausible revision of Hayata (1998), in conjunction with Hayata (1985), was shown to be inadequate in Section 2.2. Hayata's (1998) vowel harmony missed the suppletion paradigm of some /e/ vowel-final base verbs (Section 2.2.1). Our extension of Hayata (1985) could not explain 1) why both /aisu/ 'love [NON-PAST]' and /aisuru/ 'love [NON-PAST]', for example, are grammatical or 2) why not many morpheme combinations use, e.g., /aisu/, as the base form (Section 2.2.2). An analysis was suggested that the verb base forms of the consonant-final base verbs of one Chinese sound plus /s/ apply up to the phoneme /s/. A consequence from this analysis was: redundant occurrences of the so-called 'non-past' morpheme /(r)u/ in the non-past tense sentences (Section 2.3.1) and in the /(r)eba/ conditional clauses (Section 2.3.2). This would lead to a vacuous quantification as long as the default morpheme of tense INHER-ENTLY receives the complementary meaning of the past tense morpheme, as in the conventional assumption, as in Enç (1997) and Muraki (1991). This is inconsistent with the native speakers' judgments. In Section 3, a grammar performing a division of labor among phonology, phonology-syntax interface, syntax, lexical specifications, semantics, and pragmatics was proposed. Then, one prediction that the grammar makes was given in Section 4. A

Chomsky's explanatory-adequate explanation or speculation to the glottal stop phenomenon in western Saga dialect was finally given at the end.

IMPLICATIONS: The proposed grammar, if it is correct, will imply two aspects: One, given the default morpheme α of a syntactic category C and the non-default morpheme β, the default morpheme α may be the IDENTITY FUNCTION IN SEMANTICS and RECEIVE THE COMPLEMENTARY MEANING OF THE NONDEFAULT MORPHEME β IN PRAGMATICS; (furthermore, the default morpheme α might be infinitely repeated, and the last of the repeated default morphemes will be associable to its phonetically reduced form, i.e., will metaphorically 'suffer' a sound reduction.) This rejects the conventional assumption, as in Enç (1997) and Muraki (1991), that the default morpheme of tense inherently receives the complementary meaning of the past tense form. Two, if the proposed phonology-syntax interface constraint is correct, then the syntactic categories of penultimate morphemes will need to be seen from the phonological component as well as the syntactic category of the sequence of phonemes as a whole and morpheme boundaries.

Future research is needed to examine whether the proposed grammar is extendable to tense and verb morphemes in other dialects and classical Japanese languages. The grammar will give a new perspective to, for example, the /n/ consonant-final base verbs, as given in the endnote 13, and a difference between the sentence-final forms and the pre-nominal forms of verbs in classical Japanese languages, as given in the endnote 9. The proposed syntax and semantics 'overgenerates', and will need various constraints to prevent such phenomena. For example, constraints might be applied to western Saga dialect in order to resolve the following questions: 1) why the

so-called /e/ vowel-final base verbs, the strong base verbs of /k/ 'come' and /s/ 'do', and the consonant-final base verbs of one Chinese sound plus /s/ ONLY can co-occur consecutively with the default morpheme, or /u/ plus ʔ in the dialect, and 2) what prevents the indefinitely many number of multiple occurrences of the default morpheme of tense. These two anomalities remain to be solved for western Saga dialect.

Notes

[1]The author is a native speaker of the dialect spoken in Ashikari, Ogi-City. The dialect spoken in this area is western Saga dialect. The author comes from a fourth generation lineage of people from this area, and remained there for about 20 years after his/her birth in 1960. After that, he/she has been exposed to Tokyo dialect, and yet, has been using western Saga dialect when he/she talks with the local people, including his parents and relatives. The other dialect, eastern Saga dialect, is spoken in the prefecture's eastern area. See language maps in Kyushu Dialectological Society (1991).

[2]The forms of [kaɕeːsɯ̈ʔ], [kaɕeːɕita] and [kaɕeːɕeɴ] are used among the older generation.

[3]The phone [o] occurs in place of /u/ immediately after /o/ in fast speech of standard Japanese. Similarly, the phone [e] occurs in place of /i/ immediately after /e/ in fast speech.

[4]The standard counterpart of this is /tar#u/ 'suffice', whose negative non-past is /tar#anai/ 'do not suffice'. The western Saga dialect morphological counterpart of the standard verb /tari#ru/ 'suffice', [taɾʲiː], which is not used in the dialect. Its negative non-past is [taɾʲiɾaɴ].

[5]The form [noːnakasɯ̈] is more frequently used in the dialect than the morphological counterpart of the standard verb [nakɯsɯ̈].

[6]This verb is used in the dialect instead of the morphological counterparts of the standard verb /dekiru/ (or [deciɾu]), [dekiː], [decita] and [deciɴ].

[7]The other pronunciation of this is [ɸɯttsɯ̈ʔ]. Its past counterpart is [ɸɯtteta].

[8]Hayata's (1998) /r/-glottalization does not have the context of *either*

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immediately after [+high][+back] *or* across a morpheme boundary.

⁹If the scope were expanded to include the tense and verb morphemes OF CLASSICAL JAPANESE, then the discussion in the body of text would also hold for the strong base verbs of /k/ 'come' and /s/ 'do' and the /e/ vowel-final base verbs. The shorter forms of 1) the strong base verbs /k/ and /s/, e.g., /k#u/ 'come#NON-PAST' for the first, /kenkyuus#u/ 'do research#NON-PAST' for the second, and 2) the /e/ vowel-final base verbs with /e/ changed with /u/, e.g., /n#u/ 'sleep#NON-PAST', are ones in the non-past tense in a classical Japanese.

¹⁰It appears that two occurrences of the past tense morpheme occur in the form [ocitata] in western Saga dialect, as in (18a). The last sequence [ta] is actually not the PAST morpheme, but is an emphatic particle. The emphatic particle [ta] occurs immediately after a predicative noun at the utterance final, as in (18b), in contrast with the non-occurrence of the 'non-past' morpheme /(r)u/ at the utterance final of the predicative noun, as in (18c).

(18) a. kodoɴ no   ocitata.
         child   NOM get up [NON-PAST] [EMPHATIC]
         'Children got up!'

      b. kodoɴ no   ɲihoŋdʑiɴ ta.
         child   NOM Japanese EMPHATIC
         'Children are Japanese!'

      c. *kodoɴ no   ɲihoŋdʑiɴ ɾu.
          child   NOM Japanese NON-PAST

¹¹See Hayata (1998) for a phonological analysis of the phones other than the glottal stop in place of the verb base final (VBFnl) /r/ when it is not the

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final of a sentence, as in /nukken/ ([nɯkkeɴ]) 'since (he) sleeps...'.

[12]We will need /ko/ as well associated with [kuru] 'come' and /si/ and /se/ for the standard (or /se/ for western Saga dialect) as well associated with [suru] 'do' if the scope of the grammar contains the negation /(a)nai/ 'not' for the standard and /(a)n/ 'not' for the dialect. Hayata (1985) analyzes the verb base forms of /k/ 'come' are /ki/, /ko/, and /ku/, and those of the verb base forms of /s/ 'do' are /si/, /se/, and /su/. See Halle and Marantz (1993) for the analysis of the morphology of verb in English, which includes the suppletion among the paradigm of one verb.

[13]This could explain two consecutive occurrences of the default morpheme of tense in the /n/ consonant-final base verbs in a classical counterpart /sin#u#r#u/ 'die#DfltMT#VBFnl#DfltMT' of the modern one /sin#u/. Further research is needed to investigate this phenomenon.

[14]The grammar predicts that the past counterpart /kodon#no#ne#ta/ 'children slept' receives meaning quite differently. The syntax analyzes the sentence as having the structure as $[_{TC}$ $[_{NOMP}$ kodon no] $[_{VI-fn}$ $[_{VI-bse}$ $ne]$ $[_{Past}$ $ta]]$. Its INHERENT content is $\lambda e \exists t [\exists x [child'(x) \& sleep'(e)(t) \& SUBJ(e,x)] \& t \in T_{PAST}]$.

Appendix. The Proposed Grammar of Tense and Verb Morphemes

This appendix lists all the constraints of the proposed grammar. The parts in the bold font are original analyses of the current study.

PHONOLOGY:

- Association Between Verb Final /u/ and Zero: $\emptyset \overset{assoc}{=} u \ / \ r \ \# \ \text{---}_{TC}]$

- The Lengthened Vowel and Final /R/ Association, Figure 3

PHONOLOGY-SYNTAX INTERFACE:

- The Glottal Stop and Final /R/ Association, Figure 4

SYNTAX:

- initial symbol: TC
- TC → NOMP VI-fn
- TC → NOMP VP-fn
- VP-fn → VP-bse Tense
- VT-fn → VT-bse Tense
- VI-fn → VI-bse Tense
- **Tense → DfltMT**
- Tense → Past
- **DfltMT → VBFnl DfltMT**
- **DfltMT → DfltMT DfltMT**
- VP-bse → ACCP VT-bse
- NOMP → N NOM
- ACCP → N ACC
- NOM → no
- ACC → ba
- N → kodon % 'child'
- N → funa % 'carp'
- **VBFnl → r**
- **DfltMT → u**
- VT-bse → kaw % 'buy'
- VT-bse → kir % 'cut'
- VI-bse → nak % 'cry'
- VT-bse → **tab** % 'eat'
- VT-bse → tabe % 'eat'
- VI-bse → **n** % 'sleep'
- VI-bse → ne % 'sleep'
- VT-bse → ki % 'wear'
- VT-bse → **kenkyuus** %'study'
- VT-bse → **ais** % 'love'

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SEMANTICS:

- **DfltMT' = $\lambda X \lambda e \lambda t[X(e)(t)]$**

- PAST' = $\lambda X \lambda e \exists t[X(e)(t) \,\&\, t \in T_{PAST}]$

- **VBFnl' = $\lambda X \lambda e \lambda t[X(e)(t)]$**

- Verb' = $\lambda e \lambda t[R'(e)(t)]$, where a *1* or *2*-place relation replaces R', e.g., sleep'.

- GF = $\lambda Y \lambda X \lambda e \lambda t[Y(\lambda x[X(e)(t) \,\&\, GF'(e,x)])]$, where either the pair (SUBJ, Subject) or the pair (OBJ, Object) replaces the pair (GF, GF').

- N' = $\lambda Y[\exists x[N'(x) \,\&\, Y(x)]]$, where the predicate of noun replaces N'.

PRAGMATICS:

- $\lambda X \lambda e \lambda t[X(e)(t) \,\&\, t \in T_{NON-PAST}]$ is free.

- Existential Closure of $\lambda e[X(e)(t)]$ • Existential Closure of $\lambda t[X(e)(t)]$

ABBREVIATIONS:

NOM: nominative, ACC: accusative, clssclJpns: a classical Japanese, stndrd-Jpns: standard Japanese, TC: a tensed clause, VBFnl: Verb Base Final, DfltMT: default morpheme of tense, -bse: being in the base form, -fn: being in the finite form

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Abstract

The current paper argues that our plausible revision of Hayata (1998), which predicts the glottal stop phenomenon in eastern Saga dialect of Japanese, in conjunction with Hayata (1985) would be an inadequate explanation at the level of Chomsky's 'explanatory-adequacy' as to: 1) why the glottal stop occurs at the end of only several kinds of /ru/ final verbs in its western counterpart; 2) why the so-called 'non-past' morpheme in the consonant-final base verbs of one Chinese sound plus /s/ in the standard Japanese apparently occurs redundantly in the non-past tense sentences and the /(r)eba/-conditional clauses. A grammar performing a division of labor among phonology, phonology-syntax interface analysis, syntax, semantics, and pragmatics is proposed to explore one common answer to these two questions, having tense and verb morphemes in other dialects of Japanese and classical Japanese languages in its scope in future research. The current study implies that the 'non-past' morpheme is actually the default one of tense the inherent meaning of

which is the identity function, rejecting the conventional assumption, as in Enç 1997, and the tense of a clause with the verb with its tense being only the default morpheme is specified by the freely given non-past tense in pragmatics.[1]

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[1]to be supplied after review if successful

(1985)

(1998)

/ru/

/(r)eba/ -/s/

Enç (1997)